HANDBOOK ON

NATIONAL

ENVIRONMENTAL LEGISLATION AND INSTITUTIONS IN

SOUTH ASIA

HANDBOOK ON NATIONAL ENVIRONMENTAL LEGISLATION AND ISTITUTIONS IN SOUTH ASIA

FOR

SOUTH ASIA COOPERATION FOR ENVIRONMENT PROGRAMME (SACEP) COLOMBO, SRI LANKA

UNDER THE UNEP/ SACEP/ NORAD PUBLICATION SERIES ON ENVIRONMENTAL LAW AND POLICY

EDIT BY
Dr. RASHID HASAN

PREFACE

South Asia Co-operative Environment Programme (SACEP) identified National Task Members of South Asian countries with the help of respective Government for the preparation of "Handbook of National Environmental Legislation and Institutions in South Asia". A couple of meetings of the National Task Members were organized by the SACEP under the UNEP/SACEP/NORAD publication series on Environmental Law and Policy. The objective of meeting was for co-operation among the environmental law experts in SAARC region for the preparation of National reports on the environmental legislation. The UNEP, SACEP, and Country Missions attended the meetings of task members. The meetings were organized by the SACEP in Sri Lanka

The meetings of National Task Members were organized for deliberations by the experts and the members on the national legislation and their status implementations for the effective management of environment. During the meetings, a broad framework for the preparation of Handbook of National Environmental Legislation and Institutions was prepared and finalized under guidance of experts like Mr. Lal Kurukulasuriya, Chief Environmental Law, UNEP; Mr Anand Raj Joshi, former Director, SACEP; Mr. Maqbool Elahi, Director, SACEP and Mr Prasnatha Dias Abeyegunawardene, Deputy Director, SACEP. National Task Members submitted their respective report on the national legislation based on the framework. I was asked by the UNEP/ SACEP to prepare a synthesis report in the form of South Asian Handbook of National Environmental Legislation and Institutions for publication under the UNEP/SACEP/NORAD publication series on Environmental Law and Policy.

The Framework prepared by the National Task Member was very exhaustive covering environmental issues and legislative responses of countries in the South Asian region. While preparing the book, emphasis has been on the institutions, legislation and policies and programmes evolved particularly after the Stockholm Conference on the Human Environment in 1972. The book highlights the country specific environmental issues with institutional and legislative responses by the South Asian countries in the background of their socio-economic development. The compliance and enforcement of their legislation, policies and programmes have been accorded due focus. Roles played by the judiciary, NGOs, and civil society in the control of pollution and conservation of the environment has been highlighted. The international obligations under the Multilateral Environmental Agreements and other regional and bilateral agreements including their compliance through legislative, policy initiatives and through programmes have been provided.

A separate Executive Summary on legal and institutional measures adopted by the countries in the South Asian region has been added. In the recent past there have been a lot of initiatives under the aegis of SAARC, SACEP and under the other aegis of international agencies like UNEP, World Bank, UNDP, ESCAP. Male Declaration on the control of air pollution has been an important milestone in the regional effort for cooperation in the prevention and control of air pollution. There has been several Joint meetings, seminars and training programmes for the strengthening of the target group like judiciary, government officials, private sectors, industry, NGOs and civil society. A Technical Committee on Environment, Meteorology and Forestry has been constituted under the SAARC to assist the SAARC Secretariat on the environmental matters.

The objective of the book is not the enumeration of the existing legislation in the region but their application as an effective tool in the environment management. Emphasis has been given on the over

all environment governance particularly the legislation and their implementation. Keeping this in view, the book focuses on the environmental issues, their status and solutions both by legislation and policies. The order of the topics and consistency in their contents were maintained as far as possible. Attempts have also been to accommodate all topics relevant to the objective of the book. However all topics could not be accommodated due to space and scheme of the book. The information/material available on the website of UNEP and related organizations like ESCAP, UNDP, World Bank, ADB, SACEP, SAARC including websites of secretariats of various MEAs have been used. The information available on the websites of Government's websites of SAARC countries including websites of Conventions Secretariats and national and international environmental institutions was also utilized in the preparation of the book.

I take this opportunity to express my gratitude to Mr. Lal Kurukulasuriya, Chief, Environmental Law UNEP without whose keen interest and guidance the book could not have come into existence. I am thankful to Mr Anand Raj Joshi, former Director, SACEP, Mr. Maqbool Elahi, Director; SACEP and Mr Prasantha Dias Abeyegunawardene; Deputy Director, SACEP for their suggestions and encouragement in the preparation of this book. Discussions with the National Task Members who contributed to various chapters have been immensely useful in preparing the book. The Task Members in fact deserve the credit for this book. I gratefully acknowledge the constant encouragement and keen interest shown by Mr. Nirmal Andrews, Director, ROAP/UNEP, Bangkok in completing the book. The cooperation extended by the staff and secretariats of UNEP and SACEP is gratefully acknowledged. I thank Government of India for nominating me as the National Task Member of the Task Group constituted by the SACEP/UNEP. Lastly, I owe to my family and friends for their support during the preparation of this book.

Dr Rashid Hasan

National Task Members/Legal Expert

Country	National Legal Expert
Bangladesh	Mr Mahful haque, Deputy Secretary(Environment) Ministry of Environment & Forest, Bangladesh Secretariat, Dhaka, Bangladesh Tel: 8621548/8614880 e-mail: hahfuzal@citecho.net
Bhutan	Mr Nedup Tshering, Environment Impact Assessment Officer, National Environment Commission, Thimpu Royal Government of Bhutan Tel: 975-2-23384 Fax: 975-2-23385
India	Dr Rashid Hasan, Additional Director Ministry of Environment & Forests, Paryavaran Bhawan, CGO Complex, Lodi Road New Delhi- 110003 Tel: 91-11-4363975 Fax: 91-11-433975
Maldives	Ms Aishath Aazima Shakoor, Legal Officer Ministry of Home Affairs, Housing & Environment, Huaravee Building, Male, Republic of Maldives Tel; 960-324861 Fax: 960-324739
SACEP	Anand Raj Joshi, Director, SACEP, Colombo, Sri Lanka Ph: 941 59787 Fax: 941589359
Nepal	Mr Sherang Karki, Legal Officer Ministry of Population & environment, Singh Durbar, Kathmandu, His Majesty's Government of Nepal Tel: 977-1-241586/241587 Fax: 977-2-242138
Pakistan	Mr Kamran Saeed Khan,Technical Officer Ministry of Environment, Local Government and Rural Development, 7th Floor, UBL Building, Jinnah Avenue, Blue Area, Islamabad Pakistan Tel: 92-51-9208061 Fax: 92-51-9202211
Sri Lanka	Dr B. M. Batagoda, Director, Environment Division Ministry of Environment & Natural Resources Sampathpaya, Battaramulla, Sri Lanka Tel: 94-1-887452 Fax: 94-1-877292
SACEP	Mr. Prasantha Dias Abeyegunawardene Deputy Director programmes, SACEP, Colombo,Ph: 941 59787 Fax: 941589359
SACEP	Mr Mabool Elahi, Director, SACEP, Colombo,Ph: 941 59787 Fax: 941589359
UNEP	Mr Lal kulukulasuryia, Chief, Environmental Law UNEP, Nairobi; Kenya

LIST OF OTHER COUNTRY CONTRIBUTORS/EXPERT

Bangladesh:

1. Mr. M.A. Malek, Dy. Director, DSE.
2. Mr. Masud Iqbal Md. Shameem
3. Dr. Indrajit Roy, Principal Scientific Officer, BARC, Dhaka
4. Md. Reazuddin, Director (T), DoE
5. Mr. M. Gul Hussain, National Committee on Plant Genetic Resources, Bangaladesh.
6. Dr. Khabir Ahmed, Chief Scientific Officer, Bangladesh Agricultural Research Council
7. Dr. Niaz Ahmed Khan, University of Chittagong, Bangladesh.
8. Dr. M. Farooque, Jt. Director, DoE.
9. Mr. Mohammed Sulaiman Haider, Asstt. Director (T) DoE.
10. Mr. Hardhan Banik, DFO, Noakhali
11. Mr. Laskar Muqusudin Rehman, Asstt. CCF, Forest Department, Bangladesh.
12. Mr. Md. Shawkat Ali, Senior Asstt. Secretary, M/o Environment Forests.
13. Mr. Ravi Gopal Biswas, Dy. Director, DoE.
14. Md. Masud Karim, Senior Researcher
15. Mr. Quazi Sarwar Imitiaz Hashmi.
16. Mr. Md. Abdus Sobhan, Director (T) DoE.
17. Mr. Abdul Wahab Akonda,
18. Mr. Hasan Zahid
19. Mr Habib Ehsanul, Bangladesh Environmental Lawyers Association
20. Shaheen Malik, Advocate, Bangladesh

Bhutan

21. Mr Nedup Tshering,

India

22. Dr. Rashid Hasan; Addl. Director, MoEF, New Delhi
23. Officers relating to various Divisions of the Ministry

Sri Lanka

24. Dr B. M. Batagoda, Director, Environment Division
25. Shri Gamini Gamage
26. Dr. H.M. Kodisinghe
27. Dr. Pradeepa Silva
28. Mr. Jagath Gunawardene
29. Mr. Anura Jayasundera
30. Mr. Asitha Seneviratne
31. Mr. S.Shivakumar
32. Miss Thushara Wijethunga

33. Miss Sadeeva Ariartne
34. Mr. Nelum Dorambawila
35. Mrs. Chaulani Panditharatne
36. Mr. Erandathi Lokupitiya
37. Mr. Indrapriya Kularatne
38. Mr. Anura Jayathilake
39. Miss Ranmali Jayasinghe

Pakistan

40. Mr Kamran Saeed Khan,Technical Officer

Maldives

41. Ms Aishath Aazima Shakoor, Legal Officer

Nepal

42. Mr Sherang Karki, Legal Officer, Nodal Officer and others officers dealing with the subject matter

SUMMARY OF CONTENTS

CHAPTER I

EXECUTIVE SUMMARY

CHAPTER II

COUNTRY PROFILE

CHAPTER III

OVERVIEW OF CONSTITUTIONAL, LEGISLATIVE AND INSTITUTIONAL FRAMEWORK

A. CONSTITUTIONAL PROVISIONS

B. Legislation

SUMMARY OF ENVIRONMENTAL ISSUES, POLICIES, LEGISLATION, INSTITUTIONS AND INTERNATIONAL CONVENTIONS IN SOUTH ASIA REGION

Key Environmental Issues in South Asian Countries

Bangladesh

Population Density and poverty; Unplanned human settlement; Unplanned urbanization and industrialization; Increasing Population Density; Natural Disasters (Cyclones, Flood etc.); Global Warming; Faecal Pollution; Forest Depletion; Loss of Habitat or Endangered Species; Declining Fish Catch; Shortage of Drinking Water; Sea Level Rise; Solid Waste Management; Water Pollution, Urban Air Pollution, Ground Water Pollution; Chemical and Hazardous Waste Management; Lack of Environmental capacity Building; Environmental Education

Bhutan

Insufficient Human Resources; Insufficient to Implement Comprehensive Environmental Strategy; Limited Area for Agriculture; High Fuel wood Consumption; Emerging Urban Development Problems; Environmental Education; Poverty alleviation; Coastal Pollution

India

Air Pollution; Water Pollution, Land Degradation; Solid Waste Management; Hazardous Waste; Bio Medical Waste, Loss of Biodiversity; Conservation of Natural Resources; Forest Depletion; Environmental Education; Ground Water Pollution; Poverty Alleviation; Rapid Urbanization; industrial Pollution Prevention and Control; Clean Technology; urban Environmental Issues

Maldives

Coral and Sand Mining; Waste Management; Institutional relationships; Poverty alleviation through capacity building of committees Gender and social structure; Local resource mobilization; expenditure for poverty alleviation, transparency and accountability; Legal framework for decentralization; Enforcement and Compliance of Legislation; Land Resources; Coral Reefs; Sea Level Rise; Population Density; Marine Resources; Marine biodiversity; Environment Education; Capacity Building;

Nepal

Forest Depletion, Land Degradation; Soil degradation; Water Pollution, Air Pollution; Inadequate Capacity for Management of Environment; Loss of Biodiversity; Rapid Urbanization; Industrial waste; Landslides; Lack of Agricultural Land; Vehicular pollution; Indoor Pollution; Environment Education; Environment Capacity Building;

Pakistan

High Population Growth; Water Pollution, Air Pollution, Solid Waste Disposal, Hazardous Waste, Biodiversity Loss; Land Degradation; Soil Degradation; Forest Depletion; Natural Disasters; Coastal Pollution; Environment Education, Environment Capacity Building

Sri Lanka

Air Pollution, Vehicular Pollution; Deforestation; Solid Waste Disposal Health Hazards; Air Pollution; Water Pollution; Soil Erosion; Land Degradation; Deforestation; Loss of Biodiversity and Wildlife; Industrial Pollution; Coastal Erosion; Solid Waste Disposal; Inadequate Capacity to manage Environment; Marine Biodiversity; Degradation of Marine Resources; Environment Education; Environment Capacity Building;

Environmental Policies in South Asian Countries

Bangladesh

Wetland Policy for Bangladesh; National Environment Action Plan,1992; the National Forest Policy, 1994; National Environment Policy (1995); energy Policy (1996); fishery Policy (1998); water Policy (1999); Industry Policy (1999); Agriculture Policy (1999); Country's Fourth and Ninth Five Year Plan (1997-2002)

Bhutan

Paro Resolution on Environment and Sustainable Development, 1990; National Environmental Strategy;

India

National Forest Policy, 1988; National Wildlife Action Plan, 1988; Policy Statement on the Abatement of Pollution, 1992; National Conservation Strategy and Policy Statement on the Environment and Development, National Environmental Action Plan, 1993; National Strategy for Conservation Macro level Plan for Conservation of Biodiversity, 2000; National Action Plan, 2002; National Wildlife Conservation Strategy, 2002

Maldives

National Environment Action Plan; Male Declaration, 1998

Nepal

Nepal Environment Policy and National action Plan, 1993 updated in 1998; Nepal's Five Year Ninth Plan, 1995-2001

Pakistan:

National Conservation Strategy, 1993; Provincial Conservation Strategy, 1996;

Sri Lanka:
National Conservation Strategy, 1988; National Environmental Action Plan, 1994 updated in 1998

Legislation Related to Environment

Bangladesh

Cultural heritage Irrigation Policy 1998 Antiquities Ordinance 1986, Environment Conservation Act 1995; Water and Power Development Board 1972 Soil conservation EPC Ordinance 1977; Marine Fisheries Ordinance 1983; Territorial Water and Marine Zone Act 1974; Shipping Ordinance 1976, Wildlife (Preservation) Order, 1974; Wildlife (Preservation) Act 1973 Amended 1974; Bangladesh Wildlife (Preservation) Act, 1973; Factories Act, 1965; Water Supply and Sewerage Authority Ordinance 1963 Amended in 1989; Embankment and Drainage Act 1952; IWTA Ordinance 1958, Conservation and Protection of Fisheries Act 1950; Fish Conservation Act, 1950; Authority Ordinance 1950; Water Hyachith Act 1939; Petroleum Act 1934; Petroleum Act 1934; Forest Act 1927 Modified in 1973; Forest Act, 1927; Mines Act 1927; Mines Act 1927; Fish Policy 1998 Private Fisheries Protection Act 1889; Canals Act 1864; Irrigation Act 1876; Constitution of Bangladesh (Article 31, 32); Penal Code, 1860;

Bhutan

National Mines and Management Act 1995 and the Environmental Assessment Act 2000, Forest and Nature Conservation Act 1995; Mining Act (1995); Paro Resolution on Environment and Sustainable Development (1990); Plant and Quarantine Act and regulations (1988); ; Plant and Quarantine Act and regulations (1988); Wildlife Act (1985); Environmental Strategy**;** Inheritance law (1979); Livestock Law (1979); Land Law (1979); Pastureland Law (1979); National Forest Policy, 1974; Forest Act 1969, National Forest Act (1969);

India

National Biodiversity Act, 2002; National Environment Appellate Authority Act, 1997, National Environment Tribunal Act, 1995; Public Liability Insurance Act, and Amendment,1991-92; Coastal Regulation Zone Notification, 1991; Motor Vehicles (Amendment) Act, 1986; The Environment (Protection) Act, 1986; The Coal Mines (Conservation and Development) Amendment Act, 1985;

Model Regional and Town Planning and Development law, 1985; Oil Fields (Regulation and Development) Act, 1984; Air (Prevention and Control of Pollution) Act, Rules and Amendment, 1981,1982,1983, 1987; Forest (Conservation) Act, 1980,198; Wildlife (Protection) Act, 1980,1981; Water (Prevention and Control of Pollution) Act, Rules and Amendment, 1977, 1978, 1982; Urban Land (Ceiling and Regulation) Act, 1976; Merchant Shipping Act, 1970; Insecticide Act, 1968; River Boards Act, 1965; Ancient Monuments and Archaeological Sites and Remains Act, 1958; Mines and Minerals (Regulation and Development) Act and Amendment, 1957,1984; Industries (Development and Regulation) Act and Amendment, 1957, 1987; Provision in State Acts on Town and Country Planning; Factories Act and Amendment, 1948, 1987; Indian Forest Act and Amendment, 1927,1984; Indian Fisheries Act, 1897; Indian Boiler Act, 1923;

Maldives

Law on Uninhabited Islands (Law no: 20/98, Fisheries Law of the Republic of Maldives, 87; Environmental Protection and Preservation Act, 1993; Environmental Impact Assessment (EIA);

Nepal

Environment Protection Act, 1997; Environment Protection Regulation, 1997; ODS Consumption Rules, 2001; Forest Act, 1993, Water Resources Act, 1992 ; Electricity Act, 1992 ; Constitution of the Kingdom of Nepal 1992; Transport Act, 1992 ; Constitution of the Kingdom of Nepal, 1990; Pesticides Control Act, 1991 ; Nepal Water Supply Corporation Act, 1990 ; Village Development Act, 1990 ; Municipality Act, 1990 ; District Development Board Act, 1990; Kathmandu Valley Department Authority Act, 1988 ; Royal Academy of Science and Technology Act, 1988 ; Pashupati Area Development Trust Act, 1987 ; Solid Waste Management and Resource Mobilization Act, 1986 ; Nepal Electricity Authority Act, 1983 ; Nepal Petroleum Act, 1983 ; International Centre for Integrated Mountain Development Act, 1983 ; King Mahendra Trust for Nature Conservation Act, 1982 ; Soil Conservation and Watershed Management Act, 1982 ; Decentralization Act, 1982 Natural Calamities Relief Act, 1982 ; Nepal Standard Act, 1979 ; Narcotic Drugs Control Act, 1976 ; Medicines Act, 1976 ; Animal Feeds Act, 1975 ; Pasture Land Nationalization Act, 1974 ; Public Roads Act, 1974 ; National Parks and Wildlife Conservation Act, 1973 ; Plants Protection Act, 1972 Jhora Sector Land Distribution Act, 1972 ; Town Development Plan (Implementation) Act, 1970 ; Rapti Doon Land Development Area (Sale and Distribution) Act, 1967 ; Canal, Electricity and Related Water Resource Act, 1967 ;Forest Protection (Special Arrangements) Act, 1967 ; Food Act, 1966 ; Agriculture Development Bank Act, 1966 ; Malaria Eradication Act, 1965 ; Contagious Diseases Act, 1965 ; Nepal Medical Council Act, 1965 ; Tourism Industry Act, 1965 Tourism Act, 1957, and Mountaineering Regulation, 1979 ; Highway Construction Act, 1965 ; Mills Act, 1965 ; Town Development Committee Act, 1964 ; Vehicles Act, 1964 ; Nepal Electricity Act, 1964 ; Explosives Act, 1963 ; Land Acquisition Act, 1963 ; Forestry Act, 1963 ; Irrigation Act, 1963; Industrial Enterprises Act, 1962 (revised 1982; new Act, 1992); New Civil Code, 1962 ; Aquatic Animals Protection Act, 1961; Land Survey Act, 1961; Birta Abolition Act, 1959; Nepal Factory and Factory Worker's Act, 1958; Civil Aviation Act, 1958; Nepal Industrial Development Corporation Act, 1958; Wildlife Protection Act, 1957; Nepal Mines Act, 1956 (new Act in 1985); Private Forest Nationalization Act, 1956; Forest Protection Act 1956; Lands Act, 1956 (Revised 1965); Ancient

Monuments Protection Act, 1956; Animal Feed Act, 1956; Royal Nepal Airlines Act, 1956 (revised 1963);

Pakistan

Environment Protection ordinance 1983, revised in 1997; o. V), l, Punjab Wildlife (Protection, Preservation, Conservation and Management) Ordinance (No. XXI), 1972, 1973; The Pakistan Agricultural Pesticides Act, 1972; The Greater Lahore Water Supply Sewerage and Drainage, Ordinances 1967; The West Pakistan Land and Water Development Board (Authority for payment from Board Fund) Rules, 1966; Pakistan Regulation and Control of Loudspeakers and Sound Amplifiers Ordinance (11), 1965; Wildlife conservation Fisheries Rules (No. 4(107) SO (F and C), 1964; Wildlife conservation Wildlife Protection Rules, 1960; Wildlife conservation West Pakistan Wildlife Protection Ordinance, 1959; Wildlife Protection Ordinance (No. LVI) 1959; The West Pakistan Water and Power Development Act, 1958; The West Pakistan Water and Power Development Act, 1958 amended in 1958, 1964, 1967; The Punjab Wild Birds and Wild Animals Protection Act (No. XIII), 1955; Water supply and Drainage Forest Act, No. XVI), 1927; Wildbirds and Animals Protection Act, 1912; The Sind ligation Act, 1879 amended in 1961, 1969; The Canal and Drainage Act (No. VIII) 1873 amended in 1952, 1965, 1968, 1970;

Sri Lanka

National Environmental (Noise Control) Amendment Regulation,1997; Fisheries and aquatic resources Act, 1996; National Environmental (Noise Control) Regulation,1996; Regulations contained in Gazette Extraordinary No. 924/13 of 23.05.1996; Motor Traffic Act, Standards published in Gazette Extraordinary No. 817/6 of 1994); Coast Conservation Act No. 57/198; Forestry Ordinance, the Flora & Fauna Act, the Fisheries Act; National Environmental (Protection and quality) Regulation, 1990; Coast Conservation (Amendment) Act, 1988; National Environment (Amendment) Act, 1988; National Heritage Wildness Act/1987; Sri Lanka Standards SLS 722. 1985; Sri Lanka Standards SLS 721. 1985; Water quality standard; Sri Lanka Standards SLS 652 1984; Sri Lanka Standards SLS 624. 1983/1984; Land Reclamation and Development Corporation Act No. 52/1982; Marine Pollution Prevention Act, 1981; Coast Conservation Act, 1981; National Aquatic Resources & Development Agency Act (1981); Coast Conversation Act (1981); Marine Pollution Prevention Act (1981); Research and Development Agency Act No. 54/1981; National Environment Act, 1980; Control of Pesticide Act, 1980; National Environmental Act (1980) and Amendment (1988); National Environmental Act established in 1980 and amended in 1988; National Environmental Act (1980) and Amendment (1988); Sri Lanka Ports Authority Act (1977); National Water Supply and Drainage Board Law (1974); National Water Supply and Drainage Board Law No. 12/1974; Mines and Minerals Law No. 4/1973; Forest ordinance of 1970 and its Amendments up to 1979; Section 23A and 23N of the National Environmental Act; Section 20A of the Greater Colombo Economic Commission Law No. 4 of 1978 as amended by ActNo. 49 of 1992; Water Resources Board Act (1964); Drought Control Act No. 25 of 1951; State Land ordinances No.8 of 1947 and No. 9 of 1948; State Land ordinances No.8 of 1947 and No. 9 of 1948; State Land Ordinance No. 8/1947; Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 (Chap.567) and

its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970; Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 (Chap.567) and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970; Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 (Chap.567) and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970; Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970; Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 and its Amendments of 1942; 1944, 1945, 1949, 1964 and 1970; Fauna and Flora Protection Ordinance No. 2/1937; Ordinance for the protection of areas subject to damages from floods, No. 4 of 1924 and Act No.22 of 1955; Land Development Ordinance No. 19/1935; Geological Survey and Mines Bureau Forest Ordinance No. 16/1907;

Environmental Institutions in South Asian Countries

Bangladesh

Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; Department of Forests; International Institutes of Environment; Forest Research Institute, Bangladesh; Forest Industries Development Corporation; Institute of Forestry and Environmental Sciences; Ministry of LGRD & C; Ministry of Water Resource; Ministry of Agriculture; Ministry of Health and Family Welfare; Department of Public Health Engineering; Ministry of Local Government; Rural Development and Cooperatives; Water Supply and Sewerage Authority; Ministry of Energy and Mineral Resources;

Bhutan

National Environment Committee; Planning Commission; National Environment Commission; Ministry of Rural Development; Ministry of Rural Development

India

Ministry of Environment and Forests**;** Central Pollution Control Board, State Department of Environment; Wildlife Institute of India; India Council of Forestry Research and Education; Dehradun Indian Institute of forest management; G. B. pant Himalayan Institute of Environment and Development; State Pollution Control Boards; State Department of Environment; Botanical Survey of India; Zoological Survey of India; Ministry of Agriculture; Ministry of Water Resources; Ministry of Surface Transport; Ministry of Industry; Ministry of Health; Ministry of Agriculture; Ministry of Non-Conventional Energy Sources; Ministry of Commerce**;** Ministry of Urban Development; Planning Commission; Supreme Court; High Courts; District Courts; Nyaya Panchayat, Panchayat Adalat, Gram Kachheri; Other Specialized Institutes funded/associated with the Ministry of Environment and Forests

Maldives

Ministry of Home Affairs, Housing and Environment; Ministry of Planning and Environment; National Environment Council; Ministry of Atolls Administration; Maldives Water and Sanitation Authority; Ministry of Fisheries, Agriculture and Marine Resources; National Commission for the Protection of the Environment; Ministry of Fisheries & Agriculture; Ministry of Tourism; Ministry of Health and the Ministry of Construction & Public Works; Ministry of Tourism; Ministry of Planning, Human Resources and Environment ; Institute for Technical Education

Nepal

National Planning Commission; Environment Protection Council; Ministry of Population and Environment; Ministry of Forest and Soil Conservation; Ministry of Agriculture and Cooperative; Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Information and Communication Ministry of Defense Surveillance of national parks and wildlife reserves, Disaster Rescue; Ministry of Education and Sports; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Land Reform and Reform of land tenure, land management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, regulation and management of the of water resources, irrigation works, electricity, flood control;

Pakistan

Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs; Environmental Tribunals; Pakistan Wildlife Management Boards; Ministry of Food and Agriculture; Forest Department; Water and Power Development Authority; Ministry of Health and Social Welfare; Ministry of Planning and Development; Ministry of Defense; Ministry of Petroleum and Natural Resources; Ministry of Production; Ministry of Science and Technology; Ministry of Water and Power; Pakistan Atomic Energy Commission; Pakistan Mineral Development corporation; Ministry of Food and Agriculture; National Council for Conservation of Wildlife

Sri Lanka

Ministry of Environment and Natural Resources; Department and Mahaweli Authority; Department of Wildlife Conservation; Coastal Conservation Department; National Environmental Steering Committee, Metrological Department; Ministry of Agriculture, Lands and Forestry; Natural Resources, Energy and Science Authority; Ministry of Fisheries and Aquatic Resources; Ministry of Transportation, Environment, and Women's Affairs; Wayamba Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; Central Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; National Planning Department; Board of Infrastructure Investment; Regional Industry Service Committees; Industrial Development Board; Provincial and local governments; Sri Lanka Standards Institute; Central

Environmental Authority,; Ministry of Environment and Natural Resources; National Water Supply and Drainage Board (NWSDB); Ministry of Housing, and Plantation Infrastructure; Department of Coast Conservation(CCD), Ministry of Fisheries
and Ocean Resources; Irrigation Department, Ministry of Irrigation and Water Management; Mahaweli Authority of Sri Lanka; Ministry of Irrigation and Water Management; Water Resources Board; Ministry of Irrigation and Water Management; Department of Forests; Ministry of Environment and Natural Resources; Department of Wildlife Conservation; Ministry of Environment and Natural Resources; Geological Survey and Mines Bureau; Marine Pollution Prevention Authority, Fisheries and Ocean Resources; Natural Resources, Energy & Science Authority: NARESA; Ministry of Economic Reform Science and Technology; Provincial Council Under Ministry of Home Affairs (Municipal Councils, Urban Councils & Pradeshiya Sabhas); Sri Lanka Reclamation & Development Corporation of the Ministry of Housing and Plantation Infrastructure

International Conventions/Treaties/Protocols (ICTPs) in the Field of Environment to which Country is a Party

Bangladesh

- International Plant Protection Convention, Rome, 1951.
- International Convention for the Prevention of the Sea by oil, London, 1954 (as amended on 11 April 1962 and 21 October 1969)
- Plant Protection Agreement for the South East Asia and Pacific Region (as amended). Rome 1956.
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water, Moscow, 1963
- Treaty on Principles governing the Activities of States in the Exploration and use of outer Space including the Moon and Other Celestial Bodies, London, Moscow, Washington, 1967.
- International Convention Relating to intervention on the High Seas in Cases of Oil Pollution Causalities, Brussels, 1969
- Convention on Wetlands of International importance especially as Waterfowl Habitat, Ramsar, 1971 (Popularly known as Ramsar Convention).
- Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons, and on their Destruction, London, Moscow, Washington, 1972.
- Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 1972.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 1973 (Popularly known as CITES)
- United Nations Convention on the Law of the Sea, Montego Bay, 1982.
- Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985
- Montreal Protocol on substances that Deplete the Ozone Layer, Montreal 1987.
- London Amendment to the Montreal Protocol on substances that Deplete the Ozone Layer, London, 1990. Copenhagen Amendment

- Convention on Early Notification of a Nuclear Accident, Vienna, 1986.
- Convention on Early Notification of a Nuclear Accident, Vienna, 1986.
- Agreement on the Network of Aquaculture Centres in Asia and the Pacific, Bangkok, 1988
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989.
- International Convention on Oil Pollution Preparedness, Response and Cooperation, London, 1990.
- United Nations Framework Convention on Climate Change, New York, 1992.
- Convention on Biological Diversity, Rio De Janeiro, 1992
- International Convention to Combat Desertification, Paris, 1994.
- Convention on the Prohibition of Miliitary or Any other Hostile Use of Environmental Modification Techniques, Geneva, 1976
- Agreement related to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, New York, 1994.
- Agreement for the implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and management of Straddling fish Stocks and Highly Migratory fish Stocks, New York, 1995.
- Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Paris, 1993
- United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Paris, 1994
- Convention on Nuclear Safety, Vienna, 1994

Bhutan

- The Final Act and the Law of Sea Conventions signed on 10th December 1982.
- UN framework convention on climate change; instrument of ratification signed on 25 August 1992
- UN convention on Biological Diversity; instrument of ratification signed – 25 August 1995
- Convention on The Conservation of Migratory Species of Wild Animals (1979)
- Vienna Convention for the Protection of The Ozone Layer (1985)
- Montreal Protocol on Substances That Deplete The Ozone Layer (1987)
- Basel Convention on The Control of Transboundarv Movements Of Hazardous Wastes And Their Disposal (1989
- United Nations (1992) Framework Convention on Climate Change (1992).
- Stockholm Declaration of the United Nations Conference on the Human Environment (1972)
- Washington Declaration on Protection of the Marine Environment From Land-Based Activities (1995)

India

1. Waste Management and Hazardous waste

- Basel Convention on Trans-boundary Movement of Hazardous Substances 1991-92

2. International resources

- The Antarctic Treaty (Washington, 1959)
- United Nations Convention on the Law of the Sea (Montego Bay, 1982)
- International Tropical Timber Agreement (Geneva, 1983)

3. Global climate

- Vienna Convention on ozone depleting substances
- Montreal Protocol
- Framework Convention on Climate Change
- Kyoto Protocol 1992

4. Marine pollution (conventions of the International Maritime Organisation, IMO)

- The international convention for the prevention of pollution from ships, 1973 (MARPOL 73)
- The international convention on civil liability for oil pollution damage, 1969 (Effective from June 19, 1975)
- Protocol to the international convention on civil liability for oil pollution damage, 1969
- The international convention on the establishment of an international fund for compensation for oil pollution damage 1971 (Effective from October 16, 1978)
- Protocol to the international convention on the establishment of an international fund for compensation for oil pollution damage, 1971
- IMP Protocol - 1978 and the IMO 1973 convention.
- Convention on the prevention of marine pollution by dumping of wastes and other matter, 1972 (Effective from August 30, 1975) Not ratified by India, since it considers this convention to be linked with the Basel convention on transboundary movement of hazardous substances.

5. Wildlife

- Convention on Biologic Diversity
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora
- (CITES), Washington D.C.
- The Convention on Wetlands of International Importance, Especially as Waterfowl Habitat, (The Ramsar Convention)
- Convention relative to the Preservation of Fauna and Flora in their natural State, London 1936
- International Convention for the Regulations of Whaling (Washington, 1946)
- International Plant Protection Convention (Rome, 1951)
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979)
- Convention on the Conservation of Antarctic Marine Living Resources (Canberra, 1980) 1992

6. Environmental Planning

- The Rio declaration on environment and development
- Agenda 21
- Convention to combat desertification 1992 1994

7. Other environmental fields

- Convention concerning the protection of workers against ionizing radiation (Geneva, 1960)
- Protection (of industrial workers) against hazards of poisoning arising from benzene
- Treaty banning nuclear weapon tests in the atmosphere, in outer space and under water(Brussels, 1975)
- Convention on the protection of world cultural and natural heritage (Paris, 1972)

Maldives

- UNFCCC,
- Convention on Bio-diversity,
- United Nations Convention on the Law of the Sea,
- Vienna Convention for the Protection of the Ozone Layer,
- Montreal Protocol on Substances that Deplete the Ozone Layer,
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

Nepal

- Plant Protection Agreement for the South-East Asia and Pacific Region, Rome, 1956. Nepal acceded to the Agreement on 12 August 1965.
- Convention on the High Seas, Geneva, 1958. Nepal ratified the Convention on 28 December 1962.
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Under Water, Moscow, 1963. Nepal ratified the Convention on 7 October 1964.
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, Washington, 1967. Nepal ratified the Convention on 10 October 1967.
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971. Nepal acceded to the Convention on 17 December 1987.
- Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea Bed and Ocean Floor and the Subsoil Thereof, London, Moscow, Washington, 1971. Nepal ratified the Convention on 6 July 1971.
- Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972. Nepal accepted the Convention on 20 June 1978.
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 1972. Nepal ratified the Convention on 1 January 1973.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973. Nepal acceded to the Convention on 18 June 1975.
- Vienna Convention on the Protection of the Ozone Layer, 1985. Nepal ratified the Convention in 1994.
- Montreal Protocol on Substances that Deplete the Ozone Layer, 1987. Nepal acceded to the Protocol in 1994.
- London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, 1990. Nepal acceded to the Convention on : 1994.

- Agreement on the Network of Aquaculture Centres in Asia and the Pacific, 1988. Date of Ratification/Accession (AC): 4 April 1990 (AC).
- United Nations Framework Convention on Climate Change, 1992. Nepal ratified the Convention on 2 May 1994.

- Convention on Biological Diversity, 1992. Nepal ratified the Convention on 23 November 1993.
- Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989. Nepal acceded to the Convention in August 1996.
- Convention on Combating Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1994. Nepal ratified the Convention in 1996.

Pakistan

- Convention on Biological Diversity CBD No data
- Framework Convention on Climate Change FCCC No data
- Vienna Convention for the Protection of Ozone Layer No data
- Convention on International Trade In Endangered Species of Wild Fauna and Flora CITES No data
- Ramsar Convention: Convention on Wetlands of International Importance Especially asWaterfowl Habitats 1982
- United Nations Convention on the Law of the Sea No data
- International Convention for the Prevention of Pollution from ships No data
- Convention of Protection of Marine Life No data
- Basel Convention on the Transboundary Movements of Hazardous Wastes and their Disposal No data
- Convention on Desertification No data
- Treaty Banning Nuclear Weapons Test in the Atmosphere in Outer Space and Under Water No data
- Convention on the Prohibition of Military or Any Other Hostile Use of Environmental

Sri Lanka

- Ramsar Convention on Wetlands, 1975;
- Basle Convention on the Transboundary Movement of Hazardous Waste,1992;
- Biodiversity Convention, 1992;
- Vienna Convention on Substances that Deplete the Ozone Layer and the
- subsequent Montreal Protocol, 1989;
- Framework Convention on Climatic Change, 1993;
- Bonn Convention on Migratory Species, 1989;
- Convention on International Trade in Endangered Species, 1973.
- Montreal Protocol (1987) was ratified on 15 December 1989
- London Amendment (1990) was ratified on 16 June 1993

- Copenhagen Amendment (1992) was ratified in July 1997
- The latest report to the Montreal Protocol Secretariat was prepared in June 1997
- UNFCCC was ratified on 23 November 1993
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Convention on Wetland of International Importance Especially as Waterfowl Habitat (1971)-Ramsar
- Convention concerning the protection of the World Cultural and Natural Heritage (1972)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973)-CITES
- Convention on the Conservation of Migratory Species of Wild Animals (CMS 1979)
- United Nations Convention on the Law of the Sea-
- Marine Pollution Prevention Authority Vienna Convention for the Protection of the Ozone Layer (1985)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)-
- Convention on Biological Diversity (1992)
- United Nations Framework Convention on Climate Change (1992)
- United Nations Convention to Combat Desertification (1994)
- Nations Convention on the Law of the Sea of 10 December 1982
- Montreal Protocol on Substances that Deplete the Ozone Layer.
- Convention on early Notification of a Nuclear Accident
- Agreement on the Network of Aquaculture Centers in Asia and the Pacific
- Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction
- Agreement for the Establishment of the Indian Ocean Tuna Commission - Nov. 1993/
- International Plant Protection Convention.
- International Convention for the Preservation of Pollution of the Sea by Oil (as amended)
- Marine Pollution Prevention Authority Plant Protection Agreement for Asia and Pacific Region * (as amended)
- Convention on the Continental Shelf
- Convention on Fishing and Conservation of the Living Resources of the high Seas
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water
- Treaty on principles governing the activities of states in the exploration and use if Outer Space including the Moon and Other Celestial Bodies.
- International Convention on Civil Liability for Oil pollution Damage (as amended
- International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties
- Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (biological) and Toxin Weapons and on their Destruction

- Convention on the Prohibition of Military or any other Hostile Use of Environmental Codification techniques.
- The International Convention for the Prevention of Pollution from the Ships (MARPOL)-1973
- Biosafety Protocol 24.05.2000

CHAPTER I

EXECUTIVE SUMMARY

1.1 INTRODUCTION

The South Asian region comprises Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, and Sri Lanka. Given the economic, social and cultural context of the countries of South Asia, similar challenges confront them in protecting their environment and natural resources. For instance, high rates of population growth, urbanization, and widespread incidence of poverty are common, although improvements have been witnessed in all major indicators of human development over recent years. South Asia is also home to a significant but shrinking array of terrestrial and marine biodiversity. For example, the Hindu Kush Himalayan belt is home to some 25 000 major plant species, comprising 10 per cent of the world‘s flora. In addition, Sri Lanka, India and other countries of the region are amongst the most biological diverse countries in the World and India contains extensive savannah and forest habitats, including many endemic species of international importance. South Asia is also home to around 14 per cent of the world‘s remaining mangrove habitat, in addition to the highest percentage of threatened wetlands, 82 of which are in Bangladesh. The region has attained significance due to enormity of resources and biodiversity vis-à-vis developmental activities in the region.

The Rio Declaration on Environment and Development and Agenda 21 emphasized the need to develop endogenous capacity in the legal and institutional areas for sustainable development. In this past decade, countries in the South Asia have taken remarkable and progressive steps towards developing sustainable legal institutional frameworks for improved environmental management. The most successful measures taken have strengthened the synergy and coordination among various institutions for promoting a coherent and holistic approach to the management of the environment. The legal system, and particularly the judiciary, has been a crucial and inspiring partner in this process.

The steadily growing awareness of the importance of the legal and institutional system with regards to management within the last decade has been a first step in its development. There has been a continuing drive towards consolidation of the institutional structure, both conceptually and functionally, from the management of sectoral uses of the environment to the management and protection of environment in its own right. Opportunities to strengthen national and regional environmental policies and legislation that effectively integrate global, regional and national environmental priorities and concerns have been taken. As such, many countries in this region have developed and incorporated contemporary approaches to environmental management.

2. ENVIRONMENTAL INSTITUTIONS

Cabinet-level environmental agencies are now established in all South Asian countries, but they remain generally weak and without clear direction. Their principal regulatory vehicle has been the application of environmental impact assessments to review large development projects, but this process has been poorly implemented and even subject to considerable corruption in several countries. Efforts to control industrial pollution through rigid permitting schemes—tied often to unrealistic emissions and discharge standards—have also had disappointing results. The over-emphasis of donors in supporting these fragile government environmental bodies has been to the detriment of other potentially more influential institutions. Ministries of central governments deserve much greater attention. Outside the executive branch, legislative bodies are of growing importance as sources of innovation and action to address environmental issues of social concern, but have received very little support with respect to their dealings

with environmental matters. Likewise, as stated by the activist, Supreme Court of India, the judicial branch can play a significant role in shaping environmental policy. However, it, too, has received relatively little assistance in building its understanding of environmental issues and exploring options for positive action. At the same time, there is a strong trend toward decentralization and devolution within the region. This means that an entirely new group of government agencies—at state, city, and local levels—will require environmental management skills.

The establishment of Environment Ministries in many countries in Asia in the last decade, has been a laudable achievement. Ministries have emerged in countries across the region including **Banladessh, Bhutan, India, Maldives, Nepal, Pakistan and Srilanka** formulating environmental policies as well as overseeing the work of other ministries relating to the environment. In the **Maldives**, for example, the Ministry of population and Environment is responsible for formulating rules and regulations regarding the environment.

The ***Pakistan*** *Environmental Protection Act 1997* established the **Pakistan** Environment Protection Council, consisting of the Prime Minister, all Ministers in charge of the subject of the environment and at least twenty 'non-officials' including representatives from commerce and industry, medical and legal professions, trade unions and NGOs and the technical/ scientific community. The **Pakistan** Environmental Protection Agency (PEPA) was also established under the Framework Act and was set up to administer and implement its provisions, rules and regulations. The Pakistan Environment Protection Council has the power to direct government to prepare, promote and implement projects for the protection, conservation, rehabilitation and improvement of the environment, as well as the prevention and control of pollution and the sustainable development of resources. These directives can be at the Council's initiative or by the public's request

In **Sri Lanka**, the *National Environmental Act* (No. 47 of 1980 as amended by No. 56 of 1989) established both a Central Environmental Authority and Environmental Council. The Central Environmental Authority is a corporate authority with executive functions in the field of environmental management. The Authority is empowered with administration of the framework legislation.

Many institutions have incorporated environmental concerns into their economic decision-making through their Five Year Plans. Often there are specific environmental sub-sections within a planning ministry that provide environmental inputs into the National Plan after organised consultations with working groups from other sectoral ministries, including the environment ministry, as well as experts.

In **Nepal**, for example, the National Planning Commission (NPC) must assess and approve all public environmental policies, programmes and projects before they go into effect. As the NPC also plays a role in co-ordinating inter-sectoral activities, and monitoring environment-related actions and providing a budget, this integrated role as overseer is very important. In both, **Nepal** and **India**, the development planning process now includes broad consultation between all levels of government. The Eighth Five-Year Plan in **Nepal** supported the creation of a high-level Environment Protection Council, and advisory body with the Prime Minister as chair, to formulate policies, give directives, and establish inter-ministerial coordination and monitoring related to environmental management.

A National Environment Committee was established in 1989 in **Bhutan**, as part of the Planning Commission under the Royal Command of His Majesty the King. The Environment Secretariat was de-linked from the Planning Commission and upgraded to an independent organisation functioning as the National Environment Commission (NEC) in 1992. The NEC is a high-level, cross-sectoral body made up Ministers and officials from various sectors to create policy, to regulate, and to be responsible for meeting the Royal Government's obligations under global environmental conventions.

In the **Maldives** in 1998, environment was given an elevated status being combined with the then Ministry of Planning and Development to form the Ministry of Planning and the Environment. The rationale for this move was for environmental considerations to be fully and efficiently integrated into development planning with the country. In 1998, environmental administration was transferred to the

Ministry of Home Affairs, Housing and the Environment, responsible for developing all aspects of environmental policy and enforcement of legislation. It now administers and co-ordinates with other agencies and undertakes programmes to increase public awareness.

India has well evolved institutes at Central, States, District and village level and has constituted a National Environmental Council headed by the Prime Minster on the environmental matters. It is a think tank body at the apex level. Recently in 2003, a National Forest Commission has also been set on the forestry matters under the Chairmanship of retired Supreme Court Judge.

3. ROLE OF ENVIRONMENTAL INSTITUTIONS

The Environment Ministries established in many Asian countries including India, Sri Lanka and Pakistan are responsible for implementing these framework or organic environmental laws and for formulating environmental policies as well as, to varying degrees, overseeing the work of other ministries, departments and agencies relating to the environment. In the Maldives, for example, the Ministry of Environment is responsible for formulating rules and regulations regarding the environment in areas that do not already have a designated government authority already carrying out such functions.

The range of functions entrusted to the Environment Ministry include the setting of policy, the promotion of environmental considerations into development decision-making, and the monitoring of the environment. The environment ministry provides technical advice on environmental issues, formulates environmental policy inputs, implements programs on environmental protection and enforces the laws and regulations for pollution control and resource management. The Minister usually reports directly to the parliament on the state of the environment. The Environment Minister also oversees the actions of the executive agency such as a Department of Environment (Bangladesh) or a statutory organization (Sri Lanka) and monitors the activities of the other institutions and sectors that impact on the natural environment, and promotes awareness.

These departments or agencies are typically responsible for standards-setting, Environmental Impact Assessment (EIA), and coordinates and controls environment pollution through the issuing of licenses and desist orders, carrying out environmental inspections, monitoring verification and data collection and analysis as well as a public complaints and dispute settlement schemes. Keeping the natural environment under their constant review, these institutions provide a forum for public participation, serves as a catalyst for promoting environmental education, training and research and is a clearinghouse for information. Often, they are also charged with the implementation of international environmental agreements.

The lack of specificity in the powers, functions and duties of these national environmental institutions and in some instances overlapping jurisdictions, have been a major source of conflict between them, resulting in the constant institutional conflicts and the consequent weakening of the overall environmental management system.

Though conceived as an apex institution to integrate environment and development, these bodies have in practice been largely inactive and in several countries have either not met at all, or meet very infrequently, thereby negating the very purpose for which they have been set up by law. Perhaps the reasons for not activating these consultative bodies lies in the size and constitution of these bodies, financial and other constraints as well as the use of other more informal consultative mechanisms. Although regional cooperation on transboundary water allocation and water quality issues remains problematic in South

4. ENVIRONMENTAL LEGISLATION

In this region, Governmental responses to the problems of environmental pollution took the form of legislative enactment to deal with the causes of environmental impacts, particularly industrial effluents

and nuisance. Thus, in addition to new sectoral legislation to fill the more apparent gaps in national frameworks, comprehensive anti-pollution laws were enacted. Important examples are the Water (Prevention & Control of Pollution) Act 1974 and Water (Prevention & Control of Pollution) Act, 1981 and the 1977 Pollution Control Ordinance of **Bangladesh** and the 1980 Central Environmental Authority Act of **Sri Lanka**. The main focus of the legislation was however, on pollution control.

Legislative Framework

Framework environmental laws are enacted to cover the entire spectrum of cross-sectoral environmental issues. A more recent legislative technique for environmental management is the "umbrella" of framework law. Framework environmental laws are enacted to cover the entire spectrum of cross-sectoral environmental issues. Here, the legislation lays down the basic legal principles without any attempt at codification. It normally entails the declaration of environmental objectives and policies, the establishment of the necessary and relevant environmental institutions, and the definition of the common procedural principles for environmental decision-making applicable to all sectors. In this latter respect, the legislation often covers such cross-sectoral issues as environmental impact assessment, environmental quality criteria, and public participation in decision-making and implementation **Sri Lanka**'s *Central Environment Authority Act* of 1980, and *The Environmental Protection Act, 1986 of India*. Most recently, **Bangladesh's** *Environment Conservation Act* , 1995 has come into force, as well as **Pakistan**'s *Environmental Protection Act*, 1997 and the Environmental Protection Act, 1997 of **Nepal**. Many of the countries in the Pacific Islands are still in the process of formulating comprehensive umbrella environmental legislation to facilitate their environmental management.

The Environmental Protection Act 1986, in **India** has made EIA mandatory for 29 categories of development activities and expert groups have been set up in the sectoral agencies to ensure a broad range of sectoral inputs to the process. These committees meet regularly to review and discuss proposals. Nepal harmonised their EIA legislation into National EIA Guidelines which clearly name the National Planning Commission, the Environment Division and the relevant line ministries as the agencies responsible for reviewing the EIS. In China, the laws and regulations on pollution control clearly stipulate that EIA must be executed for new, expanding or reconstructed projects to strictly control new pollution.

Resource conservation legislation in the region incorporates a wide range of environmental management concerns, including water resources protection and conservation, forest laws, marine resources management, land use management, preservation of natural habitats and conservation of heritage. Most countries in the region have enacted laws specific to these issues and introduced innovations to make the enforcement more effective. However, existing gaps in legislation make dealing with conflicting demands on resources difficult to manage. In the countries of South Asia, the management of forests and forest resources has been given considerable priority. In India, under the provisions of the Forest (Conservation) Act,1980 prior permission of the Central Government is essential for the diversion of forest land for non-forest purposes. Linked to this, are the provisions in the 1986 Environment (Protection) Act, which restrict the setting up of any new wood based unit, expansion and modernization of such units, renewal of licenses for such units and construction of any infrastructure related to the setting up of new as well as existing wood based units. In **Nepal**, the government is encouraging user groups and village communities to participate in forest management and it has been made mandatory for industries setting up in forest areas or using forest products to have a detailed environmental impact assessment**. Sri Lanka** has set up national parks, nature reserves, and sanctuaries to prevent destruction of forest areas.

The ***Pakistan*** *Environmental Protection Act 1997* established the **Pakistan** Environment Protection Council, consisting of the Prime Minister, all Ministers in charge of the subject of the environment and at least twenty 'non-officials' including representatives from commerce and industry, medical and legal professions, trade unions and NGOs and the technical/ scientific community. The functions and powers of the Council include co-ordinating and supervising enforcement of the provisions of the framework act, approving comprehensive national environmental policies and ensuring their implementation. The

Council is charge of approving National Environmental Quality Standards, providing guidelines for the protection of species, habitats and biodiversity in general, and for co-ordinating the integration of principles and concerns of sustainable development into national development plans and policies. The Council may, either itself or on the request of any person or organisation, direct the Federal Agency or any Government Agency to promote the environment, the prevention and control of pollution and the sustainable development of resources.

The **Pakistan** Environmental Protection Agency (PEPA) was also established under the Framework Act and was set up to administer and implement its provisions, rules and regulations. Its functions include preparing and implementing national environmental policies and preparing revising and ensuring the enforcement of the National Environmental Standards. Its role also includes the coordination of environmental policies and programmes nationally and internationally, and also assists local councils and authorities in implementing compliance schemes. Legislatively, it is responsible for encouraging the formation and working of NGOs, community and village organisations to prevent and control pollution and promote sustainable development. PEPA must also be the agency in charge of identifying the needs for initial environmental legislation in various sectors. PEPA also perform any other function which the Council may assign to it. The framework legislation also created the Provincial Environmental Protection Agencies, to be run exclusively by the Provincial Governments, and assisted by sectoral Advisory Committees comprised of representatives from academia and NGOs.

In **Sri Lanka**, the *National Environmental Act* (No. 47 of 1980 as amended by No. 56 of 1989) established both a Central Environmental Authority and an Environmental Council. The Central Environmental Authority is a corporate authority with executive functions in the field of environmental management. The Authority is empowered with administration of the framework legislation. This includes co-ordinating all regulatory activities relating to the discharge of wastes and pollutants, and ensuring local authorities are promoting compliance. Its objective is to encourage the prudent use and conservation of land resources. The Council is comprised of senior officers from the various ministries which involve the environment, with representation from non-governmental organisations and professionals with expertise in environmental protection and management. The Council's role is to advise the Authority on environmental matters. The Authority then recommends to the Minister the basic policy on the management and conservation of the country's natural resources not only in order to obtain the optimum benefits from them, but to preserve the same for future generations. The national environmental legislation provides for comprehensive institutional coordination in the context of the devolution of power introduced through constitutional reforms in the country. A National Environmental Steering Committee has also been set up, which is responsible for integrating environmental management issues into the policies of the sectoral agencies.

Similarly, in **Pakistan**, the Pakistan Environment Protection Council has the power to direct government to prepare, promote and implement projects for the protection, conservation, rehabilitation and improvement of the environment, as well as the prevention and control of pollution and the sustainable development of resources. These directives can be at the Council's initiative or by the public's request.

Many institutions have incorporated environmental concerns into their economic decision-making through their Five Year Plans. Often there are specific environmental sub-sections within a planning ministry that provide environmental inputs into the National Plan after organised consultations with working groups from other sectoral ministries, including the environment ministry, as well as experts.

In **Nepal**, for example, the National Planning Commission (NPC) must assess and approve all public environmental policies, programmes and projects before they go into effect. As the NPC also plays a role in co-ordinating inter-sectoral activities, and monitoring environment-related actions and providing a budget, this integrated role as overseer is very important. In **Nepal** Sri Lanka, Pakistan and **India**, the development planning process now includes broad consultation between all levels of government. The Eighth Five-Year Plan in **Nepal** supported the creation of a high-level Environment Protection Council, and advsiory body with the Prime Minister as chair, to formulate policies, give directives, and establish inter-ministerial coordination and monitoring related to environmental management.

A National Environment Committee was established in 1989 in **Bhutan**, as part of the Planning Commission under the Royal Command of His Majesty the King. The Environment Secretariat was de-linked from the Planning Commission and upgraded to an independent organisation functioning as the National Environment Commission (NEC) in 1992. The NEC is a high-level, cross-sectoral body made up of Ministers and officials from various sectors to create policy, to regulate, and to be responsible for meeting the Royal Government's obligations under global environmental conventions.

In the **Maldives** in 1998, environment was assigned to the then Ministry of Planning and Development to form the Ministry of Planning and the Environment. The rationale for this move was for environmental considerations to be fully and efficiently integrated into development planning with the country. Later in 1998, environmental administration was transferred to the Ministry of Home Affairs, Housing and the Environment, responsible for developing all aspects of environmental policy and enforcement of legislation. It now administers and coordinates with other agencies and undertakes programmes to increase public awareness.

Environmental agencies have been set up at the provincial level to help implement national strategies and to better assess and monitor resource use. They also help coordinate different sectoral agencies as well as the local authorities. Municipalities and local councils also help in the execution of national environmental policies, as well as by initiating their own resource protection measures. Many local and provincial governments have formulated their own Local Agenda 21 strategies for environmental management, often supported by the state. The national government in Japan provides assistance to local authorities for their voluntary environmental measures and for the implementation of global conventions. Provincial governments in Pakistan have begun preparing environmental strategies to complement the national one.

The devolution and decentralisation of sustainable development initiatives have placed the local government units in the Philippines to the front of the development process. A local government academy has even been established to train local government officials in sustainable development issues. Each local government office has an established focal person to ensure sustainable development concerns are integrated in the local planning process.

In India, the Pimpri Chinchwad Municipal Corporation, a city near Mumbai, with assistance from the International Council of Local Environmental Initiatives (ICLEI), set up an institutional structure to effectively involve citizens in a participatory way in the planning process of the city. A media campaign was launched to increase public awareness and meetings were arranged to discuss development issues. A stakeholder group was established, consisting of government, academics, media and NGOs to review the inputs from the far-reaching community consultations, to discuss issues of waste management and the betterment of the slum areas.

The *Environmental Protection Act 1986* in India has made EIA mandatory for 29 categories of development activities and expert groups have been set up in the sectoral agencies to ensure a broad range of sectoral inputs to the process. These committees meet regularly to review and discuss proposals. Nepal harmonised their EIA legislation into National EIA Guidelines which clearly name the National Planning Commission, the Environment Division and the relevant line ministries as the agencies responsible for reviewing the EIS. In China, the laws and regulations on pollution control clearly stipulate that EIA must be executed for new, expanding or reconstructed projects to strictly control new pollution.

Often natural resource legislation will incorporate a wide range of environmental impact concerns, and will provide for an initial mechanism for the balancing of interests. Vietnam's *Law on Environmental Protection*, 1996 expressly states that exploitation of agricultural land, forest land and land for aquaculture must comply with land use plans, land improvement plans and ensure ecological balance.

5. ENFORCEMENT OF ENVIRONMENTAL LEGISLATION

Effective enforcement of environmental legislation is contingent upon the availability of adequate staff and financial resources, the administrative and political will of the enforcement agencies and the level of awareness of environmental laws. It is common, however, to find situations where responsibility for enforcement of laws are divided amongst a number of government agencies which pursue conflicting interests, thereby delaying or forestalling their implementation. In response, for enforcement to be effective, developmental planning processes have to be closely coordinated, with powers ideally vested in one apex agency. Judicial activism and public participation have, in recent years, enhanced enforcement efforts of governments in implementing environmental laws. The courts are not only allowing the public to file public interest litigation for violation of environmental rights, but are also giving directives to the government to take corrective steps for rectifying environmental damage. The imposition of fines and penalties on defaulting industries and closure of polluting units are examples of measures that have been frequently imposed by the courts. The courts have further expounded on other key concepts of sustainable development.

The courts have also stressed the "polluter pays" principle and the precautionary principle as critical safeguards for sustainable utilization of natural resources and for environmental balance. Rulings in **Sri Lanka, India, Bangladesh** and **Pakistan** on environmental assessments for development projects have provided much needed impetus to the EIA legislation. It is also significant that in most cases the courts have accepted the principle of *locus standi* as a requirement in the promotion of public participation in the judicial process for environmental issues. The experience of different countries in establishing an institutional framework for sustainable development does indicate that governments are attempting to rectify the shortcomings of earlier regimes and, with adequate emphasis on developing human potential and awareness the environmental transformation made possible through legislation, countries should be able to advance towards sustainable development.

Each country has a set of environmental legislation to deal with the national environmental problems specific to the country. The International agreements are focused on atmosphere, hazardous substances, marine environment, terrestrial resources, nature conservation and trans-boundary pollution. The key principle followed in the international agreements include Sustainable Development, Intergovernmental Equity, Common but Differentiated Responsibilities, Prior Informed Consent, Precautionary Principle, Polluter Pays Principle, and Permanent Sovereignty over National Resources.

6. CONSTITUTIONS OF SOUTH ASIAN REGION

After the Stockholm Conference many countries of the World have incorporated provisions relating to the environment to safeguard the natural resources and the pristine environment. South Asian countries in particular, were in forefront to amend their constitutions to facilitate the environment protection and its conservation in the region. The Constitution of India is perhaps the first of its kind to provide for protection and safeguard of the environment through the Directive Principles and the Fundamental duties. In the 1956 Constitution, subjects relating to the environment such as "Forests", "Protection of wild animals and birds", "Prevention of cruelty to animals", "Fisheries and agriculture", "Water", "Public Health and Sanitation", "Industries", "Factories and Boilers" were all in the Provincial List i.e. the Provincial Legislature had exclusive power to make laws with respect to these subjects. In the 1962 Constitution, "Fishing and fisheries outside territorial waters" and "Industries owned wholly or partly by the Central Government or by a corporation set up by the Centre" were placed in the list containing matters with respect to which the Central Legislature had exclusive power to make laws.

Sri Lankan Environmental Management Policy originates from the country's supreme law that is the Constitution. The 1978 Constitution recognizes that the state shall protect, preserve and improve the

environment for the benefit of the community (Article 24(14)), as principles of state policy. The constitution also recognizes that it is the duty of every person in Sri Lanka "to protect nature and conserve its riches" (Article 28 (f)). Like other nations of the region, **Bangladesh** also initiates to the global call for the protection and conservation of her natural environment and ecology. The Constitution of Bangladesh asserts that it should be a fundamental responsibility of the state to attain, through planned economic, a constant Increase of productive forces and a steady improvement in the material and cultural standard of living of the 'people' (Artlcle-15). **Nepal's** new —Constitution of the Kingdom of Nepal, 1990, which arose following the period of political realignment in Nepal, places upon the State a duty to incorporate environmental matters into its policy process

Constitutional Provisions and the Environment

Environment protection has been mandated under the Constitutions of the following countries:

6.1 Bangladesh

The Constitution of Bangladesh does not explicitly provide for the right to a healthy environment as a fundamental right. Article 31 however states that –every citizen has a right to protection from action detrimental to life, liberty, body, reputation or property unless these are taken in accordance with law". Article 32 states, —no person should be deprived of right or personal liberty save in accordance with law". These two articles together incorporate a fundamental right to life. In two recent cases this question has been dealt with in a positive fashion.. In *Dr. Mohiuddin Farooque v. Bangladesh and others,* the Court reiterated Bangladesh's commitment –in the context of engaging concern for the conservation of environment irrespective of the locality where it is threatened. In this judgement it is expounded that —Articles 31 and 32 of our Constitution protect life as a fundamental right. It encompasses in its ambit the protection and preservation of its environment, ecological balance free from pollution of air and water, sanitation without which life can hardly be enjoyed. Any act or omission contrary thereto will be in violation of this same right to life." The High Court, in the case of *Dr. Mohiuddin Farooque v. Bangladesh and others* stated that the right to life includes the right to fresh air and water and a situation beyond animal existence in which one can expect normal longevity of life. Hence, the right to a healthy environment has now become a fundamental right, as was with case laws, which puts an additional responsibility upon the judiciary to ensure that Rule of Law is guaranteed.

Constitution of the People's Republic of Bangladesh as amended through 1986.

Part II, Art. 23
The state shall adopt measures to conserve the cultural traditions and heritage of the people and so foster and improve the national language, literature and the arts that all sections of the people are afforded and the opportunity to contribute towards and to participate in the enrichment of the national culture.

Part II, Art. 24
The state shall adopt measures for the protection against disfigurement, damage or removal of all monuments, objects or places of special artistic or historic importance or interest.

Part III, Art. 31
To enjoy the protection of law, and to be treated in accordance with the law, and only in accordance with the law, is the inalienable right of every citizen, wherever he may be, and of every other person for the time being within Bangladesh, and in particular no action detrimental to the life, liberty, body, reputation or property of any person shall be taken except in accordance with the law.

Part III, Art. 32
No person shall be deprived of life or personal liberty save in accordance with the law.

6.2 India

The Indian Constitution is amongst the few in the world that contains specific provision on environmental protection. The Chapter ‗Directive Principles of State Policy and the Fundamental Duties especially enumerate the national commitment to protect and improve the Environment. Judicial interpretation has strengthened this constitutional mandate. The Courts have recognized the right to a wholesome environment as being implied in the Fundamental Right to Life.

Article 19 Protection of certain rights regarding freedom of speech, etc
(1) All citizens shall have the right
(a) to freedom of speech and expression

Article 32 Remedies for enforcement of rights conferred by this Part

(1) The right to move the Supreme Court by appropriate proceedings for the enforcement of the rights conferred by this Part is guaranteed.
(2) The Supreme Court shall have power to issue directions or orders or writs, including writs in the nature of habeas corpus, mandamus, prohibition, quo warranto and certiorari, whichever may be appropriate, for the enforcement of any of the rights conferred by this Part.
(3) Without prejudice to the powers conferred on the Supreme Court by clauses (1) and (2), Parliament may by law empower any other court to exercise within the local limits of its jurisdiction all or any of the powers exercisable by the Supreme Court under clause (2).
(4) The right guaranteed by this article shall not be suspended except as otherwise provided for by this Constitution.

Article 51A Fundamental duties

It shall be the duty of every citizen of India -
(a) to abide by the constitution and respect its ideals and institutions, the National Flag and the National Anthem;
(b) - (f) …
(g) to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;
(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
(i) - (j) …

The Constitution of India by the 73rd and 74th Constitutional Amendment Act 1992, incorporated a decentralized approach to planning has been introduced in India through a system of Panchayati Raj and Nagar Palika (local self-governments of urban cities/ towns) institutions. With the enactment of the Constitution Amendment Act (1992), Panchayati Raj Institutions (PRIs) have been revitalized and a process of democratic decentralization has been ushered in.

6.3 Nepal

Constitution of Nepal as per amendment 1980, Part IV, Art. 19(3) provides that the social objective of the Panchayat System shall be to establish a harmonious social life, based upon morality, by eliminating the obstacles that may arise in the process of mobilising the general public for setting up of a society as envisaged by clause (1) and to maintain national unity with due regards to the existing mutual harmonious tolerance upon the cultural and traditional values of Nepal adhered to by the Nepalese citizen from time immemorial as the prosperity and glory of Nepal as well as their national character.

Appendix- Part A

The Constitution of the Kingdom of Nepal, 2047 Bikram Sambat (1990) proclaims: "The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness, and the State shall also make arrangements for the special protection of rare wildlife, the forests and vegetation; similarly the Constitution has made it mandatory for the for the government to seek ratification by a 2/3 majority of Parliament of any treaty or agreement that involves sharing of the natural resources of Nepal and has significant, serious or long-term implications for the country

6.4 Pakistan

Though there is no specific provision on the protection and conservation of environment in the Constitution of Pakistan but under Part II, Article 9 provides that ‗No person shall be deprived of life or liberty save in accordance with law'.

Part VII, Article 18
(1) - (2) …
(3) Without prejudice to the provisions of Article 199, the Supreme Court shall, if it considers that a question of public importance with reference to the enforcement of any of the Fundamental Rights conferred by Chapter I of Part II is involved have the power to make an order of the nature mentioned in the said Article.

The 1973 Constitution of Islamic Republic of Pakistan included "environmental protection and ecology" in its concurrent legislative list - Parliament and the provinces have the ability to legislate in that respect - however the primary responsibility lies with the national government to take the lead in introducing environmental protection measures that can be integrated into the provincial laws does not specify any rights and obligations of state or citizens with regard to the environment great flexibility by enabling Parliament to legislate on matters of national importance and uniform or general applicability, and the Provincial Assemblies to legislate on matters of particular concern to their respective provinces. The successive Constitutions of Pakistan contained provisions for environmental protection and resource conservation. The 1973 Constitution mentioned Environmental Pollution and Ecology as a subject in the Concurrent Legislative List, meaning that both the Federal and Provincial Governments may initiate legislation for those purposes

6.5 Sri Lanka

Like other Asian countries in the region, Chapter VI, Article 27 of Constitution of Sri Lanka envisages that the state shall protect, preserve and improve the environment for the benefit of the community.

Chapter VI, Article 28
The exercise and enjoyment of rights and freedoms is inseparable from the performance of duties and obligations, and accordingly it is the duty of
every person in Sri Lanka -
(a) - (c) ...

(d) to preserve and protect public property and to combat misuse and waste of public property;
(e) ...
(f) to protect nature and conserve its riches

7. EIA IN SOUTH ASIAN REGION

In many parts of the world, economic development projects directed at improving levels of material comfort have had unintended detrimental effects on people and natural resources. Water, land, and air have been degraded to the point where they can no longer sustain existing levels of development and

quality of life. With inadequate environmental planning, human activities have resulted in the disruption of social and communal harmony, the loss of human livelihood and life, the introduction of new diseases, and the destruction of renewable resources. These and other consequences can negate the positive benefits of economic development. Economic development in developing countries has been focused on immediate economic gains- environmental protection has not been a priority because the economic losses from environmental degradation often occur long after the economic benefits of development have been realized.

The past failure of development planning processes to take adequate account of the detrimental impacts of economic development activities led to the advent of *environmental impact assessment (EIA)* processes. EIA was first employed by industrialized countries in the early 1970s. Since that time, most countries have adopted EIA processes to examine the social and environmental consequences of projects prior to their execution. The purpose of these processes is to provide information to decision makers and the public about the environmental implications of proposed actions before decisions are made.

7.1 Legislation on Environmental Impact Assessment

Environmental impact assessment (EIA) has become an important tool in guiding policy choices by helping to create an awareness amongst project implementation agencies about environmental impact of their actions and the measures required to control negative externalities of the projects. For many countries in the region, environmental assessment methodologies have been made a mandatory exercise through enactment of suitable legislation. By making EIA compulsory under law, it is envisaged that potential damages to the environment can be minimized or prevented from the project formulation stage itself. This is also seen as a crucial link in integrating environmental concerns into economic decision making process. Provision for EIA is either in the national framework legislation or in subsidiary legislation. **Nepal** has attempted to harmonize sectoral legislation by formulating national EIA guidelines which identify the agencies responsible for reviewing the assessment report. Other countries in the region who have made EIA mandatory include: **India, Sri Lanka, Bhutan, Maldives and Nepal**. Legislative sanction for EIA has the advantage of introducing greater objectivity in the decision making process. In the context of sustainable development, mandatory EIA also ensures the participation of stakeholders and the public in the EIA process, which brings cross-sectoral ideas and views into perspective and thereby enlightens the decision making process.

Environmental quality and anti-pollution regulations are still the most widely used legislative technique for pollution control, though several new approaches are evident in contemporary state practice. These laws usually deal with air quality, water, marine pollution, solid waste disposal, toxic materials management, and establish quality criteria, define pollutants, set permissible limits, and regulate control, compliance and enforcement methods. One of the most widely used techniques for environmental control is the system of authorisations (by permit, certification, licence) administered by government institutions.

Since the substance of the framework legislation is less detailed than the former anti-pollution laws or the comprehensive environmental code options, the implementation of its principles inevitably calls for further enabling legislation. For example, extensive regulations are issued under the ***Indonesian*** *Environmental Management Act* of 1997, on matters such as environmental standards, hazardous waste, waste control and industrial pollution. The Act also empowers Provincial Government to issue such regulations. Although both the environmental code and the framework law options represent an integrated, coherent and holistic approach to environmental management, the framework law technique has the added advantage of flexibility. The basic legislation can remain intact while the implementing frameworks are reformulated in response to changes in socio-economic and ecological factors. Similar provisions authorising specified government agencies to issue environmental quality criteria, standards and norms to control air, water and waste pollution exist in the legislation of **Bangladesh**, **India, and Sri Lanka**.

Legislation can also be an instrument for instituting novel approaches to dispute avoidance and settlement, and promoting public participation at all levels in environmental decision-making and implementation. Such participation can be secured through the establishment of appropriate local level dispute mediation, conciliation and settlement institutions and the definition of "citizen rights" to enforce legislation. This latter aspect may become an important safeguard where public agencies are remiss in their duties or themselves violate the law.

The effective implementation of environmental legislation presupposes the existence of appropriate institutional arrangements and processes. The sectoral approach to environmental management has had the effect of diffusing power and responsibility in diverse government departments (and in certain cases in local authorities) without any mechanisms for coordination. Jurisdictional overlaps and conflicts have inevitably arisen, thereby inhibiting not only the effective implementation of sustainable development policies but also law enforcement. The major practical problems result from the difficulties in setting up control and enforcement mechanisms to enforce the legal provisions.

7.2 Use of Environmental Impact Assessment (EIA)

The need to integrate environmental considerations into national socio-economic planning is now widely recognised across the South Asia region. The Environmental Impact Environmental Impact Assessment (EIA) process has become the most common institutional mechanism for achieving such integration. EIA has become an important tool in guiding policy choices and has helped to create an environmental awareness amongst agencies involved in project implementation. With EIA, potential environmental damages can be minimised or even prevented at the initial project formulation stage.

For many countries in the region an Initial Environmental Examination (IEE) or Environmental Impact Statement (EIS) has been made mandatory through the national framework legislation or the enactment of subsidiary legislation.. **Nepal** has formulated EIA guidelines which involve the review of the Planning Commission, Environment Ministry as well as the project implementing agency. **India**, and **Sri Lanka** have all made an EIA mandatory for specified development projects.

As important as public participation, has been the need to ensure consultation and active partnership among interested governmental and parastatal institutions. Whether operating at the national or local level, all of these bodies have relevant expertise and practical experience to contribute to the EIA process. EIA has helped to ensure that the wide range of national, provincial/state, local authorities, scientific and technical sectors have all been given the chance to comment on proposed activities, thereby avoiding costly mistakes and facilitating inter-sectoral co-operation. The heart of the EIA is the analysis of alternatives, and the EIA process aims at finding the best project option, in both environmental and socio-economic terms, under the circumstances.

. The **Sri Lankan** Ministry of Environment has held that an adequate and rigorous consideration of alternatives is at the heart of any environmental impact assessment process, and sufficient information must always be produced to permit a reasonable choice of alternatives as far as environmental aspects are concerned. At the conclusion of this wide-ranging and objective process, decision-makers are better equipped to design and carry out an "environmentally friendlier" activity. In **Sri Lanka**, the EIA process has been designed to promote inter-ministerial and inter-sectoral coordination. Sectoral ministerial representatives as well as the private sector formulate and review EIA activities, regulations and policies.

The *Environmental Protection Act 1986* in **India** has made EIA mandatory for 29 categories of development activities and expert groups have been set up in the sectoral agencies to ensure a broad range of sectoral inputs to the process. These committees meet regularly to review and discuss proposals. **Nepal** harmonised their EIA legislation into National EIA Guidelines which clearly name the National Planning Commission, the Environment Division and the relevant line ministries as the agencies responsible for reviewing the EIS

The critical issues for EIA development in the South Asia region are consistency in application, obtained through a centralised management, decentralised implementation and the access to independent expertise. The EIA process must continue to be focus on greater public participation in the process and greater access of information to the public in order to make their participation meaningful. Although great progress has been made in the EIA legislative development of countries in the region, problems remain at the actual implementation of the EIA provisions. EIA procedures must not be seen as being obstructive to the goals of development in order to prevent circumvention.

8. JUDICIARY IN SOUTH ASIA REGION

8.1 Judiciary in SA Region

Present judicial system in India, Pakistan, Sri Lanka and Bangladesh has evolved from institutions established during the colonial period. The traditional role of the judiciary that of settlement of disputes (civil jurisdiction) and the trial and-punishment of those charged with crimes (criminal jurisdiction) has thus evolved over a considerable period of time. The basic elements of a modern system of civil and criminal justice have been in operation in most of the sub-continent for more than a century and in Nepal at least since 1951, when the Interim Constitution was promulgated.

8.2 Judicial Mechanisms in SA Region

The Judiciary plays a crucial role in promoting the goals of sustainable development. Judicial institutions serve as agencies for interpreting legislation relating to environmental issues, integrating emerging principles of law within the holistic paradigms of sustainable development, providing a coherent and comprehensive strategy for handling diverse sectoral laws into a cross-sectoral approach, ensuring effective implementation of legislation and, in recent years, providing opportunities for people, to canvass for the protection of fundamental rights to a satisfactory environment. The rule of law becomes particularly important as regulations and procedures which govern human activity serve to limit conflicts arising from competing claims (social, economic and ecological) on scarce resources whilst ensuring sustainable development. Connections and linkages between different forms of activity and their environmental consequences are subject to different interpretations and reflect an inherent complexity of issues. The judiciary, therefore, is called upon to resolve such issues without compromising the fundamental goals of civil society. The structure of judicial institutions in different countries of the South Asia region has not been substantially modified to cater to the requirements of achieving sustainable development. In many countries, the Supreme Courts have taken the lead in interpreting laws and giving directions which have had far reaching impact on environmental management. The Supreme Court in India, for example, in recognizing the role of environmental protection in sustainable development and growth, has been establishing mechanisms for institutionalising judicial dispensation in environmental matters. The Court has adopted and set procedures that become the guiding law for the sub-ordinate courts in the country. The most important innovation has been the Public Interest Litigation that enables individuals and organizations to file a writ petition with the objective of protecting environmental resources and benefiting the affected people. The Supreme Court of India has also established specialized High Court benches known as Green Benches. Similarly, in Pakistan the superior courts exercise jurisdiction conferred under Articles 184(3) and 199 of the Constitution. The 1997 proposed amendment to Environmental Protection Act provides for Environmental Tribunals that will have exclusive jurisdiction to try offences under the Act. Likewise, Nepal‘s 1997 Environmental Protection Act provides for the designation of a Prescribed Authority before which environmental cases are to be filed. However, appropriate rules for designating such an authority have not yet been formulated and environmental cases continue to be brought before the ordinary courts. An active judiciary has the potential to establish the rights of people to enjoy certain environmental rights and seek judicial intervention where these are violated. The judiciary may also act as a check on government policies that disrupt fragile ecological balances and generate awareness and consciousness amongst policy makers through court verdicts and orders. However, there is a need for specialist environment courts that can facilitate more consistent and

speedier environmental decision-making. These courts would reduce the number of cases brought before the Supreme Courts and High Courts and reduce the administrative costs as a single combined jurisdiction would be cheaper than multiple separate tribunals.

The Supreme Courts of many countries have taken the crucial lead in interpreting environmental laws and giving judgements that have far-reaching impact on environmental management. The Supreme Court of **India**, for example, has adopted and set procedures which have become the guiding law for all the lower courts in the region. Specialised benches known as "Green Benches" have been set up to implement directives and encourage expertise in matters related to environmental issues. The Government of **India** enacted the *National Environmental Tribunal Act* in 1995, to effect an expeditious handling of cases regarding the damages arising from the handling of hazardous wastes. Similarly, in **Pakistan**, the *Environmental Protection Ordinance 1997* provides for the establishment of Environmental Tribunals which have exclusive jurisdiction to try environmental offences. The *Environmental Protection Act, 1997* in **Nepal**, provides for a Prescribed Authority for environmental cases. These courts have facilitated consistent less expensive and more efficient decision-making in the area of environmental disputes and need to continue to be developed in the region.

The structure of judicial institutions in South Asia countries have not substantially changed in the last decade, but the Supreme Courts of many countries have taken the crucial lead in interpreting environmental laws and giving judgements that have far-reaching impact on environmental management. The Supreme Court of India, for example, has adopted and set procedures which have become the guiding law for all the lower courts in the region. Specialised benches known as "Green Benches" have been set up to implement directives and encourage expertise in matters related to environmental issues. The Government of India enacted the *National Environmental Tribunal Act* in 1995, to effect an expeditious handling of cases regarding the damages arising from the handling of hazardous wastes. Similarly, in Pakistan, the *Environmental Protection Ordinance 1997* provides for the establishment of Environmental Tribunals, which have exclusive jurisdiction to try environmental offences. The *Environmental Protection Act, 1997* in Nepal, provides for a Prescribed Authority for environmental cases. These courts have facilitated consistent less expensive and more efficient decision-making in the area of environmental disputes and need to continue to be developed in the region

In Bangladesh, India, Sri Lanka and Pakistan, the Supreme Courts have given broad interpretations of the "fundamental right to life" under each country's Constitution, providing a entrenched legal foundation for the public's right to a healthy environment, the protection of the environment and the public's right to information. The interpretation of constitutional rights was broadened in Bangladesh in the 1995 Supreme Court decision of *Dr. Mohiuddin Farooque* v. *Secretary*, *Ministry of Communication*, *Government of the Peoples' Republic of Bangladesh.* This was a petition against various Ministries and other Authorities for not fulfilling their statutory duties to mitigate air and noise pollution caused by motor vehicles in the city of Dhaka. The Petitioner argued, and the Court agreed, that although the Constitution of Bangladesh contained no specific right to a safe and healthy environment, this 'right to life' was enshrined within. This interpretation was supported by Constitutional prohibitions on actions detrimental to life, body or property, Similarly, In Pakistan, the courts have given a broad interpretation to the 'right to life' stating that persons must not only be able to sustain life, but also to enjoy it. On the

In **Bangladesh**, **India**, **Sri Lanka**, and **Pakistan**, the Supreme Courts have given broad interpretations of the "fundamental right to life" under each country's Constitution, providing a entrenched legal foundation for the public's right to a healthy environment, the protection of the environment the public's right to information. The interpretation of constitutional rights was broadened in **Bangladesh** in the 1995 Supreme Court decision of *Dr. Mohiuddin Farooque* v. *Secretary*, *Ministry of Communication*, *Government of the Peoples' Republic of Bangladesh.* This was a petition against various Ministries and other Authorities for not fulfilling their statutory duties to mitigate air and noise pollution caused by motor vehicles in the city of Dhaka. The Petitioner argued and the Court agreed, that although the Constitution of Bangladesh contained no specific right to a safe and healthy environment, this 'right to life' was enshrined within. This interpretation was supported by Constitutional prohibitions on actions

detrimental to life, body or property, Similarly, In **Pakistan**, the courts have given a broad interpretation to the 'right to life' stating that persons must not only be able to sustain life, but also to enjoy it.

Courts have applied the public trust doctrine in regard to the management of natural resources and the environment, and in some states have given consideration to the concept of inter-generational and intra-generational equity. In the 1988 Supreme Court of **India** decision of *Rural Litigation and Entitlement Kendera* v. *State of U.P.*, the Court ordered that unauthorised and illegal mining in the Dhera Dun District, which was adversly affecting the ecology of the region, be stopped. The Court specifically remarked that the area was a gift of nature to mankind and a bequest of the past generations to the future.

The responsibility and liability of the industry has been emphasised by the judiciary's support of the polluter pays principle. This principle was specifically addressed in India with the 1996 Supreme Court decision *Indian Council for Enviro-Legal Action* v. *Union of India*, where an action was brought to stop and remedy the pollution caused by several chemical industrial plants in Bichhri village, Udaipur District, Rajasthan. The Court noted the finding in the *Oleum Gas Leak Case II* under which an enterprise that is engaged in a hazardous or inherently dangerous activity which results in harm to anyone, is strictly and absolutely liable to compensate all those who are affected by the accident. This rule strayed from the exceptions of strict liability set forth in *Rylands* v. *Fletcher* to suit better the particular conditions in India. The Court strongly endorsed the polluter pays principle, under which the financial costs of preventing or remedying damage lie with those who cause the pollution. This principle also played a role in another 1996 Supreme Court of India decision, *Vellore Citizens Welfare Forum* v. *Union of India*. Here the Court noted that although the Respondent leather industry was a major foreign exchange earner for India and provided employment, it did not mean that it had the right to destroy the ecology, degrade the environment or create health hazards. The Court ordered the Central Government to establish an authority to deal with the situation created by the tanneries and other polluting industries in the State of Tamil Nadu. This authority was to implement the precautionary principle and the polluter pays principle and identify the loss to the ecology/ environment , and the loss to individuals and families who had suffered because of the pollution, and then determine the compensation to reverse the environmental damage and compensate those who had suffered.

Great advances have been made in the region in access to justice, providing wider standing for aggrieved parties and an expansion of substantial and procedural matters related to public interest litigation. The judiciary has extended the eligibility for public interest standing so that weaker sections of society are not denied access to environmental justice, particularly in respect of a subject matter of great public concern. The 1996 Supreme Court of **Bangladesh** (Appellate Division - Civil) decision in *Dr. Mohiuddin Farooque* v. *Bangladesh*, *Represented by the Secretary, Ministry of Irrigation, Water Resources & Flood Control*, extended the interpretation of "any person aggrieved" in the Constitution of Bangladesh to include not just individually affected persons, but also to the people in general, as a collective and consolidated personality. In this case, the petitioner, the Secretary General of the Bangladesh Environmental Lawyers Association, had filed a petition on behalf of a group of people in the district of Tangail whose life, property, livelihood, vocation and environmental security were seriously being threatened by the implementation of a flood control plain. The Court concluded that the petitioner should be given *locus standi* to maintain the writ position, because the cause the Association *bona fide* espoused, both in respect of fundamental rights and constitutional remedies, is a cause of an indeterminate number of people in respect of a subject matter of great public concern.

The public's right to know has been emphasized in **India** in *Bombay Environment Action Group, Shaym H.K. Chainani Indian Inhabitant, Save Pune Citizen's Committee* v. *Pune Cantonment Board*, a 1986 decision in the High Court of Judicature, Bombay. In this case, the Court upheld the right to information and the rights of recognized social action groups to obtain such information, stating that the disclosure of information in regard to the functioning of the Government and the right to know flows from the right of free speech and expression guaranteed under the Constitution. The Court also said that "people's participation in the movement for the protection of the environment cannot be over-emphasised." To stimulate public participation, people need education. The Petitioner, M.C. Mehta in the 1992 Supreme Court of India decision, *M.C. Mehta* v. *Union of India and Others*, asked the Supreme Court to issue

direction to cinema halls, radio stations and schools and colleges to spread information relating to the environment. The Petitioner made this application on the grounds that the Indian Constitution required every citizen to protect and improve the natural environment, including forests, lakes, rivers and wildlife, and to have compassion for living creatures. To fulfill these obligations to the environment, the Petitioner argued that people need to be better educated about the environment. The Court agreed and noted that it was the Government's obligation to keep citizens informed about such matters, and hence issued the requested directions.

Underlying many recent cases is a clear judicial concern for the integration of environment and development in decision-making. The 1988 Supreme Court of **India** decision, *M.C. Mehta* v. *Union of India and others*, provides an example of the advancement of the concept of sustainable development. Here the Court observed that while it was conscious that its decision to prevent tanneries, which were polluting the River Ganga from operating until they installed primary effluent treatment plants, could bring unemployment, the decision to defend and improve the environment for present and future generations had become an imperative goal. The precautionary principle was applied in **Pakistan** in the 1992 Human Rights case of the Supreme Court, *Ms. Shehla Zia and others* v. *WAPDA*. The Court advocated the precautionary principle for the legal system, including both the judiciary and the various regulatory agencies, when responding to scientific uncertainties in the evidence before them. It was emphasised that a policy of sustainable development should be adopted to strike a balance between economic progress and prosperity and to minimise possible hazards.

9. ENVIRONMENTAL GOVERNANCE IN SOUTH ASIA

Almost all the developing countries in the Asia-Pacific region have made considerable progress during the past two decades towards strengthening the legal and institutional structures for environmental management, natural resource conservation and sustainable use, as well as for the integration of environmental considerations in development decision making. Significant as these developments are, there remain many difficult challenges to be overcome if these legal and institutional arrangements so painstakingly put in place are to function effectively. There is little doubt that building upon and consolidating the gains of the recent past in the institutional field and promoting more effective compliance and enforcement of existing regulations will be the major focus of countries in the region in the coming years. The institutional developments that have taken place in the region, highlights some of the major challenges that countries face in turning these into an effective and efficient vehicle for advancing towards the goals of sustainable development, and outlines some possible responses to these challenges.

In the run-up to the Rio Conference and for several years thereafter, there was a flurry of legislative and institution building activities in the region, resulting in the creation of new Ministries of Environment and their executing arms, and the enactment of a new breed of legislation that have come to be called environmental laws. As a result, almost every country in the South Asia region has now a Ministry or Agency empowered by law to carry out a wide range of activities for the protection of the environment, conservation and sustainable use of natural resources and to promote the integration of environmental considerations in development decision making. Almost every country also has in its statute books a basic or framework environmental law.

However, the over-arching and cross-sectoral environmental legislation and institutions, on the existing sector-based legislative and institutional framework and centuries old administrative culture founded on the unchallenged authority of ~~–~~line- Ministries", brought in its wake a number of difficult challenges which are only now beginning to recognised and addressed. Initially, the Environment Ministries were viewed with apprehension as usurping the traditional and hitherto unquestioned functions of the line ministries and agencies with statutory functions. This made interaction and partnership- the essence of effective environmental management- almost impossible. This in turn led to the proliferation of environmental cells in various Ministries and agencies, including National Planning Commissions - in

itself not a bad development at all, but for the lack of co-ordination and leadership that is essential to hold together such a widely scattered an disparate system environmental institutions with varying capabilities and jurisdictions. These problems were further exacerbated by legislative deficiencies, such as unclear demarcation and overlapping powers and functions, lack of specificity, dispersed competencies and procedural difficulties; management deficiencies such as absence of consultation, both horizontal and vertical and lack of delegation and decentralisation; resource deficiencies such as inadequate financial, human and material resources and lack of information and training.

Examples abound in almost every country in the region of the where responsibility for environmental oversight is scattered among a varying number of national institutions resulting in the week implementation of policies, plans and laws and the under-investment in environmental improvement and lack of opportunities for local level participation. In Sri Lanka, some four or five ministries with one another for environmental decision making, including the ministries of Environment, Energy and Industry, and is further complicated by clashing jurisdictions between the central government agencies and provincial agencies; in federal systems of government such as India, the challenges are even more daunting having regard to the constitutional separation of legislative and executive powers.

10. SUBREGIONAL COOPERATION

10.1 The South Asia Cooperative Environment Programme (SACEP)

The Secretariat consists of the Director General, professional, administrative and supporting staff. The Director General is appointed in rotation from the member states in alphabetical order and the appointment is for a period of three years. The main function of the Secretariat is to assist the Governing Council, the Consultative Committee, National Focal Points, and Subject Area Focal Points in the discharge of their duties and responsibilities. It is based in Colombo, the Sri Lankan Government provides financial support for its existence.

The SACEP is also acting as the Secretariat for implementing the South Asian Seas Programme, which was designated in 1983 as the ninth UNEP's Regional Seas Programme. Bangladesh, India, Maldives, Pakistan and Sri Lanka are the participatory countries of this programme and have ratified the Action Plan in 1995 for protecting and managing the coastal and marine resources in the region.

10.2 Financial Arrangements

SACEP currently receives three types of financial assistance for its activities:

- Annual country contributions from the member countries on a agreed scale of assessment
- The hosting and support facilities provided from the Government of Sri Lanka as the host country of the Secretariat.
- Bilateral - NORAD, SIDA, & the Netherlands Government

South Asia Co-operative Environment Programme (SACEP) is an inter-governmental organization, established in 1982 by the Governments of South Asia to promote and support protection, management and enhancement of the environment in the region.

10.3 Member Countries

Eight countries, namely; Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, has ratified the Articles of Association of SACEP.All member countries of SACEP belong to the developing world, and five have been classified as least developed. Most of these nations share many

similar environmental problems, stemming from poverty and its consequences on natural resources. According to the World Bank, during the past decade, South Asia has been the second fastest economically growing region in the world, and their efforts at increased production have put increasing pressure on natural resources and the environment. Significant natural resource concerns in South Asia include depletion of water quality and quantity, dwindling forests and coastal resources, and soil degradation resulting from nutrient depletion and salinization**.**

10.4 The aims and objectives:

To promote and support the protection, management and enhancement of the environment, of South Asia, individually, collectively and co-operatively · To encourage the judicious use of the resources of the environment with a view to alleviating poverty, reducing socio-economic disparities and improving the quality of life of the people

10.5 Functions

The functions of SACEP are to promote co-operative activates which would be beneficial to member countries in priority areas of mutual interest, facilitate exchange of knowledge and expertise and provide local resources for implementation of priority activities while mobilizing maximum constructive and complementary support from donor countries and agencies.

10.6 The Governing Council (GC)

The Governing Council is responsible for determining policy and programmes of SACEP and it oversees these activates by meeting regularly to review the ongoing programmes and to endorse new recommendations put forward by the Secretariat. It consists of one representative from each member states who will be of Ministerial rank. Since becoming a legal entity in 1982, SACEP held eight GC Meetings and the following table indicates the important initiatives and decisions taken at these meetings.

10.7 The Consultative Committee

The Consultative Committee comprising of the representatives of the diplomatic missions in Colombo and the Secretary, of Ministry of Forestry and Environment of Sri Lanka is responsible for facilitating the implementation of policies, strategies and programmes approved by the SACEPs Governing Council. The Consultative Committee meets regularly to provides guidance to the Secretariat in its activities and up to May 2001, 79 Consultative Committee Meetings has been held. Presently the Indian High Commission in Sri Lanka is the Chair of the Committee.

10.8 National Focal Points

Each Member State has designated a National Focal Point to facilitate the work of the Secretariat and to function as the main communication link between the Secretariat and the respective country. National Focal Points are expected to implement and monitor national programmes in co-operation with the Secretariat.

10.9 Subject Area Focal Points (SAFP)

The Subject Area Focal Points are expected to co-operate with the Secretariat in project identification, formulation, implementation and monitoring. The country, which is responsible for a particular subject area, designates a center of excellence in that subject and appoints a liaison officer. The member countries were assigned as the focal points for the following subject areas at the 7th GC Meeting of SACEP in 1998;

Bangladesh: Management of Freshwater Resources,

India: Conservation of Biodiversity, Energy and Environment, Environment Legislation, Education & Training, Waste Management,
Maldives: Management of Coral Island Ecosystems, Sustainable Tourism Development
Nepal: Participatory Forestry Management,
Pakistan: Air Pollution, Desertification, Science & Technology for Sustainable Development
Sri Lanka: Sustainable Agriculture & Land use, Sustainable Human Settlement Development,

Since its inception in 1982, SACEP has initiated a number of projects, which are building national capacity to manage environmental issues. The overall focus of SACEP's activities includes capacity building and institutional strengthening; conservation and sustainable use of biodiversity; ecosystems conservation and management; environmental information and assessment; and education and awareness raising. SACEP's members include Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, and Sri Lanka.

10.10 The SACEP South Asian Regional Seas Programme

The formulation of the Regional Seas Programme was a major achievement under the aegis of SACEP, and it is one of the few major transboundary environmental programmes of South Asia. Under this programme, a South Asian Seas Action Plan was also prepared along with national and regional overviews and action plans. The implementation activities relate to integrated coastal zone management; development of national and regional oil and chemical contingency plans; and protection of the marine environment from the impacts of land-based activities.

10.11 Improvement of the Legal and Institutional Framework

Another major programme undertaken by SACEP has been the improvement of the legal and institutional framework in the countries of the sub-region with technical assistance from UNEP Regional Office for Asia and the Pacific. Under this programme, national workshops were organized in Bangladesh and Nepal covering environmental law from both national and international convention implementation perspectives. In the Maldives, support was given for a National Planning Meeting to develop National Environmental Legislation. In Sri Lanka, activities were carried out in development of regulations; preparation of a model statute; establishment of environmental standards; preparation of the state of environment report; training programmes; and, an environmental awareness raising programme for children. Private and Public Cooperation Initiative SACEP launched this initiative to promote cooperation between governments and the private sector, with support from UNEP and NORAD under the initiative, a Regional Seminar on Cooperation for the Promotion of Environmentally Friendly Business Practices are being convened.

11. SAARC ENVIRONMENT INITIATIVES

11.1 South Asian Association for Regional Cooperation (SAARC)

SAARC was established in 1983, with its headquarters in Kathmandu, and includes the countries of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. SAARC has a particular focus on economic cooperation, although it also covers many aspects of regional cooperation (including environment). SAARC has grown steadily and, as a result of recent coordination initiatives between the two programmes, its environmental activities are complementary to those of SACEP. SAARC has set up several technical committees in many fields. The Committee on Environment was given the status of a Technical Committee in 1992, in which year a special session of this Committee was held in Pakistan to prepare modalities and programmes of action. The implementation of the recommendations of the Regional Study on Greenhouse effects has also been mandated to this Committee.

11.2 International Programmes and Projects

Countries of the sub-region are also participating in four transboundary efforts being promoted by the World Bank in Asia and the Pacific. URBAIR and the Two-Stroke Vehicle Engine Initiative address the rapidly worsening air pollution problem in South Asia‘s largest cities. The Bay of Bengal Environment Programme funded by GEF and jointly implemented with FAO, addresses fisheries research, environmental emergencies, large marine ecosystems, and coastal zone management in and around the bay. Both South and East Asian countries are involved in this programme. The South Asia Development Initiatives seeks to improve regional cooperation in the poorest part of South Asia (Bangladesh, Bhutan, Nepal and eastern India) in water resource management, energy development and trade, and transport and commerce. A programme for the preservation of Cultural Heritage in South Asia is being implemented in Bangladesh, India and Nepal to promote active involvement and financial support of the public, NGO, and private sectors to rehabilitate and protect national heritage sites.

The Third SAARC Summit held in Kathmandu in the year 1987 decided to commission a study entitled "Causes and Consequences of Natural Disasters and the Protection and Preservation of the Environment." National Studies were undertaken and subsequently consolidated into a Regional Study, which was approved by the Sixth SAARC Summit in Colombo, 1991. The recommendations of the above Regional Study were considered by the Committee on Environment (held in February 1992), which identified, for immediate action, measures for strengthening the environment management infrastructure; programmes on environmentally sound land and water use planning; research and action programme on mountain development in the Himalayan Region; coastal zone management programme; a SAARC forestry and watershed programme; programme on energy and environment; pollution control and hazardous waste management programme; a SAARC co-operative programme for biodiversity management; peoples participation in resource management; information exchange on low cost and environmentally sound habitat technologies; establishment of a SAARC relief and assistance mechanism for disaster and regional cooperation on the development of modern disaster warning systems.

A special session of the Committee on Environment met in November 1992 to evolve specific programme activities and modalities to implement the above measures. The Fourth SAARC Summit held in Islamabad in 1988 decided that a joint study be undertaken on "Greenhouse Effect and its Impact on the Region." National Studies prepared by member states were consolidated into a regional study, which was approved by the Seventh SAARC Summit.

The Committee on Environment was designated as the Technical Committee on Environment (TC04) and included within its purview, "Greenhouse Effect and its Impact on the Region." It began functioning on 1 January 1993. TC04 has identified measures for immediate action from among the recommendations and decided on a number of modalities for their implementation. These include: improving climate monitoring capability through networking arrangement and through SAARC Meteorological Research Centre (SMRC); developing climate change and sea-level rise scenario through country specific studies and sharing of information data in this respect; making available to member states expertise on climate research and monitoring Greenhouse Gases emission; identification of training and research institutions and ongoing programmes; exchange of information and data; exchange of experience on strategies for developing, mitigating and adaptive responses to climate change.

TC04 also covers topics such as: Approaches to Environmental Legislations, Regulations and Standards in SAARC countries; Rehabilitation of Degraded Lands; Training Course on Wetlands Assessment and Management; Workshop on Alternate/Renewable Energy and Workshop of SAARC National Experts on Climate Change. The urgent need to establish a networking approach through identified nodal points/institutions has also been stressed.

A SAARC Environment Ministers Conference was held in New Delhi in April 1992 to evolve a joint position on the issues related to the UN Conference on Environment and Development (UNCED). SAARC also presented a common position paper to the Fourth World Conference on Natural Disaster Reduction.

11.2 SAARC Environment Ministers’ Meeting

The Fourth SAARC Environment Minister's Meeting was held in Colombo from October 31 to November 1, 1998. A draft common SAARC position on Climate Change issues on the eve of the Buenos Aires meeting on Climate Change was adopted at the Meeting. The common SAARC position highlights the need for determination of equitable emission entitlements as well as transfer of new and additional financial resources and environmentally sound technologies on concessional terms to developing countries. It expresses concern at the attempt of some Annex-I Parties (Industrialized Countries) to link ratification of the Kyoto Protocol to the introduction of new commitments for non-Annex-I parties, which will only delay the Protocol coming into force.

The SAARC Environment Ministers agreed to direct their focus on a single theme in each of their future meetings. They also agreed that Bio-Diversity should be the theme for the year 1999. The Government of India will host a Meeting on the trans-boundary movement of hazardous wastes and dumping of such wastes in the region by other countries. This Meeting would examine the implications of the coming into effect of the Basel Convention for the SAARC countries and also explore the possibility of harmonizing policies and procedures with regard to hazardous wastes.

11.3 SAARC Environment Ministers Adopt Common Environment Programme

SAARC Environment Ministers who met in Colombo from 30 October to 1 November 1998 for their fourth annual Conference under the chairmanship of Nandimithra Ekanayake, Minister of Environment and Forestry of Sri Lanka adopted a common environment programme for the region as a follow up on the SAARC Action Plan on the Environment. Chandrika Bandaranaike Kumaratunga, President of Sri Lanka and current Chairperson of SAARC inaugurated the Fourth SAARC Environment Ministers' Conference. In her inaugural address, President Kumaratunga highlighted the environmental dimensions of development that would guide the governments in the region along a sustainable path to economic growth. She underscored the fact that SAARC region, which is home for nearly one fifth of the world population, was confronted with worsening poverty, ill health, illiteracy, social instability and continued degradation of the environment. The Conference adopted a common SAARC position for presentation at the Fourth Session of the Conference of the Parties to the UN Framework Convention on Climate Change in Buenos Aires.

11.4 Technical Committee on Environment Matters

Environment (TC04)

The Third SAARC Summit at Kathmandu, 1987 decided to commission a study on "Causes and Consequences of Natural Disasters and the Protection and Preservation of the Environment". National Studies were undertaken and subsequently consolidated into a Regional Study, which was approved by the Sixth SAARC Summit in Colombo, 1991.

The Committee on Environment was designated as the Technical Committee on Environment and included within its purview, "Greenhouse Effect and its impact on the Region". It began functioning from January 1, 1993.

TC04 has identified measures for immediate action from among the recommendations and decided on a number of modalities for their implementation. These include, improving climate monitoring capability through networking arrangement and through SAARC Meteorological Research Centre (SMRC); developing climate change and sea-level rise scenario through country specific studies and sharing of information data in this respect; making available to member states expertise on climate research and monitoring Greenhouse Gases emission; identification of training and research institutions and ongoing programmes; exchange of information and data; exchange of experience on strategies for developing, mitigating and adaptive responses to climate change.

TC04 also covers topics such as Approaches to Environmental Legislations, Regulations and Standards in SAARC countries; Rehabilitation of Degraded Lands; Training Course on Wetlands Assessment and Management; Workshop on Alternate/Renewable Energy and Workshop of SAARC National Experts on Climate Change. The urgent need to establish a networking approach through identified nodal points/institutions has also been stressed.

A SAARC Environment Ministers Conference was held in New Delhi in April 1992 to evolve a joint position on the issues related to the UN Conference on Environment and Development (UNCED). SAARC also presented a common position paper to the Fourth World Conference on Natural Disaster Reduction.

TCs on Environment and Meteorology will be merged and designated as TC on Environment and Meteorology with effect from 1 January 1996.

11.5 Meetings of the Technical Committee on Environment, Meteorology and Forestry

The first meeting of the Technical Committee on Environment, Meteorology and Forestry was recently held in Kathmandu in 2001 and its second meeting was held in Thimpu on 23rd April, 2002 and discussed the following matters:

1. Review of activities held since the First Meeting of the Technical Committee on Environment, Meteorology and Forestry.
2. Cooperation in the field of environment.
   - Review of implementation of the decisions/recommendations of the Fourth SAARC Environment Ministers‘ Conference.
   - Review of implementation of the Plan of Action on Environment.
   - Cooperation between Government and Private Sector in the field of Environment.
   - Cooperation in the field of meteorology (Collaboration with the SAARC Meteorological Research Centre (SMRC).

3. Cooperation in the field of forestry.
4. Cooperation with other international or regional organizations in the field of environment.
5. Cooperation in disaster management and disaster prevention.
6. Consideration of inter-linkages between environment, meteorology and forestry and evolution of integrated approach and strategy.

11.6 National Environment Action Plans and State of the Environment Reports

The Heads of State or Government expressed their deep satisfaction at the positive outcome of the Environment Ministers' Conference held in Male' in October 1997, and called for the effective and early implementation of the SAARC Environment Action Plan. In this context they welcomed the offer of Maldives to prepare a feasibility study on the establishment of a Coastal Zone Management Centre. The Heads of State or Government also committed their governments to prepare National Environment Action Plans and State of the Environment Reports before the end of 1998

The Heads of State or Government expressed their satisfaction over the adoption of a common position by Member States prior to the Third Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in Kyoto, Japan and welcomed the adoption of the Kyoto protocol in the United Nations framework. They urged all industrial countries to ratify the Protocol and to undertake urgent and effective steps to implement the commitments undertaken by them to reduce their emissions of green-house gases.

The Heads of State or Government also emphasised the need for complementary action by organisations and institutions in the region in their efforts to protect the environment and achieve sustainable development in the region. The Heads of State or Government noted that the SAARC Environment

Ministers would be meeting in Sri Lanka in late 1998. They urged that the Ministers should manage any specific measures required for SAARC to further strengthen cooperation on environment issues, with other international or regional organisations engaged in the same field.

12. REGIONAL CONVENTIONS/AGREEMENTS

In the last several years, the South Asia region community has taken a number of steps towards establishing standards or norms for environmental protection in the form of treaties, conventions and agreements. These agreements in turn have played a significant role in developing countries, either by influencing their domestic policies or by inducing them to follow higher environmental standards. Agreements can be bilateral, between two countries, or multilateral, among more than two countries. Multilateral agreements can be further divided into agreements between many countries belonging to different parts of the world, and regional or sub-regional agreements.

12.1 Agreement on Establishing the SAARC Food Security Reserve (SFSR)

During the Third SAARC Summit (Kathmandu, 1987), an Agreement on establishing the SAARC Food Security Reserve was signed. The Agreement, which came into force on 12 August 1988, provided for a reserve of foodgrains for meeting emergencies in member countries. The size of the reserve at present stands at 241,580 tonnes.

The SAARC Food Security Reserve Board comprises representatives from each member country and meets once a year. The main functions of the Board are to undertake a periodic review and assessment of the food situation and prospects in the region including factors such as production, consumption, trade, prices, quality and stocks of foodgrains.

12.2 Agreement on SAARC Preferential Trading Arrangement (SAPTA)

The Agreement on SAPTA was signed by the Ministers of Member States on 11 April 1993 during the Seventh SAARC Summit. The initiative towards establishing SAPTA was taken during the Sixth SAARC Summit in Colombo in December 1991. This Agreement is an umbrella framework of rules providing for step-by-step liberalisation of intra-regional trade. It envisages periodic rounds of trade negotiations for exchange of trade concessions on tariff, para-tariff and non-tariff measures.

SAPTA contains provisions giving Special and Favourable Treatment to the Least Developed Countries (LDCs) in SAARC region. Additional measures in favour of LDCs are incorporated in Annex-I of the Agreement. Provisions for safeguard action and balance of payments measures are also incorporated in the Agreement to protect the interest of Member States during critical economic circumstances.

The Agreement on Preferential Trading Arrangement (SAPTA) signed in Dhaka on 11 April 1993 has accelerated the process of trade and economic cooperation in the region.

12.3 Malé Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia

In Recognizing the potential for increase in air pollution and consequential phenomena due to concentration of pollutant gases, acid rain or acid deposition as well as the impacts on the health of humans and other living organisms in all our countries due to man made and natural causes; and also recognizing the potential for increase in transboundary air pollution as a corollary of air pollution in each country; the declaration states that countries shall continue the process in stages with mutual consultation to draw up and implement national and regional action plans and protocols based on a fuller understanding of transboundary air pollution issues. It declare that in pursuit of the above, as appropriate, institutional structures at the national level, including networking, both for the purposes of

policy and the technical requirements, and countries shall use the good offices of regional, international bilateral and multilateral agencies in this, as appropriate.

13. IMPLEMENTATION OF CONVENTIONS

Over the last decade countries in the Asia region have increasingly become signatories to international environmental agreements. Participation in these international agreements has also carried with it the obligation to institute adequate national measures for their implementation. Current developments demonstrate an increasing use of institutional and legislative mechanisms for this purpose. Recent environmental accords such as, the Montreal Protocol on Ozone Depleting Substances, the Biological Diversity and Climate Change Conventions as well as, the Basel Convention, CITES and Convention on Migratory Species impact upon a wide range of critical national interests involving the participation of several national, and sub-national administrative bodies. Legislation has lended itself well to serve as an effective instrument for implementing the obligations in a co-ordinated and cohesive way. To allow for the flexibility necessary for creating such co-ordinated administrative regimes, new environmental legislation usually specifies the principal concepts, obligations, rights and duties in regard to each Convention and leaves the detailed institutional arrangements to be specified in regulations. Many countries in the region have become parties to any of the international environmental instruments of global significance, but generally implementation of these conventions into domestic legislation has not been encouraging thus far, but slowly this trend has been changing.

In Sri Lanka, the Ministry of Environment must now monitor international developments relating to the negotiation and implementation of international agreements relating to environmental management for sustainable development, and take all measures as are necessary, in consultation with relevant ministries, departments, agencies, public and private sectors, NGOs to promote the furtherance and safeguarding of the interests of Sri Lanka relating to natural resource conservation and environmental management for sustainable development in such negotiations. All measures necessary for the adoption of such agreements must also be taken.

At the national level, there is still a need for better scientific assessment of the ecological linkages between the conventions, identification of programmes that have multiple benefits and enhanced public-awareness raising for the conventions. Only then will the impetus of implementation be stirred.

14. SOUTH ASIA ENVIRONMENTAL FACT SHEET

SOUTH ASIA Environmental Fact Sheet							
ITEMS	BANGLADESH	BHUTAN	INDIA	MALDIVES	NEPAL	PAKISTAN	SRI LANKA
Constitutional Status on Environmental Protection.	Protection of Monuments and Heritage, right to protection from actions detrimental to life	Does not have a constitution.	Duty of the state and citizens protection of environment After 73rd and 74th Amendment L S G s given executive powers on Environmental issues.	No direct reference to Environment.	Duty of the state to protect environment, wildlife, forest and vegetation.	Environmental pollution and ecology brought in the concurrent legislative list in 1993.	Duty of the State and every person. After 1987, Amendment Provincial govt. & executive power to protect environment, nature and its riches.
Major Environmental Laws	Environment Conservation Act, 1995 2) Forest Act, 1927 3) Agriculture & Sanitary Improvement Act, 1920 4) Embankment and Drainage Act and about 180 other laws having bearing on environment.	Environment Assessment Act – 2000. Forest & National Conservation Act, '95 and Mines Act '97 address envtal issues	Environment Protection Act, 1986 and has Pollution Control laws and a plethora approx. 200 environment Related enactments.	Law on Protection and Preservation of Envt.'93. Law on Fisheries '87. Law on Coral Mining '78, EIA guidelines and several related laws in operation.	Environment Protection Act, 1997 and about 25 other environment Related laws	Pakistan EPA 1997 and a web of other environment Related enactments.	National Environment Act '80, NEPA and Forest Conservation Act. Coast Conservation Act also in existence.

Institutions Directly Responsible for implementation.	Ministry of Environment and Forest (MOEF)- created in 1989, Sectoral ministries/ departments	National Environmental Commission	Ministry of Environment and Forest (MOEF)- created in 1980, Sectoral ministries & Pollution Control Boards (both at State and Centre levels), State Department of Environment	Ministry of Planning Environment, National Commission for the Protection of the Envt and Ministries like Planning, Human Resources and Envt. Fisheries etc. are responsible for implementation.	Ministry of Population and Environment, Environment. Protection Council, National planning Commission sectoral ministries like Forest, Industries etc.	Ministry of Environment, Apex body- Central Environment Protection Authority. local authorities oversee the local matters.	Ministry of Environment, Central Environmental Authority
Environmental Tribunals			Acts provide for Tribunals and Appellate Authority. The forest yet to start.			The EPA provides for Environment Tribunals which are to have exclusive jurisdiction to try serious violations.	

Environmental Policies, Strategies and action Plans	National Envt'al Policy adopted in '92. Forestry, Master Plan in '93 and National Conservation Strategy '92 & Envt'al Management Action Plan prepared in '96.	Environment policies include Paro resolution on environment and sustainable development, Bh**utan's** Sustainable Development strategy, Framework Guidelines for EIA developed in '92.	No Comprehensive Environment Policies or Action Plan brought out so far but there are sectoral policies on Pollution, land use. Agriculture, Forest, Industrial etc.National Conservation Strategy on Environment and development, 1992	No policy or action plan has been brought out so far but as a member of Alliance of Small Island States (AOSIS), is working to address ocean level rise.	Forestry Master Plan, 1988. National Conservation Strategy, 1988 in operation. National Envt'al Policy Action Plan prepared in 1992.	National Conservation Strategy of Pakistan, Five Year Plans incorporate principles of sustainability	National Conservation Strategy adopted in '88 & National Envt'al Action Plan adopted in '91 National Policy on Industry and Envt'al issued in '96. National Forest policy adopted in '96 Coastal Zone Mgmt Plan '90 – under revision.
Judiciary	The SC exercises writ jurisdiction. locus standi widened – Right to healthy environment is declared a Fundamental right but the Constitution bars the courts to pass stay orders stalling development projects.		The SC and HCs have been instrumental in developing PIL. providing effective remedies & developing environmental jurisprudence, Right to healthy, ecologically balanced environment declared as a Fundamental Right.	Role not very significant.	Exercises writ jurisdiction. Locus standi widened to deal with PILs.	The Sc and HCs exercise writ juris. Locus standi widened to deal with PIL and suo moto actions. Rt to life expanded to prtect people from envtal hazards; Rt to clean and unpolluted water a FRt.	The Sc and Court of Appeals exercise writ jurisdiction. Locus standi widened to hear PILs.

15. STATUS OF MAJOR GLOBAL ENVIRONMENT CONVENTIONS IN SAARC REGION

Country Status – Ratification
(* = Accession, Ap = Approval, Ac = Acceptance)

Country	CBD	Ramsar	UNCCD	UNFCCC	Kyoto Protocol	Vienna Convention/ Montreal Protocol	Basel Con-vention	CITES	CMS (came into force)
Bangladesh	3/05/94	21/09/92	26/01/96	15/04/94		1990* /1990*	1/04/93*	20/11/81	
Bhutan	25/08/95			25/08/95					
India	18/02/94	01/02/82	17/12/96	1/11/93		1991* /1992*	24/06/92	20/07/76	1982
Maldives	9/11/92			9/11/92	30/12/98*	1988* /1989	28/04/92*		
Nepal	23/11/93	17/04/88	15/10/96	2/05/94		1994* /1994*	15/10/96*	18/06/75*	
Pakistan	26/07/94	23/11/76	24/02/97	1/06/94		1992* /1992*	26/07/94*	20/04/76*	1/12/87
Sri Lanka	23/03/94	15/10/90	09/12/98	23/11/93		1989* /1989*	28/08/92*	4/05/79*	1/09/90

CHAPTER II

COUNTRY PROFILE

BANGLADESH

1. GEOGRAPHY

Bangladesh has a glorious history of several centuries. Bangladesh with 147,570 sq. km land area is located in the Tropics between 2034 north and 2633 North latitudes and 8801 East longitude in South Asia. The Indian state of West Bengal, Meghalya, Assam and Tripura border Bangladesh in the west, the north and the East. Bangladesh also shares a border with Mayanmar in the Southeast corner. In the south, Bangladesh has a long coastline along the Bay of Bengal. Bangladesh is classified into four physiographic regions.

- Western and Northern Frontier Hilly regions.
- Cheat label
- Flood Plains of Ganges, the Brahmputra and the Meghna river systems, and
- Delta.

The unique features in Bangladesh are the world's largest single tract of mangroves in the world located at the southwest part of the country and the longest shark free sandy beach in the world at the southwest part of the country.

2. POPULATION

Bangladesh is one of the most densely populated countries in the world. Its total population is over 120 million and 800 persons per sq. km. Most of the people are Muslim, Hindu, Christian and others.

3. OTHER SOCIO-ECONOMIC INDICATORS

Bangladesh, a 28 years old nation, still not enjoying a healthy socio-economic base; rather a overwhelming population pressure with poor literacy rate, two nutritional level and less skill manpower, frequent natural calamity, poverty, unscientific and over exploitation of natural resources etc. are dwindling its glamour day by day. The major socio-economic indicators are mentioned below

3.1 Human Resource

In Bangladesh, two primary resources are man and land, the former overwhelming the later, existing inequality in the distribution of land can be mitigating by equitable development of human resources and equitable access of all, to the benefits of development. Besides, non-formal vocation education, on-the-job training, training for self employment and development of small entrepreneurship at local and grass-root level can add a newer dimension for human resources development.

3.2 Literacy

Approximately 53% of the population is illiterate in Bangladesh. Since resources are very limited in comparison to the population, a simultaneous increase of investment of public funds at all levels of education

is beyond expectation; rather efficient and wise use of resources with prioritizing technical and vocational education could be a central strategy in education sector of advancement.

3.3 Health Level

Increased population seeks higher demand of health services and the increased rate of mortality and morbidity reveals malnutrition and environmental degradation. The National Health Survey of 1996 showed that 26.4% of the people of Bangladesh suffer from visual disability. 18.5% hearing disability and so on. They are mostly caused due to inadequate food intake and air and water pollution. The national disability rate is 11 person per 1000. Mortality rate of children under 5, is one of the highest in the world and about 60% children experience moderate to sever malnutrition.

4. INDUSTRY

Industrial development about half of the population cannot contribute to the country's development effort. Unplanned industrial expansion in the vicinity of Dhaka has already adversely affected the quality of surface water in the rivers around Dhaka and the scenario is almost same in other cities of the country. Industries are now becoming the main reason for pollution in waters, air and even in land. Thus per capita health cost increased by $25 per month and increased water supply costs as well.

5. LAND, FORESTS AND MINERAL RESOURCES

In terms of usage of land, 52% of total land is cropped land, 13% are forests, 27% are rivers and other water bodies and urban lands, 25% lands are used for industrial purposes, 4% are fallow land and other 4% are waste land. Deforestation, hill cutting, mining etc. causes land degradation by surface erosion, increased salinity, and desertification. Due to unplanned and unscientific deforestation, forest cover of the country are dwindling at an alarming peace and at present about 8% forest cover are remained which are very minimum for country environmental balance. Besides these, the country is naturally gifted with some other renewable resources viz. fisheries, water and solar power etc. On the other hand, there are some non-renewable resources like natural gas, oil, peat, coal, hard rock/stones white clay etc. in abundance and some other natural resources are yet to be explored.

6. WATER QUALITY

Bangladesh is a land of intricate network of over 200 large and small rivers which discharges flashes about 175 billion cu. Meter to the Bay of Bengal. These rivers carry water from a catchment area of 1.7 million sq. Km. and about 2.4 billion tons of sediment annually. The main rivers are Ganges, Brahmputra and Meghna.

About 50% of urban population and nearly 85% rural population have access to drinking water supply. Most of the drinking water (about 50%) comes from underground water sources. Still saline water intrusion and arsenic poisoning are observed in the groundwater of some areas. Arsenic pollution is a recent alarm in a good number of districts in Bangladesh.

Water borne diseases sometimes appear as an alarming epidemic and causes majority of mortality and morbidity in Bangladesh. This is due to lack of awareness; accessibility problems and non-use of tube well water for domestic purpose.

7. CRITICAL ENVIRONMENTAL ISSUES

- Population and poverty
- Degradation of resources (anti-people and uncoordinated)

• Conflict of development with environment illiteracy Vs ignorance
• Pollution: water, air and soil
• Destruction of mangrove, tree cover and firewood
• Loss of fisheries
• Unplanned human settlement
• Unplanned urbanization and industrialization
• Loss of wildlife
• Natural hazards

Sustainable development of the countries environment, largely depends on the integration of environmental issues in developmental activities at all level. With the view to this, identification to critical environmental issues and scientific action to combat those are urgent. Some key issues are as follows:

- Over the past 100 years, Bangladesh has wormed by 0.5% and this trend is still consistent. Thus, Bangladesh is projected to be 0.5 to 2.0 c warmer than today by the year 2030.
- Sea level rise and subsequent submerge of a vast area at the southern Bangladesh.
- Impact of drought and desertification at the central and northern part of the country.
- Degradation of environment and service and facilities especially the urban areas, due to their ever-expanding nature.
- Geo-political location of the country in terms of the delta of a huge catchments /water shed of Indian basin. Naturally, Bangladesh is more vulnerable to water quality and quantity besides; the regional water sharing issue is a major factor, which dominate sectoral development.
- As an agrarian country, Bangladesh is largely dependent on her land and water resources. Due to ever increasing population pressure, it is now a difficult strategic issue to allocate limited resources for agriculture, fisheries, urbanization and other land uses for sustainable development. As a result, agricultural resources are already under severe pressure and environmental strain.
- The present state of sanitation, especially in the rural Bangladesh in case of drinking water supply, water quality, visions circle of bacterial contamination is very alarming. Only 36.9% of the population has acceptable sanitary system for safe disposal of excretion.
- Bangladesh have a classified natural forest areas of 6-8% of the total land area, where recent trend of deforestation is much accelerating. Thus some diversified and complex ecosystems are under serious threat. To be mentioned here is the world's largest mangrove tract, Sunderban reserve forest is gradually being degraded due to rapid deforestation, top-dying, saline water intrusion, and coaching and inadequate reforestation.
- Unplanned industrialization depriving environmental consideration, especially in and around residential areas causes serious water and air pollution. Industrial wastage, smokes, effluents of tanneries are causing both health problems, making human habitats unusable and causing water pollution of major rivers.
- Serious problems of environmental degradation resulting from unplanned urbanization needs to be evaluated in terms of i) Land use, landuse alteration, ii) inadequate water, sanitation, shelter and other facilities in slums and other poor areas of cities, iii) degradation of community ambient environment and iv) little control on industrial wastage commissions and unhealthy of human and domestic wastes.
- Increased exploitation of natural resource basis, for example land, water and energy needs, mass awareness and quick from both public as well as common mass to minimize environmental degradation.

8. PROBLEMS, CAUSES AND RESPONSES

8.1 Poverty and rural development

Bangladesh is trapped in the vicious circle of poverty, which is reflected in large scale unemployment, low income level, low productivity due to deficiency of capital, weak technological base, make imperfection and lack of skill. The ongoing fifth five year plan aims to alleviation of poverty through accelerated economic growth (avg. 7% per annum) to bring about a noticeable improvement in the standard of living of people by raising their level of income and meeting their basic need.

8.2 Population

Around 120 million population of Bangladesh with a growth rate of 1.75% is designated as number one problem of the country. About 1.2 million people are adding each year. Thus the country is facing increasing land/man ratio, aggravating unemployment problem and consequently thwarting the prospect of socio-economic development of the country. Besides, the population control programmes are yet on the delivery system, which needs further development of local level institutions and mass literacy.

8.3 Education

Universal primary education is precondition for modernization and development. The overall literacy rate in Bangladesh is 44.3% (1995), the female being 28.5% and the male 50.4%. The gap of literacy rate between the urban and rural areas varied by 63.0% and 36.6% respectively. Since resources are limited, its wise use and scientific management is urgent for socio-economic development of masses.

9. LEGAL FRAMEWORK OF ENVIRONMENTAL MANAGEMENT

From the age-old norms and experiences, upto the country's constitution along with numbers of legislations, ordinances, and policies constitute the legal framework of the national forest management. The National Environmental Policy, 1992, Bangladesh National Conservation Strategy (BNCS), the Bangladesh Environment Conservation Management Action Plan (NEMAP), Forestry Master Plan, Wildlife (Preservation) Act, 1973, etc. The other sectoral pollution also emphasize on environment and its conservation. Those are the Forest Act, 1927 and the Amendment Act, 1990 Flood Action Plan and Flood Management Strategy, Water Resources Planning Law, 1992. Brick Burning (Control) Act, 1990, Coast Guard Law, 1994; The Pesticide Ordinance, 1971; The Pesticide Rules, 1985; The Explosive Act, 1923; The Penal Code, 1860; Fisheries Protection Act 1889, Conservation and Protection of Fisheries Act 1950, Marine Fisheries Ordinance 1983; Territorial Water and Marine Zone Act 1974, Mines Act 1927, Petroleum Act 1934, Antiquities Act 1986, Antiquities Ordinance 1986, Irrigation Policy 1998, Water Supply and Sewerage Authority Ordinance 1963 amended in 1989, Inland Shipping Ordinance 1976, Embankment and Drainage Act 1952 Water Hyachith Act 1939, Canals Act 1864 Irrigation Act ,1876, Wetland Policy 1997 Water and Power Development Board 1972 Soil conservation EPC Ordinance 1977 etc.

10. PREVENTION AND SETTLEMENT OF ENVIRONMENTAL DISPUTES

Environment, as per the Environment Protection Act, 1995, includes water, air, land and physical properties and inter-relationships, which exists among and between them and human beings, other living creatures, plants and micro-organisms. Thus any sort of violation of norms that affects social, physical, biological and ecological factors is designated as environmental disputes. It has a wide coverage, like land transformation, air, water and sound pollution, unplanned and unhealthy sewerage, discharge, contamination of domestic and river water flow, illegal poaching and destroying habitat, unplanned industrial and residential areas, slums etc. All these diversified violation of norms are settled and restricted by the constitutional obligations and provisions, sectoral ordinances, acts, laws of the government.

Any sort of dispute, within the frame of environmental related acts, ordinances and laws are enquired and settled under the Code of Criminal Procedure. To be mentioned, to make it up-to-date and effective, meanwhile, a number of amendments are brought herewith. Depending on the extent, nature, value, perspective and local level works there are varied level of courts established, keeping Bangladesh Supreme Court as the highest body to settle the disputes. The other sub-ordination courts are:

- Appellate Division
- High Court Division
- District and Sessions Judge Court
- Additional District and Sessions Judge Court
- Sub-judge and Assistant Sessions Judge Court
- Assistant Judge Court
- District Magistrate Court
- Thana Maginstrate Court
- Metropoliton Magistrate Court
- Division Special Judge Court
- Special Tribunal Judge Court
- Small Case Court
- Village Court

Moreover, in cases Special Forest Court is also active in the country to settle forests and environmental disputes.

BHUTAN

1. GEOGRAPHICAL

Area (square kilometer)	46500 square kilometers
Population	698,950 approx.
Population growth	3.1 percent
GNP per capita (US $)	US$ 545
Land-use	
Forests	72.5 percent
Cultivated Areas	7.7 percent
Number of Protected areas	9
Protected areas as % of total land	26.23 percent
Total protected area (square km)	10,513

Economic Activity as percentage of Gross Domestic Product

Agriculture	38.2 percent
Industry	29.5 percent
Community and Social Services	10.9 percent

Bhutan is located between two biogeographical realms: the Palearctic realm of the temperate Euro-Asia and the Indo-Malayan realm of the Indian sub-continent. As a result of this location, Bhutan hosts a large number of endemic species and very rich biodiversity. The biomes in Bhutan stretch from sub-tropical in the south (150m ASL) through temperate in the central interior, to an alpine zone in the north (7000m+ASL). Animals such as the tiger, elephant, one-horned rhinoceros, Asiatic water buffalo, pygmy hog and the rare golden langur exist in the lush tropical forests of the South. The snow leopard, blue sheep, and takin are found in the cool forests and alpine meadows of the North. There are over 165 species of animals (mammals), and more than 770 species of birds have been identified (despite the very limited data inventories that have been conducted in these fields).

Within Bhutan's borders, one can find over 60 percent of the endemic species of the Eastern Himalayan region. In addition, Bhutan's rich flora includes over 50 species of Rhododendron, and over 300 species of medicinal plants, mostly alpine, that are used in traditional herbal medicine. As a result, Bhutan has been declared as one of ten global "hot-spots" for the conservation of biological diversity. Many ecologists believe that Bhutan represents the last best chance for conservation in the Eastern Himalayas, a region considered of critical importance to the global efforts to conserve biological diversity. Few countries can match Bhutan’s biological diversity, and even fewer have taken such strong steps to ensure the conservation of their biodiversity.

2. POPULATION

The population of Bhutan is about 600,000. Bhutan has the lowest population density in the region, however, one of the greatest challenges that confront the nation’s rapid rate of population growth of 3.1 percent, which stands as one of the highest in the sub-region. If the current rate of growth at 3.1 percent per annum remains unchecked, the kingdom’s population will double in 23 years.

3. ENVIRONMENT AND DEVELOPMENT ISSUES

The preservation of Bhutan's rich biological diversity can be attributed to the enlightened leadership and the strong conservation ethic of the Bhutanese people. Conservation is a central tenet of Buddhism. Buddhism believes in preserving nature and giving back to the earth what one has taken. Buddhism also believes in the sanctity of life. The importance of protecting nature in all its manifestations has permeated our consciousness and has become integral to the Bhutanese way of life. The pre-Buddhist —Boní (animism) beliefs whereby forests, mountains, lakes, rivers and the sky are the domain of spirits and desecrating them will lead to disease and suffering, are very strong. Therefore, preservation of the environment, sacred and cultural heritage sites are an important and an integral part of the Bhutanese value system.

There are vibrant customary rules and norms, especially regulating the use of community grazing land, irrigation channels, forests, breeding stock, foot paths, shrines, bridges, etc. These are held in community ownership and use. Sophisticated institutional arrangements have evolved to equitably and efficiently regulate their uses. The Bhutanese culture is thereby based on the customary rules, norms, indigenous knowledge systems and institutions

His Majesty, King Jigme Singye Wangchuck has continued to ensure that the processes of economic development and environmental and cultural integrity are not mutually exclusive, but critical to the long-term viability of Bhutanese development. As summarized by His Majesty, himself, "Gross National Happiness is more important than Gross National Product." This has been the principle guiding force of Bhutan's sustainable development strategy.

As a result of the enlightened leadership and the strong tradition of environmental conservation and preservation, Bhutan now has over 26% of its land area under protected area management and over 72.5% of the country under forest cover. While many parts of the world have suffered from alarming deforestation rates, the forest cover in Bhutan has actually increased in the last decade. The 73rd session of the National Assembly in 1995 has mandated that the country must at all times keep 60% of the country under forest cover.

The enlightened conservation ethic and an innate understanding of terms such as sustainability and ecological succession and carrying capacity were practiced in Bhutan, although, these terms were not quantified. It was understood that resources were finite, had to be used in balance and that excessive uses would deplete the natural base and threaten the whole ecosystem. In this harsh mountain environment, these views were communicated through stories and beliefs that the spirits, Gods and Goddesses would destroy violators of the natural order. All the sacred forests, sacred lakes and watershed areas can be translated today to important conservation sites. These values ensured that at the start of its economic development process in 1961, Bhutan inherited an almost intact natural environment. Forests, atmosphere, land, water were in pristine conditions with the local people putting minimal pressure on the resource base.

4. ENVIRONMENTAL CHALLENGES

Bhutan's isolated location and late start in development and the conservation ethic has shielded the country from many of the detrimental side effects of poorly planned or haphazard development. As a result, while most of the Himalayan region has seen its natural resource base severely compromised through deforestation, soil degradation, erosion, and pollution, Bhutan's natural patrimony of extensive and varied forests, limited yet fertile and productive farmland, and pristine water and air remains largely intact.

Although, the present generation of Bhutanese cannot take credit for centuries old methods of resource utilization which has enabled to inherit an intact natural resource base, they can take credit for ensuring the continuation of this legacy. The Royal Government has established institutions, begun programs, projects and ratified international conventions towards the aim of preserving and conserving the natural environment. The government has prioritized the environment as a key sector and has charted out a sustainable development path. The key will be to follow this path amidst the many challenges ahead.

During the second half of the twentieth century, Bhutan became an active participant of social and economic development. They have made vast improvements in the quality of life that results from breakthroughs and improvements in medicine and technology. However, threats that come from inappropriate or uncoordinated development are starting to manifest itself in the country. Threats to the continued integrity of Bhutan's natural resource base are increasingly being felt from a variety of "developmental" sources:

- infrastructure construction;
- industrial expansion;
- increasing urbanization;
- growth of foreign tourism;
- compromising land-use management practices;
- high population growth rate;
- employment shifts;
- changing consumption patterns; and
- Technological innovations.

5. LEGAL FRAMEWORK

Forest Act 1969, Forest and Nature Conservation Act 1995, Mines and Management Act 1995 and the Environmental Assessment Act 2000 National Environmental Strategy**;** Paro Resolution on Environment and Sustainable Development (1990); National Forest Policy, 1974; National Forest Act (1969); Land Law (1979); Pastureland Law (1979); Inheritance law (1979); Livestock Law (1979); Wildlife Act (1985); Plant and Quarantine Act and regulations (1988); Mining Act (1995);

INDIA

1. GEOGRAPHY

Location: Southern Asia, bordering the Arabian Sea and the Bay of Bengal, between Burma and Pakistan
Geographic coordinates: 20 00 N, 77 00 E

Area:

- Total area: 3,287,590 sq km
- Land area: 2,973,190 sq km

Land boundaries:

- Total: 14,103 km
- Border countries: Bangladesh 4,053 km, Bhutan 605 km, Burma 1,463 km, China 3,380 km, Nepal 1,690 km, Pakistan 2,912 km
- Coastline: 7,000 km
- Maritime claims:
    - contiguous: 24 nm
    - continental shelf: 200 nm or to the edge of the continental margin.
    - exclusive economic zone: 200 nm
    - territorial sea: 12 nm

Climate: Varies from tropical monsoon in south to temperate in north.

Terrain: Upland plain (Deccan Plateau) in south, flat to rolling plain along the Ganges, deserts in west, Himalayas in north.

- Lowest point: Indian Ocean 0 m
- Highest point: Kanchenjunga 8,598 m

Natural Resources: coal (fourth-largest reserves in the world), iron ore, manganese, mica, bauxite, titanium ore, chromite, natural gas, diamonds, petroleum, limestone plus numerous others.

Land use:

- arable land: 55%
- permanent crops: 1%
- meadows and pastures: 4%
- forest and woodland: 23%

- other: 17%
- Irrigated land: 430,390 sq km (1989)

2. ENVIRONMENTAL ISSUES

According to the Strategy, Environmental problems in India can be interrelated classified into two broad categories, which are

(a) those arising as negative effect of the very process of development;
(b) those arising from condition of poverty and under development.

The first category has to do with the impact of efforts to achieve rapid economic pressure of demand generated by those section who are economically more advanced and impose great strain on the supply of natural resources.

The second category has to do with the impact on the health and integrity of our natural resources as a result of poverty and the inadequate availability, for a large section of our population, of the means to fulfill basic human needs such as food, shelter and employment.

Current issues:

- deforestation; soil erosion; overgrazing; desertification; air pollution from industrial effluents and vehicle emissions; water pollution from raw sewage and runoff of agricultural pesticides; distributed water is not potable throughout the country; huge and rapidly growing population is overstraining natural resources natural hazards: droughts, flash floods, severe thunderstorms common; earthquakes.

International Agreements: Antarctic Treaty, Biodiversity, Climate Change, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber, Wetlands; signed, but not ratified - Antarctic-Environmental Protocol, Desertification.

3. LEGAL SYSTEM:

Based on English Common Law; limited judicial review of legislative acts; accepts compulsory ICJ jurisdiction, with reservations.

4. ECONOMY

Economic overview:

- India's economy is a mixture of traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a multitude of support services.
- Faster economic growth in the 1980s permitted a significant increase in real per capita private consumption.
- A large share of the population, perhaps as much as 40%, remains too poor to afford an adequate diet.
- Production, trade, and investment reforms since 1991 have provided new opportunities for Indian businessmen and an estimated 200 million plus middle class consumers.

- 25 Indian states and several union territories, which are playing a more active role in determining economic policy, are further complicating the economic climate.

5. INDUSTRIES

- textiles, chemicals, food processing, steel, transport equipment, cement, mining, petroleum, machinery wood products, electric and electronnic, several others

6. LEGAL FRAMEWORK

In recognition of the felt need for environmental protection, varied regulatory and promotional measures have been taken in the past twenty years. They include:

Constitution of India (Article 21,48A, 51A, 32, 226); Water (Prevention and Control of Pollution) Act, 1974; Water (Prevention and Control of Pollution) Cess Act, 1977; Air (Prevention and Control of Pollution) Act, 1981; Indian Forest Act, 1972; National Environment Tribunal Act, 1995; National Environment Appellate Authority Act,1997; Wildlife (Protection) Act, 1972 and Amendments; Forest (Conversation) Act, 1980; Environment (Protection) Act, 1986; Public Liability Insurance Act, 1991; Forty Second Amendment, 1976 The Constitution (73rd Amendment) Act, 1992; Constitution (74th Amendment) Act, 1992

MALDIVES

1. GEOGRAPHICAL

Location: Southern Asia, group of atolls in the Indian Ocean, south-southwest of India

Population: 301,475 (July 2000 est.)

Geographic coordinates: 3 15 N, 73 00 E

Geography: 1,190 coral islands grouped into 26 atolls (200 inhabited islands, plus 80 islands with tourist resorts); archipelago of strategic location astride and along major sea lanes in Indian Ocean

Area:
total: 300 sq km
land: 300 sq km
water: 0 sq km

Area - comparative: about 1.7 times the size of Washington, DC

Land boundaries: 0 km

Coastline: 644 km

Maritime claims: measured from claimed archipelagic baselines
contiguous zone: 24 nm
exclusive economic zone: 200 nm
territorial sea: 12 nm

Climate: tropical; hot, humid; dry, northeast monsoon (November to March); rainy, southwest monsoon (June to August)

Terrain: flat, with white sandy beaches

Elevation extremes:
lowest point*:* Indian Ocean 0 m
highest point*:* unnamed location on Wilingili island in the Addu Atoll 2.4 m

Natural resources: fish

Land use:
arable land*:* 10%
permanent crops*:* 0%
permanent pastures*:* 3%
forests and woodland*:* 3%
other*:* 84% (1993 est.)

Natural hazards: low level of islands makes them very sensitive to sea level rise

2. ENVIRONMENT ISSUES

depletion of freshwater aquifers threatens water supplies; global warming and sea level rise; coral reef bleaching

3. ENVIRONMENT - INTERNATIONAL AGREEMENTS

Party to*:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Hazardous Wastes, Ozone Layer Protection Convention
signed, but not ratified*:* Law of the Sea Convention

1. LEGAL SYSTEM

Based on Islamic law with admixtures of English common law primarily in commercial matters; has not accepted compulsory ICJ jurisdiction.

Constitution: adopted January 1998

Legislative branch: unicameral People's Council or Majlis (50 seats; 42 elected by popular vote, 8 appointed by the president; members serve five-year terms) *elections:* last held 20 November 1999

Judicial branch: High Court

5. THE MALDIVES

The Maldives consists of a chain of coral atolls, 80-120 km wide and 860 km long, located on the Lacadive-Chagos submarine ridge in the Indian Ocean. There are altogether 26 natural atolls and the land is divided between 1190 islands of which 198 are inhabited. Historically these islands have been divided into twenty administrative regions also known as atolls. Over 80% of the land area of these islands is less than 1 meter above mean sea level. Like most archipelagic states, the economy and the lifestyle of the Maldives is essentially maritime and marine-based. Until recently the lifestyles of the Maldivians had little direct impact on the environment. The main environmental impacts included the mining of coral and coral sand in the absence of other building materials and deforestation induced by the need for fuel wood. Despite the constraints of technical know-how, manpower and finances, the Maldivian Government has instituted appropriate policy legislation, regulatory and institutional measures for environmental planning and management. Environmental education and awareness have been given high priority by the Government and a number of initiatives have been taken in this area.

6. ECONOMY - OVERVIEW

Tourism, Maldives largest industry, accounts for 20% of GDP and more than 60% of the Maldives' foreign exchange receipts. Over 90% of government tax revenue comes from import duties and tourism-related taxes. Almost 400,000 tourists visited the islands in 1998. Fishing is a second leading sector. The Maldivian Government began an economic reform program in 1989 initially by lifting import quotas and opening some exports to the private sector. Subsequently, it has liberalized regulations to allow more foreign investment. Agriculture and manufacturing continue to play a minor role in the economy, constrained by the limited availability of cultivable land and the shortage of domestic labor. Most staple foods must be imported. Industry, which consists mainly of garment production, boat building, and handicrafts, accounts for about 18% of GDP. Maldivian authorities worry about the impact of erosion and possible global warming on their low-lying country; 80% of the area is one meter or less above sea level.

7. KEY ISSUES AND GOVERNMENT'S INITIATIVES

Key Issues and Government's Initiatives			
Relevant Key Issues 1. Institutional relationships 2. Poverty alleviation through capacity building of committees 3. Gender and social structure 4. Local resource mobilisation, expenditure for poverty alleviation, transparency and accountability 5. Legal framework for decentralisation			
Steps	**Critical Agencies to be involved**	**Country Resources Available**	**Regional Actions**
1. Strengthen and institutionalise the present Atoll Development Committees (ADCs) 2. Enable island development committees, clubs, associations for social mobilisation => i.e. critical area around which these committees can be mobilised. 3. Empowerment and awareness raising of elected Women's Committees, NGOs, for income generation and social mobilisation 4a. Create awareness amongst private entrepreneurs to contribute to local development efforts 4b. Allocate budgetary resources for community-planned (IDC, ADC, IWC) activities 4c. Private sector investments for major infrastructure and	1. Atoll officers, Atolls Ministry, Planning Ministry, President's Office 2. Island offices, Atoll offices, Atolls Ministry, Planning Ministry, President's Office 3. Island offices, Atoll office, Atolls Ministry, Planning and Finance Ministry 4a. Traders Association, Tourism Industry, Public/Private companies	1. Infrastructure, some financial inputs, commitment 2. Infrastructure, administrative costs 3. Administrative support 4a. Public/private sector 4b. Limited own funds 4c. Institutions. Companies	1. Human resource development and capacity building 2. Share expertise, regional experience and resources for demonstration of SAPAP programmes 3. Assist in creating credit fund, capacity building experience, expertise 4a. Share experience of mobilising private sector funds for local development 4b. Expertise and shared experience from outside

income generating activities in partnership with CBOs (e.g. construction/operation of airstrips can be private) 5a. Policy consensus at all levels 5b. Capacity building at all levels (some local institutions can help in this) 5c. Strengthen accountability and transparency => some framework already in place => a government audit agency with a lot of power and an anti-corruption board with the power to scrutinise all public funds. 5d. Clearly defined roles and functions => need to get rid of overlapping => each line agency and each Island Committee should know exactly where the boundaries are.	4b. Atoll offices, Atolls Ministry, Finance Ministry, Planning Ministry 4c. Atoll offices, Atolls Ministry, Trade Ministry, Finance and Planning Ministries, President's Office, Maldives Chamber Of Commerce 5a. All govt agencies 5b. All govt agencies, private sector, CBOs 5c. All govt agencies, private sector 5d. Govt agencies, communities, CBOs	5a. Commitment 5b. Regulatory and legal framework, training and local institutions 5c. Audit office, Anti- corruption board 5d. Present roles and functions	5a. Share experience and provide expertise 5b. Exposure outside training 5c. Experience, expertise 5d. External Consultancy services needed

8. LEGAL FRAMEWORK

Environmental Protection and Preservation Act, 1993; Environmental Impact Assessment (EIA); Fisheries Law of the Republic of Maldives, 87; Law on Uninhabited Islands (Law no: 20/98

NEPAL

1. GEOGRAPHICAL

Nepal is situated in the Central Himalaya at $26^0$22' to $30^0$27' N Latitude and $80^0$4' to $88^0$12' E Longitude between two large landmass, the People's Republic of China in the North and India in the East, South and West. It, however, represents only 0.3 percent of the total Asian landmass. The country is roughly rectangular in shape, with an average length of 885 Km East to West and non-uniform width of 193 Km North to South. An important location feature of the country is the sharp contrast in elevation and climate. Of the total area of the 147,484 Km^2, 28 percent lies above 3000 m, 61 percent between 300 – 3000 m, and remaining 11 percent below 300 m. Consequently, there is a sharp zonation in climatic types with distinctive natural vegetation and cultivated crops. Slightly over 80 percent of the land is covered by rugged hills and mountain out of which over 20 percent is high mountain zone, between 2200 – 4000 m with long, straight and steep slopes and narrow valleys. These areas are sensitive to erosion. The High altitude Himal Zone, above 4000 m, which is about 23 percent of the Kingdom is mostly snow covered Himalaya region.

The Terai, inner Terrai as deciduous vegetation. The main species are sal (Shorea robusta), khair (Acacia Catechu), simal (Salmaria malacarica), and sisoo (Dalbergia Sisoo). **T**he landscape between 1000 m and 2000 m in the hill regions are dominated by species as chillaune (Schiima walichii), katus (Castonpis indica), species associated with bans (Dundro calamas), uttis (Alnus nepalensis), and guras (Rhododendron arborium). Oak, alder, poplar and magnolia are found on higher ridges. Above 4,000 m, the vegetation is subalpine. Rhododendron, juniper, and birch are common here, together with a variety of alpine plants.

Over 80 percent land area of the country is drained by three major river system, thus producing three principal river basins. These basins are Koshi basin in the east, the Karnali basin in the west and Gandaki basin is culturally a transition zone. These basin constitute the center of cultural and political development in the country. The principal rivers of each of the three drainage systems originate in the Trans-Himalayan region and flow south fed by numerous tributaries arising in the hill region.

The Karnali river system in the west is the largest river system in Nepal. With an average runoff of 18,000 ft^3 /sec the total hydropower potential from the Karnali is estimated at 32,000 MW. The Gandaki has a runoff of 10,000 ft^3/sec and an estimated power potential of 21,000 MW .

Most part of Nepal falls within the monsoon climate area, altitude being the major determinant of the division of Nepal into climatic regions. Within short vertical distances, the climatic conditions tend to change radically.

In Nepal broadly speaking four climate types can be recognized.

i. *A humid tropical climate* prevails up to an altitude of 100m. The Terai, the southern parts of the country characterize this climatic type. Summers are hot with temperature rising up to 37^0. Winters are cool with mean temperature of 12^0 C. The summer rainfall (June to September) varies between 1,700 mm to 900 mm.
ii. *A moist subtropical climate* characterizes the hill region between 1,000 and 2,500 m. In summers the temperature reach to 32^0 C. Winters are mild but not very severe.
iii. *A temperate to cool temperate climate* prevails between 2,500 – 4,000m. Summer are short and cool, winters are severe with the night temperature dropping below freezing point.
iv. *Alpine and arctic climates* are found above 4,000 m, which is the upper limit of forest.

Nepal is predominantly a country of villages. At present the 28,000 villages or settlements in the country have been organized into 4,048 local administration units. Only 33 of these are recognized municipal areas and therefore by definition —urban" although not all display distinctive urban characteristics. The 33 municipal areas harbor, at present, about 9 percent of Nepal's population.

2. POPULATION

Average population density is estimated at just over 145.6 people per square kilometer. This is relatively high for a country where distribution pattern of natural resources as well as socio economic development is uneven. Environmental degradation is quite obvious where population pressure exceeds the carrying capacity of the land.

Geographically, there is an uneven population distribution, attributed to disparity in income and social development. Only 7.5 percent of the population live in area at an altitude between 10,000 feet to 13,000 feet. About 46 percent live in mid hilly region. Low land Gangatic plain called Terai in the South provides livelihood to another 46.5 percent of the population. At present an estimated population of Nepal is about 21.42 million, and with the current growth rate of 2.66 percent a year with the doubling time of only 26 years.

Unlike many other developing countries, Nepal started the modernization only very recently and under relatively unfavorable circumstances. With virtually zero physical infrastructure for modern development, limited exploitable natural resources, a small skilled labour force, and a landlocked situation, options for rapid development have been very limited and choices uncertain. Most people who have lived in the hills and mountain areas have survived on a precarious balance with the fragile environment. The population increase and employment dependent on agriculture have retarded economic growth and created a new group of people living below the poverty line.

Due to its geography and low level of economic development, economic forces and development are closely interconnected in Nepal. Past 40 years experience has clearly shown that the environment and economy are dovetailed component of the national development. In many respects, the future economic development of Nepal will be greatly facilitated if natural resources and environment are better managed, however it will be severely constrained if the resources and environmental quality are allowed to deteriorate further. A deteriorating environment has increased the difficulties of poverty eradication, while the failure to overcome poverty has exacerbated environmental problems. More and more people are finding difficulty in natural resources which were easily available to them, and especially to predominant agricultural population, the importance of the continued availability of diversified natural resources which directly affect soil fertility, water availability, and productivity of farm resources can not be overemphasized.

Over the years, the environmental problems such as increasing loss of topsoil, deforestation, water shortage, floods, degradation of agricultural land, forest, and pastureland has increased considerably. Special characteristic of mountain areas such as fragility, diversity, inaccessibility, and a long history of subsistence farming based on extensive linkages between farming, forestry, and livestock sectors clearly indicate that sustainable solutions to integrated mountain development must be very carefully selected.

3. ENVIRONMENTAL ISSUES

The main environmental issues in Nepal are related to excessive dependence on the one overstretched natural resource base, coupled with a high rate of population growth, a predominance of stagnating subsistence agriculture, growing urbanization and some recent industrialization. From the policy perspective, issues exist that are related to a lack of recognition for the proven ingenuity of the population in

managing the fragile ecosystem, and of the limitations in capacity of the public sector to directly manage the common resources. Although the government diagnosed some of the underlying problems as early as the late 1950s and early 1960s, and undertook some isolated and
generally fragmentary efforts to address those problems, a concerted realization of the urgency of some of the environmental issues facing the country only emerged with the Fifth Five-Year Plan period (1975-1980).

Some groundwork was carried out, however, on soil conservation and watershed management, national parks and wild life protection during the Fourth Five-Year Plan period (1970-1975). A separate department was created for each of them, in addition to launching a few pilot programmes for soil conservation and watershed management as well as the establishment of seven national parks and wild life reserves. During the Fifth Five-Year Plan period priority was given to capitalization of the infrastructure already created for increased production and utilization of the workforce, and to regional balance and economic integration of various regions. However, as part of the measures for environment protection, efforts were also made to adopt a comprehensive population and employment policy, and to strengthen activities related to soil conservation, watershed management and the establishment of new national parks and protected areas.

The failure to achieve a reasonable and sustained rate of growth in the agricultural sector has led to the expansion of cultivation on economically less productive and environmentally fragile land which would otherwise remain under some kind of permanent vegetation cover. It also means that farms are being continuously subdivided and fragmented, with a resulting negative impact on household food security. In addition, the expansion of cultivation on ecologically sensitive uplands has led to an accelerated erosion of productive soils, the undermining the productivity of farmland and an increase in sedimentation in downstream areas.

The other two areas of environmental concern are: (a) growing urbanization; and (b) industrialization. Environmental degradation, particularly in the urban and peri-urban areas, has become a matter of serious public concern and the establishment of squatter-like manufacturing and housing units is considered to be the main source of the problem. According to 1999 census, Nepal is one among the least urbanized developing countries, with the urban population accounting for less than 10 per cent of the total population, urban population is projected to double in less than 15 years at its present growth rate, indicating that Nepal is already on the threshold of "urban transition". Between 1981-1991, the urban population increased by 77 per cent compared with 20 and 23 per cent increases in the rural and total populations, respectively. It has been estimated that growth in the urban population resulting from natural increase was only 31.9 per cent during 1980-1985 and 32.5 per cent during 1990-1995, compared with 68.1 and 67.5 per cent as a result of non-urban to urban migration, international migration and urban boundary expansion during the same periods, respectively. However, statistical information necessary for estimating the magnitude of the problem is extremely scanty. Air and water pollution and the problem of urban waste disposal in the Kathmandu Valley are regularly reported in local, national and international newspapers, thus illustrating public concern in that area.

4. MAJOR PROBLEMS, CAUSES AND RESPONSES

Environmental problems in Nepal are the consequences of rapidly growing demand that exceeds the physical carrying capacity and the scale of the economy. The two interrelated facts generated two principal environmental problems in Nepal that are land degradation and deforestation. These two processes are due to nature of terrain and over exploitation of the natural resource base. Recently, pollution problems have also emerged due to hazard urbanisation and industrialisation.

The population of Nepal has increased from 8 million in 1952/54 to about 17.5 million in 1987 and 21.1 million in 1997. The population is expected to double again in about 25 years at the present growth rate of 2.66 percent per annum. The economic and environmental prospects are very dark for population growth of this scale, as current indicators of the quality of life and pressures on natural resources are already very worrying. Although physical carrying capacity is subject to change through technological improvements and investments in real capital, these gain achieved from technology and capital formation are far too limited in magnitude and extent to offset the pressure of rapidly growing population and its resulting pressure.

In principle and given the resources required, economic and environmental targets and sustainability could be achieved through the use of policy instruments. Conversely, failure to meet attainable targets can be attributed to an inadequate use of policy. One of the most tragic aspects of Nepalese development history is that, while there has been reasonable perception of the basic problems, there has been a continuing failure of implementation. Sectoral Master Plans and similar studies have been prepared for agriculture, forestry, irrigation, urban development and tourism. Proposals for long-term plans are available for natural resources management and land-use planning. Despite all these plans and studies, most of which are reasonably accurate, the policy changes and institutional responses are very slow.

Another area, which is imparting serious negative impacts on the overall development of the country, is the shortage of skilled manpower. An adequate supply of well-trained and skilled manpower is a necessary condition for sustainable development. Because of the difficulties of acquiring private sector resources for developing manpower in countries such as Nepal, the role of the Government has been very critical. By providing adequate support to educational and training institutions, the Government can help to maintain a steady supply of trained manpower in the country. Despite substantial efforts in the past, the inadequacy of manpower is a major complaint of all the key development agencies such as those concerned with agriculture, forest, irrigation, transport, and power.

Increasing degradation of natural resources and slow economic growth are the two major symptoms of the un-sustainability of Nepal's environment and its economy. Economic development has resulted in increase consumption of its natural resources, thus resulting in decline in the stock of critical resources such as forest and soil.

In Nepal, deforestation and soil erosion are two most critical environmental problems, where available renewable natural resources are being lost at an alarming rate. Both these problems are natural as well as man induced type.

5. DEFORESTATION

The forest areas declined from 6.5 million hectare in 1964/65 to 5.5 million hectares in 1984/85 or 37. 4 % of the total area of the country. Recent study has shown that it has declined further to 29 percent. Deforestation (the permanent removal of trees) is the major reason for the loss of the forest and it is caused by a number of important factors:

i. *Clearing Land for Agriculture:* Historically, with the rise in population, the area under cultivation expanded to the extent that even marginal lands were cleared for cultivation. Recent studies, however, suggest that due to low productivity, harsh working conditions, and mass migration, this trend is declining in the hills but still prevalent in Terai. The process of migration from the hills into Terai began in the 1950's, is continuing and increasing demands are being made for arable land. As the area becomes more accessible through improvements in the road infrastructure, land pressures could pose a threat to the fragile forest environment of Terai.

ii. *Cutting timber:* Until recently, this was second uncontrolled factor responsible for the deforestation. Rapid growth in urban population exerted too much pressure on the forest for hard wood for housing and other infrastructures. This has led to uncontrolled extensive cutting of trees. Beside this timber was one of Nepal's major exports to India until recently, but is no longer so.

Degradation (the removal of forest products in excess of the natural regenerative capacity): This is more widespread. The causes are related to increasing populations. In all parts of the country, and the proportional increase in demands for timber, fuelwood, litter, fodder and forest products. The main causes of forest degradation are over cutting of fuelwood; severe lopping of trees for fodder, setting fires; illicit felling of trees for timber smuggling; and poorly planned resettlement programme.

Soil Erosion

The erosion processes in the hill and mountain areas are complex and include —natural" (geological) and —accelerated" (man-induced) erosion. Natural erosion is very high because of constant tectonic uplifting of the major mountain ranges and consequent down cutting of the river system. Natural erosion is characterized by different forms of mass wasting, particularly rock failure, landslides, slumps, riverbank cutting. The natural erosion rates in the rugged mountain are high.

In addition to these natural erosion, human activities of deforestation; improper cultivation practices; overgrazing, cultivation shifting of land and developmental work induces accelerated soil erosion. The most serious problem is the loss of topsoil from cultivated and grazing land. As top soil erodes, soil fertility declines and the soil loss is less able to maintain its productive capacity.

In all the cases the soil erosion determining factors are erosive rainfall (1.5 mm in 30 minute), soil erodibility (especially red and sedimented soil), and slope (greater than 30 degrees) of the land.

Another important factor responsible for soil erosion is the rivers' high sediment loads that reduces the useful storage capacity of man-made reservoir, silt deposition in irrigation canals. During the peak discharges, sedimentation results in abrupt river channel changes, causing huge losses in arable land in low-lying areas.

6. POLLUTION PROBLEMS

6.1 Water Pollution

The issue of water pollution is very critical in Nepal. The study shows that waterborne disease account for 15 percent of all their cases and 8 percent of deaths. The proportion is higher among children and much higher for infants 0.4 years-41 percent of all cases, and 32 percent of deaths. Recent studies shows that in most part of country the bacteriological quality of water is far from safe.

Many studies have been conducted to monitor the surface and ground water quality of Kathmandu valley as well as other major cities of the Kingdom. In most of all the cases rivers maintain good chemical and biological water quality before it enters the urban areas, where ecological breakdown occurs. In all cases untreated city sewage and industrial effluent increases the pollutant concentration to levels that not only destroy the self-purification capacity of the river but also the aquatic life. The extent of water pollution in and around urban areas is fast becoming a matter of grave concern.

The review of previous studies indicates that domestic wastewater is the main factor affecting river and other water bodies as ponds, lakes and under ground water bodies. Domestic wastewater responsible for over 90 percent river pollutants and other 10 percent is contributed by industrial, agricultural, and services industries. Shallow ground water is extremely polluted because of the lack of sewerage facilities and over 30 percent of the deep-water aquifers are contaminated with colliform bacteria. The common practice of dumping solid waste on the river and stream banks is wide spread and shows no sign of being curtailed. There are different Acts and Regulation as: The Soil and Water Conservation Act; Nepal Water Supply Corporation Act (NWSC); Solid Waste Act 1986; and The Canal (Irrigation, Electricity and Related Water Resources) Act forbid polluting any water resources in the country, but due to lack of enforcement mechanism non of these Acts and Regulations have been implemented.

6.2 Air Pollution

The extent of air pollution in urban areas is also increasing. Mass migrations of rural populations into the cities resulting in increase of commercial and industrial activities exerting sever strain on natural resources. The results, the release of pollutant in the atmosphere outstripping the carrying capacities of major urban cities. The monitoring work carried out in Kathmandu and other heavily populated industrial and commercial cities have shown that vehicular and industrial emission is the major source of pollution. In crowded cities like Kathmandu where topographical condition is unfavorable for dispersion of pollutants, the pollutant load in the air, especially in and around the core area, is very alarming. Major pollutants are suspended particulate matter, Sulphur Dioxide, Oxide of Nitrogen, Carbon Monoxide and hydro- carbons. Lack of pollution control facilities, poor fuel quality, condition and age of vehicles, road conditions, general awareness, weak enforcement mechanism and lack of commitment on the side of government are the major reasons behind this.

7. LEGAL FRAMEWORK

The Constitution of the Kingdom of Nepal (1990); Environmental Protection Act, 1997(Environment Protection Regulations (1997) and its 1st Amendment (2055, 1998); ODS Consumption (Control) Rules, 2001 Animal Slaughter House and Meat Inspection Act, (1998) Hygiene; Consumer Protection Act, 2054 (1997) Food safety; Environment Protection Act, (1996); Environmental Planning Guidelines, (1998); Explosives Act, (1961); Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982)

PAKISTAN

1. GEOGRAPHICAL

Location Southern Asia, bordering the Arabian Sea, between India on the east and Iran and Afghanistan on the west and China in the north

Geographic coordinates 30 00 N, 70 00 E

Map references Asia

Area
total: 803,940 sq km
land: 778,720 sq km
water: 25,220 sq km

Area—comparative slightly less than twice the size of California

Land boundaries
total: 6,774 km
border countries: Afghanistan 2,430 km, China 523 km, India 2,912 km, Iran 909 km

Coastline: 1,046 km

Maritime claims
contiguous zone: 24 nm
continental shelf: 200 nm or to the edge of the continental margin
exclusive economic zone: 200 nm
territorial sea: 12 nm

Climate mostly hot, dry desert; temperate in northwest; arctic in north

Terrain flat Indus plain in east; mountains in north and northwest; Balochistan plateau in west

Elevation extremes
lowest point: Indian Ocean 0 m
highest point: K2 (Mt. Godwin-Austen) 8,611 m

Natural resources land, extensive natural gas reserves, limited petroleum, poor quality coal, iron ore, copper, salt, limestone

Land use
arable land: 27%
permanent crops: 1%
permanent pastures: 6%
forests and woodland: 5%
other: 61% (1993 est.)

Irrigated land 171,100 sq km (1993 est.)

Natural hazards frequent earthquakes, occasionally severe especially in north and west; flooding along the Indus after heavy rains (July and August)

Geography—note controls Khyber Pass and Bolan Pass, traditional invasion routes between Central Asia and the Indian Subcontinent

Population 135,135,195 (July 1998 est.)
note: population figures based on 1981 national census results—1998 census results are pending

Population growth rate 2.2% (1998 est.)

Government type federal republic

National capital Islamabad

2. ENVIRONMENT ISSUES

Water pollution from raw sewage, industrial wastes, and agricultural runoff; limited natural fresh water resources; a majority of the population does not have access to potable water; deforestation; soil erosion; desertification

Environment—international agreements
party to: Biodiversity, Climate Change, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Wetlands
signed, but not ratified: Marine Life Conservation

3. LEGAL SYSTEM

Based on English common law with provisions to accommodate Pakistan's status as an Islamic state; accepts compulsory ICJ jurisdiction, with reservations

Legislative branch bicameral Parliament or Majlis-e-Shoora consists of the Senate (87 seats; members indirectly elected by provincial assemblies to serve six-year terms; one-third of the members up for election every two years) and the National Assembly (217 seats; 207 represent Muslims and 10 represent non-Muslims; members elected by popular vote to serve five-year terms).

Judicial branch Supreme Court, judicial chiefs are appointed by the president; Federal Islamic (Shari'at) Court

Constitution 10 April 1973, suspended 5 July 1977, restored with amendments 30 December 1985

4. ECONOMY

Pakistan continues to suffer through a damaging foreign exchange crisis. The crisis stems from years of loose fiscal policies that exacerbated inflation and allowed the public debt, money supply, and current account deficit to explode. In April 1997, the then Prime Minister SHARIF introduced a stimulus package of tax cuts intended to boost failing industrial output and spur export growth. At that time, the IMF endorsed the program, paving the way for a $1.5 billion Enhanced Structural Adjustment Facility. Although the economy showed signs of improvement following the measures, SHARIF has refused to implement the tough structural reforms necessary for sustained, longer-term growth. As a consequence, at yearend 1997, industrial production continued to flag, foreign exchange reserves continued to teeter around $1 billion—only four weeks of imports—and borrowing to support the budget deficit already exceeded the amount allocated for the entire fiscal year. At the same time, the government must cope with long-standing economic vulnerabilities—inadequate infrastructure, low levels of literacy, and increasing sectarian, ethnic, and tribal violence.

Agriculture—products cotton, wheat, rice, sugarcane, fruits, vegetables; milk, beef, mutton, eggs

Exports
total value: $8.2 billion (FY96/97)
commodities: cotton, textiles, clothing, rice, leather, carpets
partners: EU, US, Hong Kong, Japan

Imports
total value: $11.4 billion (FY96/97)
commodities: petroleum, petroleum products, machinery, transportation equipment, vegetable oils, animal fats, chemicals
partners: EU, Japan, US, China

5. ADMINISTRATIVE CONTROL

(a) national council for conservation of wildlife in Pakistan.
(b) Pakistan forest institute.
(c) zoological survey of Pakistan.
(d) Pakistan environmental protection agency (pak-epa)

Federal Institutions:

(a) promotion of local government institutions
(b) planning and coordination;
(c) grants-in-aid; and
(d) international aspects including liaison with community development and local government institutions in other countries.

6. CRITICAL ENVIRONMENTAL ISSUES

Environmental Issues

The fear of an imminent environmental crisis, which was previously restricted to the small-developed countries, has suddenly acquired global dimensions. The unbridled development and growth without regard to the environment is leading to resource depletion, pollution and degradation of ozone layer. These global issues have alarmed the government and international organizations and give rise to a number of problem vis-à-vis the handling of these problems. The developing countries due to the lack of economic resources and prevalent poverty find it extremely difficult to strike a balance between raising the low standard of living of the people and protection of the environment. Efforts at a global level are needed to confront or dear with the environmental forums.

Pakistan is situated in the South Asian peninsula with a population of 131 Million. It has very diverse topography and climatic zones, with 5 majors ethnic groups spread over the country. Government has recently started taking great interest in environmental affairs. A very high rate of population growth, poverty, illiteracy and ineffective enforcement of environmental legislation has contributed to the rapidly deteriorating environment in the country. Industrial and vehicular emission and lack of waste disposal system are causing air pollution. There is a serious lack of infrastructure for clean water supply. There are practically no international level sewage treatment plants in Pakistan. The marine life is under great threat due to influx of industrial wastes and oil spills into water bodies, such as the Karachi harbor. Almost 40% of arable land is non-productive. Water logging and salinity are rapidly making millions of hectors of land non-cultivable.

There is an acute shortage of forests; the existing ones are being cut down to supply fuel-wood various animal, bird and plant species are facing extinction due to deforestation and hunting.

Development Issues

a. Involvement of bureaucratic system to solve environmental problems which lacks a more imaginative and creative approach.
b. Irrational pricing and cost recovery policies regarding water, electricity, gas and fertilizers, giving no incentive for efficient end-use.
c. Prevalent protectionism for local industry.
d. Weak enforcement of existing environmental legislation.
e. Lack of funding and commitment for mass programs.
f. Safe drinking water supplies and waste disposal/recycling are the major issues, which merit the attention of the government.

Ministry of Environment, Local Government and Rural Development is functioning actively to solve the country's environmental problems. The Pakistan Environmental Protection Act, 1997, has been enforced to protect the environment. Environmental Protection Agencies (EPAs) have been set up in all of the four provinces. Pakistan Environmental Protection Council (PEPC), headed by the Prime Minister is actively engaged in-countering the environmental problems. Pakistan became the 23rd country in the world to adopt a National Conservative Strategy (NCS), in March 1992. The NCS is a policy document on environmental conservation, containing the viewpoint of experts and individuals from all sectors of the socio-economic set up.

7. PROBLEMS CAUSES AND RESPONSES

Increase in Population

The total population of Pakistan on January 01, 1997 estimated was at 131 million. With the current high growth rate of 3% per annum, Pakistan's population would cross 135 million by the end of this century. Pakistan's population growth rate has been increasing gradually since 1931 onwards, though there has been some decrease in it between 1972-1981. This growth rate causes high unemployment and puts pressure on public services such as electricity, water supply and sewerage-thus giving rise to unhygienic lifestyle of a large number of people, which ultimately deteriorates the environment.

Hence, there is an urgent need to curb the high population growth rate to enable the nation to evenly distribute its resources and infrastructure among the population. For this purpose the National Conservation Strategy (NCS) prepared by the Government of Pakistan proposed a project to integrate environment and population programs. This project consists of 3 components which are as under:-

1. Acceleration of conventional population welfare program through health system and NGOs.
2. Involvement of resource sector extension agents in disseminating family planning goals.

Intensive population program in fragile areas with high fertility rates.

8. LEGAL FRAMEWORK

Constitution of Pakistan, 1973; Environmental Protection Ordinance (PEPO), 1983;Pakistan Environment Protection Act, 1997; Environmental Quality Standards; Fisheries Act, 1997; Pakistan Environment Protection ordinance 1983, revised in 1997; The West Pakistan Regulation and Control of Loudspeakers and Sound Amplifiers Ordinance (11), 1965; The Pakistan Agricultural Pesticides Act, 1972 Pesticide rules The Canal and Drainage Act (No. VIII) 1873 amended in 1952, 1965, 1968, 1970; The Sind ligation Act, 1879

amended in 1961, 1969; The West Pakistan Water and Power Development Act, 1958. amended in 1958, 1964, 1967; The West Pakistan Land and Water Development Board (Authority for payment from Board Fund) Rules, 1966

SRI LANKA

1. GEOGRAPHICAL

Location: Southern Asia, island in the Indian Ocean, south of India
Geographic coordinates: 7 00 N, 81 00 E
Map references: Asia
Area:
T*otal:* 65,610 sq km
L*and:* 64,740 sq km
W*ater:* 870 sq km
Area—comparative: Slightly larger than West Virginia
Land boundaries: 0 km
Coastline: 1,340 km
Maritime claims:
C*ontiguous zone:* 24 nm
C*ontinental shelf:* 200 nm or to the edge of the continental margin
E*xclusive economic zone:* 200 nm
T*erritorial sea:* 12 nm
Climate: Tropical monsoon; northeast monsoon (December to March); southwest monsoon (June to October)
Terrain: Mostly low, flat to rolling plain; mountains in south-central interior
Elevation extremes:
Lowest point: Indian Ocean 0 m
H*ighest point:* Pidurutalagala 2,524 m
Natural resources: Limestone, graphite, mineral sands, gems, phosphates, clay
Land use:
A*rable land:* 14%
P*ermanent crops:* 15%
P*ermanent pastures:* 7%
F*orests and woodland:* 32%
O*ther:* 32% (1993 est.)
Irrigated land: 5,500 sq km (1993 est.)
Natural hazards: Occasional cyclones and tornadoes
Geography: Strategic location near major Indian Ocean sea lanes
Population: 18,933,558 (July 1998 est.) *note:* since the outbreak of hostilities between the government and armed Tamil separatists in the mid-1980s, several hundred thousand Tamil civilians have fled the island; as of late 1996, 63,068 were housed in refugee camps in south India, another 30,000-40,000 lived outside the Indian camps, and more than 200,000 Tamils have sought political asylum in the West
Legal system: A highly complex mixture of English common law, Roman-Dutch, Muslim, Sinhalese, and customary law; has not accepted compulsory ICJ jurisdiction
Legislative branch: Unicameral Parliament (225 seats; members elected by popular vote on the basis of a modified proportional representation system to serve six-year terms)

Judicial branch: Supreme Court, judges are appointed by the Judicial Service Commission; Court of Appeals

2. ECONOMY—OVERVIEW

At independence in 1948, plantations growing tea, rubber, or coconuts and paddies growing rice for subsistence dominated Sri Lanka's economy, and, as late as 1970, plantation crops accounted for 93% of exports. In 1977, Colombo abandoned statist economic policies and its import substitution trade policy for market-oriented policies and export-oriented trade. Sri Lanka's most dynamic industries now are food processing, textiles and apparel, food and beverages, telecommunications, and insurance and banking. By 1996 plantation crops made up only 20% of exports, while textiles and garments accounted for 63%. GDP grew at an annual average rate of 5.5% throughout the 1990s until a drought and a deteriorating security situation lowered growth to 3.8% in 1996. The economy rebounded in second half 1996, however, and continued to perform well in 1997 with growth of 6%. Sustained economic growth, coupled with population growth of only 1.1%, has pushed Sri Lanka from the ranks of the poorest countries in the world up to the threshold of the middle income countries. For the next round of reforms, the Central Bank of Sri Lanka recommends that Colombo expand market mechanisms in nonplantation agriculture, dismantle the government's monopoly on wheat imports, and promote more competition in the financial sector. A continuing cloud over the economy is fighting between the Sinhalese and the minority Tamils, which has cost 50,000 lives in the past 14 years.
GDP: Purchasing power parity—$72.1 billion (1997 est.)
GDP—real growth rate: 6% (1997 est.)
GDP—per capita: Purchasing power parity—$3,800 (1997 est.)
GDP—composition by sector:
Agriculture: 18.4%
Industry: 18%
Services: 63.6% (1996)
Budget:
Revenues: $3 billion
E*xpenditures:* $4.2 billion, including capital expenditures of $1 billion (1997 est.)
Industries: Processing of rubber, tea, coconuts, and other agricultural commodities; clothing, cement, petroleum refining, textiles, tobacco
Industrial production growth rate: 6.5% (1996 est.)
Electricity—capacity: 1.557 million kW (1997 est.)
Electricity—production: 4.86 billion kWh (1997 est.)
Electricity—consumption per capita: 220 kWh (1997 est.)
Agriculture—products: rice, sugarcane, grains, pulses, oilseed, roots, spices, tea, rubber, coconuts; milk, eggs, hides, meat.

3. ENERGY

In 1998, Sri Lanka consumed 0.17 quadrillion Btu (quads) of commercial energy and produced 0.04 quads. Sri Lankan commercial energy consumption consisted of oil (76%) and hydroelectricity (24%). In addition, Sri Lanka consumes large amounts of noncommercial fuel, specifically biomass, nearly all of which is wood. Biomass consumption is increasing by about 3% annually. Overall, biomass accounts for about 55% of Sri Lanka's total energy consumption. Biomass is consumed mainly by households, and Sri Lanka has, in the past, run successful wood stove programs.
Sri Lanka's government controls the price of petroleum and electricity. In addition, utilities are subsidized and power is sold at below-market rates. In 2000, Sri Lanka paid an additional $250 million in fuel import bills due to increased prices and also higher oil imports.

4. ENVIRONMENTAL OVERVIEW

Total Energy Consumption (1998E): 0.2 quadrillion Btu* (0.04% of world total energy consumption).

Energy-Related Carbon Emissions (1998E): 2.4 million metric tons of carbon (0.04% of world carbon emissions).
Sectoral Share of Energy Consumption (1997E): Residential (50.8%), Industrial (23.5%), Transportation (20.5%), Commercial (5.0%)
Sectoral Share of Carbon Emissions (1997E): Transportation (53.0%), Industrial (26.7%), Residential (16.3%), Commercial (3.9%)
Fuel Share of Energy Consumption (1998E): Oil (76.0%)
Fuel Share of Carbon Emissions (1998E): Oil (99.9%), Coal (0.1%)
Renewable Energy Consumption (1997E): 205 trillion Btu* (6% increase from 1996)
Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified November 23rd, 1993). Not a signatory to the Kyoto Protocol.

Major Environmental Issues: Deforestation, soil erosion, wildlife populations threatened by poaching; coastal degradation from mining activities and increased pollution; freshwater resources being polluted by industrial wastes and sewage runoff.

Major International Environmental Agreements: A party to Conventions on Biodiversity, Climate Change, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Nuclear Test Ban, Ozone Layer Protection, and Wetlands. Has signed, but not ratified: Marine Life Conservation

5. LEGAL FRAMEWORK

National Environment Act, 1980; National Environment (Amendment) Act, 1988; Control of Pesticide Act, 1980; Coast Conservation Act, 1981; Coast Conservation (Amendment) Act, 1988;Marine Pollution Prevention Act, 1981; Fisheries and aquatic resources Act, 1996; Forestry Ordinance, the Flora & Fauna Act, the Fisheries Act; National Environmental (Protection and quality) Regulation, 1990; National Environmental (Noise Control) Regulation,1996; National Environmental (Noise Control) Amendment Regulation,1997;

CONCLUSION OF THE CHAPTER

South Asia today stands at a crossroad. A decade after Rio, it is still ridden with poverty and natural resources degradation. On the other hand, immense latent potential exists within the member countries. There is a broad consensus on the thematic priorities of poverty eradication, managing population growth, conserving natural resources and building macro-economic stability. However, the challenge is for more action and accountability at various levels.

Besides housekeeping within the countries, the sustainable development processes initiated at the local and national levels need to be multiplied exponentially. This is possible only through much stronger Sub-regional cooperation, keeping aside socio-political differences. South Asia today has immense potential in all the three key inter-related components of sustainable development.

On the social front are the unique diversity of traditional values, arts, crafts and cultural practices, besides modern industrial products, services and pool of contemporary brainpower. On the environment front the sub-region is endowed with approximately 15% of the known biological wealth of the world. Finally on the economic front, besides being the second fastest growing region in the world, the sub-region also has the largest consumer base. The initiatives required are fairly well known. The political will for cooperation supported by a robust operational mechanism can transform the sub-region into a strong and sustainable entity within the global community.

The sub-region also needs to take a leadership role in making global systems more responsive and accountable to regional and local needs. An important step in this direction was taken at Johannesburg by strongly advocating the concerns and approaches based on the experiences of the developing world.

REFERENCES:

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Annual Report 2000-2001, Ministry of Environment & Forests
3. Akhtar, S. M. 1978. Economic Development of Pakistan. Vol. 2. Publishers United Ltd , Lahore
4. Centre for Science and Environment, State of Indian Environment: Citizen's fifth report 1999
5. Country Profile on Environment Bangladesh, 1999
6. Country Profile on Environment –Bangladesh, 1997, JICA
7. Central Bureau Statistics, 1994a. A Compendium on the Environmental Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
8. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, lslamabad
9. Government of India, Planning Commission Ninth Five Year Plan 1997-2002
10. Human Development Report 1999, UNDP
11. IUCN and EUAD. 1991. National conservation strategy, IUCN and EUAD, Pakistan.
12. MoEF (1997) White paper on pollution in Delhi with *an action plan.* New Delhi: Ministry of Environment and Forests.
13. Ministry of Finance, Nepal,1996. Economic Survey 1995/96.
14. National Planning Commission, 1970. The Fourth Five-Year Plan (1970-1975).
15. National Planning Commission, 1975. The Fifth Five-Year Plan (1975-1980).
16. National Planning Commission, 1980. The Sixth Five-Year Plan (1980-1985).
17. National Planning Commission, 1992. The Eighth Five-Year Plan (1992-1997).
18. National Planning Commission, 1997. Unpublished draft note on the preparation of the Ninth Five-Year Plan (1997-2001) document.
19. National Planning Commission/ World Conservation Union, 1991a. A legislative and institutional framework for environmental management in
20. Nepal, National Conservation Strategy Implementation Project.
21. National Planning Commission/World Conservation Union, 1991b. Sources of industrial pollution in Nepal: a national survey, National Conservation Strategy Implementation Project.
22. National Planning Commission/World Conservation Union, 1992. Developing a national system of environmental planning in Nepal, proceedings of a Workshop on the National Conservation Strategy Implementation Project, held in Kathmandu, 1992.
23. National Planning Commission/World Conservation Union, 1993. National Environmental Impact Guidelines, National Conservation Strategy Implementation Project.
24. National Planning Commission/World Conservation Union, 1995.Regulating growth: Kathmandu Valley, main report (draft),
25. National Conservation Strategy Implementation Project, National Planning Commission.
26. National Planning Commission/World Conservation Union, 1996a. NCS Nepal Newsletter of the National Conservation Strategy Implementation Project, vol. IV, No. 2, 1996,

27. National Planning Commission/World Conservation Union, 1996b. Sector Action Plans (forestry, industry, water resources), Nepal Environmental Policy and Action Plan, Phase II, final report, National Conservation Strategy Implementation Project.
28. Planning Commission, *Eighth Five Year Plan, 1992-97,* vol. n (New Delhi, 1992)
29. Planning Commission, *Draft Sixth Five Year Plan 1978-83,* revised (New Delhi,1978
30. Planning Commission, *Eighth Five Year Plan, 1992-97,*
31. Pachauri, R.K.; Sridharan, P.V. (1998) *Looking Back* to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
32. S. Singh, 'Eco-Funds: Budgeting for Environment', The Hindu Survey of the Environment (Madras: The Hindu, 1993
33. The State of India's Environment, 1982, A Citizens' Report (New Delhi: Centre for Science and Environment, 1982
34. The World Fact Book 1999, CIA
35. UNDP Human development report, 1998
36. World Development Indicators, 1999, The World Bank
37. World Development Report, 1999, The World Bank

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER III

OVERVIEW OF CONSTITUTIONAL, LEGISLATIVE AND INSTITUTIONAL FRAMEWORK

CONSTITUTIONAL FRAMEWORK BANGLADESH

Key Issues: No Specific Provisions for right to clean Environment as a fundamental right

Key Provisions: Constitution of Government of Bangladesh (Articles 23, 24, 31 and 32) relates to different facets of Environment;

Key Institutions: Supreme Court of India; High Courts; District Courts; Authorities; Tribunals

1. INTRODUCTION

Like other nations of the South Asia region, Bangladesh also initiates to the global call for the protection and conservation of her natural environment and ecology. The Constitution of Bangladesh asserts that it should be a fundamental responsibility of the state to attain, through planned economic, a constant increase of productive forces and a steady improvement in the material and cultural standard of living of the 'people' (Artlcle-15). Subsequently, in response to the above constitutional commitment, the country has so far signed to 22 international conventions, treaties and protocol related to the environment.

2. CONSTITUTIONAL PROVISIONS

Constitution of the People's Republic of Bangladesh as amended through 1986.

Part II, Art. 23
The state shall adopt measures to conserve the cultural traditions and heritage of the people and so foster and improve the national language, literature and the arts that all sections of the people are afforded and the opportunity to contribute towards and to participate in the enrichment of the national culture.

Part II, Art. 24
The state shall adopt measures for the protection against disfigurement, damage or removal of all monuments, objects or places of special artistic or historic importance or interest.

Part III, Art. 31
To enjoy the protection of law, and to be treated in accordance with the law, and only in accordance with the law, is the inalienable right of every citizen, wherever he may be, and of every other person for the time being within Bangladesh, and in particular no action detrimental to the life, liberty, body, reputation or property of any person shall be taken except in accordance with the law.

Part III, Art. 32
No person shall be deprived of life or personal liberty save in accordance with the law.

The Constitution of Bangladesh does not explicitly provide for the right to a healthy environment as a fundamental right. Article 31 however states “every citizen has a right to protection from action detrimental to life, liberty, body, reputation or property unless these are taken in accordance with law”. Article 32 states,

"no person should be deprived of right or personal liberty save in accordance with law". These two articles together incorporate a fundamental right to life. The next question is whether the right to live includes the right to an environment capable of supporting the growth of meaningful existence of life, or a right to a healthy environment. In two recent cases, this question has been dealt with in a positive fashion. In *Dr. Mohiuddin Farooque v. Bangladesh and others,* the Court reiterated Bangladesh's commitment "in the context of engaging concern for the conservation of environment irrespective of the locality where it is threatened. In this judgment it is expounded "Articles 31 and 32 of our Constitution protect life as a fundamental right. It encompasses in its ambit the protection and preservation of its environment, ecological balance free from pollution of air and water, sanitation without which life can hardly be enjoyed. Any act or omission contrary thereto will be in violation of this same right to life."

Moreover, the Constitution of Bangladesh make special provisions in favour of women or children or for the advancement of any backward section of citizens under the Article 28.4 of Constitution. The Article reflects the right of the State to make special provisions, although backward sections and groups cannot ask for development as an enforceable right. The Fundamental Principles of State Policies stipulated in Part II of the Constitution spell out certain aims of the State in promoting development. They form the basis of every law and guide its interpretation. They also guide the works of the State and citizens. Important among them is Article 15, which provides for the fundamental responsibility of the State to attain, through planned economic growth, the constant increase of productive forces and the improvement in the material and cultural standards of living of the people, to be secured for every citizen

The High Court, in the case of *Dr. Mohiuddin Farooque v. Bangladesh and others* (48 DLR 1996, p.438) stated that the right to life includes the right to fresh air and water and a situation beyond animal existence in which one can expect normal longevity of life. Hence, it appears that the right to a healthy environment has now become a fundamental right, as was with case laws, which puts an additional responsibility upon the judiciary to ensure that Rule of Law is guaranteed in cases where the sustainability of a proposed development project is questionable. The Bangladesh Constitution states that no one can be denied the right to life and property except in accordance with law and if those rights are taken away, compensation must be paid. The laws that regulate a development programme in a particular sector usually allow objections to be raised and provide for compensation of all rights and interests affected by relevant projects. Therefore, the people who are adversely affected have the right to ask for compensation.

CONSTITUTIONAL FRAMEWORK INDIA

Key Issues: No Specific Provisions for right to clean environment as Fundamental Right

Key Provisions: Constitution of Government of India (Articles 21, 32, 48 A, 51A (g), and article 226 related to Environment

Key Institutions: Supreme Court of India; High Courts; District Courts; Authorities; Tribunals

1. INTRODUCTION

The Constitution of India is perhaps the first of its kind to provide for protection and safeguard of the environment through the Directive Principles and the Fundamental Duties. There are several laws under the Union List, State List and the Concurrent Lists that make specific provisions for protection of the environment. Although there were several provisions which dealt with environmental problems and concerns even before the first conference on environment in Stockholm in 1972, all the specific sectoral laws were enacted thereafter.

The main sources of law in India are the Constitution, statutes (legislation), customary law and case law. Statutes are enacted by Parliament, state legislatures and Union Territory legislatures. Besides, there is a vast body of laws known as subordinate legislation in the form of rules, regulations as well as bye-laws made by Central/State governments and local authorities like municipal corporations, municipalities, gram panchayats and other local bodies. This subordinate legislation is made under the authority conferred or delegated either by Parliament or stake or Union Territory legislatures concerned. Judicial decisions of superior courts like Supreme Court and High Courts are important sources of law. Decisions of Supreme Court are binding on all courts within the territory of India. As India is land of diversities, local customs and conventions which are not against statute, morality, etc. are to a limited extent also recognized and taken into account by courts while administering justice in certain spheres.

2. CONSTITUTIONAL PROVISIONS

Constitution (52nd Amend.) Act, 1985

Article 19 Protection of certain rights regarding freedom of speech etc. (I) All citizens shall have the right (a) to freedom of speech and expression;

Article 21 Protection of life and personal liberty No person shall be deprived of his life or personal liberty except according to procedure established by law

Article 32 Remedies for enforcement of rights conferred by this Part
(1) The right to move the Supreme Court by appropriate proceedings for the enforcement of the rights conferred by this Part is guaranteed.

(2) The Supreme Court shall have power to issue directions or orders or writs, including writs in the nature of habeas corpus, mandamus, prohibition, quo warranto and certiorari, whichever may be appropriate, for the enforcement of any of the rights conferred by this Part.

(3) Without prejudice to the powers conferred on the Supreme Court by clauses (1) and (2), Parliament may by law empower any other court to exercise within the local limits of its jurisdiction all or any of the powers exercisable by the Supreme Court under clause (2).

(4) The right guaranteed by this article shall not be suspended except as otherwise provided for by this Constitution.

Article 47 Duty of the State to raise the level of nutrition and the standard of living and to improve public health. The State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties and, in particular, the State shall endeavour to bring about prohibition of the consumption except for medicinal purpose of intoxicating drinks and of drugs which are injurious to health.

Article 142 Enforcement of decrees and orders of Supreme Court and orders as to discovery, etc.

The Supreme Court in the exercise of its jurisdiction may pass such decree or make such order as is necessary for doing complete justice in any cause or matter pending before it, and any decree so passed or order so made shall be enforceable throughout the territory of India in such manner as may be prescribed by or under any law made by Parliament and, until provision in that behalf is so made, in such manner as the President may by order prescribe. (2) Subject to the provisions of any law made in this behalf by Parliament, the Supreme Court shall, as respects the whole of the territory of India, have all and every power to make any order for the purpose of securing the attendance of any person, the discovery or production of any documents, or the investigation or punishment of any contempt of itself.

Article 226 Power of High Courts to issue certain writs

(1) Notwithstanding anything in article 32, every High Court shall have power, throughout the territories in relation to which it exercises jurisdiction, to issue to any person or authority, including in appropriate cases, any Government, within those territories directions, orders or writs, including writs in the nature of habeas corpus, mandamus, prohibition, quo warranto and warranto and certiorari, or any of them, for the enforcement of any of the rights conferred by Part III and for any other purpose.

(2) The power conferred by clause (1) to issue directions, orders or writs to any Government, authority or person may also be exercised by any High Court exercising jurisdiction in relation to the territories within which the cause of action, wholly or in part, arises for the exercise of such power, notwithstanding that the seat of such Government or authority or the residence of such person is not within those territories.

(3) Where any party against whom an interim order, whether by way of injunction or stay or in any other manner, is made on, or in any proceedings relating to, a petition under clause (1), without - (a) furnishing to such party copies of such petition and all documents in support of the plea for such interim order; and (b) giving such party an opportunity of being heard, makes an application to the High Court for the vacation of such order and furnishes a copy of such application to the party in whose favour such order has been made or the counsel of such party, the High Court shall dispose of the application within a period of two weeks from the date on which it is received or from the date on which the copy of such application is so furnished, whichever is later, or where the High Court is closed on the last day of that period, before the expiry of the next day afterwards on which the High Court is open; and if the application is not so disposed of, the interim order shall, on the expiry of that period, or, as the case may be, the expiry of the said next day, stand vacated.

(4) The power conferred on a High Court by this article shall not be in derogation of the power conferred on the Supreme Court by clause (2) of article 32. Appendix- Part A

One of the unique features of the Indian Constitution is that notwithstanding the adoption of a federal system and existence of Central Acts and State Acts in their respective spheres, it has generally provided for a single integrated system of courts to administer both Union and state laws. At the apex of the entire judicial system exists Supreme Court of India with a High Court of each state or group of states, and under High Courts, there is a hierarchy of subordinate courts. There is separation of judiciary from

executive. Panchayat courts also function in some states under various names like Nyaya Panchayat, Panchayat Adalat, Gram Kachheri, etc., to decide civil and criminal disputes of petty and local nature. Different state laws provide for different kinds of jurisdiction of courts.

Each state is divided into judicial districts presided over by a District and Sessions Judge, who is the principal civil court of original jurisdiction and can try all offences including those punishable with death. He is the highest judicial authority in a district. Below him, there are courts of civil jurisdiction, known in different states as munsifs, sub-judges, civil judges and the like. Similarly, criminals, judiciary comprises chief judicial magistrate.

The Constitution of India empowers Parliament to make laws to fulfil India‟s international obligation as well as any decision made at any international conference, association or body. The Article States:

> *Notwithstanding anything in the foregoing provision of the chapter, Parliament has power to make any law for the whole or any part of the territory of India for implementing any treaty, agreement or convention with any other country or countries or any decision made at any international conference association or other body.*

Parliament has used its power under Article 253 to enact the Air (Prevention and Control of Pollution) Act of 1981 and the Environment (Protection) Act of 1986. The preamble of both the laws states that these were enacted to implement the decisions reached at the United Nations Conference on the Human Environment held at Stockholm in 1972. At the Conference, members of the United Nations agreed to work to preserve the world‟s natural resource and called on each country to carry out this goal.

3. CONSTITUTION FORTY SECOND AMENDMENT

The adoption of the Stockholm Declaration on the Human Environment in 1972 has provided the necessary impetus to all nation states to evolve some viable plan of action for the preservation and improvement of the global environment. Initially, the Constitution of India had no direct provision for protection of environment but taking note of the Stockholm Conference and a growing awareness of the environment crises, a direct provision was incorporated for protection of the environment by the Government of India, in 1976 through the Forty Second Amendment. It exhibited its commitment to environment by inserting an Article, a new directive principle of state policy which reads:

> *The State shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country.*

By the same amendment it created through Article 51(A)g, a fundamental duty of citizen by adding

> *It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife.*

The above two provisions make it amply clear that the protection of environment is not the obligation of the state but also the fundamental duty of each and every citizen of India. These constitutional directions complied with government obligation under Stockholm Declaration paved the way for the enactment of statutory laws to prevent the environment pollution.

The Constitution (Forty Second Amendment) Act, 1976 is a landmark development in the filed of environment law. It enabled the Centre to enact laws. It transferred to the concurrent list some areas, which were originally, dealt with by the Sates to legislate. By this, the Centre has the power to make laws on the forests, wildlife and population control. India being a federation, the provisions contained in Part IX “Relation between the Union and the State” of the Constitution govern the legislative relations between Union and States. Parliament can make laws with respect to the matters contained in the Union List and State Legislature with respect to the matters contained in State List of the Seventh Schedule. But

Parliament and the legislature of any State are competent to make laws with respect to any of the matters contained in the concurrent list of the Seventh Schedule. Parliamentary legislation on the matters in the concurrent list is paramount. Parliament legislation also enjoys the power to make laws in respect to any matter for any part of the territory of India not included in the State list.

Article 250 empowers the Parliament to legislate with respect to any matter in the State List, if a proclamation of emergency in operation. Article 248 empower the Parliament to legislate any subject not included in any the three lists. By virtue of the power in the filed of environment, under Article 252(2) of the Constitution, Parliament enacted the Water (Prevention and Control of Pollution) Act, 1974.

Under Article 246 of the Constitution of India, there are three lists of subjects given in the Seventh Schedule of the Constitution. List I or the Union List contains subjects over which the Union Government has exclusive powers of legislation (e.g., Defence, Foreign Affairs, Citizenship, Railways, National Highways, Shipping and Navigation of National Waterways, Banking, Insurance, Inter-state Trade and Commerce, Census, Union Public Service, etc). List II or the State List comprises subjects over which the State has exclusive jurisdiction (e.g. Public Order, Public Health and Sanitation, Agriculture, Water, Land, Fisheries etc). List III or the Concurrent List enumerates subjects on which both the Union and the State Legislatures have concurrent jurisdiction, but in case of conflict between the Union and the State law, the former would prevail (Article 254) (e.g., Criminal Law and Procedure, Marriage and Divorce, Contracts, Civil Procedure, Forests, Protection of Wild animals and Birds, Economic and Social Planning, Population Control and Family Planning, Factories, Electricity, etc). The residuary powers, i.e. the power to legislate on any subject not included in any of the above three lists, vest in the Central Government (Article 248)

Article 249 of the Constitution also empowers the Union government to legislate with respect to a matter in the State List in the national interest, if the Council of State (Upper House of the Union Parliament) has declared by resolution supported by not less than two thirds of the members present and voting that it is necessary of expedient in the national interest that Parliament should legislate on it.

Article 252 empowers the Parliament to legislate on any matter with respect to which it has no power to make laws for the States except as provided in Articles 249 and 250, if the Legislatures of two or more States pass a resolution to the effect that is desirable for it to do so.

4. THE 73RD AND 74TH CONSTITUTIONAL AMENDMENT ACT 1992

The Constitution of India by the 73rd and 74th Constitutional Amendment Act 1992, incorporated a decentralized approach to planning has been introduced in India through a system of Panchayati Raj and Nagar Palika (local self-governments of urban cities/ towns) institutions. With the enactment of the Constitution Amendment Act (1992), Panchayati Raj Institutions (PRIs) have been revitalized and a process of democratic decentralization has been ushered in:

The Constitution (73rd Amendment) Act, 1992

- Provides for constitution of local rural bodies.
- Provides for assigning functions, which include soil conservation, water management, watershed development, social and farm forestry, drinking water, etc.

The Constitution (74th Amendment) Act, 1992

Consequent to the 73rd Constitutional Amendment Act, State Governments have enacted enabling legislations providing for elected bodies at the village, intermediate and district levels, with adequate representation from the weaker sections and women. Almost all the States have constituted Panchayati Raj bodies.

- Provides for constitution of urban local bodies.
- Assigns them function of protection of environment and promotion of ecological effect.

The State Governments are further required to endow the Panchayats with power and authority necessary to enable them to function as institutions of self-government with the responsibility of preparing plans for economic development and social justice and implementing them. Correspondingly, transfer of resources would have to be effected. In addition, they would require personnel and administrative support. Staff engaged in particular works/departments should be transferred along with the work to the Panchayati Raj Institutions.

As per provisions of the Constitution 74th Amendment Act, the Urban Local Bodies/ Municipalities prepare plans for the development of urban areas. The municipalities are the focal institutions for the provision of urban infrastructure and delivery of services and the States would have to endow them with commensurate functional and financial powers and responsibilities.

While the urban local bodies would have a share in the revenue of the States, they would have to be permitted to levy their own taxes/cesses at the local level. These could include professional tax, property tax, entertainment tax and motor vehicle taxes etc. In addition, they could levy user charges and licence fees, wherever feasible. Some of the municipalities in cities could also raise resources from the market by issue of bonds.

As per Article 243 (G) of the 73rd Constitutional Amendment Act, the Panchayati Raj Institutions will prepare plans for economic development and social justice. Thus the core function of the PRIs would be planning at the local level through the institution of the District Planning Committees. The District Planning Committees will provide the umbrella for the preparation of integrated district development plan. However, certain broad principles would have to be laid down for assigning a role to each of the three-tiers; the actual devolution could be based on the rule that what can be done at a lower level should be done at that level, and not a higher level. The Gramsabha would list out priorities and assist in the selection of beneficiaries for various programmes and schemes.

In this way, the aspirations of the people would be articulated. Thereafter, the planning process would begin from below (bottoms up approach) with the preparation of village plans, which would be incorporated into the intermediate level plans and finally merged into a district plan.

5. ARTICLE 21 OF THE CONSTITUTION

The Article 21 of the Constitutions of Indian provides for right to life or personal liberty. However, the scope of this Article envisages right to an environment free of smoke and pollution for a better „quality" of life. In the various court cases on environment, the right to life and liberty has been extrapolated to right to clean environment. The Article 21 states that:

"No person shall be deprived of his life or personal liberty except according to procedure established by law."

The objective of Article 21 is to prevent encroachment upon right to life by the Executive save in accordance with law, and in conformity with the provisions thereof. The Public Interest Petitions have been founded on Article 21, to comprehend such diverse aspects as-children in jail being entitled to special treatment, health hazard due to pollution, beggars" interest in housing, health hazards from harmful drugs, right of speedy trial, handcuffing of prisoners, delay in execution of death sentence, immediate medical aid to injured persons, starvation deaths, the right to know, right to open trial, inhuman conditions.

The acceptance of Public Interest Litigation by the Supreme Court of India in judicial system in contributing much influence in the protection of environment. Social action litigation or Public Interests Litigation has come of age in India and the higher judiciary is doing a yeoman service in enforcing the rights of the Indian populace in socio-economic and environmental matters in the face of executive apathy and indifference. In the process, the Supreme Court has established in resolving these matters in commendable way.

This approach has led the Supreme Court to adopt, apply, evolve and derive a range of Principles to guide the development of environmental jurisprudence. Notable amongst the fundamental norms recognized by the court are:
(1) Every person enjoys the right to a wholesome environment, which is a fact of the right to life guaranted under Article 21 of the Constitution of India;
(2) Enforcement agencies are under an obligation to strictly enforce environmental laws;
(3) Government agencies may not plead non-availability of funds, inadequacy of staff or other insufficiencies to justify the non-perforance of their obligations under environmental laws;
(4) The „polluter pays principle" which is a part of the basic environmental law of the land requires that a polluter bear the remedial or clean up cost as well as the amount payable to compensate the victims of pollution;
(5) The „precautionary principle" requires government authorities to anticipate, prevent and attack the causes of environmental pollution. This principle also imposes the onus of proof on the developer or industrialist to slow that his or her action is environmentally benign;
(6) Government development agencies charged with decision making ought to give due regard to ecological factors including;

- the environmental; policy of the Central and State Government;
- the sustainable development and utilization of natural resources;
- the obligation of the present generation to preserve natural resources and pass on to future generations an environmental as intact as the one we inherited from the previous generation

(7) Stringent action ought to be taken against contumacious defaulters and person who carry on industrial or development activity for profit without regard to environmental laws;
(8) The poor conferred under an environmental statue may be exercised only to advance environmental protection and not for a purpose that would defeat the object of the laws;
(9) The state is the trustee of all natural resource, which are by nature meant for public use and enforcement. The public at large is the beneficiary of the sea-shore, running water, air, forests and ecologically fragile land. These resources cannot be converted into private ownership.

CONSTITUTIONAL FRAMEWORK NEPAL

Key Issues: No Specific Provisions for right to clean environment as Fundamental Right

Key Provisions: Constitution of Government of Nepal , Article 19;

Key Institutions: Supreme Court of Nepal; Courts; District Courts; Authorities; Tribunals

1. INTRODUCTION

The role of environmental considerations in national governmental policy has assumed greater prominence with the promulgation of the new Constitution, which contains certain provisions regarding the responsibility of the state to the protection of the environment.

2. CONSTITUTIONAL PROVISIONS

Constitution of Nepal as amended through 1980, Part IV, Art. 19(3)

The social objective of the Panchayat System shall be to establish a harmonious social life, based upon morality, by eliminating the obstacles that may arise in the process of mobilizing the general public for setting up of a society as envisaged by clause (1) and to maintain national unity with due regards to the existing mutual harmonious tolerance upon the cultural and traditional values of Nepal adhered to by the Nepalese citizen from time immemorial as the prosperity and glory of Nepal as well as their national character.

Under the previous Constitution, (1962), the role of the natural environment in the country‟s social and economic life was not mentioned. However, under the new "*Constitution of the Kingdom of Nepal, 1990*, which arose following the period of political realignment in Nepal, places upon the State a duty to incorporate environmental matters into its policy process. The pertinent section, Article 26(4), proclaims:

> The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness, and the State shall also make arrangement for the special protection of the rare wildlife, the forests and the vegetation.

Similarly the Constitution has made it mandatory for the government to seek ratification by a two third majority of Parliament of any treaty or agreement that involves sharing of the natural resources of Nepal and has significant, serious or long-term implications for the country.

Nepal‟s Constitution in Part IV, Article 19(3) states that the social objective of the Panchayat system shall be to establish a harmonious social life, based upon morality, by eliminating the obstacles that may arise in the process of mobilizing the general public for setting up of a society as envisaged by clause (1) and to maintain national unity with due regards to the existing mutual harmonious tolerance upon the cultural and traditional values of Nepal adhered to by the Nepalese citizen from time immemorial as the prosperity and glory of Nepal as well as their national character.

In order to speed up the matter of Environmental Protection in the Country HMG/Nepal established the "Environmental Protection Council" in 1992. The objective was to formulate and implement national

environmental policies, plans, and programs related to environmental conservation, and to coordinate the environmental related sectoral ministries and Institutions. In this direction, the first achievement was the formulation of "Nepal Environmental Policy and Action Plan (NEPAP)". NEPAP identified the existing environmental problems connected with the land utilization, forest and pasture management, water resource management, fulfillment of the basic needs, health sanitation, poverty alleviation, conservation and promotion of natural heritage, minimization of adverse environmental impacts, urban industrial development and development of physical infrastructure. It also suggested a work plan to resolve those problems associated with this Sector.

CONSTITUTIONAL FRAMEWORK PAKISTAN

Key Issues: No Specific Provisions for right to clean environment as Fundamental Right
Key Provisions: Constitution of Government of Pakistan (Articles 9,18, 199)

Key Institutions: Supreme Court of Pakistan; Provincial Courts; District Courts; Authorities; Tribunals

1. INTRODUCTION

As in the 1956 and 1962 Constitutions, the Constitution of Islamic Republic of Pakistan 1973, (including its preamble) does not specify any principle or policy objective which indicate, with regard to Environment, rights and obligations of state as well as its citizens. However, Environment is on the **"**Concurrent List**"** of the Constitution, includes the subject of "Environmental pollution and Ecology" enabling both the Federal and Provincial Governments to address environmental concerns, Thus under the Article 142, the Parliament (National Assembly and Senate) and the Provincial Assemblies are empowered to make necessary laws accordingly. This provides greater flexibility by enabling Parliament to legislate on matters of national importance and uniform or general applicability, and the Provincial Assemblies to legislate on matters of particular concern to their respective provinces.

2. CONSTITUTIONAL PROVISIONS

In the 1956 Constitution, subjects relating to the environment such as "Forests", "protection of wild animals and birds", "Prevention of cruelty to animals", "fisheries and agriculture", "water", "Public Health and Sanitation", "Industries", "Factories and Boilers" were all in the Provincial List i.e. the Provincial Legislature had exclusive power to make laws with respect to these subjects. In the 1962 Constitution, "Fishing and fisheries outside territorial waters" and "Industries owned wholly or partly by the Central Government or by a corporation set up by the Centre" were placed in the list containing matters with respect to which the Central Legislature had exclusive power to make laws.

The Constitution (In Part II, Article 9 states that n o person shall be deprived of life or liberty save in accordance with law. Part VII, Article 184 (1) - (2) … (3). The Constitution of Pakistan in fact does not have any provisions relating to the environment. However, the provisions relating to the right to liberty and right life have been interpreted by the Supreme Court of Pakistan as involving the right to environment. In this regard, the Court has referred to the Rio principles and other international laws while adjudicating on the environmental cases. Article 29 of the Constitution states that " The provisions of this Chapter do not confer or impose legal rights or obligations, and are not enforceable in any court or tribunal. No question of inconsistency with such provisions shall be raised in any court or tribunal") of **Pakistan** without prejudice to the provisions of Article 199, the Supreme Court shall, if it considers that a question of public importance with reference to the enforcement of any of the Fundamental Rights conferred by Chapter I of Part II is involved have the power to make an order of the nature mentioned in the said Article. The **Pakistan's** Draft NWFP Environmental Act 1996 - includes rights of citizens to a healthy environment, the right of access to information concerning the environment, the right of participation in decisions that affect the environment, the right to an investigation of an alleged offence under the Act, the right of employees to protect against victimization in cases where they file a report or complaint regarding contravention of the Act and the right to initiate legal action regarding failure to comply with the Act. Most cases pertaining to the environment were decided on the basis of Article 9 of the Constitution which provides for, *inter alia*, the right to life. In the case of *Shehla Zia v. WAPDA* (PLD 1994 SC 693), the Supreme Court expanded and enlarged the scope of the right to life. The court

held that life does not simply mean animal life or vegetative existence. It stated that the word “life” is significant as it covers all facets and aspects of human existence. The court went on to observe that life includes such amenities and facilities to which a person born in a free society is entitled. The Court concluded that the installation or construction of a grid station or transmission line in the vicinity of a populated area may expose the residents to the hazards of electro-magnetic fields and is therefore in violation of Article 9 of the Constitution.

CONSTITUTIONAL FRAMEWORK SRI LANKA

Key Issues: No Specific Provisions for Right to clean Environment as Fundamental Right

Key Provisions: Constitution of Government of Sri Lanka (Articles 27,28)

Key Institutions: Supreme Court of India; Provincial Courts; District Courts; Authorities; Tribunals

1. INTRODUCTION

Sri Lankan Environmental Management Policy originates from the country's supreme law that is the Constitution. The 1978 Constitution recognizes that the state shall protect, preserve and improve the environment for the benefit of the community (Article 24(14)), as principles of state policy. The constitution also recognizes that it is the duty of every person in Sri Lanka "to protect nature and conserve its riches" (Article 28 (f). The pledge given in the 1978 Constitution to safeguard the environment was formally institutionalized with the enactment of the National Environmental Act No.47 of 1980. This Act established the Central Environmental Authority (CEA) in 1981 as the premier state agency responsible for the "formulation and implementation of policies and strategies for the protection and management of environment in Sri Lanka".

2. CONSTITUTIONAL PROVISIONS

The Constitution of **Sri Lanka** contains several provisions, relating to the environment. For example, Article 27(14) of the Constitution of Sri Lanka states that it is the duty of the State "to protect, preserve and improve the environment for the benefit of the community". In addition, Article 28 (f) of the Constitution to makes it a "fundamental duty" of every person to "protect nature) and conserve its riches". These provisions, however, are not set out in the chapter on fundamental rights: they are to be found in the chapter entitled "Directive Principles of State Policy and Fundamental Duties and are not enforceable in a court of law since the Constitution specifically states so. Chapter VI, Article 28 says that the exercise and enjoyment of rights and freedoms is inseparable from the performance of duties and obligations, and accordingly it is the duty of every person in Sri Lanka - (a) - (c) ... (d) to preserve and protect public property and to combat misuse and waste of public property; (e) ... (f) to protect nature and conserve its riches

The Constitutional pledge for the management of environment was further strengthened by the Thirteenth Amendment to the Constitution, which dealt with the devolution of power and administrative responsibility in a number of areas including environment. The Thirteenth Amendment states that the Protection of environment within the province to the extent permitted by or under any law made by parliament is the responsibility of the Provincial Council (Ninth schedule, List 1 section 37). In addition to this, the Thirteenth Amendment to the Constitution lists the following areas related to environment as devolved subjects: environmental health; establishment and maintenance of herbaria; some functions of land use and land improvement; preservation protection and improvement of stock and prevention of animal diseases, regulation of mines and mineral development, fees under the fauna and flora protection ordinance; and land development ordinance.

However the subject of land, which is the important aspect of the environment, has been devolved to the provincial councils, subject to special provisions. Some of these provisions are:

a) National Land Commission appointed by the Central Government would be responsible for formulation of national policy with regard to the use of state land;

b) The Commission will include representatives of the provincial councils in the Island;
c) This land Commission will have a technical secretariat representing all the relevant disciplines required to evaluate the physical and socio-economic factors relevant to natural resource management;
d) National Policy on land use is based on technical aspects (not on political or communal aspects) and the commission will lay down general norms in regard to the use of land, having regard to soil, climate, rainfall, soil erosion, forest cover, environmental factors and economic viability; and
e) Provincial councils should exercise the power vested on them with regard to the land subject having due regard to the National Policy formulated by the National Land Commission.

Ambiguously, some important environmental subjects are listed under the concurrent list, for which, both Provincial and Central Government had to agree on the implementation of the remaining powers which were held concurrently. Such subjects are soil erosion, social forestry and protection of wild animals and birds, and protection of the environment.

By amendment, each provincial council had the authority to enact and implement any statute related to their responsibilities. On the basis of these provisions, the North Western Provincial Council (NWP) passed its own environmental statute and created its own Environmental Authority, the Wayamba Environmental Authority (WEA). Other provincial councils have not so far enacted any such statute. After Wayamba Environmental Authority was established, there are conflicts between central governmental and provincial authorities over the jurisdiction of certain activities. Undertaking EIA process for Norochole thermal power plant is a good example. Finally both the central government and provincial authorities had to undertake separate EIAs.

The NWP environmental statute has also prescribed the projects and undertakings, which are required to obtain lEE and EIA. This prescribed list does not include large development projects such as power generations and major irrigation works. In the event of conflicts between a provincial statute and an Act of Parliament with respect to a subject in the concurrent list, the provincial statitute takes precedence within the province. This has led to a situation where large-scale projects, which are not prescribed by the NWP environmental statute, would be exempted from the EIA requirement.

Further, devolution of environmental management has been proposed by the devolution proposals. Under this proposal environment appears in List I that specifies the preserved subjects and the List 2 that specifies the subjects devolved to the Regional Council. List I makes reference to "National Environment" List 2 refers to "Forestry and Protection of the Environment within a Region". This means that National Policy concerns come within the Central Government while the regional policies and implementation comes under the provinces.

Other environmental provisions proposed by the devolution proposal are:

(i) "Every citizen is entitled to own property alone or in association with others subject to the preservation and protection of the environment and the right of the community" (Article 21 (1)
(ii) "State shall protect and preserve and improve the environment and safeguard the reefs, shores, forests, lakes, water courses and wildlife of Sri Lanka (Principles of state policies -Article 53”(6); and
(iii) "Protect and improve the environment and conserve its riches" (Fundamental duties -Article 54 (6))”.

The reserved list that contains subjects that shall be exercised by the Central Government includes following environment related functions:
(i) Protection of marine and aquatic resources in keeping with international obligations and measures to enforce such obligation;
(ii) Policy and national programmes relating to coast conservation;

(iii) National Plans on environment and conservation including conservation of flora and fauna in keeping with international obligation; and
(iv) Intervention in instances of national (natural and environmental) disasters

Other constitutional provisions available for environmental protection are provisions to obtain writ from the Court of Appeal against administrative acts or omissions (Article 140). eg. the EFL Ltd has requested a writ of *certiorari* to cancel or quash the decision of the Secretary to the Ministry of Forestry and Environment to approve the Upper Kotmale Hydro Power Project (CA No.1023/98). The EFL Ltd. also has requested a writ of *mandamus* and writ of *prohibition* from the Court of Appeal under article 140 of the Constitution to direct authorities to take action to stop disastrous sand mining (CA No. 673/97). Under the Article 126 of the Constitution, a citizen can seek redresal from the Supreme Court for violating his right to life that include a right to an environment suitable to live in and right to breathe air of acceptable quality that supports life (SCFR 569 /98).

CONCLUSION:

The Constitutional Framework of South Asian countries (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka) has been amended in the wake of Stockholm Conference in 1972. India along with other countries of the region has incorporated provisions relating to the environment in the Constitution in 1976. In most of these countries the environment and forest are in the domain of the State/ Provincial Governments. After the Constitutional amendment, the environment and forest are now under the mandate of the Central Government. Accordingly, the respective Government of these countries have taken initiatives to enactment legislation on the environment and on the forestry side. The Judiciaries of these countries have also been proactive in directing the Governments to take remedial action either through legislation or through executive orders to mitigate the environmental sufferings and also to improve the quality of the environment. Overall the amendments of Constitutions in South Asian countries have an encouraging development in the region.

Constitutions of these countries contain specific provisions relating to the protection of the environment and natural resources. Some of them recognize explicitly the right to a satisfactory environment even if the adjectives used differ from one Constitution to another. This right is generally presented as entailing corresponding duties towards the State and its institutions and obligations for individuals and organs of society. A few recognize corresponding rights for the individuals and groups. An increasing number of States have developed the framework of laws and regulations needed to ensure implementation of this right Some of them have spelt out the substantive aspect of that right and the related procedural rights, such as, the right to health, to life, to participation, to association, to information, and to legal action or recourse. Some countries have provided for the punishment of offences against the environment and/or have affirmed the principle of compensation for the victims, as well as reparation for damage. In some cases there is also a reference to preventive aspects. A number of cases in national courts directly affirm and enforce the constitutional right to the environment

LEGAL FRAMEWORK BANGLADESH

Key Issues: Multiplicity of Legislation; Overlapping Provisions; Non- Compliance and Enforcement; Faulty Structure/Scheme of Legislation; Drafting Legislation; Lack of Provisions for Implementation; Inbuilt Enforcement Mechanism

Key Legislation: Constitution of Bangladesh (Article 31, 32); Environment Conservation Act 1995; Penal Code, 1860; Fish Conservation Act, 1950; Bangladesh Wildlife (Preservation) Act, 1973; Wildlife (Preservation) Order, 1974; Factories Act, 1965; Forest Act, 1927; The Pesticide Ordinance, 1971; The Pesticide Rules, 1985; The Explosive Act, 1923; The Penal Code, 1860; Fisheries Protection Act 1889, Conservation and Protection of Fisheries Act 1950, Marine Fisheries Ordinance 1983; Territorial Water and Marine Zone Act 1974, Mines Act 1927, Petroleum Act 1934, Antiquities Act 1986, Antiquities Ordinance 1986, Irrigation Policy 1998, Water Supply and Sewerage Authority Ordinance 1963 Amended in 1989, Inland Shipping Ordinance 1976, Embankment and Drainage Act 1952 Water Hyachith Act 1939, Canals Act 1864 Irrigation Act ,1876, Wetland Policy 1997 Water and Power Development Board 1972 Soil conservation EPC Ordinance 1977,

Key Institutions: Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; Department of Forests; International Institutes of Environment; Forest Research Institute, Bangladesh; Forest Industries Development Corporation; Institute of Forestry and Environmental Sciences;

1. NATIONAL POLICY ON THE ENVIRONMENT

National Environment Management Action Plan (NEMAP) 1992 of Ministry of Environment and Forest presents actual actions to achieve the objective mentioned in the National Environmental Policy covering fields of the environment with emphasis on the people‟s participation in the process for formulating the plan. Five Year Plan (1997-2002) 1997 aims to protect and preserve the environment by putting in place adequate regulatory regimes and effective institutions, keeping in view the need for regeneration, recycling and optimum exploitation of natural resources consistent with sustainable Development, Ministry of Environment and Forest.

Fourth Five Year Plan (1990-95) 1990 envisages following objectives:

1) Control pollution and degradation related to soil, water and air ;
2) Promote environment friendly activities in the development process;
3) Preserve, protect and develop natural resources base;
4) Strengthen the capabilities of public and private sectors to manage environmental concerns as a basic requisite for sustainable development; and
5)Create people‟s awareness for participation in environment promotion activities.

National Environmental Policy 1992 states that:

1) Maintenance of the ecological balance and overall progress and development of the country through protection and improvement of the environment;
2) Protection of the country against natural disaster;
3) Identification and control of all types activities related to pollution and degradation of the environment;
4) Environmentally sound development in all sectors;

5) Utilization of all natural resources with long-term environmental sustainability; and
6) Active involvement to all environmental fields with international initiatives

The Environmental Conservation Act of 1995 empowered the MOEF to formulate rules and guidelines for the management. It also designates DOE responsible for enforcing the 1997 EIA procedures air pollution, water pollution, noise Ministry of Environment and Forest Environmental Conservation Rules of 1995 Air pollution, water pollution. The EIA process is categorized into four classes, that is, green, amber A, amber B, and red.

2. SOME IMPORTANT RELATED ENACTMENTS

Factories Act, Motor Vehicles Act 1939 National Water Policy 1999, Non Agricultural Tenancy Act 1947, , Acquisition and Tenancy Act 1950 , Waste Land Act 1950, Town Improvement Act 1950, Municipality Ordinance 1977, Ordinance 1982, Land Reforms Ordinance 1984, Land Reform Board Act 1989, Chittagong Hill Tract Regulation Act 1990, New Agricultural Extension Policy 1997, Opium Act 1978, Pesticide Ordinance 1971 Amended in 198, Agricultural Pest Ordinance 1962, Dangerous Drug Act 1930, Dangerous Drug Control Order 1982, Agriculture and Sanitary Improvement Act 1920, Poison Act 1930, Explosive Substances Act 1908 Modified in 1983, Explosive Act 1884, Municipality Ordinance 1977 Authority Ordinance 1950, Forest Act 1927 Modified in 1973, Forest Wildlife (Preservation) Act 1973 Amended 1974, Fish Policy 1998, Fisheries Protection Act 1889, Conservation and Protection of Fisheries Act 1950, Marine Fisheries Ordinance 1983 Territorial Water and Marine Zone Act 1974, Mines Act 1927, Petroleum Act 1934, Antiquities Act 1986, Antiquities Ordinance 1986, Irrigation Policy 1998, Water Supply and Sewerage Authority Ordinance 1963 Amended in 1989, Inland Shipping Ordinance 1976, Embankment and Drainage Act 1952 Water Hyachith Act 1939, Canals Act 1864 Irrigation Act ,1876, Wetland Policy 1997 Water and Power Development Board 1972 Soil conservation EPC Ordinance 1977,

A total of 23 laws have been identified which contain provision regarding conservation of environment and control of environmental pollution from various sources; furthermore, a research by the environmental regulatory regime shows that there are about 185 laws which have bearing on environment. These laws provide for measures relevant for environmental offences and by prescribing or prohibiting certain activities, lay down right and duties. Among these laws, the Bangladesh Environmental Conservation Act, 1995 is enacted to control and mitigate pollution and environmental conservation. This has come into force all over Bangladesh through notification of the Ministry of Environment arid Forests (MoEF). Similarly, the Penal Code, 1860 has provisions to check pollution to the atmosphere, the Fish Conservation Act, 1950 provides measures to ensure undisturbed sprawling grounds, the Bangladesh Wildlife (Preservation) Order, 1974 prohibits certain dealing with specific species of wildlife etc. Besides, various other legislations certain provisions to address pollution of air, soil, water and other component of the environment.

However, most of these laws remain un-enforced due to too many legislative and institutional failures such as lack of rules, identification of institutions responsible for enforcement, absence of statutory environmental quality standards, lack of legal education and awareness. A National Environment Policy has been adopted in 1992 that provides Sectoral Policy Guidelines in combating and promoting environmental matters.

Some of these laws, now in force-such as the Forest Act of 1927 were inherited. Others were enacted after 1947 as the issues arose which needed addressing through legal measures. These laws were previously useful when they were enacted but do not satisfy present needs. Moreover, environmental scenario of the world and the country has changed considerably, therefore, for better environmental management, updating of related laws are required. Environmental legislation in Bangladesh covers laws on the

(i) protection of environmental Health

(ii) control of environmental pollution, and
(iii) conservation of natural and cultural resources. The above categorization is being made on the basis of broad objectives of the environmental laws exiting in Bangladesh.

The exiting laws are not mutually exclusive. It is obvious that many of the laws falling in one category are bound to relate to objectives falling in the other categories. This is only natural because of the fact that environment protection is a multisector phenomenon not limited to any particular aspect of nature. The major legislation are listed bellow:

Pesticide Ordinance 1971 amended in 1980; Agricultural Pest Ordinance 1962; Dangerous Drug Act 1930; Dangerous Drug Control Order 1982; Ordinance 1977; Description Authority Ordinance 1950; Forests Act 1927 Modified in 1973; Wildlife (Preservation) Act 1973 Amended 1974; Fish Policy 1998; Private Fisheries Protection Act 1889; Conservation and Protection of Fisheries Act 1950; Marine Fisheries Ordinance 1983; Territorial Water and Marine Zone Act 1974; Mines Act 1927; Petroleum Act 1934; Antiquities Act 1986 Cultural Heritage Antiquities Ordinance 1986; Irrigation Policy 1998; Water Supply and Sewerage Authority Ordinance 1963; Amended in 1989; Inland Shipping Ordinance 1976, Embankment and Drainage Act 1952; Water Hyacinth Act 1939; IWTA Ordinance 1958; Canals Act 1864 Irrigation Act 1876; Wetland Policy 1997 ; Water and Power Development Board 1972; Soil conservation EPC Ordinance 1977

3. BANGLADESH ENVIRONMENTAL CONSERVATION ACT 1995 (ECA 1995)

The Act established for environment conservation, environmental standard development and environment pollution control and abatement, although it is known by the shortened title above. It has repealed the Environment Pollution Control Ordinance 1977.

A special presidential order again renamed the DEPC to the Department of Environmental Pollution Control Ordinance 1989.

The Environmental Conservation Act, 1995 (ECA'95) is currently the main legislative framework document relating to environmental protection in Bangladesh, which repealed the earlier environment pollution control ordinance of 1997 and has been promulgated in 1995.

The main objectives of ECA, 1995 are -

- Conservation and improvement of environment and
- Control and mitigation of pollution of environment.

The main strategies of the Act can be summarized as –

- Declaration of ecologically critical areas, and restriction, on the operation andprocess which can be carried or can not be initiated in the ecologically critical area.
- Regulation in respect of vehicles emitting smoke harmful for the environment. Environmental clearance.
- Regulation of the industries and other development activities-discharge permit. Promulgation of standard limit for discharging and emitting waste
- Formulation and declaration of environmental guidelines.

The first set of rules to implement the provisions of Act has been promulgated in 1997. The Department of Environment (DOE) is implementing the Act. DOE is headed by a Director General. The DG, has overall control. The power of DG are as given in the Act, may be outlined as follows:

- Identification of different types and causes of environmental degradation and pollution.
- Instigating the investigation and research into information regarding environment

- Conservation, development and pollution.
- Power to close down the activities considered harmful to human life or the environment.
- In emergency, there is no opportunity for appeal. Power to declare an area affected by pollution as an ecologically critical area. The type of work or process, which can take in such an area, is governed by DOE. Similar to in aforementioned clause, if any part of the environment is polluted/damaged by operation. The Director General can request or force the operator to make rectifying arrangement, its; operators must inform the Director General any pollution incident.

In the event of an accidental (pollution) event the Director General may take control of an operation and the respective operator is bound to help. The operator is responsible for costs incurred (and possibly) compensation.

- Before new project can go ahead as stipulated under the rules, they must obtain an Environment Clearance from the Director General. An appeal procedure does exist for these promoters who fail to obtain clearance;

4. THE ENVIRONMENT CONSERVATION RULES 1997 (ECR, 1997)

These are the first set of rules, promulgated under the Environment Conservation Act 1995. Among other things, these rules set (i) the National Environmental Quality Standards for ambient air, various types of water, industrial effluent, emission, noise, vehicular exhausted., (ii) requirement for and procedures to obtain environment clearance (iii) requirement for EIA according to categories of industrial and other development interventions.

According to the rules, any project/development intervention of the Red category, is to obtain environmental clearance in two steps - first to obtain site/location clearance (based on the application along with necessary papers, including the Initial Environmental Examination, IEE which will contain the scope of work of the proposed EIA and then to obtain Environmental clearance (by submitting the application along with necessary papers and-after obtaining the approval on the Environmental Impact Assessment Report, which is to obtained in between). The Department of Environment may take up to sixty days to issue the-site clearance (from the date of receiving the application), sixty days to approve the EIA and thirty more days to issue the Environmental Clearance, provided everything goes well.

This may be quite a lengthy process if DOE uses the full extent of the time limits. The rules however provide the Director General a discretionary authority to grant 'Environmental Clearance' to an applicant exempting the requirement of site/location clearance, provided considers it appropriate.

5. THE PENAL CODE 1860 (CHAPTER XIV OF OFFENCES AFFECTIVE THE PUBLIC HEALTH, SAFETY, CONVENIENCE, DECENCY AND MORALS).

Article 277: Failing Water or Public Spring or Reservoir-

Whoever voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used, shall be punished with imprisonment of either description for a term which may extend to three months, or with fine which may extend to five hundred taka or with both.

Article 278: Making Atmosphere Noxious to Health-

Whoever voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighborhood or passing along a public way, shall be punished with fine which may extend to five hundred taka.

Article 284: Negligent Conduct with Respect to Poisonous substance-

Whoever does, with any poisonous substance, any act in a manner so rash or negligent as to endanger human life, or to be likely to cause hurt or injury to any person, or knowingly or negligently omits to take such order with any poisonous substance in his possession as is sufficient to guard against probable danger to human life from such poisonous substance,

Article 285: Negligent Conduct with Respect to Fire or Combustible Matter -
Whoever does, with fire or any combustible matter, any act so rashly or negligently as to endanger human life, or to be likely to cause hurt or injury to any other person, or knowingly or negligently omits to take such order with any fire or any combustible matter in his possession as is sufficient to guard against any probable danger to human life from such fire or combustible matter, shall be punished with imprisonment.

Article 286 : Negligent Conduct with Respect to Explosive Substance -

Whoever does, with any explosive substance, any act so rashly or negligently as to endanger human life, or to be likely to cause hurt or injury to any other person, or knowingly or negligently omits to take such order with any explosive substance in his possession as is sufficient to guard against any probable danger to human life from that substance, shall be punished with imprisonment of either description for a term which may extend to one thousand taka or with both.

6. THE EXPLOSIVES ACT 1884

Section 6(3) reads

Any person manufacturing possessing, using, selling, transporting or importing an explosive in contravention of a notification issued under this section shall be punishable with imprisonment for a term which may extend to fifty thousand taka, in default of which with a further imprisonment for a term which may extend to one year, and in water or land, the owner and master of the vessel or carriage excuse, each be punished with imprisonment for a term which may extend to ten years and shall not be less than two years and also with a fine thousand taka, in default of which with a further imprisonment for a term which- may extend to one year.

Further section 8(1) and 8(2) reads as

(1) Whenever there occurs in or around in connection with, any place in which an explosive is manufactured, possessed or used, or any carriage or vessel either conveying an explosive or on or from being loaded or unloaded, any accident by any explosion or by fire attended with loss of human life or serious injury to person or property, or of a description usually attended with such loss in injury the occupier of the place, or the master of the vessel, or the person in charge of the carriage, as the case may be, shall within such time and in such manner as may be by rule give notice thereof and of the attendant loss of human life or Personal injury, if any, to the Chief Inspector of Explosives in Bangladesh and to the (officer in charge of the nearest police station-

(2) Whoever in contravention of sub-section (1) fails to give notice of any accident shall imprisonment for a term which may extend to three months and also with fine which may extend to five thousand taka, in default of which with a -further imprisonment for a term which may extend to three months and also with fine which may extend to five thousand take in default of which with a further imprisonment for a term which may extend to one month , and if the accident is attended by loss of human life, with imprisonment for a term which may extend to one year and also with a fine which may extend to ten thousand taka. In default of which with a further imprisonment which may extend to two months.

7. THE EXPLOSIVE SUBSTANCES ACT 1908

One of the punishment sections A. read as follows:

Section 3: Punishment for causing explosion likely to endanger life, person or property Any person who unlawfully or maliciously causes by any explosive substance and explosion of a nature likely to endanger life or to cause serious injury to person or property shall, whether any injury to person or property has been actually caused or not, be punisyhable with death, or with imprisonment for a term which may extend to ten years and shall not be less than five years, to which fine may be added.

8. BANGLADESH WILDLIFE (PRESERVATION) ACT, 1973

This law provides for the preservation, conservation and management of wildlife in Bangladesh. The earlier laws on wildlife preservation, namely, the elephant Preservation Act - 1879, the Wild Bird and Animals Protection Act - 1912, and the Rhinoceros Preservation Act - 1932 have . been repealed and their provisions have been suitably incorporated in this law.

This act encompasses a range of. different activities ' including the hunting and fishing although the provisions of greatest significance relate to the establishment of wildlife sanctuaries and national parks by the MoEF. Such designations have enormous significance for the types of developments that may take place. However, it must be recognized that no wildlife sanctuaries or national parks occur in close proximity to the proposed project site.

The main provisions are as follows:

1. The Wild animals specified, as "game animals" shall not be hunted, killed or captured save in accordance with the terms of a permit issued under this order.

2. The Wild animals specified in this order shall be known as "Protected Animals" and shall not be hunted, killed or captured save as otherwise expressly provided in this order.

3. No person shall, with a view to carrying on a profession, trade or business, buy, sell or otherwise deal in wild animals, trophies or meat, or process or manufacture goods or articles from such trophies or meat unless he is in possession of a valid permit, issued for the purpose by an officer authorized in this behalf.

4. The Government may, by notification in the official Gazette declare any area to be wildlife sanctuary.

5. The Government may declare any area to be a national park provided that the government may, for scientific purpose or for betterment of the national park or for aesthetic enjoyment of scenery or for any other exceptional reason, relax all or any of the prohibitions specified above.

Article 23 (2): No person shall:

i) Damage or destroy any vegetation in any wildlife sanctuary;
ii) Cause any fire in a wildlife sanctuary; and
iii) Pollute water flowing in or through a wildlife sanctuary.

Contravention or attempt to contravene various provisions of the law have been made punishable as specified in the law.

This legislation does not provide scope for creation of a strong organization, which can adopt appropriate measures to protect wildlife. The importance of wildlife could be highlighted in the legislation, which is not there. Punitive provisions are not readily usable. The types of endangered and ecologically valuable animals/birds could be highlighted in the legislation. It should have asked for

active participaton and specific action from local administration to protect wildlife. It also does not prescribe seasons when certain animal/birds can not be hunted or captured.

Latest Executive Order

A very recent executive order issued in June 1998 in relation to the Bangladesh Wildlife Preservation Order 1973 has imposed a ban for the next five years on hunting of any form of wildlife.

9. THE BANGLADESH FOREST ACT 1927

The law updated and consolidated the provisions of the laws passed earlier regarding protection and development of forests after repeating the Indian Forests Act 1878. Forest Act 1890 and the amending acts of 1891, 1901, 1911, 1914, 1918.

The Government may assign a reserve forest to any village community, the Government may declare any forest land and waste land belonging to the government or having property rights to be "protected forests". The government may stop any public or private way or watercourse in the interest of preservation of the forest.

The relevant section is 26 of the Act, which reads:

Acts prohibited in such forests - (1) Any person who, in a reserved forest -

(a) keeps or carries any fire except at such seasons as the Forest-officer may notify in this behalf,
(b) trespasses or pastures cattle, or permits cattle to trespass;
(c) causes any damage by negligence in felling any tree or cutting, or dragging ;any
(d) quarries stone, burns lime or charcoal, or collects, subjects to any manufacturing
- process, or removes, any forest produce other than timber;

or who enters a reserved forest with fire arms without prior permission from the Divisional Forest Officer concerned shall be punishable with imprisonment for a term which may extend to six months and shall also be liable to fine which may extend to two thousand taka, in addition to such compensation for damage done to the forest as the convicting Court may direct to be paid.

10. THE ANTIQUITIES ACT 1968 AS, AMENDED BY THE ANTIQUITIES (AMENDMENT) ORDINANCE 1976

The Act was enacted to consolidate and amended the laws relating to preservation and protection of antiquities and repealed "The Ancient Monuments Conservation Act 1904" and "The Antiquities (Export Control) Act 1947).

The main provisions of the Act are as follows:

I If the government has reasonable grounds to believe that any land contains any antiquity, it may direct to acquire such land or any part thereof under the land Acquisition Act, 1894 (I of 1894), as for a public purpose. The government may, purchase, or take lease or accept a gift or bequest of any antiquity.

2. If the Government apprehends that a protected immovable antiquity -is in danger of being destroyed, injured or allowed to fail into decay, it may, after consultation with the Advisory Committee, acquire such antiquity or any part thereof.

3. Subject to the provisions of this Act or of any agreement, no person shall, except for carrying out the purpose of this Act, destroy, break, damage, alter, injure, deface or mutilate, or scribble write or engrave any inscription or sign on any antiquity in respect of' which the Director has accepted guardianship or the Government has acquired any right.

4. No person shall make on any land excavation for archaeological purpose except under and in accordance with a license granted by the Director.

This legislation does not call for strengthening of the concerned organization, which will take care about the major provisions under this legislation. How the provisions under this law are going to be implemented, that is not clearly mentioned. This legislation also does not spell out the need for preservation the antiquates of the country or their value in terms of social and cultural aspects. However according to the Archaeology Department, any one finding any object of historical or archaeological value during any excavation or site preparation for their own purpose, is to submit the nearest Civil Administration of the police Department

11. THE GROUNDWATER MANAGEMENT ORDINANCE 1985

This is a framework type of legislation with enabling power to make rules by the Government by notification in the official Gazette. This ordinance is mostly related to tube well licensing which is authorized to the Upazilia Parishad (presently the Thana Executive office). Before granting such license, the points to be reviewed include:

- the aquifer condition of the soil where the tube well is to be installed
- will not have any adverse effect upon the surrounding area' 'the distance of the nearest existing tube well the suitability of the site for installation of the tube well'.

These tube wells mostly concern for irrigation water required for agricultural production and for matters connected there with

12. THE GROUNDWATER MANAGEMENT RULES 1987

These are the first set of rules under the ordinance of 1995. These detail out the tube well license issue further, how to obtain it, how to cancel and suspend etc. Schedule I of the rules require i) the minimal distance of a new tube well at about three quarter of a mile from the nearest river of all time flow ii) plantation of the tube well to be above the water level during floods.

13. THE PUBLIC HEALTH (EMERGENCY PROVISIONS) ORDINANCE, 1944

This is an ordinance to make special provisions in regard to public health. This is a framework kind of legislation with provision to make rules, which, among others, may prescribe any disease against the spread of which special precautions are considered by the Government to be necessary", and "prohibit any act which in the opinion of the Government is likely to lead to or facilitate the spread of any disease prescribed under the above clause.

14. THE FACTORIES ACT 1965

This is an Act to repeal and with certain amendments, re-enact the Factories Act, 1934.

This Act requires (section 12(l)) that "every factory shall be kept clean and free from effluvia arising from any drain privy or other nuisance and in particular accumulation of dirt and refuse shall be removed daily". Section 13(1) specifies, "effective arrangement shall be made in every factory for the disposal of wastes and effluent due to the manufacturing process carried on therein".

Further section 14(l) mentions that, effective and suitable provision shall be made in every factory for securing and maintaining in every workroom -

a) adequate ventilation by the circulation of fresh air, and

b) such temperature as will secure to worker therein reasonable conditions of comfort and prevent injury to health, and in particular -

i) the walls and roofs shall not be exceeded but kept as low as practicable;
ii) where the nature of the work carried on iri the factory involves, or is likely to involve, the production of excessively high temperature, such adequate measures as are practicable, shall be taken to protect the workers thereform by separating the process which process such temperature from the work-room by insulting the hot parts or by other effective means.

Section 15.1 of the Act stipulates,
i) In every factory in which, by reason of the manufacturing process carried on, there is given off any dust or fume or other impurity of such a nature and to such an extent as is likely to be injurious or offensive to the workers employed therein effective measures shall be taken to prevent its accumulation in any work-room and its inhalation by workers, and if any exhaust appliance is necessary for this purpose, it shall be applied as near as possible to the point of origin of the dust, fume or other impurity, and such point shall be enclosed so far as possible.
ii) In any factory no stationary internal combustion engine shall be operated unless the exhaust is conducted into open air, and no internal combustion engine shall be operated in any room unless effective measures have been taken to prevent such accumulation of fumes therefrom are likely to be injurious to the workers employed in the work room.

Further. section 17 ask for workspace requirement

1) No work room in any factory shall be overcrowded to an extent injurious to the health of the workers employed there in.
2) Without prejudice to the generality of provisions of sub section (1) there shall be provided for every worker employed in a work room -
a) at least three hundred fifty cubic feet to space in the case of factory in existence on the date of commencement of this Act; and
b) at least five hundred cubic feet of space in the case of a factory built after the commencement of this Act-

In every factory -
a) sufficient latrines and of prescribed types shall be provided conveniently situated and accessible to workers at all times while they are in the factory

In every factory the following shall be securely fenced by the safeguards of substantial construction which shall be kept in position while the parts of machinery required to be fenced are in motion or in use, namely-

a) Every moving part of a prime mover and every fly wheel connected to a prime mover ;
b) The head race and tailrace of every water wheel and water turbine; -
c) Any part of a stock bar which projects beyond the head stock of a lathe; and
d). Unless they are in such position or of such construction as to be as safe to every person employed in the factory as they would be if they were securely fenced:

i. every part of an electric generator; a motor or rotary converter;
ii. every part of transmission machinery; and
iii. every dangerous part of any machinery.

Conservation Act, 1950 as amended by the Protection and Conservation of Fish (Amendment) Ordinance, 1982 and the Protection and Conservation of Fish (Amendment) Act. 1995. Conservation of fish in inland waters of Bangladesh. This is relatively unscientific and similarly provides a means by which the Government may introduce rules to protect those inland waters not in private ownership. As

the Brahmaputra river is not privately owned, it is covered by this Act. This is framework legislation with rule making powers. Among others, some of these rules may -

a) prohibit or regulate all or any of the following matters, that is to say thatthe construction, temporary or permanent, of weirs, dams, bunds, embankrnents and other structures
b) prohibit the destruction of, or any attempt to destroy, fishes by explosives, gun, bows etc.
c) prohibit the destruction of, or any attempt to destroy, fishes by tile poisoning of water or the depletion of fisheries by pollution, by trade effluent or otherwise.

15. THE PROTECTION AND CONSERVATION OF FISH RULES 1985

These are a set of rules in line with the overall objectives of the Fish Act. Some of those are Section-4 "No person shall construct bunds, weirs, dams and embankments or any other structure, whether temporary or permanent, in, on, across or over the rivers, canals, khals or beels for any purpose other than irrigation, flood control or drainage".

Section 5 - "No person shall destroy or make any attempt to destroy any fish by explosives, gun, bow and arrow in inland waters or within coastal waters". Section 6 - "No person shall destroy or make any attempt to destroy any fish by poisoning of water or the depletion of fisheries by pollution, by trade effluents or otherwise in inland waters".

Pesticide Ordinance, 1971

As amended by the Agricultural pesticides (Amendment) Act 1980 and the Agricultural pesticides (Amendment) Ordinance 1983.

The Act provides for the regulation of import, manufacture, formulation, sale distribution and use of pesticides in order to prevent injury to public health or to animals or vegetation.

The main provision of the Ordinance are as follows :

No person shall import, manufacture, formulate, repack, sell, offer for sale, hold in stock for sale or in any manner advertise any brand of pesticide unless the same has been registered, and a licence has been obtained from the government for such dealing.

16. THE BRICK-BURNING (CONTROL) ACT, 1989(ACT NUMBER 8 OF 1989)

This Act has been promulgated to control brick burning . This requires to obtain a license from the appropriate authority (District Commissioner) to go into brick burning.

The Act restricts brick burning with fuel wood and categorically mentions that no one will allowed to use fuel wood for brick burning.

The Act has a provision of punitive measures of imprisonment for six months or a fine of Taka Fifty thousand only or both. The Act also provides for inspection of the brick fields to check the use of fuel wood and the inspecting authority has the right to confiscate all the bricks and fuel wood found on the particular brickfield.

17. THE BRICK BURNING (CONTROL) (AMENDMENT) ACT 1992

This Act was promulgated in July 1992 and was intended for certain amendment of the Act of 1989. The two major issues need special mention in this regard is the shifting of authority from the Upazilla Parishad Chairman to the District Commissioner and the re-definition of fuel. In this act the definition of fuel is any floral based fuel other than the dead (motha) of the bamboo. The Act replaces the earlier fuelwood of the earlier act with this fuel.

18. THE BOILERS ACT 1923

This requires that no owner of a boiler shall use the boiler or permit it to be used, unless it has been registered in accordance the- provisions of this act. The Act mentions, among other things, that the authorizing certificate ceases to be in force when any accident occurs to he boiler, when any structural alteration is made.

The punishment is Taka ten thousand and may be extendable to Taka two thousand per day for the period of violation. The boiler user can not use the boiler nor test without the certificate, but also at a higher pressure than allowed. The boiler owner is to inform the inspector within twenty four hours in case of any accident. From the age-old norms and experiences, upto the country"s constitution along with numbers of legislations, ordinances, and policies constitute the legal framework of the national forest management. The National Environmental Policy, 1992, Bangladesh National Conservation Strategy (BNCS), the Bangladesh Environment Conservation Management Action Plan (NEMAP), Forestry Master Plan, Wildlife (Preservation) Act, 1973, etc. new framing the local bodies of environmental management in the country. The other sectoral pollution also emphasize on environment and its conservation. Those are the Forest Act, 1927 Amendment Act, 1990 Flood Action Plan and Flood Management Strategy, Water Resources Planning Law, 1992. Brick Burning (Control) Act, 1990, Coast Guard Law, 1994 etc. About 182 laws (excluding rules and by-laws) have so for been identified by BELA.

The existence of all these laws and a number of public agencies, however, failed to deliver to the nation what the legislation envisaged.

BHUTAN

Key Issues: Multiplicity of Legislation; Overlapping Provisions; Non- Compliance; Enforcement; Faulty Structure/Scheme of Legislation; Drafting Legislation; Lack of Provisions for Implementation; Lack of Inbuilt Enforcement Mechanism

Key Legislation: Forest Act 1969, Forest and Nature Conservation Act 1995, Mines and Management Act 1995 and the Environmental Assessment Act 2000 National Environmental Strategy**;** Paro Resolution on Environment and Sustainable Development (1990); National Forest Policy, 1974;National Forest Act (1969); Land Law (1979); Pastureland Law (1979); Inheritance law (1979); Livestock Law (1979); Wildlife Act (1985); Plant and Quarantine Act and regulations (1988); Mining Act (1995);

Key Institutions: National Environment Committee; Planning Commission; National Environment Commission; Ministry of Rural Development; Ministry of Rural Development

1. INTRODUCTION

Bhutan has two fundamental sources of law: His Majesty the King and the National Assembly. Both sources act in mutually reinforcement way. The King sits in the National Assembly and thus contributes directly to laws and it issues. In order to pass an Act, law, etc., the National Assembly calls for a point to be submitted from the relevant agencies. However, before being submitted to the National Assembly, a prior approval from the cabinet is necessary.

The National Assembly is made up of 150 members or representatives. The membership is divided into three categories: 105 elected representatives the people including one representative of the business community; 12 representatives of monks‟ community and 33 senior civil servants.

The Cabinet is represented by Council of Ministers and is headed by the Chairman. The head of the government is normally elected as the Chairman of the Cabinet.

2. LEGISLATION

The following policies, administrative and legal instrument relating to the environment in Bhutan are

a) Resolutions

Paro Resolution on Environment and Sustainable Development (1990)
Resolutions of the National Assembly relating to the environment (various years)

b) Laws and Acts

National Forest Act (1969)
Land Law (1979)
Pastureland Law (1979)
Inheritance law (1979)
Livestock Law (1979)
Wildlife Act (1985)
Plant and Quarantine Act and regulations (1988)
Mining Act (1995)
Forest and Nature Conservation Act (1995)

Development of law at the national level with relation to environment protection and its conservation has led to legislation on environmental and environment-related issues by adding regulatory instruments with well-defined requirements. The Program for further implementation of Agenda 21 established the target year of 2002 for all countries to have formulated national sustainable development strategies. Bhutan‟s national strategy, the National Environment Strategy, has already been in place for four years now, making the Kingdom one of the 85 countries globally to have completed such a sustainable development strategy.

Bhutan has used a combination of the sustainable development strategy and five-year development sector plans. These sectoral plans have facilitated the Government in receiving financial resources for helping decision-makers to achieve and measure progress toward sustainable development goals and targets. The National Environment Commission (NEC) is the national coordinator of the country‟s sustainable development strategy; its long-term objective is to define policies, programs, plans and actions for promoting and ensuring the sustainability of Bhutan‟s natural resources. The NEC provides input into major policy areas in which environmental concerns and economic development need to be balanced, such as tourism; road access; resource-based mechanisms for financing sustainability; public health; urbanization; and population and sustainability.

Development of law at the national level with relation to sustainable development has led to legislation on sectoral environmental and environment-related issues by adding regulatory instruments with well-defined requirements. Policies also have been refocused to better integrate fragmented sectoral laws and regulations into a coherent framework, streamlining and harmonizing regulatory requirements.

A prerequisite for creating environmental legislation is the establishment of environmental standards. Such standards have never been systematically developed for Bhutan, which has often led to the adoption of regional and international standards instead. Environmental legislation eventually will be developed for all sectors based on environmental quality standards determined by the National Environment Commission and sectoral Ministries.

The majority of Bhutan‟s existing environmental legislation concerns the conservation of forests and the protection of wildlife and their habitats. More recent legislation covers the industrial and mining sectors and environmental assessment, as has been mentioned. The next set of environmental laws in Bhutan will have to be built upon the framework of current laws such as the Forest Act 1969, Forest and Nature Conservation Act 1995, Mines and Management Act 1995 and the Environmental Assessment Act 2000. In addition, an umbrella law is needed to facilitate implementation of a holistic approach to environmental issues. The Royal Government has thus initiated the development of such a law, the National Environmental Protection Act, which is currently under way.

INDIA

Key Issues: Multiplicity of Legislation; Overlapping Provisions; Non- Compliance; Enforcement; Faulty Structure/Scheme of Legislation; Drafting Legislation; Lack of Provisions for Implementation; Inbuilt Enforcement Mechanism

Key Legislation: Constitution of India (Article 21,48A, 51A, 32, 226) The Water (Prevention and Control of Pollution) Act, 1974; The Water (Prevention and Control of Pollution) Cess Act, 1977; The Air (Prevention and Control of Pollution) Act, 1981; The Indian Forest Act, 1972; The National Environment Tribunal Act, 1995; The Wildlife (Protection) Act, 1972 and Amendments; The Forest (Conversation) Act, 1980; The Environment (Protection) Act, 1986; The Public Liability Insurance Act, 1991; Forty Second Amendment, 1976 The Constitution (73rd Amendment) Act, 1992; Constitution (74th Amendment) Act, 1992

Key Institutions: Ministry of Environment and Forests**;** Central Pollution Control Board, State Pollution Control Boards; State Department of Environment; Botanical Survey of India; Zoological Survey of India; Ministry of Agriculture; Ministry of Water Resources; Ministry of Surface Transport; Ministry of Industry; Ministry of Health; Ministry of Agriculture; Ministry of Non-Conventional Energy Sources; Ministry of Commerce**;** Ministry of Urban Development; Planning Commission; Supreme Court; High Courts; District Courts; Nyaya Panchayat, Panchayat Adalat, Gram Kachheri

1. INTRODUCTION

India has so far developed a comprehensive framework of environmental legislation and regulations for the protection and the conservation of the environment. However, due to poor implementation of our environmental laws, the targets set for the environment protection were not achieved. One of the reasons for the poor implementation of laws is lack of knowledge and skill of application in the lawmakers, law enforcers and industry managers. The Government of India, keeping this in view, has taken initiatives to strengthen the legal capacity of lawmakers, law enforcers, industry managers, law teachers etc. The legal capacity building will assist in strengthening voluntary compliance, as well as capacity for enforcement. The approach of the legal component rests on the assumption that the participatory approach based on traditional approaches to compliance with law and norms governing environmental resource use. The Project will support the development of specific actionable strategies to reduce the gap between law and practice

2. LEGISLATION

Legislation on water pollution control dates back to Shore Nuisance (Bombay, Colaba) Act, 1853 which authorised the Collector of land revenue in Bombay to order removal of any nuisance below high water mark in Bombay harbour. The Orient Gas Company Act 1857 under section 15, provided for fines on the Company and right of compensation to any whose water was fouled by the Company, Later the Indian Penal Code 1860 under section 268, 269,277, 278 and 290 provided for a fine on a person who fouled the water of any public spring or reservoir and for penalising negligent acts with poisonous substances. The Indian Easement Act 1882 protected riparian owners against unreasonable pollution by upstream users. Indian Fisheries Act 1897, Indian Port Act 1908, Indian Forest Act, 1927 and Merchant Shipping Act 1958 also contain provisions against polluting rivers and other water bodies. The Criminal Procedure Code under section 133 empowers the Collector to order stoppage of activities resulting in nuisance to the public. It may be noted that the above-cited laws incidentally deal with water pollution and prevention and control of water pollution was not their main objective. Noise, air and visual pollution can be controlled under the Motor Vehicles Act, 1939 (amended in 1989). Several States have their own laws for regulating pollution.

3. ENVIRONMENTAL ACTS AND AMENDMENTS

General
The Environment (Protection) Act, 1986
The Public Liability Insurance Act,1991 and Amendment, 1992
The National Environment Tribunal Act, 1995
The Ancient Monuments and Archaeological Sites and Remains Act, 1958
The National Environment Appellate Authority Act, 1997

Forests and Wildlife
The Indian Forest Act, 1927 and Amendment, 1984
The Forest (Conservation) Act, 1980,1981
The Wildlife (Protection) Act, 1980,1981
The Insecticide Act, 1968

Land Use
The Urban Land (Ceiling and Regulation) Act, 1976
The Model Regional and Town Planning and Development Law, 1985
Provision in State Acts on Town and Country Planning
The Industries (Development and Regulation) Act and Amendment, 1957, 1987
The Mines and Minerals (Regulation and Development) Act and Amendment, 1957,1984
The Coal Mines (Conservation and Development) Amendment Act, 1985

Water
The Water (Prevention and Control of Pollution) Act, Rules and Amendment, 1977, 1978, 1982
The Coastal Regulation Zone Notification, 1991
The Oil Fields (Regulation and Development) Act, 1984
The Merchant Shipping Act, 1970
The River Boards Act, 1965
The Indian Fisheries Act, 1897

Air
The Air (Prevention and Control of Pollution) Act, 1981; Rules and Amendment, 1982,1983, 1987
The Factories Act, 1948 and Amendment, 1987
The Motor Vehicles (Amendment) Act, 1986
The Indian Boiler Act, 1923

4. THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT, 1974

The Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) is one of the major laws relevant to the environment. Its main objects are the following:-

(a) to provide for the prevention and control of water pollution;
(b) to provide for the maintaining or restoring of wholesomeness of water;
(c) to provide for the establishment of Boards for the prevention and control of water pollution;
(d) to provide for conferring powers on such Boards and Assigning functions to such Boards; and
(e) to provide for matters connected with the above.

The Water Pollution Act was taken as relating to a subject not within the competence of Parliament (except as provided in article 249 and 250 of the Constitution). The Act has been enacted in pursuance of resolutions passed by certain States under Article 252(1) of the Constitution. The Act applies in the first instance to all the Union Territories and to the following States whose Legislatures have passed the

requisite resolution: Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradeash, Rasasthan, Tripura and West Bengal.

Central and State Pollution Control Boards

By sections 3 and 4, the Act provides for the creation of the Central Pollution Control Board and State Pollution Control Boards, Sections 13-15 authorise the establishment of Joint Boards. The main function of the Central Board, under section 16(1) of the Act, is to "promote cleanliness of streams and wells in the States" Section 16(2) provides certain functions in the nature of advice, planning, co-ordination, publication, education and programmes for preventing, controlling and abating water pollution.

The State Boards (section 17) are expected not only to plan comprehensive programmes for the prevention and control of water pollution in the State but also to inspect sewage or trade effluents, works and plants for their treatment, to lay down standards for such effluents and for the quality of receiving waters, to make orders for waste disposal and the like.

Directions by Boards

By section 18 of the Water Pollution Act, power to give "directions" is conferred on-

(a) the Central Government (which can give directions to the Central Board);
(b) the Central Board (which can give directions to the State Boards):
(c) the State Government (which can give directions to the State Board).

In case of conflict between directions given by the Central Board and the State Government, that matter shall be referred to the Central Government for decision. If the Central Board's directions are not complied with by the State Board, the Central Government can order the former to perform the functions of the latter for a specified period.

Control of Pollution of water

Apart from the general powers of the State Boards (section 17), a State Board has statutory powers to obtain information (section 20), to take samples of effluents and have them analysed (sections 21-22) and to enter and inspect premises and vessels (section 23). Violation is punishable under section 40.

Prohibition against pollution

Section 24 prohibits every person from knowingly doing certain acts which cause water pollution. Most important is the prohibition against causing or permitting the entry into any stream or well or sewer or by land of-

any poisonous matter;
any noxious matter;
any polluting matter as per standards laid down by the State Board;
any other matter tending to impede the proper flow of water of a stream "in a manner leading or likely to lead to a substantial aggravation of pollution due to other causes or its consequences".

Violation is punishable under section 43 (New outlets and new discharges)

Section 25 prohibits the following acts, if committed without the previous consent of the State Board:-

(a) establishment of any industry etc. or any treatment and disposal system likely to lead to discharge of sewage;
(b) bringing into use any new or altered outlet for discharge of sewage; or
(c) beginning to make any new discharge or sewage.

Violation is punishable under Section 44.

Section 27 lays down the circumstances in which consent may be granted. Orders refusing consent are, under section 28, appealable to the prescribed appellate authority. They can also be revised by the State Government under section 29.

Power to carry out works

Where consent of the Board is subject to the condition of execution of works and the person to whom such conditional consent is given fails to execute the works, the State Board can get those works executed at his cost, under section 30.

Accidents and emergencies

Where owing to any accident etc. there is any discharge of poisonous, noxious or polluting matter, section 31 imposes on the person concerned an obligation to inform the State Board. Failure to close is punishable under section 45A, which is the residuary penal provision.

By section 32, the State Board is empowered to take emergency measures in case of such accident. Violation is offence under section 41.

Restraint order

In case of apprehended pollution of water of any stream or well, section 33 enables the State Board to apply to the Court for a restraint order. Violation of the restraint order becomes punishable under section 44. Further the Court may authorize the Board to undertake removal and disposal of the matter.

Power of a Board to give directions

By section 33A of the Water Pollution Act (subject to directions of the Central Government), a Board can, in the exercise of its powers and performance of its functions under the Act, issue directions. Breach of such direction is punishable under section 41.

Penalties

Sections 41 to 50 of the Water Pollution Act is of considerable importance in practice and deals with penalties and procedure

5. THE AIR (PREVENTION & CONTROL OF POLLUTION) ACT, 1981

The Air Pollution Act has an international background, which has important constitutional implications. The Act was passed to implement the decisions taken at the United Nations Conference on the Human Environment held in Stockholm in June 1972, in which India participated. The preamble to the Air Pollution Act (in the first paragraph) contains a formal recital of the fact and adds that the decisions so taken were "to take appropriate steps for the preservation of the natural resources of the earth which, among other things, include the preservation of the quality of air and control of air pollution". The preamble, in the second paragraph, further records that "it is considered necessary to implement the discussion aforesaid in so far as they relate to the preservation of the quality of air and control of air pollution".

The fact that the Air Pollution Act has been passed to implement the decisions taken at the above Conference leads to the important constitutional position that the legislative power of Parliament consequentially expands in its dimension and by virtue of the decision taken at the above Conference,

Parliament acquires competence to make a law necessary to implement the decision, whatever be the position regarding competence to make a law necessary to implement the decision, whatever be the position regarding competence to make laws on the subject matter of the decision, with reference to the scheme of distribution of legislative powers between the Union and the State under the provisions of the Constitution. This is a short rough statement of the position resulting from the relevant constitutional provisions, namely, article 253 and Seventh Schedule, Union list, entries, 12, 13 and 14.

Territorial extent of the Act

Unlike the Water Pollution Act, 1974, the Air Pollution Act extends to the whole of India. Providing for all India extent became possible because of the fact that the Act has been avowedly passed to implement the decision taken at the Stockholm Conference.

Scheme of the Act

The scheme of the Act may be dealt with, at this stage. Chapter 1, headed "Preliminary", deals with the short title, extent and commencement of the Act, and definitions, in sections 1 and 2 respectively. The most important definitions are those of the expressions "air pollution", "emission", "industrial plant" and "occupier" Chapter 2 deals with Central and State Boards for the Prevention and Control of Air Pollution, their composition, terms and conditions of service of members, their qualifications and delegation of powers, in section 3-15. The powers and functions of the Boards themselves are dealt with in Chapter 3 (sections 16-18). The really operative part of the Air Pollution Act begins with Chapter 4 (sections 19-3A). That Chapter is concerned with declaration of "air pollution control areas" (section 19), emissions from automobiles (section 20), restrictions on the operation of industrial plants in air pollution control areas (sections 21,22 and 22A) and several incidental matters, including ancillary powers (sections 23-27). It also provides for the establishment and recognition of "State Air Laboratories" and Analysts for the purposes of the Act (sections 29-31). An important provision contained in section 31 gives a right of appeal to any person aggrieved by an order made by the State Board. Much more important is the provision contained in section 31A, inserted by the amending Act 47 of 1987, under which a "Board" which means a Central Board or a State Board, as defined in section 2(g) can give written directions to any person, officer or authority in the exercise of its powers and performance of its functions under this Act. This power (vide the Explanation to section 31A) includes power to issue certain drastic directions, such as the closure; prohibitions or regulation of any industry, operation or proceeds, or the stoppage or regulation of supply of electricity, water or "any other service". It may be mentioned that by section 39 (as amended in 1987) whoever contravenes any of the provisions of the Act or any order or direction issued under the Act for which no penalty has been elsewhere provided in the Act, shall be punishable with imprisonment up to 3 months or fine up to 10,000 rupees or both. The general provision as to offences by companies (section 40) applies to contravention of a direction issued under Section 33A and punishable by virtue of section 39, as it applies to any other offence under the Act committed by a company.

Chapter 5 of the Air Pollution Act (sections 32 to 36) deals with certain financial matters, such as funds, accounts and audit, chapter 6 (sections 37 to 46) is titled "Penalties and Procedure". But, in fact, it also contains a section, which purports to exclude the jurisdiction of courts to issue injunctions in certain cases (section 46). Incidentally, this Chapter has been extensively amended by the amending Act of 1987. Chapter 7 of the Air Pollution Act (sections 47 to 54) is titled "Miscellaneous", but, in fact this Chapter also contains certain important provisions (section 47 to 49) relating to suppression or dissolution of State Boards. It also contains a provision (Section 52) giving to the Air Pollution Act an overriding effect over all other laws except the Atomic Energy Act, 1962. The latter Act remains the governing law in relation to radioactive pollution. As regards rule-making power, sections 53 and 54 give the power to Central Government and State Governments respectively. However, the power of the Central Government is confined to specified matters, while the power of the State Government is much wider, because it covers not only the matters enumerated in Section 54(2) but also is power to make rules "to carry out the purposes of this Act" as provided in section 54(1).

6. THE ENVIRONMENT (PROTECTION) ACT, 1986

The Environment (Protection) Act, 1986, (Central Act 29 of 1986) which came into force on 19th November, 1986, is the most comprehensive Act on the Indian statute book relating to environment not only because of its very wide definition of "environment", but also because of the sweeping coverage of its substantive provisions, particularly Chapter 2, dealing with general powers of the Central Government (sections 3 to 6) and the stringent provisions regarding penalties for various offences (section 15 to 17). The declared objective of the Act, as enunciated in the long title, is to "provide for the protection and improvement of environment and for matters connected therewith". The Act does not repeal any of the earlier laws regarding pollution of the environment and allied matters. Nor does it make a specific mention of the various Boards or other Authorities constituted under other laws. Rather, it envisages the creation (if necessary) of fresh Authorities.

The Environment (Protection) Act, 1986 extends over 26 sections. Section 1 gives the short title, extent and commencement of the Act; Section 2 contains the definitions, almost each of the definitions being of practical importance. The basic definitions are, of course, those of the expressions, "environment", "environmental pollution", "handling" and "hazardous substance". These expressions are important, because they are found frequently recurring in the substantive provisions of the Act, or represent the nuclear concepts underlying the Act.

Several important powers have been conferred on the Central Government by section 3 to 6, which constitute Chapter 2 of the Act. There is, in the first place, section 3, which confers on the Central Government power to take measures for protecting the environment and improving its quality. This power is without prejudice to the power given by section3 (3), to the Central Government, to constitute appropriate authorities for the purpose of exercising and performing the powers of the Central Government. Such an authority can, if so authorized by the Central Government under section 4(2), exercise general control and direction even over the officers appointed under section 4. Section 5 of the Act gives a far-reaching power to the Central Government, "in the exercise of its powers and performance of its functions under this Act", to issue written directions to any person, officer or authority. This power, although it is declared to be subject to the provisions of the Act, can be exercised "notwithstanding anything contained in any other law". The power to issue "directions" under section 5 can itself be delegated, by a gazette order of the Central Government, to the authority or authorities constituted by the Central Government under section 3(3).

There is the power with the Central Government, under section 6, to make rules on any of the matters referred to in section3; and this power is supplemented by section 25 of the Act, giving power to the Central Government to make rules on specified matters. All rules are, however, to be laid before the Parliament, as required by section 26.

7. THE NATIONAL ENVIRONMENT TRIBUNAL ACT, 1995

The Tribunal will adjudicate on the matters compensation for death, or injury to a person and damage to property and environment or any of head specified in the schedule. The payment of compensation is based on principle of no-fault liability. The workmen have been excluded from the ambit of the Act. The Act also envisages that if death, injury or damage caused by an accident cannot be attributed to any individual activity but is the combined or resultant effect of several such activities, operation and processes, the Tribunal may apportion the liability for compensation amongst those responsible for such activities, operations and processes on an equitable basis.

The Tribunal is to be established with its benches in each State and Union Territory, or for a group of States/Union Territories in phased manner. In the first phase, in addition to the principal bench at Delhi, benches are proposed to be set up in Bombay, Calcutta and Madras. The Tribunal will consist of a Chairperson, Vice-Chairperson, Judicial and Technical Members. Its benches may exercise tribunal. A bench shall consist of a Judicial Member and a Technical Member.

The Tribunal shall not be bound by the procedure laid down in the Code of Civil Procedure but shall be guided by the principles of natural justice. The Tribunal shall have power to regulate its own procedure: and also enjoy powers vested in a civil court while trying a suit in respect of summoning and enforcement of attendance of any person, taking evidence on oath and affidavits, powers requiring the discovery and production of documents, including requisition of any public record or document.

Access to the Tribunals will be available to the aggrieved persons/entities and representative bodies in the field of environment by making an application. On receipt of such an application, the Tribunal may, if satisfied after inquiry, admit the application for adjudication. If the Tribunal is not so satisfied, it may summarily reject the applications after recording reasons. The Tribunal also has *suo moto* power to dispense justice to the victims of the accident.

The Tribunal will entertain claims for compensation for damage if it is presented within 5 years from the occurrence of the damage. No other civil court shall have jurisdiction to entertain any claim or action, which can be entertained, tried or dealt with by the Tribunal. No application fees shall be changed in respect of cases brought before the Tribunal from persons whose income is below prescribed limits and from representative bodies. Apples from the Tribunal will lie to the Supreme Court.

The Tribunal is empowered to make interim orders to provide injunctive relief to the victims by way of injunction or stay orders. The interim orders shall subject to the following conditions:

Copies of such application and of all documents in support of the plea for such interim order are furnished to the party against whom such application is made or proposed to be made, ,,and

Opportunity is given to such party to be heard in the matter. However these conditions could be dispensed within exceptional circumstances. Non-compliance of Tribunal‟s directions or orders will be punishable with imprisonment up to 3 years or the fine, which may extend up to Rs.10 lakhs or both. The orders will however be passed after the accused is given an opportunity to show cause. This legislation is first of its kind in the world for providing relief, compensation and restitution to victims of accidents while handling hazardous substances: and for environmental damages.

8. THE NATIONAL ENVIRONMENT APPELLATE AUTHORITY ACT, 1997

The Act to provide for the establishment of a National Environment Appellate Authority to hear appeals with respect to restriction of areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain conditions. The Act to provide for the establishment a National Environment Appellate Authority to hear appeals with respect to restriction of areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards under the Environment (Protection) Act,1986 and for matters connected therewith or incidental thereto, be taken into consideration. The Act seeks to fulfill an urgently felt need for some mechanism for effective and expeditious disposal of appeals against the decisions of competent authorities Under the Environment (Protection) Act, 1986 giving environmental clearances to developmental projects. In view of certain recent interventions of the Hon'ble Supreme Court in public interest litigations involving environmental issues, it was considered necessary to set up an independent body for quick redressal of public grievances. Consequently, an Ordinance was promulgated providing for the establishment of a National Environment Appellate Authority to deal with appeals against the grant of environmental clearance to projects.

The following class of persons shall have i) the right to appeal any person who is likely to be affected by the grant of environmental clearance; ii) any person who owns or has control over the project with respect to which an application has been submitted for environmental clearance; iii) any association of persons (whether incorporated or not likely to be affected by such order and functioning in the field of environment; iv) the Central Government, where the environmental clearance is granted by the State

Government and where the environmental clearance is granted by the Central Government; or any local authority within any part of whose local limits are within the neighborhood, wherein the project is proposed to be located. The Authority shall not be bound by the procedure laid down in the Code of Civil Procedure but shall be guided by the principles of natural justice. The Authority shall have powers to regulates own procedure and also enjoy powers vested in a Civil Court while trying an appeal in respect of summoning and enforcement of attendance of any person, taking evidence on oath and affidavits, owners requiring the discovery and production of documents, including requisition of any public record or documents. The Authority shall fix the places and times of its enquiry safeguards under the Environment (Protection) Act, 1986 and forvmatters connected therewith or incidental thereto, be taken in to consideration.

The Act seeks to fulfill an urgently felt need for some mechanism for effective and expeditious disposal of appeals against the decisions of competent authorities under the Environment (Protection) Act, 1986 giving environmental clearances to developmental projects. In view of certain recent interventions of the Hon'ble Supreme Court in public interest litigations involving environmental issues, it was considered necessary to set up an independent body for quick redressal of public grievances. Consequently, an Ordinance was promulgated providing for the establishment of a National Environment Appellate Authority to deal with appeals against the grant of environmental clearance to projects.

LEGAL FRAMEWORK MALDIVES

Key Issues: Multiplicity of Legislation; Overlapping Provisions; Non- Compliance; Enforcement; Faulty Structure/Scheme of Legislation; Drafting Legislation; Lack of Provisions for Implementation; Inbuilt Enforcement Mechanism

Key Legislation: Environmental Protection and Preservation Act, 1993; Environmental Impact Assessment (EIA); Fisheries Law of the Republic of Maldives, 87; Law on Uninhabited Islands (Law no: 20/98)

Key Institutions: Ministry of Home Affairs, Housing and Environment; Ministry of Planning and Environment; National Environment Council; Ministry of Atolls Administration; Maldives Water and Sanitation Authority; Ministry of Fisheries, Agriculture and Marine Resources; National Commission for the Protection of the Environment; Ministry of Fisheries and Agriculture; Ministry of Tourism; Ministry of Health and the Ministry of Construction and Public Works;

1. INTRODUCTION

The main legislative instrument for the protection of the environment in the **Maldives** is the Law on the Protection and Preservation of the Environment (Law No. 4/93). The purpose of this law is set out in its preamble, which states that, the natural environment and its resources are part of a national heritage that needs to be protected and preserved for the benefit of future generations. Further, it is stated that the protection and preservation of the country‟s land and water resources, flora and fauna, beaches, reefs, lagoons and all natural habitats are important for the sustainable development of the country. Law No. 4/93 established a framework upon which regulations and policies can be developed to protect and preserve the natural environment and resources for the benefit of future generations. Environmental Protection and Preservation Act - approved by the Citizen's Majilis in April 1993 which provides the Ministry of Planning, Human Resources and Environment with wide statutory powers of environmental regulation and enforcement. Law No: 4/93 Environmental Protection and Preservation Act of the Maldives provided the umbrella framework for the protection and preservation of the Environment. The Act defines the environment as „all living and non-living things that surrounds and effects the lives of human beings‟.

2. LEGISLATION

The government adopted appropriate sectoral policies covering areas such as fresh water resources, and waste management. Coral mining on reefs surrounding inhabited islands are banned.

The Act empowers the Environment Ministry to establish and administer protected areas and prohibits disposal of oil, waste, poisonous gases or anything else, which could be harmful to the environment within the territory of the Maldives. The Act also regulates the disposal and transboundary movement of hazardous wastes.

Different provisions of the Act are:

Section 5

An impact assessment study shall be submitted to the Ministry of Environment before implementing any development project that may have a potential impact on the environment. The Ministry of Environment

shall formulate the guidelines for EIA and shall determine the projects that need such assessment as provided in the Section.

Under this Section EIA guidelines have been drafted with the help of assistance from the UNDP and are now in force.

Section 6

The Ministry of Environment has the authority to terminate any project that has any un-desirable impact on the environment. A project co terminated shall not receive any compensation.

Section 11

A „project" is any activity that is carried out with the purpose of achieving a certain social or economic objective.

Section (3)

The Ministry of Environment shall be responsible for formulating policies as well as rules and regulations regarding the environment in areas that do not already have a designated Government authority already carrying out such functions.

The above provisions call for the scrutiny of the other legislative provisions regarding the management of the environment.

Environmental Impact Assessment

Environmental Impact Assessment (EIA) has been made mandatory for large scale projects in the Maldives through the Environmental Protection and Preservation Act of Maldives (4/93). The legislation provides the basic framework for the EIA process in the country and the EIA procedures are laid out in the form of guidelines. According to article 5 (a) of the Act, an impact assessment study shall be submitted to the Ministry of Planning, Human Resources and Environment before implementing any activity that may have an impact on the environment. Article 5 (b) states that the principles of EIA and the projects that require an EIA shall be determined by the Ministry of Planning, Human Resources and Environment. To streamline and facilitate the EIA process in the country the Ministry developed a set of guidelines outlining the procedures for EIA and these were approved by the Cabinet in December 1994.

3. RELATED AREAS AND LEGISLATION

Fisheries and Marine Resources

Law No: 5/87 Fisheries Law of the Republic of Maldives as stated earlier governs the area of living marine resources. This law defines "fishing" as the taking out, extraction of any living marine resource or any effort to take out, extract any living marine resources from within the EEZ of the Maldives.

Section 3

The Ministry of Fisheries, Agriculture and Marine Resources has the discretion to regulate the area of Fisheries in the Maldives.

The Ministry of Fisheries, Agriculture and Marine Resources shall monitor the activities of fishing within the Maldives and shall formulate and implement policies and activities for the development and advancement of fisheries.

The Act further states that the Ministry of Fisheries shall regulate fishing by foreign vessels within the EEZ of the Maldives, fisheries related research activities. Further Section 10 of the Act, empowers the Fisheries Ministry to declare as protected any living marine resources deemed necessary for a time period deemed necessary. There is no specific law on the issue of pollution. Legal protection is given of different aspects and areas of pollution by different legislation. Law No. 7/96 the Wreckage Law of the Maldives deals with the area of marine pollution from wrecked or sunken ships.

Section 14 (b) gives the Ministry of Transport and Civil Aviation power to fine the owner of any ship wrecked or sunken in Maldivian waters where any material which is potentially harmful to the environment is spilled into the sea either by a deliberate act or willful negligence. The Act provides, where the Government has incurred any costs in cleaning any material as stated in sub-section (a) then such cost should be refunded to the Government by the owner.

Sub-section (c) states that where any damage to the environment is caused by any activity of the owner of the vehicles, shall compensate such damage. All three sub-sections of section 14 are administrative procedures and are not referred to adjudication.

NEPAL

Key Issues: Multiplicity of Legislation; Overlapping Provisions; Non- Compliance; Enforcement; Faulty Structure/Scheme of Legislation; Drafting Legislation; Lack of Provisions for Implementation; Inbuilt Enforcement Mechanism

Key Legislation: The Constitution of the Kingdom of Nepal (1990); Environmental Protection Act, 1997(EPA; Environment Protection Regulations (EPR, 1997) and its 1st Amendment (1998); ODS Consumption (Control) Rules, 2001 Animal Slaughter House and Meat Inspection Act,(1998) Food safety; Environment Protection Act, (1996); Environmental Planning Guidelines,(1998); Explosives Act, (1961); Foreign Investment & Technology Transfer Act,(1993) and First Amendment (1996); Local Self Governance Act,(1998) and Rules, (2000); National Environmental Impact Assessment Guidelines; The Conservation Act, (1972); Nepal Drinking Water Corporation Act, (1988) ; Nepal Health Services Act (1996) and First amendment (1998); Water Resources Act, (1992); Solid Waste Management and Resource Mobilization Act, (1986); Ancient Monuments Protection Act,(1956) and latest Amendmen; Apartment Ownership Act, 2054; Buildings Act, Civil Aviations Act, (1958) ; Factory and Factory Workers Act, (1958); Industrial Enterprises Act, (1992) and First Amendmen; Kathmandu Valley Development Authority Act, (1988); Mines and Minerals Act, (1985); Mines and Minerals Regulations (1999); Nepal Petroleum Act, (1983); Public Roads Act, (1974); Public Roads improvement Cess Fund Act; Tourism Act, (1978); Vehicle and Transport Management Act, (1992) and Rules; Aquatic Animals Protection Act, (1961) and First Amendment; Management Regulations, (1996); Buffer Zone Regulations, (1996); Conservation Area Management Regulations, (1996); Forest Act, 2049 and First Amendment Act,(1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982);

Key Institutions: Ministry of Agriculture and Cooperative; Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Information and Communication Ministry of Defense Surveillance of national parks and wildlife reserves, Disaster Rescue; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Land Reform and Reform of land tenure, land management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, regulation and management of the of water resources, irrigation works, electricity, flood control;

1. INTRODUCTION

In **Nepal** at the national level, it was only in 1990, after the promulgation of the new Constitution of the Kingdom of Nepal that some concerns were expressed over the protection of the environment in the Constitution. Clause 4 of Article 26 of the Constitution provides:" The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness

and the State shall also make arrangements for the special protection of the rare wildlife, the forests and the vegetation". Until recently, environmental legislation in Nepal had been piecemeal and there was no single basic law governing the issues of environment. Very recently, the Parliament of Nepal has passed an Environment Protection Act, 1997 which may be termed as the basic law of environment. The preamble speaks of the objectives of the Act, which *inter alia,* recognizes that sustainable development can be achieved through the interlinkage between economic development and protection of the environment. The Nepal has also enacted other sectoral laws on the sectoral environmental issues like wildlife, national parks, and ancient monument protection.

2. LEGISLATION

The Constitution of the Kingdom of Nepal, 2047 Bikram Sambat (1990) proclaims:
"The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness, and the State shall also make arrangements for the special protection of rare wildlife, the forests and the vegetation". Similarly, the Constitution has made it mandatory for the government to seek ratification by a two-thirds majority of Parliament of any treaty or agreement that involves sharing of the natural resources of Nepal and has significant, serious or long-term implications for the country (Ministry of Law, Justice and Parliamentary Affairs, 1990b).

> An umbrella act - Environmental Protection Act 2053 (1996) is in place and environmental regulations 1997 (Batabaran Sanrakshan Niyamawali~ 2054) have come into force. The Act acknowledges the important relationship between economic development and environmental protection for sustainable development and acknowledges the danger and need for mitigation measure to reduce the negative impact on humans, wildlife and nature from the environmental degradation. It makes impact assessment mandatory in development projects. Sectoral guidelines for environmental management have been prepared in forest, roads, tourism, water and industry.

Consistent with the initiatives of that time and the then existing policy of government intervention, including actual management of important economic activities, a number of legislative instruments were introduced with environmental implications, including such legislative instruments as: the Private Forest Nationalization Act, 1956; the Lands Act, 1965; the Forest Protection Act, 1956; the Ancient Monuments Protection Act, 1956; the Wild Life Protection Act, 1957; the Aquatic Species Protection Act, 1961; the Malaria Eradication Act, 1965; the Contagious Diseases Act, 1965; the Forest Protection (Special Arrangements) Act, 1967; the Plant Protection Act, 1972; the National Parks and Wildlife Conservation Act, 1973; the King Mahendra Trust for Nature Conservation Act, 1982; the Soil Conservation and Watershed Management Act, 1982; and the Solid Waste Management and Resource Mobilization Act, 1986. Those Acts are all examples of the initiatives taken to empower the government to either manage natural resources or to regulate them so that they become consistent with State policies.

Notwithstanding the lack, until recently, of specially designed and unified legal instruments to comprehensively address environmental and consumer protection issues, there are some 69 different Acts which directly or indirectly provide the basis for regulating and enforcing various environmental protection measures, and for safeguarding the interest of general consumers. Each of the Act is supplemented by corresponding regulations. While it would be too exhaustive to highlight the provisions of each of the legislative measure, some of the major provisions of the all-embracing type of umbrella legislation, that is, the Environment Protection Act (EPA), 1997, are presented below.

In view of the scattered nature of the existing Acts and their inadequacy for meeting the needs of the overall environmental problems in Nepal, the need for an umbrella Act has been felt for some time. Following approval by Parliament, the Act received Royal Assent and is expected to become effective immediately after publication in the official Gazette.

The objective of the EPA is to recognize the interdependence between development activities and the environment, and to maintain a clean and healthy environment by minimizing, as far as possible, the impacts of environmental degradation on humans, animal and plant species, and their physical surroundings. The EPA provides the much needed legal basis for the authorities concerned to require an IEE or EIA for all projects with potentially negative impacts on the environment. With the enforcement of the Act, it will not be possible to implement such projects without the approval of the authorities concerned. While the responsibility to conduct an initial environmental examination is left to individual implementing agencies, all cases requiring an EIA must be referred to the Ministry of Population and Environment. The ministry can make use of outside expertise for reviewing EIA reports when deciding whether or not to approve a proposal. The implementing agencies can then approve a project with the proviso that the proponent adopt the necessary preventive or mitigatory measures as indicated by the EIA.

A highly significant contribution by the Act is the provision of a legal basis for the authorities to fix and enforce pollution standards. Thus far, in the absence of a legal framework, no significant progress has been made, either in setting such standards or in enforcing them.

The EPA empowers the authorities concerned to impose restrictions on all activities and equipment which are found to have any significant adverse effect on the environment. It makes provision for appointing environment inspectors with the authority to inspect, examine and recommend measures for adoption by clients. It gives the government the authority to declare specific areas of amenity value, habitats of rare species, biotic diversity, and places of historic and cultural significance as environmentally protected areas. The EPA also has entrusted the agencies concerned with the preservation of national heritage sites, including those listed as world heritage sites. Another distinguishing feature of the EPA is the establishment of an environment protection fund to be mobilized for environmental protection, pollution control and heritage preservation.

Environment Protection Council is constituted under the said Act, and thus provides a legal validity to the Council. It also provides a legal framework for the adoption of the national and two sectoral EIA guidelines that have already been approved. Similar guidelines are under preparation for a number of other key sectors.

The Act makes provision for rebates and facilities to any industry, commercial activity and technological innovation resulting in a positive impact on the environment. Provision has also been made for compensating affected parties in cases of damage caused by pollution, noise, heat or waste in contravention to the Act, with the backing of supporting regulations. Fines and penalties have been specified for violators of the Act.

In brief, it is clear that the EPA is a short and well documented umbrella legislation, appropriate to the current situation in Nepal. It covers the essential aspects related to environmental protection: (a) the requirement for IEEs and EIAs; (b) inspections; (c) the provision of authority to establish protected areas; (d) testing facilities; (e) the establishment of a fund; (f) the establishment of the necessary administrative mechanism; (g) the establishment of EPC; (h) penalties for violations of the Act; and (i) the authority to enforce guidelines and standards. The Act is flexible, leaving some substantive aspects open, with the most important being inspections. According to the Act, the Ministry of Population and Environment can delegate the function of inspections to experts outside the ministry. It is not yet clear what types of arrangements will be instituted under the upcoming regulations. There are two viewpoints in that regard: (a) the centralization of the function within the Ministry of Population and Environment; and (b) decentralization to the respective agencies, with the Ministry of Population and Environment retaining an overall supervisory role.

Environment-related Provisions in Some Contemporary Acts

Acts	Relevant Provisions
Local Self-Governance Act, 1998	Specific environmental scope of work for DDC, VDC and TDC

	comprising local level environmental planning; forest and biodiversity conservation, land-use management, pollution control, public sanitation, etc.
Environment Protection Act, 1996	Maintain clean and healthy environment and contribute to sustainable development
Forest Act, 1992	Conserve and manage forest and biodiversity
Water Resources Act, 1992	Promote environment assessment, water quality standard, and avoid significant impacts on local environment in the course of water use
Electricity Act, 1992	Avoid environmental effects during electricity generation and transmission
Vehicle and Transport Management Act, 1992	Regulate vehicular exhaust emission according to the standard
Industrial Enterprises Act, 1992	Promote the adoption of industrial pollution control measures, including incentive and disincentive provisions
Pesticide Act, 1991	Regulate the use, production and distribution of pesticide
Labour Act, 1991	Adopt preventative and curative measures for occupational health and safety
Solid Waste (Management and Resource Mobilisation) Act, 1986	Ensure solid waste management through the collection, transportation, recycling, disposal, and the classification of hazardous wastes
Soil and Water Conservation Act, 1982	Ensure soil conservation through land use regulation
King Mahendra Trust for Nature Conservation Act, 1982	Generate fund and manage the nature with people's participation
Tourism Act, 1978	Minimise environmental pollution during mountaineering activities
National Parks and Wildlife Conservation Act, 1973	Declare and manage national parks, wildlife reserves and conservation areas

Public Consultation on EA: A Legally-binding obligation. The Environment Protection Act (EPA), 1996 obliges the approving agency - the Ministry of Population and Environment - to make necessary arrangements to open the EIA report for the general public to render opinions and suggestions. The Environment Protection Rules (EPR),1997 (amendment 1999) further elaborates the public consultation process in order to ensure the participation of different stakeholders right from the scoping to the approval processes. The EPR, 1997 obliges the proponent to issue public notice on the contents prior to the preparation of a scoping report. Once the draft EIA report is prepared, based on the approved Terms of Reference (TOR), the proponent should conduct a Public Hearing at the project site. Following submission of the EIA report to the Ministry of Population and Environment (MOPE), it should be made public. The MOPE has to legally approve the EIA report within 60 days upon receipt. These legal provisions are meant to enhance the participation of different stakeholders right from the project inception to the implementation of the proposal.

The Forest Act, 1992 and the National Parks and Wildlife Conservation Act, 1973 (amendment 1993 with the inclusion of buffer zone concept) have been found effective in involving local people in forest management and species conservation. A legal provision on benefit sharing has also encouraged the local people in species conservation and has helped resolve conflicts between parks management and the people living in and around the area to some extent.

Most of the legal provisions on environment management are very new and while some require the setting of environmental standards others require extended rules and regulations for enforcement. These regulations have, however, opened avenues for developing and/or amending other measures for environment management.

Section 4.01 Conflict Resolution through Benefit Sharing Eight national parks, four wildlife reserves, one hunting reserve and three conservation areas have ensured, in situ, conservation of biological diversity in about 18 per cent of the total area of the country. Various programmes have been launched to maintain the habitat and to increase the number of endangered, threatened and vulnerable wildlife. Continuous and untiring efforts by the government along with its conservation partners, both international and national NGOs as well as the community, have proved successful in bringing about positive changes in the conservation of biological species. The new legal arrangement on buffer zone management, based upon the National Parks and Wildlife Conservation Act, 1973 (amended 1993) has opened new avenues in resolving conflicts between the park management and the local people, especially, conflicts related to access or use of forest resources to meet the requirements of the people living near protected areas, and in preserving agricultural yield and livestock from the wild animals. The Act also introduced the concept of revenue sharing and clearly spelled out that 30 to 50 per cent of the total revenue generated in the protected areas will be used for community development activities. This will be done to promote local people's participation in park management and ultimately in biodiversity conservation. Accordingly, a Buffer Zone Management Rules, 1996 is also in place. This concept has also prompted Nepal to strengthen eco-tourism in the protected areas. The benefit sharing mechanism has contributed a lot to resolving the prevailing conflicts on species conservation. Source:

PAKISTAN

Key Issues: Multiplicity of Legislation; Overlapping Provisions; Non- Compliance; Enforcement; Faulty Structure/Scheme of Legislation; Drafting Legislation; Lack of Provisions for Implementation; Inbuilt Enforcement Mechanism

Key Legislation: Constitution of Pakistan, 1973; Environmental Protection Ordinance (PEPO), 1983; Pakistan Environment Protection Act, 1997; Environmental Quality Standards; Fisheries Act, 1997; The Pakistan Penal Code, 1860; The Canal Drainage Act, 1873; The Punjab Local Government Ordinance, 1979; The Motor Vehicles Ordinance, 1965; and The Motor Vehicles Rules, 1969; The Factories Act, 1934; The West Pakistan Fisheries Ordinance, 1961; The Forests Act, 1927; The Boilers Act, 1923; The Pakistan Petroleum (Exploration and Production) Rules 1986; The Antiquities Act, 1975; The West Pakistan Epidemic Diseases Act, 1959

Key Institutions: Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs; Environmental Tribunals; Pakistan Wildlife Management Boards

1. INTRODUCTION

The Constitution of the Islamic Republic of Pakistan itself contains no statement of principles or policy about the rights and obligations of the state and its citizens with respect to the environment. It does however confer concurrent legislative power on the Federation and the Provinces to legislate in respect of environmental pollution and ecology.

2. LEGISLATION

Prior to promulgation of Pakistan Environmental Protection Ordinance (PEPO) of 1983 and the recent passage of Pakistan Environmental Protection Act (PEP-Act) 1997, Pakistan had laws that contain provisions for environmental protection. These laws dealt with land use, water quality, air quality, noise, toxic and hazardous substances, solid waste and effluents, marine and fisheries, forest conservation, mineral development, energy, public health, etc. They were not effective; punishment for violations was mild and easy to circumvent. The laws included:

- The Pakistan Penal Code, 1860
- The Canal Drainage Act, 1873
- The Punjab Local Government Ordinance, 1979
- The Motor Vehicles Ordinance, 1965; and The Motor Vehicles Rules, 1969
- The Factories Act, 1934
- The West Pakistan Fisheries Ordinance, 1961
- The Forests Act, 1927
- The Boilers Act, 1923
- The Pakistan Petroleum (Exploration and Production) Rules 1986
- The Antiquities Act, 1975
- The West Pakistan Epidemic Diseases Act, 1959, etc.

The Pakistan Environmental Protection Ordinance (PEPO) was promulgated in 1983 and is regarded as the umbrella statutory tool -not very comprehensive - the government of NWFP has prepared a draft environmental Act which emerged through active public participation in a workshop on environmental legislation as well as key recommendations of SPCS. There is an obvious need to consolidate the various aspects of national resources and environmental protection under a common statute to overcome the current fragmented situation. Pakistan Environmental Protection Act (PEPA) 1997. PEPO 1983 was supplemented by with the National Conservation Strategy which emerged out of 4 years of participatory

process oriented approach of extensive consultations with various interest groups, general public and technical experts and was adopted in 1992; PEPO 1983 was replaced with PEPA which was more comprehensive in 1997 - provided guidelines for the protection and conservation of species, habitats and biodiversity and conservation of renewable and non-renewable resources. Unfortunately most rules and regulations of PEPA are not in force - thrust of legislation is on motivation and awareness - seeks to ensure that environmental consideration and concerns of sustainable development are incorporated into national development plans and policies; legislation was result of extensive public consultative process.

In 1983, the Federal Government promulgated the Environmental Protection Ordinance. This was indeed a reforming and consolidating law. The gaps, loopholes and inconsistencies of previous environmental statutes were addressed and resolved. The enforcement mechanism for the new ordinance was somewhat weak, particularly at the provincial level. This led to a review process that aimed to make the law more comprehensive and fully effective. The Government initiated a consultative process involving the relevant Government departments, the provincial Governments, NGO‟s and the private sector for the purpose of evolving consensus on a new draft law. Borrowing the provisions of the 1983 Ordinance, a draft was prepared and circulated for public commentary. Seminars and discussion were organised wherein there was much public participation, and finally a consensus was reached on the draft. Later, the caretaker Government of 1997 promulgated this draft through an ordinance called the Pakistan Environmental Protection Ordinance 1997, which came into force on February 11 1997. The ordinance was placed before the National Assembly and then referred to the Standing Committee who approved it. It is now pending before Parliament.

The Environmental Ordinance is widely regarded as an umbrella statutory tool for dealing with environmental matters. There is a great deal of other federal and provincial legislation already in existence, all of which relates to pollution control and the preservation of natural resources. Much of that other legislation dates back many years but could be adapted for regulating present day activities. The existing laws cover the areas of: land use, forests, wildlife, range land management, irrigation, sanitation, erosion, fisheries, minerals, groundwater, rivers and marine waters, noise and vehicular pollution. To protect areas of outstanding natural interest, national parks and nature reserves are being established in NWFP. Many statutes, laws and rules exist which allow considerable freedom of action under statutory law, if the need arises. There is an obvious need to consolidate the various aspects of national resources and environmental protection under a common statute to overcome the current fragmented situation.

The Pakistan Environmental Protection Act, 1997 is the framework or umbrella environmental statute enacted on 6th December 1997, covering whole of Pakistan. However, most of the Rules and Regulations are not yet in place. The Pakistan Environmental Protection Act, 1997 can be compared with any foreign environmental legislation. The thrust of legislation is on motivation and awareness. It seeks to ensure that environmental consideration and concerns of sustainable development are incorporated into national development plan and policies.

An extensive consultative process was initiated and the draft legislation prepared in 1993 was circulated among a large number of individuals and groups including parliamentarians, federal and provincial government functionaries, Bar councils/associations, journalists and educational institutions. Among others, Law commission, Law Ministers, Law Secretaries, Overseas Chamber of Commerce and Industry; Board of Investment; Export Promotion Bureau; Associations of Chemical, Textile, Engineering, Cement, Fertilizers; Pharmaceutical, Banks; D.F.I.s were also consulted on the proposed legislation. Provincial Environmental Protection Agencies also held consultative workshops in the provincial capitals, attended by eminent persons from different walks of life and by representatives of Environmentally active NGOs.

Views received were carefully considered and legislation was revised in the light of these inputs. Thus the proposed legislation is a unique product of a public anticipatory process and has, therefore, undergone, before enactment, perhaps the most extensive public consultative process in Pakistan.

3. Pakistan Environmental Protection Act, 1997

The salient features of the **Pakistan Environmental Protection Act, 1997** are:

Preamble:
The Preamble of the PEP Act, 1997 provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development.

Definitions
The Act covers air, water, soil, marine and noise pollution (including motor vehicular pollution), handling of hazardous substances and conservation of bio-diversity.

Comprehensive definitions of "environment", "adverse environmental effect", "bio-diversity", "project", and the concept of "sustainable development have been included.

Protection Council

Establishment of Pakistan Environmental Protection Council, headed by the Prime Minister with Chief Ministers of the Provinces as its members.

It has been clarified that the Pakistan Environmental Protection Council is to approve national environmental policies within the framework of a National Conservation Strategy as may be approved by the Federal Government from time to time.

National Quality Standards

Discharges or emissions in excess of the National Quality Standards or other standards established by Pakistan Environmental Protection Agency, where ambient conditions so require, has been prohibited.

Pollution Charges

The Federal Government has been empowered to levy a pollution Charges on persons not complying with the NEQS.

Environment screening

A two-stage environmental screening process has been introduced for proposed projects involving filling of either, an Initial Environmental Examination, or for projects likely to cause an adverse environmental effect, a comprehensive Environmental Impact Assessment. Import of hazardous waste has been prohibited.
Handling of hazardous substances has been prohibited except under license. To ensure compliance with the NEQS, Pakistan Environmental Protection Agency has been empowered to direct that motor vehicles shall install such pollution control devices, or use such fuels or undergo such maintenance or testing as may be prescribed.

Environmental Protection Agencies to enforce Environmental Protection Order *(EPO)*

Pakistan Environmental Protection Agency and Provincial Environmental Protection Agencies have been empowered to issue an Environmental Protection Order (EPO) deal with an actual or potential adverse environmental effects in violation of the provisions of the Act

Penalties

The Environmental Tribunal and the Environmental Magistrates have been empowered to award compensation for losses/damages. The Environmental Tribunal may also recover monetary benefits from the offenders. Persistent offenders can be subjected to imprisonment.

Complaint by Aggrieved

An Aggrieved person can file a complaint with the Environmental Tribunal after giving 30 days notice to the Federal Agency or the Provincial Agency concerned

Environmental Tribunals and Courts

Environmental Tribunal have been constituted with exclusive jurisdiction to try serious offences under the Act. Chairperson of the Environmental Tribunal shall be a person qualifying for appointment of a Judge of High Court. Minor offences relating to pollution by motor vehicles, and violation of rules & regulations etc. are being tried by the Environmental Magistrates

International Conventions

The Federal Government has been empowered to make rules for implementing important international environmental conventions and Protocols and protocols to which Pakistan is a Party.

Overview of the Pakistan Environmental Protection Act, 1997

PEP Act, 97, *inter-alia*, has two main functions: It creates institutions and it regulates activities. The institutions that it creates have, in general, much broader subject area coverage than the specific activities that PEPA regulates. PEPA, 97 is enforced through a mixture of administrative measures, judicial sanctions and the active involvement of civil society.

Pollution Control and Abatement

Pollution is controlled through four main provisions.

- **Discharge or emission in excess of NEQS:** The primary anti-pollutant measure is contained in section 11, this prohibits the discharge or emission of any effluent waste air pollutant or noise in an amount exceeding the National Quality Standards (to be prescribed in the rules and regulations) or ambient standards for air, water or land (set under paragraph 6(g))
- **Motor vehicle emissions in excess of NEQS:** This provision (contained in section 15) applies to motor vehicles and prohibits noise or air pollutants in an amount exceeding the National Quality Standards or ambient standards for air, water or land (set under paragraph 6(9)). It is not possible to be charged under both section Ä11 and section 15 for the same offence- a motor vehicle emission should be charged under section 15.
- **Prohibition on import of hazardous waste:** This is a blanket prohibition (contained in section 13) on the importation of hazardous waste into Pakistan, its territorial waters, the exclusive economic zone or Pakistan's historic waters (as specified pursuant to section 7 of the Territorial Waters and Maritime Zones Act 1976)
- **Handling of hazardous substances:** section 14 prohibits the generation, collection, transportation, treatment, disposal, storage or handling of hazardous waste except under a license issued by the EPA or in accordance with the provisions of, any domestic law or relevant international convention (in particular. The Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal, Basel, 1989).

Assessing Environmental Impacts

Section 12 provides that no-one can commence construction or operation of a project, where such project falls within a prescribed category, unless in respect of that project:

a) an Initial Environmental Examination (IEE); or
b) where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), has been filed with the EPA and its approval has been obtained.

The rules and regulations will also specify the content of an IEE or EIA. In concept, an IEE is a preliminary document as its full title suggests (initial environmental examination). Its purpose is to deal with those classes of projects where a full environmental impact assessment may not be warranted. Upon receipt of an IEE, the EPA must either give its approval to the project or require the submission of an EIA (section 1 2(2)(a))

With an EIA, the EPA has the power:

- to approve the project (with or without conditions);
- to require that the EIA be resubmitted with modifications or
- to reject the project as being contrary to environmental objectives (section 12(2)(b)).

However, before the EPA can issue its approval, it must carry out the review of the EIA with public participation and this is an entry point for the public to make its point of view known (section 12(3,). The public also have a right to inspect the registers of IEEs and ElAs which will contain brief project particulars and a summary of decisions taken (section 12(7)).

For both EIA and IEE, the EPA must give its approval or otherwise within four months of receiving it, provided that it complies with the prescribed procedure. If the EPA fails to do so then the project will be deemed to have been approved to the extent that it does not contravene the Act or its rules and regulations (section 12(4)). This means for example, that an industrial unit which would produce emissions exceeding the limits set out in the National Environmental Quality Standards could not be taken to be approved under this provision. This four month period may be extended by the Federal Government In a particular case note that this power is placed in the hands of the Federal Government rather than the Federal Agency (although it may be delegated under section 26).

SRI LANKA

Key Legislation: Multiplicity of Legislation; Overlapping Provisions; Non- Compliance; Enforcement; Faulty Structure/Scheme of Legislation; Drafting Legislation; Lack of Provisions for Implementation;

Key Legislation: National Environment Act, 1980; National Environment (Amendment) Act, 1988; Control of Pesticide Act, 1980; Coast Conservation Act, 1981; Coast Conservation (Amendment) Act, 1988;Marine Pollution Prevention Act, 1981; Fisheries and aquatic resources Act, 1996; Forestry Ordinance, the Flora & Fauna Act, the Fisheries Act; National Environmental (Protection and quality) Regulation, 1990; National Environmental (Noise Control) Regulation, 1996; National Environmental (Noise Control) Amendment Regulation,1997;

Key Institutions: Ministry of Environment and Natural Resources; Department and Mahaweli Authority; Department of Wildlife Conservation; Coastal Conservation Department; National Environmental Steering Committee, Metrological Department; Ministry of Agriculture, Lands and Forestry; Natural Resources, Energy and Science Authority; Ministry of Fisheries and Aquatic Resources; Ministry of Transportation, Environment, and Women's Affairs; Wayamba Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; Central Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; National Planning Department; Board of Infrastructure Investment; Regional Industry Service Committees; Industrial Development Board; Provincial and local governments; Sri Lanka Standards Institute

1. INTRODUCTION

Sri Lanka has a comprehensive legal and institutional infrastructure to protect the environment. Laws to control air, water, and land pollution have been established by Parliament, while land use planning has been applied to government land sale and settlement programs. A central environmental authority is responsible for overseeing environmental impact assessments - required of all government development projects - and for the planning of national environmental and natural resource policies. Numerous nongovernmental organizations exist which engage in environmental education and lobbying. Yet, according to this report, there is a widening gap between Sri Lanka's environmental goals and achievements. Water pollution, soil erosion, deforestation, and wildlife poaching threaten many areas of the country. Inadequate management skills, ill-defined project planning, poor law enforcement, confusing procedures, inadequate training, and poor facilities have hindered the effectiveness of institutions combating environmental problems. In addition, poor interagency cooperation, inefficient use of existing data, and lack of policy leadership have frustrated private and public environmental efforts. Improved funding, leadership, environmental education, and nongovernmental organization cooperation are among the recommendations made to help strengthen environmental laws and institutionsThe first legislation related to environment was passed by the British Colonial Government to control the land resource, by the government taking over unused or unutilized land from the public. The Crown Lands Ordinance (1840) declared that all forests, waste, unoccupied or uncultivated land shall presumed to be the property of the Crown until the contrary thereof be provided. This ordinance encouraged the use of land, increasing environmental damage. Subsequently, a number of conservation and protection oriented Acts such as Forest Ordinance (1907), Fauna and Flora Protection Ordinance (1937) and the Soil Conservation Act (1951) were posed to mitigate the environmental damage. After that, more than 100 separate statutes have been enacted over the last 100 years that have some connection with environmental protection and natural resources management.

2. LEGISLATION

Most of these statutes follow regulatory policing and control approach. State protectionism was always stressed. This tendency continued until 1972, the year on which United Nations Conference on the Human Environment was held which stressed the need for environmental management rather than protection by the state. From late 1960s, to the mid 1990s, emphasis was laid on participatory environmental management. Several Acts were revised to focus more on participatory approach. The revisions in 1996 to the Fisheries and Aquatic Resource Act envisaged the setting up of Fishery Management Committee, the 1988 revision to the Irrigation Ordinance mandated former organizations, and the Forest Ordinance revision of 1988 contained provisions for participatory forestry. Public participation was also introduced to the Environmental Impact Assessment process by the National Environmental (Amendment) Act of 1988.

The focus has now moved to a wide-ranging, comprehensive framework for environmental management for sustainable development. These new statutes seek to move away from simple regulation to an effective management framework, which enables government officials to interact with community resource users and private sector. The Mines and Minerals Act No.33 of 1992 provides mechanisms for reducing pollution resulting from mining. The new draft National Environmental Bill presents a framework for National Environmental Policy, involving both the public and private sector. Section 2 of this draft bill states 'every person shall make every practicable effort to follow the path of sustainable development. The section 3 includes the objectives of sustainable development. A draft Forestry Bill has also been developed. A draft Water Resources Bill is also under preparation for managing the available water resources. Amendments to the Coast Conservations Act are also under way.

Implementation of environmental policies falls to M/TEWA, a relatively weak ministry within the government. CEA's enforcement capabilities and political weight within the bureaucracy are widely recognized by government, business, and nongovernmental organization (NGO) sectors as being deficient. CEA relies principally on its own agency's resources to conduct monitoring, even though the agency's technical and laboratory capacity is limited. Industry does not generally monitor itself

Sri Lanka developed a National Environmental Action Plan (NEAP) in 1991, which was revised and strengthened in 1994. Of particular relevance to US-AEP is the NEAP's emphasis on combining national economic development and sound environmental management by building environmental considerations into all levels of policy planning to achieve sustainable economic development. The NEAP focuses on clean industrialization, based not only on the long-run costs of disregarding the environment but also on Sri Lanka's shortage of energy resources and the lack of international competitive advantage in polluting industries.

3. INDUSTRIAL POLICIES AND LAWS

Under the government's economic liberalization program, tariffs have been substantially reduced, although some effective rates of protection still exceed 100 percent (e.g., for paper and metal products). External liberalization in manufacturing has been accompanied by internal deregulation and privatization of a large number of state-owned enterprises, causing a decrease in the share of publicly owned, value-added manufacturing from 60 percent in 1981 to 15 percent in 1991. As mentioned in section 3, BOI administers a series of incentives for new and existing manufacturing companies to invest in advanced technologies.

The government's policies of encouraging private investment and fostering an industrialization program include increased reliance on BOO/BOT arrangements to finance infrastructure projects. The Board of Infrastructure Investment is responsible for all aspects of BOO/BOT project development in coordination with the key policy and implementing ministries; however, privatization of infrastructure has progressed slowly. Most emphasis is on the power sector, although to date no private power projects exist.

The various ministries with important roles to play in economic and environmental policies have historically communicated poorly among themselves. In an attempt to rectify this problem, in the early

1990s the GOSL established an Inter ministerial Environmental Council consisting of permanent ministry secretaries to coordinate environmental policies with other government policies and plans. This council no longer exists, but the GOSL has recently established a council to review major project proposals, including industrial estates and major industrial facility expansions with respect to their economic and environmental viability. The fifteen-member inter ministerial council includes CEA, BOI, UDA, M/ID, and the Water Supply and Drainage Board. In spite of attempts to improve coordination, integration of environmental concerns into industrial policy is currently limited. One promising exception is the GOSL's recent adoption of a policy for siting high-polluting industries on industrial estate.

4. PUBLIC INFORMATION POLICIES AND LAWS

At present, the only public disclosure requirements in place are for EIAs, which must be made public and available for comment before a project decision pursuant to the National Environmental Act. NGOs have worked effectively with government to ensure that this unusual and highly effective window on government is carefully maintained. Under the new environmental statute pending before the Sri Lanka legislature, public disclosure of environmental information would become a mandatory requirement for government agencies.

Legal and Policy Developments of Particular Relevance to Industrial and Urban Environmental Management

Industrial Siting Policy*:* In 1994 the Cabinet adopted a policy requiring that all new industries that are classified as high polluting (as defined by CEA) be located on industrial estates. In addition, all new industries classified by CEA as "high polluting" must be located on industrial estates if they generate large quantities of solid and liquid wastes. M/ID is implementing this policy and recently initiated a program to foster development of industrial estates throughout the country. With the assistance of the USAID mission's *Natural Resources and Environmental Policy Project* (NAREPP) (see endnote 75), M/ID has assessed a number of candidate sites and is developing industrial estate siting and development policies and practices.

Industrial Pretreatment Plan: Under World Bank funding (see section 9), Sri Lanka plans to construct common wastewater treatment facilities under BOO/BOT arrangements for two industrial zones near the metropolitan Colombo area Ekala-Jaela and Moratuwa/Ratmalana. To minimize the uncertainties for private investors, CEA is requiring existing industries in these zones to declare by early 1997 whether they will comply with the agency's effluent standards by installing their own pollution controls or by committing to a pretreatment program and paying for treatment of their effluents by the central facilities.

Amendments to the National Environmental Act*:* The Cabinet is currently reviewing a draft bill that would essentially replace the National Environmental Act with sweeping new legislation that would fundamentally change the framework of the Sri Lankan environmental policy regime. Although the prospects for enactment by the legislature are uncertain at this time, the law, if passed, would have major implications for Sri Lanka's approach to environmental management.

Coast Conservation Act, 1981 No.57: to make provisions for Coast Conservation including the preparation of a Coastal Zone Management Plan based on the surveys within the zone including all coastal wetlands with an indication of their significance as fisheries or Wild life habitats (Section 11) and taking over some functions of Crown Lands Ordinance No.8 of 1947. 1981 No.59 Marine Pollution Prevention Act: to provide for the prevention , reduction and control of pollution in Sri Lanka waters and for matters connected with including power to take action against any marine pollution caused to the living marine resources and wildlife.

In the past in Sri Lanka there were a number of statutes with scattered provisions pertaining to natural resources management, pollution control and environmental planning. However, entire environment management was not included in any of these acts. Hence, there were serious shortcomings and difficulties in the legal framework. Many laws had been enacted during the colonial period. The scope

and nature of these laws are severely restricted, as the main objectives of the colonial administration had been oriented towards the exploitation of natural resources and revenue collection. These laws had not been enacted for conservation and resource management. Due consideration had not been given to the environment, development and sustainable growth parameters. Therefore, with the liberalization of the economy in 1977, which paved the way for rapid industrial development, there was a necessity to create a central organization for environment management.

As a result, the Central Environmental Authority (CEA) was created in 1981. This organization is responsible for policy making and coordinating activities with regard to environmental protection and management. This organization has the power:

1. to administer the provisions of the National Environment Act and regulations made therein.
2. to specify standards, norms and criteria for protecting and maintaining the quality of the environment.
3. to regulate, maintain and control the volume, types, constituents and effects of waste, discharge emissions, deposits or other sources of pollution which are of danger or potential danger to the quality of environment. Under the National Environmental Act, no person shall discharge, deposit or emit waste into the environment that will cause pollution, except:

a. under the authority of a license issued by the CEA and
b. in accordance with such standards and criteria that may be described

INSTITUTIONAL FRAMEWORK BANGLADESH

Key Issues: Environment Capacity Building; Environment Data Base; Environment Information; Environment Education; Technical man power;

Key Institutions: Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; Department of Forests; International Institutes of Environment; Forest Research Institute, Bangladesh; Forest Industries Development Corporation; Institute of Forestry and Environmental Sciences;

1. INTRODUCTION

Environmental concerns encompass almost all the sectors of the country especially which are leading to action in natural resources management viz. land and water. Institutional arrangements both at public and private sectors are pre-requisite in policy making, resources mobilizations and at implementation level.

National Environmental Council is organized and chaired by the Prime Minister. It functions through Executive Ministerial Committee headed by the Ministry of Environment and Forest and Divisional Environment Committee headed by the Divisional Commissioner. Ministry of Environment and Forest is primarily responsible for environmental protection.

The institutions responsibility for environmental management at National Level are primarily the Ministry of Environment and Forests (MoEF). The MoEF is responsible for the formulation and monitoring of environmental policy and legislations and as the controlling authority of all executing agencies like Department of Environment (DoE), Forest Department (FD), Bangladesh Forest Research Institute (BFRI), Bangladesh Forest Industries Development Corporation (BFIDC) and Institute of Forestry and Environmental Sciences (IFESCU). Furthermore, it coordinates other inter-ministerial (e.g. water, industrial, transport, mining etc) environmental issues as well. Here FD, under the frame of MoEF, works as an executing agency for the protection, control, conserve, expansion and maintain the national forest resources. Its administrative and managerial units are circles, Divisions, Ranges and Beat level, in the national forest areas.

2. MINISTRY OF ENVIRONMENT AND FOREST (MOEF)

Ministry of Environment and Forest has two major department concerning environment., Department of Environment (DOE) and Department of Forest. Department of Environment is a technical agency and looks after the environmental planning, management, monitoring and enforcement of the environmental protection measures. Recently the Department was given new extensive powers on controlling air pollution, protecting habitats and conservation of soil, water and other natural resources, and setting environmental standards. It set standards on industrial and vehicular pollutants and noise.
Major programs of the DOE are;

- Water quality monitoring at regional laboratories
- Bangladesh Environment Management Project (BEMP) supported by Canadian Government
- Sustainable Environment Management Program (SEMP) supported by UNDP and the World Bank
- Capacity building for environmental legislation and policy analysis under BEMP
- Institutional strengthening of DOE under BEMP
- River water pollution control in Dhaka city
- Establishment of wastewater treatment plants for handloom industries on cluster basis

- Conversion of petrol and diesel operated vehicles into CNG, beginning with governmental vehicles
- Promotion of self monitoring system in export processing zone and other major industrial areas
- Promotion of public awareness on environmental management
- Industrial surveys and pollution control

Department of Forest is responsible for management and development of forest resources. It conducts forest study along with the Forest Sector Master Plan.

3. INSTITUTIONAL SETUP

- Resource management laws are provided in the sectoral laws of various ministries and public agencies.
- Most of the civic and anti-nuisance rather environment related provisions are provided in the powers and functions of various statutory local government bodies. Tortuous liability is perhaps included in these laws. Besides there is the department of Public Health under the Ministry of Local Government, Rural Development and cooperatives.
- A water pollution control project turned into Department of Environment Pollution Control following an Ordinance of 1977 on Environment Pollution Control and the said department was under the Department of Public Health in Ministry of Local Government Rural Development and Cooperatives (MLGRDC).
- In 1989, a separate Ministry of Environment and Forest was created bringing under it the Department of Environment Pollution Control from the MLGRDC renaming the same as Department of Environment, and the Forestry Division of the Ministry of Agriculture as Forest Department.
- Ministry of Planning also has an Environment section that checks the environment aspects of Government projects.
- The environmental issues relating water resources is looked after by the Water Resources Planning Organization by an Act of 1992, the Bangladesh Atomic Energy Commission is entrusted to regulate radio activity under the Nuclear Safety and Radiation Control Act, 1993. There are other agencies too who are vested with the duty to protect specific aspects of environment.

INSTITUTIONAL FRAMEWORK BHUTAN

Key Issues: Environment Capacity Building; Environment data Base; Environment Information; Environment Education; Technical man power;

Key Institutions: National Environment Committee; Planning Commission; National Environment Commission; Ministry of Rural Development; Ministry of Rural Development

1. INTRODUCTION

A National Environment Committee was established in 1989 as part of the Planning Commission under the Royal Command of His Majesty the King with technical and financial support from Danida. In recognition of the priority accorded to environmental issues and the judicious use of natural resources, the Environment Secretariat was delinked from the Planning Commission. The secretariat was upgraded to an independent organization functioning as the National Environment Secretariat under the guidance of the National Environment Commission (NEC) with effect from 30 September 1992.

The National Environment Commission is a national policymaking body and regulatory agency commissioned to preserve and sustain the country‟s natural resources. The Commission is a high level, cross-sectoral body of ministers and officials from various sectors.

Mandate of the National Environment Commission

- To serve as an advisor to the Royal Government on all environmental issues;
- To institutionalize Environmental Assessment processes and guidelines;
- To monitor the impact of development on the environment;
- To be responsible for keeping the National Assembly informed on specific environmental issues;
- To be responsible for meeting the Royal Government‟s obligations to global environmental conventions;
- To ensure that the use of natural resources in Bhutan is sustained;
- To ensure that biological diversity and essential ecological processes and life support systems are maintained and the awareness thereof increased;
- To promote environmental awareness in all segments of Bhutanese society through various means;
- To ensure that adequate pollution abatement techniques and environmental management systems are put in place to mitigate the negative impacts of development and industrialization;
- To encourage and promote the use of cleaner and appropriate technologies for existing and upcoming industries in order to minimize pollution and other adverse effects;
- To play a lead role in environmental sector co-ordination at the national level; and
- To ensure the implementation of policies, legislation, and instruments for environmental conservation.

2. National Environmental Commission Secretariat (NECS)

The mandate of the National Environment Commission is implemented through the National Environment Commission Secretariat (NECS), which works in close collaboration with line ministries, Dzongkhag Yargay Tshogchungs (district development), and Geog Yargay Tshogchungs (sub-district development). The NECS plays a key role in promoting sound environmental policies.

The National Environment Commission Secretariat (NECS) plays a key role in promoting sound environmental policies and investments. The Secretariat is responsible for ensuring that Bhutan follows an environmentally sustainable development path and that all projects take into consideration environmental aspects.

The Secretariat is, however, still in the stages of development and requires significant institutional strengthening, including training of staff, and specific support for environmental legislation in order to carry out its mandate effectively. The vision for the NEC and its Secretariat is to develop further into a well functioning and effective institution with the competence and position to ensure that Bhutan's economic development proceeds at an environmentally sustainable pace. Towards this end, support to the NEC Secretariat and environmental legislation has been included as one of the components of the Danish-Bhutanese Environment Sector Programme Support.

A Deputy Minister heads the National Environment Secretariat. The NEC Secretariat is divided into various divisions to look after different sectors. In the following, the forms and function of each of the division is described. The various divisions are:

- Administration and Finance Division
- Planning and Policy division
- RNR division
- Environment Impact Assessment Division
- Communication Division

INSTITUTIONAL FRAMEWORK INDIA

Key Issues: Environment Capacity Building; Environment data Base; Environment Information; Environment Education; Technical man power;

Key Institutions:
Ministry of Environment and Forests (MoEF); Central Pollution Control Board (CPCB); State Department of Environment; State Pollution Control Board; National Environment Engineering Research Institute; Ministry of Water Resources; National Institute of Oceanography; Ministry of Non-Conventional Energy Sources (MNES); Tata Energy Research Institute; Ministry of Agriculture; Indian Council of Agricultural Research (ICAR); Ministry of Petroleum; Department of Ocean Development, Planning; Commission; National Council of Education Research and Training (NCERT); Ministry of Human Resource Development; Ministry of Urban Development and Poverty; Alleviation;
Ministry of Rural Development

1. INTRODUCTION

India has witnessed the global phenomenon of environmental degradation. It shares the deterioration of its natural resources and the cruel dilemmas in trying to arrest this deterioration. In the past four decades of development based on the utilization of natural resources of the country with the aid of science and technology was essentially carried out with internal resources of the country, in improving its infrastructure of irrigation, power, transport, communications, energy etc. as well as in education and welfare programmes for the disadvantaged sections of the society.

The need for concerted effort for environmental protection and management culminated in the United Nations Conference on Human Environment at Stockholm in 1972. During Conference, the then Prime Minister, Indira Gandhi had not only underlined the basic problems of India but also that of the developing world related to environment, human population and poverty. In her address to the Stockholm Conference she said:

> "We do not wish to impoverish the environment any further and yet we cannot for a moment forget the grim poverty of large number of people. Are not poverty and need the greatest polluters? For instance, unless we are in position to provide employment and purchasing power for the daily necessities of the tribal people and those who live in or around our jungles, we cannot prevent them from combing the forest for food and livelihood; from poaching and from despoiling the vegetation. When they themselves feel deprived, how can we urge the preservation of animals? How we can speak to those who live in villages and slums about keeping the oceans, the rivers and the air clean when their own lives are contaminated at the sources"

The statement by India‟s Prime Minister reflects India‟s position on the environment and development issues. These issues have, of late, become a matter of debate between the developed and the developing countries. While responsible for maximum environmental degradation, the developed world is shifting the onus of environmental protection on to developing countries, imposing restriction, which have a potential for severe economic repercussion on these countries.

2. INSTITUTIONAL FRAMEWORK

Environmental protection and the conservation of natural resources emerged as key national priorities in India in the wake of the 1972 Stockholm Conference on Human Environment. Between the Stockholm Conference and the Rio Earth Summit, India has been able to develop a stable organizational structure for environmental protection in the country. Legislation, policies and programmes evolved during the same period, geared to the task of protection of the environment. Despite these achievements, there has been for some time, a felt need to clearly establish our priorities in the environment and forest sectors and design a programme of action for sustainable management of the environment in the country. This need has arisen on account of the national consensus for integrating environmental considerations into development programmes and development for a sustainable route to progress. Sustainable development which has evolved as the goal for human welfare in the aftermath of the 1992 United Nations Conference on Environment and Development, is rooted in country- specific programmes of action for channeling investment resources into ecologically compatible projects and programmes.

3. CHRONOLOGY OF ENVIRONMENT PROTECTION IN INDIA

Committee on Human Environment (Pitamber Pant Committee)	Set up in 1970 under the Chairmanship of Shri Pitamber Pant (Member Planning Commission) to prepare a country paper
Conference on Human Environment (Stockholm Conference)	Held in June 1972 for the protection of Human Environment
National Committee on Environmentally Planning And Coordination (DST)	Set up in February 1972 for planning and co-ordination between/amongst various Ministries
Division of Environment (DST)	The NCEPC was converted into a Environment Division of DST
Tiwari Committee	The Committee was setup n February 1980 for the purpose of recommending legislative and administrative machinery for the protection of environment.
Department of Environment and Forests	On the recommendation of Tiwari Committee the Department of Environment was setup in 1980
Ministry of Environment and Forests	The Department of Environment set up in 1980 was converted into the Ministry on 1.11.1985
(a) National Environmental Council	Headed by the Prime Minister of India. Constituted on 14th September 1993. A think-tank on the environmental policy and planning matters of national concerns.

The Government has aimed to integrate the objectives of the aforementioned policy documents as well as take cognizance of long term developmental perspectives related to industrialisation, power generation, transportation, mining, agriculture, irrigation and other such economic activities. We are addressing parallel concerns relating to public health and industrial safety, taking into account various enforcement institutions, e.g., pollution control boards, transport authorities, dock safety, mines, explosives, factory inspectorates, etc. While a fairly comprehensive set of environmental laws is already in place, the shortcomings relate to enforcement for which, the central and state government agencies need to be suitably strengthened. Further steps are being taken to strengthen the Central and State Pollution Control Boards by augmenting their resources. Appropriate steps are also required for enhancing the availability of judicial remedies at the district and block levels in the administration of environmental laws.

4. MINISTRY OF ENVIRONMENT & FORESTS

The Ministry"s main activities include conservation and survey of flora fauna, forests and wildlife prevention and control of pollution afforestation and regeneration of degraded areas; protection of the environment and research related to these topics.

Mandate of the Ministry

- Environment and Ecology, including environment in coastal waters, in mangroves and coral reefs but excluding marine environment on the high seas.
- Botanical Survey of India and Botanical Gardens.
- Zoological Survey of India.
- National Museum of Natural History (NMNH).
- The Water (Prevention and Control of Pollution) Cess Act, 1977.
- The Air (Prevention and Control of Pollution) Act, 1981.
- The Indian Forest Act, 1972.
- The National Environment Tribunal Act, 1995.
- The Wildlife (Protection) Act, 1972.
- The Forest (Conversation) Act, 1980.
- The Environment (Protection) Act, 1986.
- The Public Liability Insurance Act, 1991
- Biosphere Reserve Programme
- National forest Policy and Forestry Development in the country, including Social Forestry.
- Forest Policy and all matters relating to forests and forest administration in so far as the Andaman and Nicobar Islands are concerned.
- Indian Forest Services
- Wildlife preservation and protection of wild birds and animals.
- Central Zoo Authority
- Fundamental research, including coordination thereof on higher education in forestry.
- Padmaja Naidu Himalayan Zoological Park.
- National Assistance to Forestry Development Schemes.
- Central Ganga Authority
- The National Environment Appellate Authority Act, 1997.
- Indian Plywood Industries Research and Training Institute, Bangalore
- Forest Survey of India, Dehradun
- National Afforestation and Eco-Development Board.
- Desert and Desertification.

5. REGIONAL OFFICERS OF THE MINISTRY

The Government of India has set up five Regional Offices of the Ministry of Environment and Forests at Bangalore, Bhopal, Bhubaneshwar, Lucknow and Shillong with a headquarters unit at New Delhi in April 1986 as part of the Secretariat of the Department to deal with forest conservation matters. These offices were re-organized in May 1988 into six Regional Offices as follows:

1. Shilong for the North Eastern Region
2. Calcutta for the Eastern Region
3. Chandigarh for the North Region.
4. Bangalore for the South Region.
5. Lucknow for the Central Region.
6. Bhopla for the Western Region.

The area of operation of these Regional Offices was substantially enlarged to take care of not only forestry functions, but also environmental management and pollution control functions.

6. OTHER RELATED MINISTRIES/DEPARTMENTS

	Ministry	**Task**
	Ministry of Agriculture	Conservation of Wildlife Conservation of biodiversity, Prevention and control of desertification, Conservation and regeneration of watersheds, Conservation and management of land and soil, Prevention and control of floods, Protection of irrigation command areas, Conservation and regeneration of forests, Prevention and control of pollution Recycling of resources, Conservation and management of energy
	Ministry of Water Resources	Prevention and control of floods, Conservation and regeneration of wetlands Conservation and regeneration of coral reefs and coastal regions. Protection of irrigation command areas, Monitoring water quality
	Ministry of Rural Development	Conservation and management of land and soil, Prevention and control of drought. Conservation and regeneration of forests, Prevention and control of pollution
	Ministry of Power	Prevention and control of pollution, Recycling of resources, Conservation and management of energy, Use of alternative sources of power
	Ministry of Petroleum	Protection of mining and oil extraction areas, Recycling of resources, Prevention and control of pollution, Conservation and management
	Department of Ocean Development	Department of Ocean Development Conservation and regeneration of coral reefs and coastal regions. Conservation and regeneration of island resource
	Ministry of Urban Development	Prevention and control of pollution, Conservation and management of energy, Conservation and regeneration of island resources Conservation and regeneration of mountain resources
	Planning Commission	
	Non Conventional Energy Sources	Use of alternative sources of power Prevention and control of pollution Recycling of resources Conservation and management of energy
	Ministry of Human Resource Development	
	Ministry of Human Resource Development	Protection from occupational health Hazards

INSTITUTIONAL FRAMEWORK MALDIVES

Key Issues: Environment Capacity Building; Environment data Base; Environment Information; Environment Education; Technical man power;

Key Institutions: Ministry of Home Affairs, Housing and Environment; Ministry of Planning and Environment; National Environment Council; Ministry of Atolls Administration; Maldives Water and Sanitation Authority; Ministry of Fisheries, Agriculture and Marine Resources; National Commission for the Protection of the Environment; Ministry of Fisheries & Agriculture; Ministry of Tourism; Ministry of Health and the Ministry of Construction & Public Works; Ministry of Tourism

1. INTRODUCTION

The environment sector was formally recognized as an entity within the Government in 1984, with the creation of an Environment Affairs Division in Ministry of Home Affairs and Social Services. In late 1988, environment was given elevated status, being combined with the then Ministry of Planning and Development to form the Ministry of Planning & Environment. The rationale for this move being that environmental considerations need to be fully and efficiently integrated into development planning with tin the country. In the government re-organization in 1993, the Ministry was given additional responsibility of human resources development, and was renamed the Ministry of Planning Human Resource and Environment. In 1998, environmental administration was transferred to the Ministry of Home Affairs, Housing and Environment. Important institutions dealing with environmental issues are: Ministry of Planning and Environment; National Environment Council; Ministry of Atolls Administration; Maldives Water and Sanitation Authority; Ministry of Fisheries and Agriculture; Marine Research Section; Selected Islands Development Unit

Government of Maldives places environment amongst top of development issues on the agenda. The delicacy of the ecological system of the islands and vibrant role-played by tourism and other natural resource based industries in the economy calls for sustainable development & environmental management to be given a key post on the agenda. Key issues are: Degradation of freshwater/land resources; Human population pressure; Coral and sand mining - Low capacity of reef to act as natural sea defenses; Destruction of biodiversity; Sea levels rise; Waste management; Complex land tenure system; Shortage of human resources and weak institutional capacities to enforce environment protection and legislation.

2. ENVIRONMENT INSTITUTIONAL FRAMEWORK

The Government recognizes that sustainable development in the Maldives will not be possible without the maintenance of environmental health and quality and in particular, the maintenance of a productive marine environment. This recognition underlies the principle aim of the National Environment Action Plan which is: "To help the Government of the Maldives to maintain and improve the environment of the country, including the marine and ocean area contained within the Exclusive Economic Zone, and to manage the resources contained therein for the collective benefit and enjoyment of present and future generations."

The Ministry of Planning, Human Resources and Environment is designated as the responsible body for formulating policies, rules and regulations regarding the environment, and empowers the Ministry to levy fines of up to one hundred million Rufiya (10 million US $) for breaches of the law.

Sustainable development is the overall development policy of the Maldives. The Ministry of Home Affairs Housing and Environment is responsible for developing all aspects of environmental policy and

enforcement of the Environment Protection and Preservation Act. The Ministry also acts as the Secretariat for the National Commission for the protection of the Environment. The Environment Section deals with all issues of the environment including global environmental issues. It administers and co-ordinates with other government offices, advises on environmental aspects and undertakes programmes to raise public awareness on environmental issues. Environment Section also acts as the focal point for both national and international activities. The Environment Research Centre of the Ministry of Home Affairs, Housing and Environment responsible for assembling the necessary environmental information required for planning and management.

The National Commission for the Protection of the Environment (NCPE) which was appointed by the President in 1989 advises the Minister for Environment on issues related to the responsibilities stated above. The mandate for the NCPE include, involvement in assessment, planning and implementation of activities of the Maldives that affect the environment and activities to protect the environment, advising on tackling environmental problems and ensuring that the environmental protection component is included in development projects. The Commission is composed of high-level representatives from relevant Government Departments. The Minister of Home Affairs, Housing and Environment chairs the NCPE.

Amongst the other Government Departments having a mandate over environmental issues are the Ministry of Fisheries and Agriculture, the Ministry of Tourism, the Ministry of Health and the Ministry of Construction & Public Works.

The Ministry of Fisheries, Agriculture and Marine Resources has the mandate to govern the areas identified in its name. The Ministry of Tourism with an overall mandate over the area of tourism and its development, the Ministry of Health dealing with integrated water resources and disposal of sewage, while the Ministry of Construction and Public Works administer the area of waste disposal and developmental projects like dredging.

At the Provincial level, the Ministry of Atolls Administration has the wide mandate for the administration of all inhabited islands except the Capital City. The Maldives is divided into 20 administrative atolls. These atolls are each headed by the Atoll Chief who takes his orders from the Minister of Atolls Administration. Each island has an Island Chief and/or his assistant accountable to the Atoll Chief and the Ministry of Atolls Administration. While the Atoll Chief has the mandate for the whole atoll it is the Island Chief who is responsible for the administration of the island office and for other affairs of the island. Different personnel handle health and Justice. All other administrative work is handled through the institutional structure of the Ministry of Atolls Administration. (i.e. the Atoll office and Island Office).

INSTITUTIONAL FRAMEWORK NEPAL

Key Issues: Environment Capacity Building; Environment data Base; Environment Information; Environment Education; Technical man power;

Key Institutions: Ministry of Population and Environment; Ministry of Agriculture and Cooperative; Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Information and Communication Ministry of Defense Surveillance of national parks and wildlife reserves, Disaster Rescue; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Land Reform and Reform of land tenure, land management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, regulation and management of the of water resources, irrigation works, electricity, flood control;

1. INTRODUCTION

The Ministry of Population and Environment was created in September 1995 to Act as the national focal point for the interrelated areas of population and environment. Its main responsibilities include: (a) the formulation and implementation of policies, plans and programmes; (b) the preparation of acts, regulations and guidelines; (c) undertaking surveys and research studies; (d) the dissemination of information; (e) the monitoring and evaluation of programmes; and (f) human resources development.

The ministry‟s scope of work includes two broad categories of activities: primary and supportive. Primary functions include activities executed on the initiative of the ministry in cooperation with other agencies. Cooperation and assistance extended to other ministries and agencies in executing their own programmes and activities are considered to be the supportive functions.

The primary functions of the Ministry of Population and Environment related to the environment revolves around four aspects: environmental conservation; pollution control; enforcement and monitoring of environmental standards; and EIA. The primary and supportive functions detailed below are listed in the approved scope of work of the ministry (Ministry of Population and Environment, 1996).

(a) Primary functions

The primary functions include:

Formulating and implementing perspective and periodic plans and programmes related to population and the environment; Organizing meetings, seminars and workshops; Preparing, publishing and disseminating audio-visual and information materials aimed at raising public awareness; Upgrading and updating the documentation process; Acting as a national focal point on population and the environment for all international and bilateral donors; Representing the country and/or recommending other agencies or experts/persons for representation at national and international seminars, conferences and conventions on population and the environment; Organizing appropriate training for the implementation of programmes on population and environment; Functioning as the secretariat of national commissions, councils etc. on both current and future population and environment issues; Amending, as and where necessary, existing policies and action plans, and formulating national policy and action plans on the main aspects of environmental conservation;

Formulating, refining and implementing EIA guidelines. This function involves three specific activities: (a) preparing, revising and refining sectoral EIA guidelines; (b) encouraging those agencies concerned to conduct EIAs as per approved guidelines before implementing any development project; and (c) examining and approving EIA reports of intersectoral and national importance;

Studying existing laws on different aspects of environmental conservation, and amending or establishing the necessary legislative framework. This function includes: (a) the preparation of an umbrella law on environmental matters; (b) the formulation of rules, regulations and bylaws; and (c) the maintenance of a chronicle of judicial precedents on environmental matters;

Implementing the provisions of, and obligations arising from, international agreements, treaties and Conventions on the environment, by: (a) acting as the national agency for international treaties on environment; (b) preparing a strategy to implement the provisions of international treaties; (c) taking a lead role in cooperating with other ministries in fulfilling obligations arising from international Conventions, treaties, agreements and declarations; and (d) participating in programmes conducted in pursuance of international Conventions;

Conducting studies and research on environmental matters, and carrying out or participating in related training, involving: (a) studies and research on the environment and the conservation of resources; (b) the assessment of environmental losses resulting from disasters; and (c) the specification of minimum natural resource requirements for any specified area;

Identifying pollution indicators and indices for the setting of standards, including: (a) research or surveys; and (b) the identification of different polluters to enable the control of pollution and fixing of ambient standards; Preparing an annual State of the Environment Report for disseminating information on the status of the environment in Nepal.

(b)Supportive functions

The supportive functions include:

Helping other agencies, from the standpoint of population and environmental management, to develop small towns in appropriate places with economic and social infrastructures, including: (a) assistance in maintaining the environmental balance, structure and management of the population at the time of planned expansion of small towns; (b) the provision of services to the population through service centres; and (c) the relocation of industries from urban areas;

Assisting agencies involved in forestry, agriculture, labour, industry, education, women‟s development etc. in designing and implementing training programmes which include population and environmental issues, in order to integrate the population, the environment and development issues,;

Creating awareness of population and environmental issues among community leaders and workers at district and local level government offices etc.;

Assisting in maintaining a balance between population and the environment through policies and programmes, such as: (a) discouraging the use of fragile land for cultivation and settlement; (b) discouraging cultivation on marginal land; (c) encouraging the use of alternative energy sources in order to save forests; (d) arranging grazing land on appropriate sites; (e)encouraging the design and implementation of settlement plans, taking into consideration the different aspects of population management; (f) discouraging unplanned urbanization; and (g) controlling pollution hazardous to public health;

Helping to develop and implement a code of conduct which will check adverse environmental impacts resulting from activities conducted by different institutions. This function includes: (a) the preparation of an environmental code of conduct for tourists, and the implementation and monitoring of that code through the Ministry of Tourism; (b) assisting the Ministry of Industry to develop environmental standards for industries and helping in their implementation; (c) assisting municipalities to preserve the urban environment; and (d) developing a code of conduct for political parties and election candidates regarding publicity and the distribution of pamphlets during elections, and the implementation of that code through the Election Commission;

Controlling pollution through research, and encouraging recycling and appropriate disposal of waste products;

Monitoring to ascertain whether different agencies, industries, communities and organizations are adhering to the defined environmental standards, and impose penalties on those violating the standards, including: (a) applying the "polluters pay principle" in the case of point-of-source pollution of water, air and soil; and (b) in the case of non-point source pollution, making communities responsible for finding and implementing solutions; Become involved in EIA of cross-sectoral projects, and organize high-level training within and outside the country to prepare expert human resources in the area of environmental management.

The above primary and supportive functions of the Ministry of Population and Environment indicates its far-reaching role and establishes the ministry as the national focal point for all population and environment-related matters. However, since it has only been established for a relatively short period, it has yet to develop its capability from the viewpoint of organizational strength, trained manpower and financial resources. Given the enormous task assigned to it, its current capability is far from adequate.

2. SECTORAL MINISTRIES AND INSTITUTIONS

The other sectoral ministries and agencies under those ministries are directly responsible for taking adequate measures to prevent or minimize adverse environmental consequences in their respective areas of development. For example, theMinistry of Industry is responsible for the preparation and enforcement of adequate environmental standards for the industrial sector, while the Ministry of Water Resources serves as the key agency in the water resources sector.

Ministry of Agriculture

The main focus of the Ministry of Agriculture is on planning, policy formulation and monitoring of agricultural development programmes and projects. The ministry is directly involved in the formulation of appropriate policies, standards and legal instruments related to a number of environmentally sensitive products such as food products, animal feed and agrochemicals. The Ministry of Agriculture is also responsible for the enforcement of standards related to food and feed, and for the control of agriculturally-related pollution.

A number of agencies under the Ministry of Agriculture provide technology and extension services not only to producers but also to traders and processors of agricultural products. Its various departments and other entities operating at the central and local levels constitute a wide network throughout Nepal. Those entities are: the Nepal Agricultural Research Council (NARC) which develops suitable technologies and disseminates them to producers, traders and processing entrepreneurs; the Department of Agriculture, which deals with extension and training in all agriculturally-related areas excluding livestock management and veterinary services; the Department of Livestock Services, which deals with extension and training for the livestock subsector, including pasture management; the Nepal Tea and Coffee Development Board, which promotes the tea and coffee industries; the National Dairy Development Board which promotes the dairy industry; and the National Seed Development Board which promotes the seed industry.

Of direct concern in the present context is the role of the Central Food Research Laboratory in implementing the Food Act, 1966, the Animal Feed Act, 1976, and their corresponding regulations.

Ministry of Forest and Soil Conservation

The Ministry of Forest and Soil Conservation is involved in planning, policy formulation and monitoring of forest-related programmes, including the utilization of forest products, wildlife conservation and biodiversity. The Ministry of Forest and Soil Conservation is also responsible for the legal instruments and administrative provisions regarding the utilization of forest products. Its Department of Forests administers the forests and rangelands throughout the country, which account for about 47 per cent of the total area of the country. The Department of Plant Resources is responsible for botanical research on forest species. The Forest Products Development Board promotes the economic and sustainable utilization of wood, medicinal and aromatic plants, and other minor forest products by developing suitable technologies and processes for industries utilizing such products. The Forest Survey and Research Centre acts as an autonomous body in conducting forestry-related research and surveys. The Department of National Parks and Wildlife Conservation is responsible for the management of the national parks and protected areas as well as biodiversity conservation. The Department of Soil Conservation (DSC) is charged with the responsibility of carrying out soil conservation activities and watershed management.

Ministry of Industry

The Ministry of Industry bears two main responsibilities associated with the industrial sector: industrial promotion; and environmental conservation. Regarding the second responsibility, the Ministry controls industrial pollution, both in new and existing industries. New industries, which are prone to cause damage to the environment, are required to incorporate protective and mitigatory measures, including the application of IEEs and EIAs. Existing industries must comply with abatement measures determined by the Ministry through control orders, and those industries are required to achieve a completely "clean" status within a stipulated period by meeting the acceptable levels of emission and effluent standards. This ministry is also responsible for preparing and enforcing legislation and regulations on industrial pollution.

The Ministry of Industry has been implementing a project on industrial pollution control management with support from the United Nations Industrial Development Organization (UNIDO) with four main objectives: (a) the formulation of an appropriate policy on pollution control and management; (b) the development of industrial pollution standards; (c) the strengthening of laboratory facilities; and (d) human resources development for industrial pollution control and management. One of the outcomes of the project has been the preparation of "industrial pollution control regulations for air and water discharges", which are awaiting Cabinet approval. Two other initiatives are in process: "industry-specific discharge standards for air- and water-borne environmental contamination"; and "industrial waste management policy in Nepal". A separate cell on Environment and Technology Transfer also exists within the ministry.

The Department of Industry, the Department of Cottage and Small-Scale Industries and the Cottage and Small Industry Promotion Board are responsible for promoting industries as well as for enforcing norms, guidelines and standards related to adverse environmental impacts arising from industries. Both the Department of Industry/Irrigation and the Department of Cottage and Small-Scale Industries have an environment unit which performs the following functions: (a) enforcement of the discharge standards; (b) applying IEE and EIA to industries; (c) issuing permits for industrial establishment; and (d) monitoring emissions and effluent discharges.

The Nepal Bureau of Standards and Meteorology (NBSM) is responsible for setting standards for air, water and other environment-related components, and for enforcing those standards. NBSM is also mandated to fix effluent and emission standards for industries and motor vehicles.

(a)Nepal Agricultural Research Council

NARC is chaired by the Minister of Agriculture and is responsible for undertaking and encouraging research on various aspects of agriculture.

(b)Royal Nepal Academy of Science and Technology

The Royal Nepal Academy of Science and Technology is responsible of undertaking and encouraging all aspects of scientific research in the country and for maintaining liaison with similar institutions outside Nepal.

Nepal Electricity Authority

The Nepal Electricity Authority (NEA) is a public sector organization, responsible for the generation and distribution of electricity to urban and rural areas. Remote areas are served by decentralized small hydropower and diesel plants. The Small Hydropower Development Board of NEA was recently restructured into the Small Hydropower Department under the Rural Electrification Directorate. NEA does not implement micro-hydropower projects below 100 kW.

The institutions in Nepal that are directly related to environmental policy formulation, planning and programme implementation are described below.

Parliamentary Committee on Natural Resources and Environmental Protection

The Parliamentary Committee on Natural Resources and Environmental Protection (PCNREP), under the chairmanship of a parliamentarian, oversees government action in initiating natural resources conservation and environmental protection measures. The Committee also gives advice to the executive branch of the government regarding appropriate measures for improving national overall environmental health. Being a legislative subunit, PCNREP can give directives to, and seek information and clarification from, the executive branch of the government.

PCNREP is headed by an independent chairperson elected by the Committee members from among the members of the House of Representatives. PCNREP has up to 11 ex-officio members, comprising the Prime Minister and other Ministers, together with 22 members of the House of Representatives nominated by the parliamentary committees of the various parties.

The National Development Council

The National Development Council (NDC) is the highest policy-level body. Formerly chaired by the King of Nepal, the Council is now chaired by the Prime Minister. Its mandate includes providing guidance on major policy issues and periodic plans. The membership of NDC comprises all Cabinet rank ministers, all the members of the National Planning Commission (NPC), the chairpersons of the various parliamentary committees, the chairpersons of two District Development Committees from each of the five development regions of the country, the leader of the main opposition party in the House of Representatives, the chairpersons of all national level political parties, the president of the Federation of Nepal Chambers of Commerce and Industry, and a few persons nominated from among intellectuals and representatives of other walks of life. NPC serves as the NDC secretariat.

The Environment Protection Council

The Environment Protection Council (EPC) is a high-level body that was created in 1992 to provide guidance on the formulation of policies, the preparation of working procedures and the implementation of policies in pursuit of the following objectives:

- Effective management of natural and physical resources;
- The achievement of sustainability in the capacity of all Nepalese by maintaining a balance as well as coordination between development efforts and environmental protection;
- The provision of support to efforts for sustainable development through the use, management, development and protection of physical resources and heritage, taking into consideration the social, economic and cultural needs and opportunities of the present and future generations;
- The timely identification of likely adverse environmental impacts from population growth, haphazard settlement and development projects, and the prevention and mitigation of such impacts;
- The development of a national system for environmental planning, environmental impact assessment and evaluation, pollution control and the protection of the national heritage;
- The utilization, development, management and protection of the capacity to regenerate and recycle physical resources without inflicting adverse impacts on the environment;
- The implementation of special measures for the protection and promotion of rare and endangered national wildlife, plant species, biological diversity, the genetic pool, natural and cultural beauty and sites, and environmentally threatened areas, in accordance with their importance;
- The preparation and improvement of the environment-related legal framework;
- The development and coordination of activities undertaken by governmental agencies and non-governmental organizations (NGOs) for the effective implementation of environmentally-related laws and policies;
- The establishment and operation of an environmental protection fund;
- The dissemination of information, and the improvement of education and public awareness related to the environment;
- The development of human resources in the area of the environment.

Membership in EPC comprises the Ministers of several ministries, senior civil servants, representatives of NGOs and the private sector, and individual professionals.

The Ministry of Population and Environment serves as the EPC secretariat. The Ministry is also required to carry out EPC directives. The Minister, State/Assistant Minister and Secretary of the Ministry of Population and Environment are appointed as the vice-chairman, member and member-secretary of EPC, respectively, thus providing the necessary links between the two agencies.

The Prime Minister heads NDC, EPC and NPC.

National Planning Commission

NPC is an autonomous government body responsible for formulating policies on overall national and sectoral development. Headed by the Prime Minister, NPC includes a vice-chairman and five members nominated on an individual basis, as well as a few ex-officio members. It is primarily an advisory body with limited executive authority.

NPC tasks include: preparing the national five-year development plan which comprehensively outlines the national development goals, objectives and strategies; presenting detailed sectoral, subsectoral and cross-sectoral development strategies and programmes; and providing estimates of financialresources allocations to the programmes included in the Five-Year Plan. NPC scrutinizes and approves the annual programmes of all the ministries and parastatals, and it regularly monitors progress. All development programmes and projects undertaken in the public sector are subject to endorsement by NPC prior to implementation.

As part of the regular NPC mandate, all environmental policies, programmes and projects in the public sector are subject to review and approval by NPC before they are put into effect. There is an Environment Protection Division within NPC, which is responsible for overseeing and coordinating intersectoral activities related to planning, programme budgeting and the monitoring of environment-related actions. Prior to the creation of the Ministry of Population and Environment, the division was the only national level bureaucratic entity responsible for carrying out EPC directives.

Among the policy-level institutions, PCNREP acts as a legislative entity since it is a parliamentary body. It can give directives to the government, and can question the performance of the government and other entities with respect to their mandates. On the other hand, the other three institutions are all chaired by thePrime Minister and are purely advisory entities within the executive branch of the government.

Product Testing Institutes

A number of public sector agencies are engaged in providing analytical services relevant to the environment. They include: (a) the Central Food Research Laboratory, under the Ministry of Agriculture, which is the principal agency providing technical inputs and analytical services in the enforcement of food and feed quality standards in accordance with the Food Act, 1966, and the Animal Feed Act, 1976; and (b) NBSM, which is the technical arm of the Ministry of Industry and is responsible for setting standards, and undertaking laboratory testing and environmental auditing. NBSM also has a separate cell responsible for industrial pollution monitoring and evaluation. It has already established one central laboratory in Kathmandu and two regional laboratories in Birgunj and Butwal. A third regional laboratory has been proposed for Biratnagar.

A small number of laboratories are available in the private sector which specialize in chemical and other tests related to air and water pollution. While those laboratories have not been accredited by the government institutions concerned, the policy is to gradually accredit private laboratories which meet minimum service qualities and technical capability. One such laboratory was recently accredited by the Ministry of Industry.

The above review demonstrates that the existing national level institutions are adequate for responding to the needs of Nepal as far as the integration of environmental considerations into the policy decision process is concerned. However, considerable gaps exist in coordination, both in terms of achieving coherence among macro level and sectoral policies, and in their implementation at different levels. Those gaps emanate from: (a) an inadequacy of trained manpower in the agencies concerned; and (b) a lack of motivation among the agencies in presenting a united front in facing the issues.

The Ministry of Housing and Physical Planning (MHPP) and the Department of Metrology (DOM) are the responsible agencies, but due to lack of resource personnel, neither could tackle the problem. The DOM has been unable to monitor air quality because of lack of necessary equipment‟s. In the direction to check air quality of the country, particularly of Kathmandu Valley, the Ministry of Population and

Environment (MOPE) has taken measures to stop the diesel operated three wheeler from the street. It is trying to promote the pollution free public transport system in the Valley. The *Kathmandu Valley Development Authority Act, 1998 (KVDAA)* contains provision for environmental pollution control, but as mentioned noted, this statues remains to be implemented. Pollution from industrial sources can be regulated by the *Industrial Enterprises Act, 2038 (1981).*

INSTITUTIONAL FRAMEWORK PAKISTAN

Key Issues: Environment Capacity Building; Environment data Base; Environment Information; Environment Education; Technical man power;

Key Institutions: Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs; Environmental Tribunals; Pakistan Wildlife Management Boards

1. INTRODUCTION

The government institutions for natural resource management are sectorally organized, in line with the general arrangements for administration and development between the Federation, provinces, and local bodies. Co-ordination mechanisms for economic planning and project approval are well established, especially for large infrastructure projects. But generally speaking the ministries and attached departments have limited capacities for analysis of environmental impacts, many of which are cross-sectoral, and line agencies are not oriented towards joint facilitation of local developments. Much more collaboration and coordinated extension is needed to promote long - term rational use of resources.

Land and revenue settlement, demarcating state, private, and common property, is the function of the district administration under the provincial boards of revenue, while forest departments oversee local rights to produce in forest lands. Revenue settlement and land consolidation have become sadly dated, leading to much private litigation. The growing number of household members who have local rights to forests has increased pressure on this resource.

2. INSTITUTIONAL FRAMEWORK

For environmental protection and the prevention of pollution, the Environment and Urban Affairs Division (EUAD) was established in 1974. With a staff of only four professionals, none of whom are environmental specialists.

Now creation of an upgraded and full-fledged Ministry of Environment is a specific step towards institutional strengthening with the Prime Minister of Pakistan is the Federal Minister alongwith Minister of State as Minister incharge for the subject of environment having responsibilities for Environment, Urban Affairs, Forestry, Wildlife, Local Government, Rural Development and Energy Conservation.

A high level council with the name of Pakistan Environmental Protection Council (PEPC) was constituted was first established under Pakistan Environmental Protection Ordinance (PEPO) 1983, Chaired by the President of Pakistan, and afterward working under the legal cover of Pakistan Environmental Protection Act (PEPA) 1997, with the chair of Prime Minister.

Environmental protection agencies established in all four provinces focus on industrial and urban pollution problems. The Ministry of Food, Agriculture, and Co-operatives is the lead agency for wildlife conservation, acting through the National Council for Conservation of Wildlife and in support of provincial wildlife departments and boards.

Almost 10,000 non-governmental organizations (NGOs) are registered in the country, mostly dealing with social welfare issues rather than development or the environment. Many senior officials of these groups are volunteers or part-time workers. Most are experienced individuals, but NGOs lack mid-level

professionals and well-trained support staff. Their limited institutional development inhibits their capacity to facilitate sustainable development.

Institutions Created by PEPA, 1997

Briefly, the institutions it provides for are:

- Pakistan Environmental Protection Council (section 3): This is headed by the Prime Minister and includes relevant Federal and Provincial Ministers as well as up to 35 representatives from various sectors. Its role (section 4) is one of overview supervision and coordination and, amongst other things:
  - to approve the National Environmental Quality Standards (NEQS),
  - to approve comprehensive national environmental policies;
  - to provide guidelines for the protection and conservation of species, habitats and biodiversity in general and for the conservation of non-renewable resources, and
  - to ensure that sustainable development is fully incorporated.

It also has the power to direct any part of government to prepare, submit, promote or implement projects for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution and the sustainable development of resources. This power can be exercised either on the Council's own initiative or on the request of any person or organization. As such, it is possible for a member of the public, an industrial concern or an NGO to seek a solution to an environmental problem through this route.

- Pakistan Environmental Protection Agency (the "Federal EPA") (section 5): this is the central implementing agency for the Act. Its functions and powers are extensive (section 6) and cover all aspects of implementing the Act, including:
- administer and implement the provisions of PEPA and its rules and regulations (paragraph 6(a));
- prepare, revise and establish the National Environmental Quality Standards (subject to prior publication for the purposes of soliciting public opinion) (paragraph 6(e));
- ensure enforcement of the National Environmental Quality Standards (paragraph 6(f));
- establish standards for the quality of ambient air, water and land (paragraph 6(9));
- establish systems for surveys, monitoring, inspection and audit to prevent and control pollution, and to estimate the costs of cleaning up pollution and rehabilitating the environment (paragraph 6(i));
- render advice and assistance in environmental matters (paragraph 6(m));
- encourage the formation and working of NGOs, community organizations and village organizations to prevent and control pollution and promote sustainable development (paragraph 6(s)), and
- take all necessary measures for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution and promotion of sustainable development.

The Federal EPA will not itself necessarily exercise these functions. Section 26 provides that the Federal Government may delegate any of the functions of the Federal EPA to any Specific part of the Federal Government, or of a Provincial Government, local council or local authority. Although the relevant Provincial EPA will ordinarily be delegated such powers for its own Province. It does not follow that a Provincial EPA will necessarily be the relevant body exercising delegated functions.

It is important to additionally note that in exercising its functions, the Federal EPA and the Provincial EPAs are bound by directions given to them in writing by the Federal Government. Similarly, a Provincial EPA is bound by directions given to it by the Provincial Government (section 27). This has potential for either positive or negative influence from external sources.

- **Provincial Environmental Protection Agencies (section 8):** These will exercise those powers and functions of the Federal EPA, which have been delegated to them by the Provincial governments which were delegated to them by the Federal government pursuant to section 26.

- **Provincial Sustainable Development Funds (section 9):** These are to be set up to provide financial assistance to environmental projects and to further the objectives of PEPA.
- **Environmental Tribunals (section 20):** These are to be set up to try the more serious offences under PEPA as well as issue arrest warrants section 21) and act as an appeal body from the directions or orders or an EPA (section 22).
- **Environmental Magistrates (section 24):** These will be judicial magistrates especially empowered by the High Court to try the less serious offences under the Act.
-

SRI LANKA

Key Issues: Environment Capacity Building; Environment data Base; Environment Information; Environment Education; Technical man power;

Key Institutions: Ministry of Environment and Natural Resources; Department and Mahaweli Authority; Department of Wildlife Conservation; Coastal Conservation Department; National Environmental Steering Committee, Metrological Department; Ministry of Agriculture, Lands and Forestry; Natural Resources, Energy and Science Authority; Ministry of Fisheries and Aquatic Resources; Ministry of Transportation, Environment, and Women's Affairs; Wayamba Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; Central Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; National Planning Department; Board of Infrastructure Investment; Regional Industry Service Committees; Industrial Development Board; Provincial and local governments; *Sri Lanka Standards Institute*

1. INTRODUCTION

Sri Lanka's current constitution established a strong president with an appointed Prime Minister and an elected Parliament. Ethnic problems spurred creation of nine provincial governments, which have taken on increasing responsibilities for environmental management. Beginning in the early 1980s, Sri Lanka passed several laws designed to integrate environment into its economic development program. A coastal zone management program was established that addressed new tourist development as well as coastal erosion issues. More far-reaching was the National Environmental Act of 1981, which established *(a)* the Central Environmental Agency, *(b)* the requirement for EIAs, and *(c)* with amendments in 1988, a strengthened EIA process and a new environmental protection licensing system, which affected all development-oriented government agencies. The government has been assisted by strong donor interest in environmental programs and institution strengthening, yet efficient government management has been frustrated by a lack of rewards and incentives for action and by the large numbers of ministries, subministries, and agencies whose jurisdictions often overlap.

2. KEY SECTORAL MINISTRIES AND ENVIRONMENTAL MATTERS

Ministry of Transportation, Environment, and Women's Affairs (M/TEWA). In conjunction with the Ministry of Policy, Planning, and Implementation, M/TEWA is principally responsible for environmental policy. The ministry was established in 1990. Efforts to strengthen the environmental component of this ministry and its predecessor have been undertaken by USAID and a number of other donor agencies with steady, albeit limited, success.

The *Central Environmental Authority* (CEA), placed within M/TEWA, was established by the National Environmental Act in 1980 to be responsible for implementing environmental programs and standards. CEA's effectiveness was hampered by its lack of regulatory authority until 1988 amendments to the National Environmental Act gave it legal authority to issue and enforce the environmental protection licensing scheme as well as oversee EIAs conducted by project-approving agencies. Given its broad duties, CEA lacks sufficient staff and financial resources to meet demands for increased industrial pollution control or engage other agencies in environmental enforcement.

The *Ministry of Finance, Planning, Ethnic Affairs, and National Integration* is the central economic planning ministry of Sri Lanka. Among its responsibilities, the ministry guides the annual Public

Investment Program, which is a mandatory planning document appraising all public investments planned for the next five years.

The *National Planning Department* is responsible for preparing the Public Investment Program and appraises the economic and financial viability of all projects submitted to the Cabinet for approval. It has established an informal environmental working group to review the environmental impacts of projects as needed. The National Water Council falls under this department and is the focus of an Asian Development Bank project to develop a strengthened legal and institutional framework for water resource management.

The *Urban Development Authority* (UDA) has wide powers to acquire, develop, and dispose of lands and properties and to exercise stringent controls on urban development activities. UDA has established industrial estates in various regions of the country by acquiring land for development and selecting industries via a committee comprised of representatives from the Ministry of Industrial Development, Board of Investment, provincial councils, and the Industrial Development Board.

The *Board of Infrastructure Investment*, which recently replaced the Secretariat for Infrastructure Development and Investment, has a leading role in infrastructure-financing policies in Sri Lanka and is the counterpart institution for USAID's Promotion of Private Infrastructure Project. In 1993 the secretariat developed guidelines for build-own-operate/build-own-transfer (BOO/BOT) projects to be used by prospective investors and state agencies promoting private financial packages from infrastructure projects.

The *Board of Investment (BOI) of Sri Lanka* is responsible for promoting, approving, and assisting foreign investment and is empowered to grant a wide range of incentives to projects in selected sectors. Renamed and expanded in 1992, BOI's objectives are to broaden the economic base of the country and generate economic development, in addition to promoting foreign investment. BOI is also responsible for planning and overseeing industrial development in three export promotion zones and three industrial estates, including environmental oversight and EIA compliance. BOI also has environmental jurisdiction over industries it approves for location outside export promotion zones and industrial estates and has authority for issuance of environmental protection licenses to these industries.

The *Ministry of Industrial Development* (M/ID) has major responsibility for tracking and promoting industrial development, facilitating private sector growth, providing industrial infrastructure, assisting domestic industry in financing investments, and strengthening regional industrial development strategies. M/ID has the lead responsibility for implementing Sri Lanka's new industrial estatesiting program (section 4) for polluting industries, a key component of its national industrialization policy.

The *Industrial Development Board* is responsible for promoting and developing small- and medium-sized industries and has established some of the nation's first industrial estates prior to creation of UDA. These estates are equipped with basic facilities such as water supply, roads, drainage, waste disposal, electricity, and telecommunications.

Regional Industry Service Committees (RTSCs) serve as regional extensions of M/ID in planning and promoting industrial expansion at the local level and providing technical assistance to local industries. Efforts are being made to strengthen the committees' ability to develop industrial estates programs effectively in each region. The committees have recently formed committees that include the Industrial Development Board, UDA, and CEA in establishing regional industrial policies, particularly with respect to industrial estates.

The *Fiscal Incentives Committee* oversees implementation of Sri Lanka's fiscal incentives policies to encourage investment in advanced technologies. These incentives apply to *(a)* technologies that provide new products and services and process raw materials locally that are currently imported in processed form and/or *(b)* utilize local resources to produce public utilities and infrastructure services. Of particular interest to the U.S. Asia-Environmental Partnership (US-AEP), the committee provides duty and turnover tax waivers for the import of advanced environmental technologies.

Ministry of Housing, Construction, and Public Utilities. Within this ministry the *National Water Supply and Drainage Board* is the principal agency for developing urban and rural water supply and urban sewerage schemes. It is responsible for removing water from the Kelani Ganga for supplying the Colombo Metropolitan Area and has lead responsibility for monitoring and maintaining sewerage systems in the cities of Colombo and Kataragama.

3. OTHER KEY INSTITUTIONS

Provincial and local governments. Under CEA's industrial classification scheme, all industries that fall in the „low-polluting" category are regulated by local authorities. This includes both licensing under the environmental protection licensing system as well as carrying out enforcement activities. The North Western Provincial Council, which has jurisdiction over Kurunegala, currently has the most autonomy on environmental matters and enacted a Provincial Environmental Act in 1993.
The *Sri Lanka Standards Institute* sets product standards (most of which are not mandatory), which currently number more than 1,200, for manufactured products, agricultural commodities, industrial raw materials, and production processes. Sri Lanka has adopted the ISO (International Organization for Standardization) 9000 series standards (ISO 9000 to 9004) on quality management and assurance and ISO 10011 standards on environmental management systems; no accreditation program is in place, however, and few firms are certified. At the request of CEA, the institute developed national standards, including tolerance limits on industrial and domestic effluent, air emission norms, noise level criteria, and classification of industries. The institute could play a lead role in ISO 14000, but little interest now exists generally in Sri Lanka in establishing an accreditation/certification program.

Research institutes. Several government research institutions gather environmental data and provide environmental monitoring services. These include the Agrarian Research and Training Institute, the Central and Regional Agricultural Institutes, and the Rubber Research Institute, among other agriculturally focused entities.

CONCLUSION

The enactments of environmental legislation in South Asian countries (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka) was started in seventies after the Stockholm Conference. Most of the countries of the region enacted umbrella legislation encompassing all the aspect of the environment. Almost all the countries of the region have also enacted sectoral legislation dealing with the sectoral issues like water, air, land, biodiversity, chemicals and wastes. Despite the good numbers of legislation, the enforcement and compliance have been really weak. This is because of inadequate awareness and education amongst the stakeholders; multiplicity of institutions, inadequate technical capacity building. Moreover the industry still find cheap to pollute rather that treat the pollution.

The main legislative instrument for the protection of the environment and conservation of natural resources in the Maldives is the Law on the Protection and Preservation of the Environment (Law No. 4/93). The purpose of this law is set out in its preamble which states that the natural environment and its resources are part of a national heritage that needs to be protected and preserved for the benefit of future generations. Further, it is stated that the protection and preservation of the country"s land and water resources, flora and fauna, beaches, reefs, lagoons and all natural habitats are important for the sustainable development of the country. The environment matters have also been dealt in other sectoral laws.

In 1992, Bangladesh formulated a comprehensive and integrated policy, the National Environment Policy. The Policy provides general guiding statement for taking national level for taking various measures for the environment management. It also provides sectoral (15 sectors) polices for other ministries. Other sectoral police has not taken the concerns of the environment protection and conservation of natural resources. The environmental aspects are addressed by the regulatory regimes of policies legislation, institutions and state policies. In Bangladesh there are about 186 laws related to the

environment. A Comprehensive Environment Conservation Act was enacted in 1995 for the protection and conservation of the environment.

Pakistan enacted umbrella legislation, the Pakistan Environment Protection Ordinance to provide for the protection, conservation, rehabilitation and improvement of the environment for the prevention and control of pollution and promotion of sustainable development. The North-West Frontier (Pakistan) Environmental Act 1996 includes rights of citizens to a healthy environment, the right of access to information concerning the environment, the right of participation in decisions that affect the environment.

The National Conservation Strategy for Nepal endorsed by His Majesty‟s Government of Nepal in 1988 was a result of World Conservation Strategy, 1980. The conservation spectrums emphasized by this strategy are wise use, protection, preservation and restoration. In the process of implementing the above strategy, following guidelines have been brought into existence- National Environmental Impact Assessment (EIA) Guidelines 1993 - Industry sector EIA Guidelines, 1996. - Forestry sector EIA Guidelines 1995. The Nepal Environmental Policy and Action Plan (NEPAP) has been prepared in response to UNCED 1992 with the objectives of sustainable management. The Environmental Protection Act, 1997 of Nepal maintain clean and healthy environment and to protect the environment with proper use and management of natural resources with larger objective of sustainable development. The Nepal has also enacted other sectoral laws on the sectoral environmental issues like wildlife, national parks, and ancient monument protection.

In Sri Lanka, the new initiatives adopted by the Government to draft a new National Environmental Protection Act (draft NEPA) and a new draft Forest Conservation Act for the environment management and resource conservation. The draft NEPA is a comprehensive draft law which updates existing legislation and introduces many new concepts including the „polluter pays‟ principle, environmental tribunals, enforceable rights to a healthy environment, administrative penalties, green marking etc. The new draft forest law contains provisions for tenure agreements between communities and the Government to be registered and re-orients the classification and regulation of forests in keeping with modern trends. New institutions for environmental management were not established until the 1980s.

Since the substance of the framework legislation is less detailed than the Specific/ sectoral laws the comprehensive environmental code options, the implementation of its principles inevitably calls for further enabling legislation. For example, extensive regulations are issued under the Environment Protection Act, 1986 on matters such as environmental standards, hazardous waste, waste control and industrial pollution. The Act also empowers State Governments to issue such regulations. Although both the environmental code and the framework law options represent an integrated, coherent and holistic approach to environmental management, the framework law technique has the added advantage of flexibility. The basic legislation can remain intact while the implementing frameworks are reformulated in response to changes in socio-economic and ecological factors. Similar provisions authorising specified government agencies to issue environmental quality criteria, standards and norms to control air, water and waste pollution exist in the legislation of Bangladesh, India, and Sri Lanka.

Legislation can also be an instrument for instituting novel approaches to dispute avoidance and settlement, and promoting public participation at all levels in environmental decision-making and implementation. Such participation can be secured through the establishment of appropriate local level dispute mediation, conciliation and settlement institutions and the definition of "citizen rights" to enforce legislation. This latter aspect may become an important safeguard where public agencies are remiss in their duties or they violate the law.

After the 1972 International Conference on Human Environment in Stockholm, states around the world began forming separate Ministries and Departments of Environment within their government. These new institutions were mandated to enact and coordinate environmental laws and to provide a control for environmental pollution. The development of institutions such as Environment Ministries and Environment Agencies has been the direct result of governmental intentions and policy to avoid conflict

and judicial overlaps among the various environment-related sectors. The long-established compartmentalized administrative structure, in which responsibilities become segmented amongst different agencies and remain separate, has created a barrier to sustainable development, which by definition requires a holistic approach. Following the Stockholm Conference, which brought into sharp focus the need for coordination of sectoral activities with a view to achieving environmental protection, there has been a trend across the entire Asia region towards establishing bodies for coordinating these activities.

Ministries have emerged in countries across the region. These Ministries are responsible for formulating environmental policies, the promotion of environmental considerations into development decision-making, and the monitoring of the environment including identification and transfer of technologies. The environment ministry provides technical advice on environmental issues, formulates environmental policy inputs, implements programs on environmental protection and enforces the laws and regulations for pollution control and resource management. The Environment Minister oversees the actions of the executive agency and monitors the activities of the other institutions and sectors that impact on the natural environment, and promotes awareness. The Minister usually reports directly to the Parliament on the state of the environment.

REFERENCES:

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Centre for Science and Environment, State of Indian Environment: Citizen‟s fifth report 1999.
3. Country Profile on Environment –Nepal, 1997, JICA.
4. Country Profile Study on Environment in Nepal, 1999, TEAM Nepal Ltd.
5. Coast Conservation Act, 1981 No.57: to make provisions for Coast Conservation including the preparation of a Coastal Zone Management Plan based on the surveys within the zone including all coastal wetlands with an indication of their significance as fisheries or Wild life habitats (Section 11) and taking over some functions of Crown Lands Ordinance No.8 of 1947. 1981 No.59 Marine Pollution Prevention Act: to provide for the prevention, reduction and control of pollution in Sri Lanka waters and for matters connected with including power to take action against any marine pollution caused to the living marine resources and wildlife.
6. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
7. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, lslamabad. Akhtar, S. M. 1978. Economic Development of Pakistan. Vol. 2. Publishers United Ltd , Lahore.
8. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
9. Government of India, Planning Commission Ninth Five Year Plan 1997- 2002,VolII, Thematic issues and Sectorial programmes.
10. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
11. Human Development Report 1999, UNDP.
12. JICA Annual Report, 1999, JICA.
13. Ministry of Law, Justice and Parliamentary Affairs, 1990a. Constitution of the Kingdom of Nepal, Kathmandu, Legal Books Management Board, Part 4, Article 26 (4).
14. Ministry of Law, Justice and Parliamentary Affairs, 1990b. Constitution of the Kingdom of Nepal. Kathmandu, Legal Books Management Board, Part 20, Article 126 (2d).
15. Mahaweli Authority of Sri Lanka Act, 1979 No.23 establish the Mahaweli Authority of Sri Lanka. The jurisdiction of the Authority is within any area that may be developed with the water resources of the Mahaweli or any major river, declared as a special area.

16. Nepal National Planning Commission (1992).
17. New ERA, 1990. "Basic Issues in Environmental Management in Nepal, Kathmandu.
18. Nepal Building Effective Institution, Asian Development Bank, Kathmandu, Nepal July 1999.
19. National Environment Act, 1980 No.47: to establish a Central Environmental Authority and matters connected therewith including recommendation to the government a system of rational exploitation and conservation of aquatic and wildlife resources, with special attention to the threatened species of fish and flora and a system of park and wildlife management, Amended by No.56 of 1988.
20. National Environmental Action Plan (1998-2001), 1998, Ministry of Forestry and Environment.
21. Oli, K. P., 1996. "Legal instruments for sustainable environmental management in Nepal, in Environment and History, vol. 2, No. 2, special issue on South Asia, Cambridge, U.K.
22. Planning Commission, Eighth Five Year Plan, 1992-97, vol. t (New Delhi, 1992
23. 22. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority Act, No.7 of 1979.
24. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority (Amendment) Act, No.7 of 1987.
25. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation (Amendment) Act, No.64 of 1988.
26. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation Act,No.57 of 1981.
27. Pachauri, R.K.; Sridharan, P.V. (1998) Looking Back to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
28. Report of the Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (N. D. Tiwari Committee) (New Delhi: Department of Science and Technology,15 September 1980).
29. The Environment (Protection) Act, 1986 (New Delhi: Publications Division, 1986).
30. The State of the Environment, 1984-1985 (New Delhi: Centre for Science and Environment 1982.
31. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
32. The World Fact Book 1999, CIA.
33. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report), JICA Nepal Office, Kathmandu, Nepal.
34. The Eight Plan. His Majesty‟s Government ofNepal, Singh Durbar, Kathmandu, Nepal, Central Bureau Statistics, 1994a. A Compendium on the Environmental Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
35. United Nations Environmental Program, Program Planning Country Report - India, 1968
36. UNDP/GEF,1999, Country Programme Strategy: Nepal, Kathmandu.
37. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal.
38. World Bank, September 1998, World Development Report, Knowledge for Development
39. World Development Indicators, 1999, The World Bank.
40. World Development Report, 1999, The World Bank.

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER IV

NATIONAL ENVIRONMENT GOVERNANCE

BANGLADESH

Key Issues: Population and poverty; Unplanned human settlement; Unplanned urbanization and industrialization; Increasing Population Density; Natural Disasters; Global Warming; Faecal Pollution; Forest Depletion; Loss of Habitat or Endangered Species; Declining Fish Catch; Shortage of Drinking Water; Sea Level Rise; Solid Waste Management; Water Pollution, Urban Air Pollution, Ground Water Pollution; Chemical and Hazardous Waste Management; Lack of Environmental capacity Building; Environmental Education

Policy Framework: National Environment Policy (1992); Water Policy (1999); Fishery Policy (1998); Energy Policy (1996); Industry Policy (1999); Agriculture Policy (1999);National Environment Management Action Plan,1992;

Key Legislation: Constitution of Bangladesh (Article 31, 32); Environment Conservation Act 1995; Penal Code, 1860; Fish Conservation Act, 1950; Bangladesh Wildlife (Preservation) Act, 1973; Wildlife (Preservation) Order, 1974; Factories Act, 1965; Forest Act, 1927;

Key Institutions: Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; Department of Forests; International Institutes of Environment; Forest Research Institute, Bangladesh; Forest Industries Development Corporation; Institute of Forestry and Environmental Sciences;

1. INTRODUCTION

Bangladesh with its number of environmental problems has been trying to combat environmental problems and improve the same by its limited facilities and resources on the line of its environmental and development policies. To promote appropriate environment management system, ensure Biodiversity conservation, ensure people's participation, develop environmentally friendly activities, preserve and protect natural resources, strengthen the capabilities of the public and private sectors, minimize environmental pollution, introduce effective EIA and to undertake research for innovating technologies, following policies have so far taken to be implemented during the country‟s Ninth Five Year Plan (1997-2002)

a. National Environmental Council headed by the Prime Minister and Executive Committee of National Environment Council headed by the Minister for Environment and Forest are more active for policy designs and programme directives.

b. Environment committees at division, district and thana levels with people's participation will be strengthened; attempts will be made to form this committee at union perished level also:

c. Department of Environment is strengthened in the light of existing Environment Policy, Act and Action Plan. In order to co-ordinate, monitor and implement these activities;

d. Drafting of rules regulations and guidelines under the Environment Protection Act (EPA) 1995 to ensure effective enforcement of EIA;

e. Sectoral legislations are to be *reviewed* and redrafted. In the light of Bangladesh's commitment expressed thought signing and ratifying a number of International Conventions and Protocols on environment;

f. 'Polluters Pay Principle' is followed in order to ensure strict compliance of environmental legislation;

g. Incentives in the form of tax-holiday etc. are provided and incremental cost incurred by the environment friendly entrepreneurs will be met in various forms/sources.

h. „National Environment Fund‟ will be established in order to provide assistance to the victims of environmental degradation caused due to natural disasters and anthropogenic activities; and

i. Environmental impact analysis will be continued in processing development projects for approval of the government.

2. CONSTITUTIONAL PROVISIONS

Like other nations of the world, Bangladesh also initiates to the global call for the protection and conservation of her natural environment and ecology. The Constitution of Bangladesh asserts that it should be a fundamental responsibility of the state to attain, through planned economic, a constant increase of productive forces and a steady improvement in the material and cultural standard of living of the 'people' (Artlcle-15). Subsequently, in response to the above constitutional commitment, the country has so far signed to 22 international conventions, treaties and protocol related to the environment.

In **Bangladesh** there are about 186 laws related to the environment. A Comprehensive Environment Conservation Act was enacted in 1995 for the protection and conservation of the environment. **Bangladesh** in 1992 formulated a comprehensive and integrated policy, the National Environment Policy. The Policy provides general guiding statement at national level for taking various measures for the environment management. It also provides sectoral polices for other ministries. Other sectoral policies have not taken the concerns of the environment protection and conservation of natural resources. The environmental aspects are addressed by the regulatory regimes of policies legislation, institutions and state policies

3. INSTITUTIONAL STRUCTURE OF ENVIRONMENTAL MANAGEMENT

Environmental concerns encompass almost all the sectors of the country especially which are leading to action in natural resources management viz. land and water. Institutional arrangements both at public and private sectors are pre-requisite in policy making, resources mobilizations and at implementation level.

The institutions responsible for environmental management at National Level are primarily the Ministry of Environment and Forests (MoEF). The MoEF is responsible for the formulation and monitoring of environmental policy and legislations and as the controlling authority of all executing agencies like Department of Environment (DoE), Forest Department (FD), Bangladesh Forest Research Institute (BFRI), Bangladesh Forest Industries Development Corporation (BFIDC) and Institute of Forestry and Environmental Sciences (IFESCU). Furthermore, it coordinates other inter-ministerial (e.g. water, industrial, transport, mining etc) environmental issues as well. Here FD, under the framework of MoEF, works as an executing agency for the protection, control, conserve, expansion and maintain the national forest resources.

Its administrative and managerial units are circles, Divisions, Ranges and Beat level, in the national forest areas.

4. ENVIRONMENTAL ADMINISTRATION

In **Bangladesh**, the primary institution for environmental management is the Department of Environment (DoE), under the Ministry of Environment and Forest (MoEF). The DoE is the authority with the mandate to regulate and enforce environmental management, and the setting and enforcement of environmental regulations, including the pollution control of water resources. Its key duties relates to the water pollution include: Pollution control, including monitoring effluent sources and ensuring mitigation of environmental pollution; Setting Water Quality standards (WQS) for particular uses of water and for discharge to water bodies; Defining environmental Impact Assessment (EIA) procedures and issuing environmental clearance permits - the latter being legal requirements before proposed projects can proceed to implementation; Providing advice or taking direct action to prevent degradation of the environment; and Declaring Environmentally Critical Areas (ECAs) where the ecosystem has been degraded to a critical state. ECA status confers protection on land and water resources through a series of environmental regulations.

The administration of the laws on resource management is entrusted with respective ministries and public agencies. In 1989, a separate ministry called the Ministry of Environment and Forest (MoEF) was created with the following major functions:

1. Management of environment and ecology.
2. Matters relating to environment pollution control.
3. Conservation of forests and development of forest resources (government and private), forest inventory, grading and quality control of forest products.
4. Afforestation and regeneration of forest extraction of forest produce.
5. Plantation of exotic cinchona and rubber.
6. Botanical gardens and botanical surveys.
7. Tree plantation.
8. Planning cell — preparation of schemes and coordination in respect of forest.
9. Research and training in forestry.
10. Mechanized forestry operations.
11. Protection of wild birds and animals and establishment of sanctuaries.
12. Matters relating to marketing of forest produce.
13. Liaison with international organizations and matters relating to treaties and agreements with other countries and world bodies relating to subjects allotted to this Ministry.

The Department of Environment (DoE) established in 1977 under the Environment Pollution Control Ordinance, 1977 still functions under the ECA. The DoE has been placed under the MoEF as its technical wing and is statutorily responsible for the implementation of the Environment Conservation Act, 1995. The Ministry of Planning also has an environmental section to check the environmental aspects of the projects of the Government of Bangladesh.

Decentralization of environmental governance albeit at a nascent stage, has been attempted through the four tiers of local governments proposed for the different administrative units

5. POLICIES AND INSTITUTIONAL RESPONSIBILITIES

Fourth Five Year Plan (1990-95) 1990:

1) Control pollution and degradation related to soil, water and air
2) Promote environment friendly activities in the development process
3) Preserve, protect and develop natural resources base
4) Strengthen the capabilities of public and private sectors to manage environmental concerns as a basic requisite for sustainable development
5)Create people‟s awareness for participation in environment promotion activities

Ministry of Environment and Forest National Environmental Policy 1992

1) Maintenance of the ecological balance and overall progress and development of the country through protection and improvement of the environment
2) Protection of the country against natural disaster
3) Identification and control of all types activities related to pollution and degradation of the environment
4) Environmentally sound development in all sectors
5) Utilization of all natural resources with long-term environmental sustainability
6) Active involvement to all environmental fields with international initiatives Ministry of Environment and Forest

National Environment Management Action Plan (NEMAP) 1992

The Action Plan presents actual actions to achieve the objective mentioned in the National Environmental Policy covering fields of the environment with emphasis on the people‟s participation in the process for formulating the plan. Ministry of Environment and Forest
Fifth Five Year Plan (1997-2002) 1997

To protect and preserve the environment by putting in place adequate regulatory regimes and effective institutions, keeping in view the need for regeneration, recycling and optimum exploitation of natural resources consistent with sustainable Development.

Ministry of Environment and Forests

Various policies adopted by the government give emphasis on management and conservation of environmental resources. These policies though not enforceable are taken as basis for administration by the concerned agencies. Being more recent documents, these ppolicies reflect on the progressive notions of environment and development. Policies on environment (1992), Water (1999), fishery (1998), energy (1996), industry (1999), agriculture (1999) require concerned administrative agencies to promote conservation and undertake development programme and activities in harmony with nature and eco-system.

National Energy Policy

National Energy Policy, 1996 commits to ensure environmentally sound sustainable energy development programmes causing minimum damage to environment. The Policy admits that unplanned and uncontrolled use of biomass fuels (contributed 65.5% of primary energy in 1990) are causing environmental degradation and committed that the demand of bio mass fuel in excess of sustainable limits is to be met by commercial fuels.

Water Policy

Water for environment is a notable feature of the Water Policy. The Policy recognizes that continued development and management of the water resource should include the protection and preservation of environment and its bio-diversity. As per the Policy, environmental needs and objects would be treated

equally with the resource management needs. All water related agencies and departments have been required to give full consideration to environmental protection, restoration and enhancement measures consistent with the National Environment Management Action Plan (NEMAP). NEMAP is the only policy document of the GoB that has been prepared with full people's participation. The Policy document is now being implemented under the Sustainable Environment Management Programme (SEMP) of the MoEF and UNDP.

Industrial Policy

The Industrial Policy seeks to promote privatization and project the government as facilitator instead of regulator. The Policy envisaged that industrial development would be sustainable from the point of view of environmental concerns and resource availability.

Agriculture Policy

Section 17 of the Agriculture Policy records concern over increased salinity of soil and excess use of chemical fertilizer and pesticides for more production. The Policy admits that saline water of the shrimp farms cause environmental pollution and calls for mitigating the same with proper implementation of the Fishery Policy.

Notified in the official gazette on 21 June 2001 the Land Use Policy states the following objectives:

(a) To prevent the current tendency for gradual and consistent decrease of cultivable land for production of food to meet the demands of the expanding population;
(b) To introduce a ‚zoning‟ system in order to ensure the best use of land in different parts of the country, according to their local geological differences, to logically control the unplanned expansion of residential, commercial and industrial construction;
(c) To ensure the best way of utilizing the *char* areas naturally rising out of river beds during dry months for the rehabilitation of the landless people;
(d) To take necessary measures to protect land, particularly government-owned land, for different development programmes that might be necessary in the future;
(e) To ensure that land use is in harmony with the natural environment;
(f) To use land resources in the best possible way and to play a supplementary role in controlling the consistent increase in the number of landless people towards the elimination of poverty and the increase of employment rate;
(g) To protect natural forest areas, prevent river erosion and to prevent the destruction of hill and hillocks;
(h) To prevent and pollution;
(i) To ensure the minimal use of land for the construction of both government and non-government multi-storied offices.

For purposes of the main land use area in Bangladesh, the Policy identifies agriculture, housing, forests, rivers, irrigation and sewerage canals, ponds, roads and highways, railways, commercial and industrial establishments, tea estates, rubber fields, horticulture gardens, the coastal belt, sandy riverbeds and *char* areas.

6. LEGISLATION

A total of 23 laws have been identified which contain provision regarding conservation of environment and control of environmental pollution from various sources; furthermore, a research by the environmental

regulatory regime shows that there are about 185 laws which have bearing on environment. These laws provide for measures relevant for environmental offences and by prescribing or prohibiting certain activities, lay down right and duties. Among these laws, the Bangladesh Environmental Conservation Act, 1995 is enacted to control and mitigate pollution and environmental conservation. This has come into force all over Bangladesh through notification of the Ministry of Environment and Forests (MoEF). Similarly, the Penal Code, 1860 has provisions to check pollution to the atmosphere, the Fish Conservation Act, 1950 provides measures to ensure undisturbed sprawling grounds, the Bangladesh Wildlife (Preservation) Order, 1974 prohibits certain dealing with specific species of wildlife etc. Besides, various other legislations certain provisions to address pollution of air. soil, water and other component of the environment. These legislative requirements covering areas whch *inter-alia* include specific with industrial, vehicular and marine pollution and prohibit certain activities which might destroy and damage the surrounding ecosystem of al living creature.

With the consciousness of the global environment threats, Bangladesh has so far signed, ratified and acceded to 22 international conventions, treaties and protocols related to environment. The Important ones, among them, signed at the UN Conference on Environment and Development (UNCED), held at Rio de Janero, Brazil. In 1992, are the Agenda 21, Climate Change Convention and Bio Diversity Convention. The Agenda 21 is the basis to attain sustainable development through policies initiated and coordinated at the National level

BHUTAN

Key Issues: Insufficient Human Resources; Insufficient to Implement Comprehensive Environmental Strategy; Limited Area for Agriculture; High Fuel wood Consumption; Emerging Urban Development Problems; Sustainable Livelihood; Land Degradation; Water Pollution; Forest Management; Loss of Biodiversity; Education and awareness

Policy Framework: Paro Resolution on Environment and Sustainable Development,1990; National Environmental Strategy; National Environmental Action Plan;

Key Legislation: Forest Act 1969, Forest and Nature Conservation Act 1995, Mines and Management Act 1995 and the Environmental Assessment Act 2000 National Environmental Strategy**;** National Forest Policy, 1974;National Forest Act (1969); Land Law (1979); Pastureland Law (1979); Inheritance law (1979); Livestock Law (1979); Wildlife Act (1985); Plant and Quarantine Act and regulations (1988); Mining Act (1995);

Key Institutions: National Environment Committee; Planning Commission; National Environment Commission; Ministry of Rural Development; Ministry of Rural Development; Department of Environment Conservation; Royal Society for the Protection of nature; Trust Fund board

1. INTRODUCTION

The Paro Resolution on Environment and Sustainable Development came up in 1990 represents a significant landmark in **Bhutan's** ongoing efforts to conserve its magnificent natural environment while improving the quality of life of its citizens. The resolution expresses eloquently the collective concerns of the Bhutanese people for the possible threats to the environment and lays down a guiding philosophy for the future to avoid such threats. The attachments to the resolution include specific recommendations for policies and actions to ensure the compatibility of environmental conservation and socio-economic development on a sustainable basis. The Paro Resolution also highlighted the importance of drafting a National Environment Strategy for Bhutan and the need to foster specific responsibility in the preservation of the environment. Today, the National Environment Commission has been set up as a high-level multi-sectoral agency, which takes care of all matters relating to the environment.

2. NATIONAL ENVIRONMENT STRATEGY

The National Environment Strategy (NES) titled "The Middle Path" has also been drafted with the help of a multi-sectoral task force and was released in December 1999. The National Environment Commission (NEC) is a national policy-making and regulatory agency responsible for preserving the country"s natural resources. The Commission is a high level, cross-sectoral body of senior ministers and officers currently under the chairmanship of the Minister of Agriculture. The NEC was set up in 1992. The NEC formulates environmental policy, sets environmental standards and legislation and ensures the use of instruments such as environmental impact assessments. The NEC works closely with donor organisations for environmental projects and represents Bhutan at national and international dialogues on the environment. The NEC is in the process of setting a consolidated, strategic, multi-sectoral framework for the environment. The institutional mechanism for coordinating conservation activities, monitoring, reporting on status and impacts has yet to be put in place. The first step towards this was the preparation of the National Environment Strategy (NES). As a follow-up to the NES, the NEC prepared the National Environment Action Plan during the 8th Five Year Plan period. The NEC is empowered to meet its long-term objective of defining policies, programmes, plans

and actions whereby the sustainability of natural resources are fully integrated into every aspect of Bhutan‟s social and economic development. The Commission also monitors the impact of development on the environment and aims to put in place the necessary controls, regulations, mechanisms and incentives in the private/public sectors to achieve sustainable development through the judicious use of natural resources. The coordination of cross-sectoral programmes and the implementation of policies and legislation are another important mandate of the Com-mission. For the implementation of its mandate, the NEC works in close collaboration with line Ministries, the Dzongkhag Yargay Tshogchungs (District Development Committees) and the Geog Yargay shogchungs (Block Development Committees).

3. ENVIRONMENT CONSERVATION AND DEVELOPMENT

In **Bhutan,** the economic development and environmental and cultural integrity are not mutually exclusive, but critical to the long-term viability of Bhutanese development - His Majesty advocates Gross National Happiness as more important than Gross National Product - this is the principle guiding force of Bhutan's sustainable development strategy. The enlightened conservation ethic and innate understanding of terms such as sustainability, and ecological succession and carrying capacity were practiced in Bhutan, although these terms were not quantified - it was understood that resources were finite, had to be used in balance and that excessive uses would deplete the natural base and threaten the whole ecosystem - all the sacred forests, lakes and watershed areas can be translated today to important conservation sites - at the start of its economic development in 1961, Bhutan inherited an almost intact natural environment. Bhutan's isolated location and late start on development and the conservation ethic has shielded the country from many of the detrimental side effects of poorly planned or haphazard development.

Department of Environmental Conservation was established so that the country could maintain the large protected areas and biodiversity conservation projects. The Trust Fund was established as a Secretariat under the Trust Fund Board. The Royal Society for the Protection of Nature (RSPN) was established in 1987. It is the only **Bhutanese** non-governmental organisation focusing on environmental issues. The main goal of the RSPN is to promote awareness among all Bhutanese on the conservation, restoration and sustainable management of the nation‟s rich natural heritage. One of the benefits of Bhutan‟s long history of isolation is the development and refinement of institutions that are particularly well suited to the country‟s unique socio-economic needs. For centuries, traditional village-based institutions were able to effectively address socio-economic and environmental needs. The *Dzongkhag Yargey Tshogchung (DYT) and Geog Yargey Tshogchung (GYT)* currently works to ensure not only the survival, but also the cultural and spiritual well-being of the Bhutanese people who, despite their ethnic homogeneity, generally lived in highly individualized communities. These locally based institutions are being adapted and strengthened to support participatory development. Poor institutional capacity has been identified as a major obstacle to the formulation and implementation of sustainable development policies. Both the RGoB (Royal Government of Bhutan) and NGOs need to improve institutional capacities for effective implementation of the national development agenda in the most sustainable way. This would require co-ordination amongst institutions, data generation, data base development, and improvements in reporting system. These institutions should be empowered to support community groups and NGOs participating in sustainable development activities. His Majesty the King personally introduced and promoted the policy of people‟s participation in the national planning and decision-making processes by establishing the DYTs *(Dzongkhag Yargey Tshogchung*s), or district development committees, in 1981. In 1991, even more broadly based grassroots organisations were formed – the GYT *(Geog Yargey Tshogchung*s), or block development committees. These groups are actively involved in the preparation of development plans.

The RGoB has given top priority to environmental conservation, environmental management and environmentally sustainable development. Environmental legislation and administrative instruments in Bhutan have been based upon old-age traditions. Many laws, policies and regulations are being promulgated to ensure environmentally sound industrial development. Some of the policies adopted by the RGoB on

environment are illustrated below. i) Improvement of existing laws, rules and notifications and introduce new legislation and policies to ensure sustainable utilisation of natural resources. ii) Preparation of master plans for different sectors of the economy e.g. Forestry, Power, and Roads. These plans include developmental planning, minimisation of environmental impact, and ensuring the utilisation of natural resources on a sustainable basis, and iii) Use of economic incentives to encourage sustainable utilisation of resources_ Increasing involvement of community and non-governmental organisations (NGOs) in planning and implementation of environmental policies.

4. ENVIRONMENTAL INSTITUTIONS

A National Environment Committee was established in 1989 in **Bhutan**, as part of the Planning Commission, under the Royal Command of His Majesty the King. The Environment Secretariat was de-linked from the Planning Commission and upgraded to an independent organization functioning as the National Environment Commission (NEC) in 1992. The NEC is a high-level, cross-sectoral body made up of Ministers and officials from various sectors to create policy, to regulate, and to be responsible for meeting the Royal Government's obligations under global environmental conventions.

In **Bhutan**, the Royal Government has established institutions, began programs, projects and ratified international conventions towards the aim of preserving and conserving the natural environment. The government has prioritized the environment as a key sector and has charted out a sustainable development path. Bhutan's policies on the environment include a Paro Resolution on environment and sustainable development (1990) and various Resolutions of the National Assembly relating to the environment (in various years). A National Environment Committee was established in 1989 as part of the Planning Commission under the Royal Command of His Majesty the King with technical and financial support from DANIDA. In recognition of the priority accorded to environmental issues and the judicious use of natural resources, the Environment Secretariat was delinked from the Planning Commission. The secretariat was upgraded to an independent organization functioning as the National Environment Commission (NEC) effective as of 1992. The NEC is a national policy-making body and regulatory agency commissioned to preserve and sustain the country's natural resources. The NEC is a high-level, cross-sectoral body of Ministers and officials from various sectors. The mandate of the NEC is to: serve as advisor to the Royal Govt. on all environment issues; to institutionalize EIA processes and guidelines. NECS is responsible for ensuring that Bhutan follows an environment sustainable development path and that all projects take into consideration environment aspects. The NECS is however still in its dev stage and requires significant institutional strengthening and training of staff - already this a component of the Danish-Bhutanese Environment Sector Programme Support

Mandate of the National Environment Commission

- To serve as an advisor to the Royal Government on all environmental issues;
- To institutionalise Environmental Assessment processes and guidelines;
- To monitor the impact of development on the environment;
- To be responsible for keeping the National Assembly informed on specific environmental issues;
- To be responsible for meeting the Royal Government‟s obligations to global environmental conventions;
- To ensure that the use of natural resources in Bhutan is sustained;
- To ensure that biological diversity and essential ecological processes and life support systems are maintained and the awareness thereof increased;
- To promote environmental awareness in all segments of Bhutanese society through various means;
- To ensure that adequate pollution abatement techniques and environmental management systems are put in place to mitigate the negative impacts of development and industrialisation;

- To encourage and promote the use of cleaner and appropriate technologies for existing and upcoming industries in order to minimise pollution and other adverse effects;
- To play a lead role in environmental sector co-ordination at the national level; and
- To ensure the implementation of policies, legislation, and instruments for environmental conservation.

National Environmental Commission Secretariat (NECS)

The mandate of the National Environment Commission is implemented through the National Environment Commission Secretariat (NECS) which works in close collaboration with line ministries, Dzongkhag Yargay Tshogchungs (District Development Committee)and Geog Yargay Tshogchungs (sub-district development). The NECS plays a key role in promoting sound environmental policies.

The National Environment Commission Secretariat (NECS) plays a key role in promoting sound environmental policies and investments. The Secretariat is responsible for ensuring that Bhutan follows an environmentally sustainable development path and that all projects take into consideration environmental aspects.

The Secretariat is, however, still in the stages of development and requires significant institutional strengthening, including training of staff, and specific support for environmental legislation in order to carry out its mandate effectively. The vision for the NEC and its Secretariat is to develop further into a well functioning and effective institution with the competence and position to ensure that Bhutan's economic development proceeds at an environmentally sustainable pace..

A Deputy Minister heads the National Environment Secretariat. The NEC Secretariat is divided into various divisions to look after different sectors. In the following, the forms and function of each of the division is described. The various divisions are:

- Administration and Finance Division
- Planning and Policy division
- RNR
- Environment Impact Assessment Division
- Communication Division

The Secretariat also houses two UNDP projects:

- Capacity 21 Project
- Bhutan National Greenhouse Gas Project

5. NATIONAL ENVIRONMENTAL STRATEGY

One of the responsibilities of the NECS was to draw up a National Environmental Strategy (NES) to ensure that environmental concerns are an integral part of the development agenda. The ultimate goal of the strategy is to guide developmental processes so that impacts on the natural environment are minimised or mitigated. The NES for Bhutan outlines three main avenues of sustainable economic development:

- expanding hydropower,
- increasing agricultural self-sufficiency,and
- and expanding the industrial base.

The NES examines each avenue in detail, taking into consideration the current status of each sector, enabling conditions for development, and the implications of such development. The NES is only the first step in the process towards sustainable development. The next step will be the implementation of the strategy, which

will be conducted through the Danida-supported Environment Sector Programme Support (ESPS). The National Environmental Strategy provides the guiding framework for all activities and programs of the NECS.

6. LEGAL FRAMEWORK

Bhutan has two fundamental sources of law: His Majesty the King and the National Assembly. Both sources act in mutually reinforcement way. The King sits in the National Assembly and thus contributes directly to laws it issues. In order to pass an Act, laws, etc., the National Assembly calls for a point to be submitted from the relevant agencies. However, before being submitted to the National Assembly a prior approval from the cabinet is necessary.

The National Assembly is made up of 150 members or representatives. The membership is divided into three categories: 105 elected representatives the people including one representative of the business community and 12 representatives of monks‟ community and 33 senior civil servants.

The Cabinet is represented by Council of Ministers and is headed by the Chairman. The head of the Government is normally elected as the Chairman of the Cabinet.

The following policies, administrative and legal instrument relating to the environment in Bhutan are

Resolutions

1. Paro resolution on environment and sustainable development (1990)
2. Resolutions of the National Assembly relating to the environment (successive years)

Laws and Acts

1. National Forest Act (1969)
2. Land Law (1979)
3. Pastureland Law (1979)
4. Inheritance law (1979)
5. Livestock Law (1979)
6. Wildlife Act (1985)
7. Plant and Quarantine Act and Regulations (1988)
8. Mining Act (1995)
9. Forest and Nature Conservation Act (1995)

Development of law at the national level with relation to environment protection and its conservation has led to legislation on environmental and environment-related issues by adding regulatory instruments with well-defined requirements. The Program for further implementation of Agenda 21 established the target year of 2002 for all countries to have formulated national sustainable development strategies. Bhutan‟s national strategy, the National Environment Strategy, has already been in place, making the Kingdom one of the 85 countries globally to complete such a sustainable development strategy.

7. TRADITIONS, PRACTICES AND ENVIRONMENT

Bhutan's population is currently estimated at 698,950 people, the majority of whom practice the Vajrayana form of Mahayana Buddhism, which is a mix of the historical teachings of the Buddha and Bon animistic beliefs. Buddhism believes in universal respect for all forms of life and the importance of protecting nature in all its manifestations. This belief is deeply embedded in Bhutanese society and culture. While Buddhism

teaches preservation and prohibits killing, Bon inculcates a deep respect for the environment and the belief that all natural phenomena – mountains, rivers, lakes, rocks and the Earth itself – are imbued with powerful spirits that can influence the general well being of a village, community or society. According to traditional beliefs, to disturb and pollute these aspects of the natural world are to incur punishments from the deities ranging from disease to death. Consequently, the Bhutanese have always treasured the natural environment and looked upon it as a source of all life. This reverence for nature has enabled Bhutan's environment to remain largely intact.

8. FUTURE CHALLENGES

In Bhutan, the decade following the UNCED summit in Rio ensured that the Royal Government charted out and implemented a clear agenda for sustainable development. Bhutanese are working toward their own definition of sustainability that is affected by the evolving nature of the country‟s historical and cultural heritage, the geography and physical characteristics of the land, and the social and political systems that together leave an indelible, singular stamp on each interpretation of the term.

Sustainable development in the Kingdom has come to mean the capacity and political will to effectively address current development and environmental problems and tomorrow‟s challenges, without compromising the Kingdom‟s unique cultural integrity and historical heritage or the quality of life of future generations of Bhutanese. The Bhutanese people aspire to achieve this by following the “Middle Path,” the balance between economic development and environmental conservation.

To this end, strong institutional, legal and policy frameworks, capacity building and awareness and innovative funding mechanisms for the environment sector have been developed. However, threats to natural resources have still increased because of economic growth, increased per-capita income and demographic changes, making it increasingly challenging to balance development and environmental conservation.

Nationally, biodiversity and natural resource conservation and sustainable development are well-recognized priorities, and progress has been made in adopting measures to protect the environment despite financial and technical constraints. Nevertheless, the state of Bhutan‟s environment remains fragile and under continued threat.

One of the most important ingredients needed for sustainable development, political will, is indeed firmly in place in Bhutan. This is because political will serves as the key to success, as effective new initiatives require major changes in the way policies and programs for sustainable development are designed and implemented. Such implementation of innovative partnerships has occurred already, but additional impetus and practical steps are needed to establish the credibility of the 2002 World Summit on Sustainable Development in carrying forward the sustainable development agenda in meaningful, measurable ways.

For Bhutan, the primary future challenges arise from many different fronts that will have to be dealt with on a continuing basis. These include:

- Globalization and the heightened expectations of unsustainable consumerist lifestyles
- Local and national capacity building
- Stronger implementation and enforcement of rules and regulations
- Stronger baseline data and monitoring systems
- Increasing education to influence individual behavior
- Prioritizing international environmental instruments
- Increasing technology transfer

- Stronger international financing, combined with allocation of domestic resources and enhanced environmental management, particularly in urban areas

For sustainable path of development, Bhutan‟s spiritual beliefs and cultural traditions have to be honored. This will involve the promotion of the indigenous ways of life that have sustained the Kingdom‟s people throughout the ages: the unique means of growing food; of meeting the needs for clothing and shelter; and, eventually, of returning to the land what we have taken from it. Indeed, Bhutan of the world can provide the valuable lessons for a sustainable future. No longer should any country have to emulate the conventional modes of development that are built on the never-ending exploitation of more resources, the scramble for more cars, and the hunger for more technology, more consumer goods, more material commodities.

Bhutan travels on a bold and innovative path to the future, an extension and expansion of the noble road from Rio. With assistance, it will fully realize its destiny: to be the embodiment of the “Middle Path,” the Buddha‟s eternal call for moderation and compassion for all things and, above all, for the environment. It is an opportunity that must be seized.

INDIA

Key Issues: Air Pollution; Water Pollution, Land Degradation; Solid Waste Management; Hazardous Waste; Bio Medical Waste, Loss of Biodiversity; Forest Depletion; Land Degradation; Urban Issues; Compliance and Enforcement; Technology Transfer;

Policy Framework: Policy Statement on the Abatement of Pollution, 1992; National Conservation Strategy and Policy Statement on the Environment and Development, National Environmental Action Plan, 1993; National Forest Policy, 1988; National Wildlife Action Plan, 1988; National Action Plan,2002, National Strategy for Conservation for Protection and Conservation of Biodiversity; National Wildlife Conservation Strategy, 2002

Key Legislation: Constitution of India (Article 21,48A, 51A, 32, 226); Water (Prevention and Control of Pollution) Act, 1974; Water (Prevention and Control of Pollution) Cess Act, 1977; Air (Prevention and Control of Pollution) Act, 1981; Indian Forest Act, 1927; National Environment Tribunal Act, 1995; National Environment Appellate Authority Act, 1997; Wildlife (Protection) Act, 1972 and Amendments; Forest (Conversation) Act, 1980; Environment (Protection) Act, 1986; Public Liability Insurance Act, 1991; Forty Second Constitutional Amendment, 1976 The Constitution (Seventy Third Amendment) Act, 1992; Constitution (Senenty Forth Amendment) Act, 1992

Key Institutions: Ministry of Environment and Forests**;** Central Pollution Control Board, State Pollution Control Boards; State Department of Environment; Botanical Survey of India; Zoological Survey of India; Ministry of Agriculture; Ministry of Water Resources; Ministry of Surface Transport; Ministry of Industry; Ministry of Health; Ministry of Agriculture; Ministry of Non-Conventional Energy Sources; Ministry of Commerce**;** Ministry of Urban Development; Planning Commission; Supreme Court; High Courts; District Courts; Nyaya Panchayat, Panchayat Adalat, Gram Kachheri

1. INTRODUCTION

Environmental concerns have been an integral part of Indian tradition as reflected in the Upanishads which first expressed the need for conservation and sustainable use of natural resources. These concerns are evident in the Constitution of the Republic of India, which states that it shall be the fundamental duty of every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife. Environment and development have become major issues for debate ever since the industrial revolution brought prosperity for the human race.

The foundations of the present day institutional framework for environmental programmes in India go back to the 1970s with the establishment of the National Council of Environmental Planning and Coordination by Smt. Indira Gandhi, the then Prime Minister almost immediately after the historic Stockholm Conference on Human Environment held in 1972. The Council was gradually evolved into a Department of Environment in 1980 which after 5 years resulted in a full-fledged Ministry of Environment and Forests of the Government of India. The State Governments also followed suit by establishing their Departments of Environment for addressing the rapidly increasing policy initiatives and programmes in the Environment and Forests sectors. The Ministry of Environment and Forests has wide ranging responsibilities as the apex body within the Government, responsible for the subjects of environment, forests and wildlife.

2. POLICY FRAMEWORK

The Government **India** has enunciated its policy in the form of a Policy Statement on Forestry, a Policy on the Abatement of Pollution and the National Conservation Strategy and Policy Statement on Conservation and Development. The National Conservation Strategy provides for the integration of environmental considerations in the policies and programmes of different sectors. It emphasizes sustainable life styles and the proper management and conservation of resources. The Pollution Abatement Policy stresses the prevention of pollution at source. It encourages the development and application of the best available practical technical solutions. The Forest Policy stresses the maintenance of environment through preservation and restoration of ecological balance. The policy seeks to substantially increase the forest cover in the country through afforestation programmes.

The Government has aimed to integrate the objectives of the aforementioned policy documents as well as take cognizance of long term developmental perspectives related to industrialization, power generation, transportation, mining, agriculture, irrigation and other such economic activities. **India** is addressing parallel concerns relating to public health and industrial safety, taking into account various enforcement institutions, eg., pollution control boards, transport authorities, dock safety, mines, explosives, factory inspectorates, etc. While a fairly comprehensive set of environmental laws is already in place, the shortcomings relate to enforcement for which, the central and state government agencies need to be suitably strengthened. Further steps are being taken to strengthen the Central and State Pollution Control Boards by augmenting their resources. Appropriate steps are also required for enhancing the availability of judicial remedies at the district and block levels in the administration of environmental laws.

India's Eighth Five Year Plan (1992-1997) identified people's initiative and participation as a key element in the process of utilization of natural resources and development. It also recognised that the role of the Government should be to facilitate and strengthen the process of involvement of major groups by creating the right types of institutional infrastructure for utilization of natural resources sustainably. The Ninth Five Year Plan (1997-2002) includes the objective of promoting and developing participatory institutions like Panchayati Raj institutions, cooperatives and self-help groups. There are over 10,000 NGOs in India ranging from National agencies to local groups, from research organisations to mass-based field organisations. Many of these are engaged in promoting eco-development, waste management, forest conservation, preservation of genetic diversity, and eco-friendly techniques in industry and agriculture.

3. CONSTITUTIONAL FRAMEWORK

The Constitution of India is perhaps the first of its kind to provide for protection and safeguard of the environment through the Directive Principles and the Fundamental duties. There are several laws under the Union list, state list and the concurrent lists that make specific provisions for protection of the environment. Although there were several provisions which dealt with environmental problems and concerns even before the first Conference on Environment in Stockholm in 1972, all the specific sectoral laws were enacted thereafter.

The main sources of law in India are the Constitution, statutes (legislation), customary law and case law. Statutes are enacted by Parliament, state legislatures and Union Territory legislatures. Besides, there is a vast body of laws known as subordinate legislation in the form of rules, regulations as well as bye-laws made by Central/State governments and local authorities like municipal corporations, municipalities, gram panchayats and other local bodies. This subordinate legislation is made under the authority conferred or delegated either by Parliament or stake or Union Territory legislatures concerned. Judicial decisions of superior courts like Supreme Court and High Courts are important sources of law. Decisions of Supreme Court are binding on all courts within the territory of India. As India is land of diversities, local customs and conventions which

are not against statute, morality, etc. are to a limited extent also recognized and taken into account by courts while administering justice in certain spheres.

One of the unique features of the Indian Constitution is that notwithstanding the adoption of a federal system and existence of Central Acts and State Acts in their respective spheres, it has generally provided for a single integrated system of courts to administer both Union and state laws. At the apex of the entire judicial system exists Supreme Court of India with a High Court of each state or group of states, and under High Courts, there is a hierarchy of subordinate courts. There is separation of judiciary from executive. Panchayat courts also function in some states under various names like Nyaya Panchayat, Panchayat Adalat, Gram Kachheri, etc., to decide civil and criminal disputes of petty and local nature. Different state laws provide for different kinds of jurisdiction of courts.

Each state is divided into judicial districts presided over by a district and sessions judge, who is the principal civil court of original jurisdiction and can try all offences including those punishable with death. He is the highest judicial authority in a district. Below him, there are courts of civil jurisdiction, known in different states as munsifs, sub-judges, civil judges and the like. Similarly, criminals, judiciary comprises chief judicial magistrate.

The Constitution of India empowers Parliament to make laws to fulfil India‟s international obligation as well as any decision made at any international conference, association or body. The Article States:

> „Notwithstanding anything in the foregoing provision of the chapter, Parliament has power to make any law for the whole or any part of the territory of India for implementing any treaty, agreement or convention with any other country or countries or any decision made at any international conference association or other body.“

Parliament has used its power under Article 253 of the Constitution to enact the Air (Prevention and Control of Pollution) Act of 1981 and the Environment (Protection) Act of 1986. The preamble of both the laws states that these were enacted to implement the decisions reached at the United Nations Conference on the Human Environment held at Stockholm in 1972. At the conference, members of the United Nations agreed to work to preserve the world‟s natural resource and called on each country to carry out this goal.

Constitution Forty Second Amendment

The adoption of the Stockholm Declaration on the Human Environment in 1972 has provided the necessary impetus to all nation states to evolve some viable plan of action for the preservation and improvement of the global environment. Initially the Constitution of India had no direct provision for protection of environment but taking note of the Stockholm Conference and a growing awareness of the environment crises, a direct provision was incorporated for protection of the environment by the Government of India, in 1976 through the Forty Second Amendment. It exhibited its commitment to environment by inserting an Article(48A), a new directive principle of state policy which reads:

> “The State shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country.”

By the same amendment it created through Article 51(A)g, a fundamental duty of citizen by adding

> "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife".

The above two provisions make it amply clear that the protection of environment is not the obligation of the state but also the fundamental duty of each and every citizen of India. These constitutional directions complied with government obligation under Stockholm Declaration and paved the way for the enactment of statutory laws to prevent the environment pollution.

The Constitution (Forty Second Amendment) Act, 1976 is a landmark development in the filed of Environment Law. It enabled the Centre to enact laws. It transferred to the Concurrent List some areas, which are originally, dealt with by the Sates to legislate. By this the Centre has the power to make laws on the forests, wildlife and population control. India being a federation, the provisions contained in Part IX "Relation between the Union and the State" of the Constitution govern the legislative relations between Union and States. Parliament can make laws with respect to the matters contained in the Union List and State Legislature with respect to the matters contained in State List of the Seventh Schedule. But Parliament and the legislature of any State are competent to make laws with respect to any of the matters contained in the concurrent list of the Seventh Schedule. Parliamentary legislation on the matters in the concurrent list is paramount. Parliament legislation also enjoys the power to make laws in respect to any matter for any part of the territory of India not included in the State list.

Article 250 empowers the Parliament to legislate with respect to any matter in the State List if a proclamation of emergency in operation. Article 248 empower the Parliament to legislate any subject not included in any the three lists, By virtue of the power in the filed of environment, under Article 252(2) of the Constitution, Parliament enacted the Water(Prevention and Control of Pollution) Act, 1974.

Under Article 246 of the Constitution of India, there are three lists of subjects given in the Seventh Schedule of the Constitution. List I or the Union List contains subjects over which the Union Government has exclusive powers of legislation (e.g., Defence, Foreign Affairs, Citizenship , Railways, National Highways, Shipping and Navigation of National Waterways, Banking, Insurance, Inter-state Trade and Commerce, Census, Union Public Service, etc). List II or the State List comprises subjects over which the State has exclusive jurisdiction (e.g. Public Order, Public Health and Sanitation, Agriculture, Water, Land, Fisheries etc). List III or the Concurrent List enumerates subjects on which both the Union and the State Legislatures have concurrent jurisdiction, but in case of conflict between the Union and the State law, the former would prevail (Article 254) (e.g., Criminal Law and Procedure, Marriage and Divorce, Contracts, Civil Procedure, Forests, Protection of Wild animals and Birds, Economic and Social Planning, Population Control and Family Planning, Factories, Electricity, etc). The residuary powers, i.e. the power to legislate on any subject not included in any of the above three lists, vest in the Central Government (Article 248)

Article 249 of the Constitution also empowers the Union Government to legislate with respect to a matter in the State List in the National interest, if the Council of State (Upper House of the Union Parliament) has declared by resolution supported by not less than two thirds of the members present and voting that it is necessary of expedient in the national interest that Parliament should legislate on it.

Article 252 empowers the Parliament to legislate on any matter with respect to which it has no power to make laws for the States except as provided in Articles 249 and 250, if the Legislatures of two or more States pass a resolution to the effect that is desirable for it to do so. Another very important provision is contained in Article 253 which empowers the Parliament to make any law for the whole or any part of the territory of India for implementing any treaty, agreement or convention with any other country of countries or any decision made at any international conference, association or other body.

Politically, India has a three tier structure i.e. Union (or Centre), State and Local Body. There are 29 states, each state having a number of local bodies. The Constitution of India governs the overall functioning of the country. The subjects over which the Centre and the States have jurisdiction are specified in the Seventh Schedule to the Constitution as Union List and State List respectively. The Central and State governments have the powers to formulate policy and pass legislation on subjects under their jurisdiction. Water, public health and sanitation, land including transfer and alienation of agricultural land, fisheries, and agriculture are state subjects, while forest and wild life are concurrent subjects. Environment is not declared in the list, the sector is governed essentially by policies and legislation at the national level, although a state can form somewhat different rules under the same national legislation. Implementation of legislation takes place through both national and state level institutions. The main institutions are central Ministry of Environment and Forest (MoEF), Central Pollution Control Board (CPCB), State Departments of Environment and State Pollution Control Boards (SPCBs). The SPCBs receive directions from both State Department of Environment and CPCB. In case of conflict the matter is referred to MoEF. Through the 73rd and 74th Constitution Amendment Acts, the government has made the local bodies (municipal corporations, municipalities and panchayats) as integral part of the institutions responsible for protection of the environment.

A decentralised approach to planning has been introduced in India through a system of Panchayati Raj and Nagar Palika (local self-governments of urban cities/ towns) institutions. With the enactment of the Constitution Amendment Act (1992), Panchayati Raj Institutions (PRIs) have been revitalized and a process of democratic decentralisation has been ushered in.

Consequent to the 73rd Constitutional Amendment Act, State Governments have enacted enabling legislations providing for elected bodies at the village, intermediate and district levels, with adequate representation from the weaker sections and women. Almost all the States have constituted Panchayati Raj bodies.

The State Governments are further required to endow the Panchayats with power and authority necessary to enable them to function as institutions of self-government with the responsibility of preparing plans for economic development and social justice and implementing them. In the Ninth Plan, it is expected that the 29 subjects identified in the Eleventh Schedule of the Constitution would be transferred to Panchayati Raj Institutions. Correspondingly, transfer of resources would have to be effected. In addition, they would require personnel and administrative support. Staff engaged in particular works/departments should be transferred along with the work to the Panchayati Raj Institutions.

As per provisions of the Constitution 74th Amendment Act, the Urban Local Bodies/ Municipalities prepare plans for the development of urban areas. The municipalities are the focal institutions for the provision of urban infrastructure and delivery of services and the States would have to endow them with commensurate functional and financial powers and responsibilities.

While the urban local bodies would have a share in the revenue of the States, they would have to be permitted to levy their own taxes/cesses at the local level. These could include professional tax, property tax, entertainment tax and motor vehicle taxes etc. In addition, they could levy user charges and licence fees, wherever feasible. Some of the municipalities in cities could also raise resources from the market by issue of bonds.

As per Article 243 (G) of the 73rd Constitutional Amendment Act, the Panchayati Raj Institutions prepare plans for economic development and social justice. Thus the core function of the PRIs is planning at the local level through the institution of the District Planning Committees. The District Planning Committees will provide the umbrella for the preparation of integrated district development plan. However, certain broad principles would have to be laid down for assigning a role to each of the three-tiers; the actual devolution

could be based on the rule that what can be done at a lower level should be done at that level, and not a higher level. The Gramsabha would list out priorities and assist in the selection of beneficiaries for various programmes and schemes.

In this way, the aspirations of the people would be articulated. Thereafter, the planning process would begin from below (bottoms up approach) with the preparation of village plans which would be incorporated into the intermediate level plans and finally merged into a district plan.

Right to Environment under the Constitution

The Article 21 of the Constitutions of Indian provides for right to life or personal liberty. However, the scope of this Article envisages right to an environment free of smoke and pollution for a better the „quality" of life. In the various court cases on environment, the right to life and liberty extrapolated to right to clean environment. The Article 21 states that:

"No person shall be deprived of his life or personal liberty except according to procedure established by law."

The objective of Art. 21 is to prevent encroachment upon personal liberty by the Executive save in accordance with law, and in conformity with the provisions thereof. The Public Interest Petitions have been founded on Art. 21, to comprehend such diverse aspects as-children in jail being entitled to special treatment, health hazard due to pollution, beggars" interest in housing, health hazards from harmful drugs, right of speedy trial, handcuffing of prisoners, delay in execution of death sentence, immediate medical aid to injured persons, starvation deaths, the right to know, right to open trial, inhuman conditions.

4. LEGISLATION

The protection and improvement of the environment is a key goal of **India.** In view of the multi-disciplinary nature of the issues involved, the growing public interest in matters pertaining to the environment. The Government of India has enacted the framework legislation, the Environment (Protection) Act 1986 to protect and conserve the environment and natural resources. The National Biodiversity Act, 2002, establishes sovereign right for protection, conservation and their utilization. The proposed law aims to assert the government"s sovereign rights over the country"s biological resources and to ensure that the any commercial benefits from them are shared equitably with the party responsible for conservation of the species and/or the provider of the knowledge. The authority will be responsible for determining fee and royalty arrangements if any species is transferred for commercial gains. However, providers of the species and/or knowledge about it will also be entitled to settle on terms with the person or organization to whom the rights are being transferred. The acquired rights will be non-transferable unless the authority consents to their transfer.

The statutory framework for the protection of environment includes the Indian Forest Act, 1927, the wildlife Protection Act, 1972, the Environment (Protection) Act, 1986, the Forest (Conservation) Act, 1982, the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981. Other enactment includes the Public Liability Insurance Act, 1991, the National Environment Tribunal Act, 1995 and the National Environment Appellate Authority Act, 1997. The implementation of law is undertaken by various agencies of the Central and State Governments.

It should be noted that although there are more than 200 legislations related to environmental protection, the key ones are those framed post Stockholm Summit in 1972. The pre 1972 laws are peripheral and are seldom applied. A number of these laws are from the pre-independence period and have not been repealed as yet.

The Ministry of Law , Justice and Company Affairs has gone on records saying that a large number of obsolete laws of the pre-independence period need to be repealed.

The importance of environmental conservation for sustainable development is well recognised and explicitly articulated in the Directive Principles of the State Policy and the Fundamental Duties of citizen enunciated in the Indian Constitution. Environmental Protection is an integrated and essential part of the policy for economic growth. Policy, plans and programmes in the fields of public health, soil conservation, forests and wildlife protection, industrial pollution and hygiene have been in existence in India for many decades.

The Central Pollution Control Board (CPCB**)** and the State Pollution Control Boards/Committees **(**SPCBs**)** were constituted under the Water Act, 1974. The Water Act states that the main function of the CPCB shall be to promote cleanliness of streams and wells in different areas of the States. Other functions of the CPCB, under the Water Act, relate to advising the Central Government, coordinating activities of SPCBs, providing technical assistance and guidance, training, dissemination of information, standard setting, etc. The functions of the SPCBs under the Water Act relate to planning for abatement of water pollution, advising State Governments, information dissemination, investigations and research, inspections, standard setting, etc. The CPCB and the SPCBs have been assigned commensurate powers under the Air Act, 1981. Under the Environment (Protection) Act, powers to close industries, operations and processes have been delegated by the Central Government to the CPCB. The State Governments have been delegated similar powers. The Central Government has also delegated powers to the SPCBs to close down industrial units handling hazardous wastes in violation of statutory provisions**.** Under the National Biodiversity Act, 2002, the Government of India plans to establish a powerful National Biodiversity Authority to administer the new law. The Authority would have the powers of a civil court and would be responsible for granting permits for the transfer of a biological resource or of knowledge about its uses. The Authority will also be responsible for opposing any moves outside India aimed at acquiring intellectual property rights over Indian biological resources.

*The Chemical Accidents (Emergency, Planning, Preparedness and Response) Rule*s, 1996 provide for the establishment of emergency response centres. The centres would be independent bodies run by industry associations. Establishing the centres would allow for a more effective response to emergency situations, particularly when accidents occur in small or middle sized chemical facilities that are generally poorly equipped with emergency facilities. The centres will also help the Crisis Management Groups already established under the Chemical Accident Rules to operate more effectively. They will also provide training in emergency procedures and provide information on accident management. It is proposed that the centres be funded by major hazardous industries.

The Factories Act, 1948 as amended in 1987 lays down provisions relating to hazardous processes. With regard to safety of workers it lays down norms for protection of eyes, precautions against dangerous fumes and gases, explosives or inflammable dust, gas etc. The National Environment Tribunal Act, 1995 Provides for strict liability for damages arising out of accidents occurring while handling any hazardous substances and for establishment of a National Environment Tribunal for effective and expeditious disposal of cases arising from such accidents, with a view to giving relief and compensation for damages to persons, property and the environment. Emergency Planning Preparedness and Response to Chemical Accidents Rules, 1996 Under section 6, 8 and 25 of the Environment (Protection) Act, Rules have been made to provide for constitution of crisis management groups at central, state, district and local levels and to define their powers and functions MoEF, CPCB, SPCB, Department of Factories, etc. The National Environment Appellate Authority Act, 1997 An Act for establishment of The National Environment Appellate Authority for receiving/hearing appeals related to environmental effects of development projects National Environment Appellate Authority within MoEF. Recently Labelling, packaging and handling Rules have also been formulated by the Government of India for better handling and management of chemicals.

5. INSTITUTIONS

MoEF is the nodal agency in the Central Government for policy, planning, promotion and coordination of environmental and forestry programmes. The main activities of the Ministry are conservation and survey of flora, fauna, forests and wildlife, prevention and control of pollution, afforestation and regeneration of degraded areas and protection of environment. These tasks are sought to be fulfilled through environmental impact assessment (EIA), ecoregeneration, assistance to organisations implementing environmental and forestry programmes, enactment of environmental legislation, formulation of environmental policies, promotion of environmental and forestry research, extension, education and training to augment the requisite manpower, dissemination of environmental information, international cooperation and creation of environmental awareness among all sectors of the country"s population. An important activity undertaken by the Ministry is coordination from an environmental point of view between different Central Ministries, either through persuasion or through formal orders from the cabinet and other higher authorities. For example, the Ministry of Power has been issued a Cabinet directive to formulate its policy statement in consonance with that of the Ministry of Environment and Forests. Another important activity is the review of EIA reports.

Central Pollution Control Board (CPCB)

The Central Pollution Control Board (CPCB) was constituted in 1974 under the provisions of the Water (Prevention & Control of Pollution) Act, 1974. Subsequently as he Indian environmental legislation evolved, its role expanded to cover the areas of air pollution, hazardous and hospital waste management etc. The main functions of CPCBs spelt out in The Water Act, 1974 and The Air Act, 1981 are to: (1) promote cleanliness of streams and wells in different areas of the States through prevention, control and abatement of water pollution, and (2) improve the quality of air and to prevent, control or abate air pollution in the country. Some of the specific programmes being carried out at present are:

- Air quality monitoring at the National Ambient air Quality Monitoring Stations conducted by SPCB with assistance from CPCB
- Water and Soil Quality Monitoring Programmes
- Inventorisation of hazardous waste management across the country
- Applied research and development work with direct relevance to pollution control i.e. Development of Water Quality Monitoring Indices
- Extensive training programmes in environmental management and pollution control
- Development and implementation of clean technologies
- Scheme of labelling „Environment Friendly" products

Chronology of Setting up of Institutions and Environment Protection In India

Committee on Human Environment (Pitamber Pant Committee)	Set up in 1970 under the Chairmanship of Shri Pitamber Pant (Member Planning Commission) to prepare a country paper
Conference on Human Environment (Stockholm Conference)	Held in June 1972 for the protection of Human Environment
National Committee on Environmentally Planning	Set up in February 1972 for planning and co-ordination between/amongst various Ministries

And Coordination (DST)	
Division of Environment (DST)	The NCEPC was converted into a Environment Division of DST
Tiwari Committee	The Committee was setup n February 1980 for the purpose of recommending legislative and administrative machinery for the protection of environment.
Department of Environment and Forests	On the recommendation of Tiwari Committee the Department of Environment was setup in 1980
Ministry of Environment and Forests	The Department of Environment set up in 1980 was converted into the Ministry on 1.11.1985
National Environmental Council	Headed by the Prime Minister of India. Constituted on 14th September 1993. A think-tank on the environmental policy and planning matters of national concerns.

The Government has aimed to integrate the objectives of the policy documents as well as take cognizance of long term developmental perspectives related to industrialisation, power generation, transportation, mining, agriculture, irrigation and other such economic activities. Government is addressing parallel concerns relating to public health and industrial safety, taking into account various enforcement institutions, e.g., pollution control boards, transport authorities, dock safety, mines, explosives, factory inspectorates, etc. While a fairly comprehensive set of environmental laws is already in place, the shortcomings relate to enforcement for which, the central and state government agencies need to be suitably strengthened. Further steps are being taken to strengthen the Central and State Pollution Control Boards by augmenting their resources. Appropriate steps are also required for enhancing the availability of judicial remedies at the district and block levels in the administration of environmental laws.

Ministry of Environment & Forests

The Ministry‟s main activities include conservation and survey of flora fauna, forests and wildlife prevention and control of pollution afforestation and regeneration of degraded areas; protection of the environment and research related to these topics.

Mandate of the Ministry

- Environment and Ecology, including environment in coastal waters, in mangroves and coral reefs but excluding marine environment on the high seas.
- Botanical Survey of India and Botanical Gardens.
- Zoological Survey of India.
- National Museum of Natural History (NMNH).
- The Water (Prevention and Control of Pollution) Act, 1974
- The Water (Prevention and Control of Pollution) Cess Act, 1977.
- The Air (Prevention and Control of Pollution) Act, 1981.
- The Indian Forest Act, 1972.
- The National Environment Tribunal Act, 1995.
- The Wildlife (Protection) Act, 1972.
- The Forest (Conversation) Act, 1980.
- The Environment (Protection) Act, 1986.
- The Public Liability Insurance Act, 1991

- Biosphere Reserve Programme
- National forest Policy and Forestry Development in the country, including Social Forestry.
- Forest Policy and all matters relating to forests and forest administration in so far as the Andaman and Nicobar Islands are concerned.
- Indian Forest Services
- Wildlife preservation and protection of wild birds and animals.
- Central Zoo Authority
- Fundamental research, including coordination thereof on higher education in forestry.
- Padmaja Naidu Himalayan Zoological Park.
- National Assistance to Forestry Development Schemes.
- Central Ganga Authority
- The National Environment Appellate Authority Act, 1997.
- Indian Plywood Industries Research and Training Institute, Bangalore
- Forest Survey of India, Dehradun
- National Afforestation and Eco-Development Board.
- Desert and Desertification.

Regional Offices of the Ministry

The Government of India has set up five Regional Offices of the Ministry of Environment and Forests at Bangalore, Bhopal, Bhubaneshwar, Lucknow and Shillong with a headquarters unit at New Delhi in April 1986 as part of the Secretariat of the Department to deal with forest conservation matters. These offices were re-organized in May 1988 into six Regional Offices as follows:

Shilong for the North Eastern Region; Calcutta for the Eastern Region; Chandigarh for the North Region; Bangalore for the South Region; Lucknow for the Central Region; Bhopla for the Western Region.

The area of operation of these Regional Offices was substantially enlarged to take care of not only forestry functions, but also environmental management and pollution control functions.

Other Related Ministries/Departments

	Ministry	**Task**
	Ministry of Surface Transport	Vehicular Pollution
	Ministry of Commerce	Trade and Environment
	Ministry of Agriculture	Conservation of Wildlife Conservation of biodiversity, Prevention and control of desertification, Conservation and regeneration of watersheds, Conservation and management of land and soil, Prevention and control of floods, Protection of irrigation command areas, Conservation and regeneration of forests, Prevention and control of pollution Recycling of resources, Conservation and management of energy
	Ministry of Water Resources	Prevention and control of floods Conservation and regeneration of wetlands Conservation and regeneration of coral reefs and coastal regions. Protection of irrigation command areas, Monitoring water quality

	Ministry of Rural Development	Conservation and management of land and soil, Prevention and control of drought. Conservation and regeneration of forests, Prevention and control of pollution
	Ministry of Power	Prevention and control of pollution, Recycling of resources, Conservation and management of energy, Use of alternative sources of power
	Ministry of Petroleum	Protection of mining and oil extraction areas, Recycling of resources, Prevention and control of pollution, Conservation and management
	Department of Ocean Development	Department of Ocean Development Conservation and regeneration of coral reefs and coastal regions. Conservation and regeneration of island resource
	Ministry of Urban Development	Prevention and control of pollution, Conservation and management of energy, Conservation and regeneration of island resources Conservation and regeneration of mountain resources
	Planning Commission	Natural Resource Conservation through Five-Year Plans
	Non Conventional Energy Sources	Use of alternative sources of power Prevention and control of pollution Recycling of resources Conservation and management of energy
	Ministry of Human Resource Development	Education including environment
	Ministry of Human Resource Development	Protection from occupational health hazards

MALDIVES

Key Issues: Institutional relationships; Poverty alleviation through capacity building of committees; Gender and social structure; Local resource mobilization; expenditure for poverty alleviation, transparency and accountability; Legal framework for decentralization; Land Resources; Coral Reefs; Sea Level Rise; Population Density; Marine Resources; Marine biodiversity; Sand Mining; Environment Education; Capacity Building;

Policy Framework: National Environment Action Plan; Male Declaration, 1998

Key Legislation: Environmental Protection and Preservation Act, 1993; Environmental Impact Assessment (EIA); Fisheries Law of the Republic of Maldives, 87

Key Institutions: Ministry of Home Affairs, Housing and Environment; Ministry of Planning and Environment; National Environment Council; Ministry of Atolls Administration; Maldives Water and Sanitation Authority; Ministry of Fisheries, Agriculture and Marine Resources; National Commission for the Protection of the Environment; Ministry of Fisheries & Agriculture; Ministry of Tourism; Ministry of Health and the Ministry of Construction & Public Works; Ministry of Tourism

1. INTRODUCTION

The environment sector was formally recognized as an entity within the Government in 1984, with the creation of an Environment Affairs Division in Ministry of Home Affairs and Social Services. In late 1988, environment was given elevated status, being combined with the then Ministry of Planning and Development to form the Ministry of Planning & Environment. The rationale for this move being, that environmental considerations need to be fully and efficiently integrated into development planning within the country. In the government re-organization in 1993, the Ministry was given additional responsibility of human resources development, and was renamed the Ministry of Planning Human Resource and Environment. In 1998, environmental administration was transferred to the Ministry of Home Affairs, Housing and Environment. Important institutions dealing with environmental issues are: Ministry of Planning and Environment; National Environment Council; Ministry of Atolls Administration; Maldives Water and Sanitation Authority; Ministry of Fisheries and Agriculture; Marine Research Section; Selected Islands Development Unit

Government of Maldives places environment amongst top of development issues on the agenda. The delicacy of the ecological system of the islands and vibrant role-played by tourism and other natural resource based industries in the economy calls for sustainable development & environmental management. Key environmental issues are: Degradation of freshwater/land resources; Human population pressure; Coral and sand mining - Low capacity of reef to act as natural sea defenses; Destruction of biodiversity; Sea levels rise; Waste management; Complex land tenure system; Shortage of human resources and weak institutional capacities to enforce environment protection and legislation.

2. ENVIRONMENT POLICY AND INSTITUTIONAL FRAMEWORK

The Government recognizes that sustainable development in the Maldives will not be possible without the maintenance of environmental health and quality and in particular, the maintenance of a productive marine environment. This recognition underlies the principle aim of the National Environment Action Plan which is: "To help the Government of the Maldives to maintain and improve the environment of the country, including

the marine and ocean area contained within the Exclusive Economic Zone, and to manage the resources contained therein for the collective benefit and enjoyment of present and future generations."

The Ministry of Planning, Human Resources and Environment is designated as the responsible body for formulating policies, rules and regulations regarding the environment, and empowers the Ministry to levy fines of up to one hundred million Rufiya (10 million US $) for breaches of the law.

Sustainable development is the overall development policy of the Maldives. The Ministry of Home Affairs Housing and Environment is responsible for developing all aspects of environmental policy and enforcement of the Environment Protection and Preservation Act. The Ministry also acts as the Secretariat for the National Commission for the protection of the Environment. The Environment Section deals with all issues of the environment including global environmental issues. It administers and co-ordinates with other government offices, advises on environmental aspects and undertakes programmes to raise public awareness on environmental issues. Environment Section also acts as the focal point for both national and international activities. The Environment Research Centre of the Ministry of Home Affairs, Housing and Environment responsible for assembling the necessary environmental information required for planning and management.

The National Commission for the Protection of the Environment (NCPE), which was appointed by the President in 1989, advises the Minister for Environment on issues related to the responsibilities stated above. The mandate for the NCPE include, involvement in assessment, planning and implementation of activities of the Maldives that affect the environment and activities to protect the environment, advising on tackling environmental problems and ensuring that the environmental protection component is included in development projects. The Commission is composed of high-level representatives from relevant Government Departments. The Minister of Home Affairs, Housing and Environment chairs the NCPE.

Amongst the other Government Departments having a mandate over environmental issues are the Ministry of Fisheries and Agriculture, the Ministry of Tourism, the Ministry of Health and the Ministry of Construction and Public Works.

The Ministry of Fisheries, Agriculture and Marine Resources has the mandate to govern the areas identified in its name. The Ministry of Tourism with an overall mandate over the area of tourism and its development, the Ministry of Health dealing with integrated water resources and disposal of sewage, while the Ministry of Construction and Public Works administer the area of waste disposal and developmental projects like dredging.

At the Provincial level, the Ministry of Atolls Administration has the wide mandate for the administration of all inhabited islands except the Capital City. The Maldives is divided into 20 administrative atolls. These atolls are each headed by the Atoll Chief who takes his orders from the Minister of Atolls Administration. Each island has an Island Chief and/or his assistant accountable to the Atoll Chief and the Ministry of Atolls Administration. While the Atoll Chief has the mandate for the whole atoll it is the Island Chief who is responsible for the administration of the island office and for other affairs of the island. All other administrative work is handled through the institutional structure of the Ministry of Atolls Administration. (i.e. the Atoll office and Island Office).

3. MALÉ DECLARATION

Air pollution is an emerging environmental issue in Asia and the impact of air pollution on human health is increasingly being reported in the region. At the initiative of United Nations Environment Programme, senior government officials and experts on air pollution from South Asian countries met at the Asian Institute of Technology, Bangkok, Thailand and agreed on a draft declaration to promote regional cooperation in the area

of pollution. On 22 April 1998, the Malé Declaration on Control and Prevention of Air Pollution and its likely Transboundary Effects for South Asia was discussed and adopted by Ministers of Environment at the seventh meeting of the Governing Council of South Asia Cooperative Environment Programme (SACEP), in Malé. The Maldives is fully committed to implementing the Malé Declaration. The Ministry of Home Affairs, Housing and Environment was designated as the national implementing agency for Malé Declaration. On 3 May 1999 the National Implementing Agency entered into an agreement with United Nations Environment Programme / Environment Assessment for Asia and the Pacific to prepare a baseline study on air pollution and a national action plan. This Action Plan, aimed implementing the Malé Declaration has been developed with the assistance of the United Nations Environment Programme

4. LEGAL FRAMEWORK

The government adopted appropriate sectoral policies covering areas such as fresh water resources, and waste management. Coral mining on reefs surrounding inhabited islands are banned. Environmental Protection and Preservation Act - approved by the Citizen's Majilis in April 1993 which provides the Ministry of Planning, Human Resources and Environment with wide statutory powers of environmental regulation and enforcement. Law No: 4/93 Environmental Protection and Preservation Act of the Maldives provided the umbrella framework for the protection and preservation of the Environment. The Act defines the environment as „all living and non-living things that surrounds and effects the lives of human beings".

The Act empowers the Environment Ministry to establish and administer protected areas while prohibits disposal of oil, waste, poisonous gases or anything else, which could be harmful to the environment within the territory of the Maldives. The Act also regulates the disposal and transboundary movement of hazardous wastes.

Different provisions of the Act are:

Section 5

(a) An impact assessment study shall be submitted to the Ministry of Environment before implementing any development project that may have a potential impact on the environment.
(b) The Ministry of Environment shall formulate the guidelines for EIA and shall determine the projects that need such assessment as mentioned in paragraph (a) of this section.

Under this section EIA guidelines have been drafted with the help of assistance from the UNDP and are now in force.

Section 6

The Ministry of Environment has the authority to terminate any project that has any un-desirable impact on the environment. A project co terminated shall not receive any compensation.

Section 11

(c) A „project" is any activity that is carried out with the purpose of achieving a certain social or economic objective.

Section (3)

The Ministry of Environment shall be responsible for formulating policies as well as rules and regulations regarding the environment in areas that do not already have a designated Government authority already carrying out such functions.

The above provisions call for the scrutiny of the other legislative provisions regarding the management of the environment.

5. ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Impact Assessment (EIA) has been made mandatory for large scale projects in the Maldives through the Environmental Protection and Preservation Act of Maldives (4/93). The legislation provides the basic framework for the EIA process in the country and the EIA procedures are laid out in the form of guidelines. According to article 5 (a) of the Act, an impact assessment study shall be submitted to the Ministry of Planning, Human Resources and Environment before implementing any activity that may have an impact on the environment. Article 5 (b) states that the principles of EIA and the projects that require an EIA shall be determined by the Ministry of Planning, Human Resources and Environment. To streamline and facilitate the EIA process in the country, the Ministry developed a set of guidelines outlining the procedures for EIA and these were approved by the Cabinet in December 1994.

6. RELATED AREAS AND LEGISLATION

Fisheries and Marine Resources

Law No: 5/87 Fisheries Law of the Republic of Maldives governs the area of living marine resources. This law defines “fishing” as the taking out, extraction of any living marine resource or any effort to take out, extract any living marine resources from within the EEZ of the Maldives.

Section 3

(a) The Ministry of Fisheries, Agriculture and Marine Resources has the discretion to regulate the area of Fisheries in the Maldives.

(b) The Ministry of Fisheries, Agriculture and Marine Resources shall monitor the activities of fishing within the Maldives and shall formulate and implement policies and activities for the development and advancement of fisheries.

The Act further states that the Ministry of Fisheries shall regulate fishing by foreign vessels within the EEZ of the Maldives, fisheries related research activities. Further Section 10 of the Act, empowers the Fisheries Ministry to declare as protected any living marine resources deemed necessary for a time period deemed necessary. There is no specific law on the issue of pollution. Legal protection is given of different aspects and areas of pollution by different legislation. Law No. 7/96 the Wreckage Law of the Maldives deals with the area of marine pollution from wrecked or sunken ships.

Section 14 (b) gives the Ministry of Transport and Civil Aviation power to fine the owner of any ship wrecked or sunken in Maldivian waters where any material which is potentially harmful to the environment is spilled into the sea either by a deliberate act or willful negligence. The Act provides, where the Government has incurred any costs in cleaning any material as stated in sub-section (a) then such cost should be refunded to the Government by the owner.

Sub-section (c) states that where any damage to the environment is caused by any activity of the owner of the vehicles, shall compensate such damage. All three sub-sections of section 14 are administrative procedures and are not referred to adjudication.

7.INTERNATIONAL CONVENTIONS

The Maldives is Party to the UNFCCC, Convention on Bio-diversity, United Nations Convention on the Law of the Sea, Vienna Convention for the Protection of the Ozone Layer, Montreal Protocol on Substances that Deplete the Ozone Layer, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

Apart from the Convention of the Law of the Sea, the Ministry of Home Affairs, Housing & Environment has the obligation to administers all other Conventions. There are two projects currently being implemented by the Environment Section one for the implementation of the UNFCCC, and other for the Convention on Bio-diversity.

8.CAPACITY BUILDING

The acute shortage of human resources is a major constraint to the development of the Maldives. This is particularly true in the environment related technical and professional areas. In the area of pollution prevention and control, there are no trained local professionals and this is an issue that needs to be addressed as a top priority. At present, there is also a lack of technical equipment to monitor and assess air pollution and this is another issue that needs to be addressed urgently. To build the necessary capacity for air quality monitoring and air pollution prevention.

In human resource development, priority is given to developing and enhancing local expertise through tertiary level training and specialised short-term training. In addition to training Government staff, capacity building efforts are also focus on the private sector and NGOs. Raising public awareness is also be a key component of the capacity building initiative. Conduct a national training workshop on the science, impacts and policy aspects relevant to air pollution. Conduct a short term technical training programme on air quality monitoring. Develop the infrastructure and facilities for regular air quality monitoring and emissions monitoring. Strengthen the Traffic Police Department and other enforcement agencies through appropriate training programmes to enhance their Capacities to strictly enforce the regulations and standards. Promote awareness among motorists and vehicle owners on the benefits of regular vehicle maintenance Develop and implement a public awareness campaign and publish air pollution index regularly. Conduct a comprehensive study to develop a long-term vehicular air pollution management programme. There is an urgent need for initiatives in the direction of resource conservation, marine biodiversity and fresh water sustenance.

NEPAL

Key Issues: Forest Depletion, Land Degradation, Water Pollution, Air Pollution; Inadequate Capacity for Management of Environment; Loss of Biodiversity; Rapid Urbanization; Landslides; Lack of Agricultural Land; Vehicular pollution; Indoor Pollution; Environment Education; Environment Capacity Building;

Policy Framework: Nepal Environment Policy and National action Plan, 1993 updated in 1998; national Conservation Strategy

Key Legislation: The Constitution of the Kingdom of Nepal (1990); Environmental Protection Act, 1997(EPA; Environment Protection Regulations (EPR, 1997) and its 1st Amendment (1998); ODS Consumption (Control) Rules, 2001 Animal Slaughter House and Meat Inspection Act, (1998) Hygiene; Consumer Protection Act, (1997) Food safety; Environment Protection Act, (1996); Environmental Planning Guidelines, (1998); Explosives Act, (1961); Financial Act, (1993); Food Act, (1966) Foreign Investment & Technology Transfer Act, (1993) and First Amendment (1996); Local Self Governance Act, (1998) and Rules, (2000); National Environmental Impact Assessment Guidelines,; New Civil Code of Nepal, (1962); The Conservation Act, (1972); Nepal Drinking Water Corporation Act, (1988) ; Nepal Health Services Act (1996) and First amendment (1998); Water Resources Act, (1992); Solid Waste Management and Resource Mobilization Act, (1986); Ancient Monuments Protection Act, (1956) and latest Amendment; Apartment Ownership Act,; Buildings Act, Civil Aviations Act, (1958) ; Factory and Factory Workers Act, (1958); Industrial Enterprises Act, (1992) and First Amendment; Kathmandu Valley Development Authority Act, (1988); Mines and Minerals Act, (1985); Mines and Minerals Regulations (1999); Nepal Petroleum Act, (1983); Public Roads Act, (1974); Public Roads improvement Cess Fund Act,; Tourism Act, (1978); Vehicle and Transport Management Act, (1992) and Rules; Aquatic Animals Protection Act, (1961) and First Amendment; Management Regulations (1996); Buffer Zone Regulations, (1996); Conservation Area Management Regulations, (1996); Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982);

Key Institutions:

Ministry of Agriculture and Cooperative; Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Information and Communication; Ministry of Defense Surveillance of national parks and wildlife reserves; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Land Reform and Reform of Land Tenure, Land Management Policy; Ministry of Local Development Resource Conservation and Integrated Rural Development, and Decentralization, Solid Waste Management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of Science and Technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, Regulation and Management of the of Water Resources, Irrigation Works, Electricity, Flood Control;

1. INTRODUCTION

The Ministry of Population and Environment (MOPE) has prepared a five-year Strategic Plan with a view to mainstreaming environmental aspects in socio-economic development plans and programmes. This Plan outlines MOPE‟s mission, goals, strategies, priority activities and outputs. The recommended mission of the Ministry is "to promote environmentally sound and sustainable development and thereby safeguard human health". This Strategic Plan aims to integrate environmental instruments in economic development planning and decision-making; develop and strengthen human resources (knowledge based and technical/scientific) and institutions; institutionalize stakeholders‟ participation on environmental management; and minimize pollution load through the enforcement of environmental legislation and standards.

The Ministry of Forests and Soil Conservation is currently finalizing the National Biodiversity Action Plan (NBAP) under the GEF-funded Biodiversity Conservation Project with the objectives of providing a systematic and strategic approach to biodiversity protection in accordance with the Convention on Biological Diversity, to which Nepal is a Party since February 1994. This Action Plan identifies key biodiversity issues, and documents a number of priority programmes in the areas of agriculture, community forests, livestock genetics, rangeland, protected areas, wetland, and non-timber forest products. The NBAP proposes special programmes to address cross-sectoral issues on biodiversity. A time frame and estimated cost is also proposed therein.

2. ENVIRONMENT POLICY IN NEPAL

Systematic National Planning process in Nepal started after 1956. All Five Year Plans prior to 1975 paid attention on natural resource utilization, agriculture production increase, sanitation and sewerage facilities and infrastructure development. At the end of fourth Plan the need for the integration of environmental aspects in the development plan was realized. In the Fifth Plan (1975-80) policies and programs on land use, soil conservation and watershed management, development and management of national parks and wildlife reserve was incorporated. The environment and land use policy was incorporated for the first time as a national policy in the Sixth Plan (1980-85). In this periodic plan, environmental aspects were included in the land use policy. A natural resource protection commission was also established. It is in this Plan period that the export of forest products was banned.

The Seventh Five Year Plan (1985-1990) was the first absolute plan to consider the environment as a distinct component in the planning process and to stipulate the preparation of an environmental impact assessment (EIA) for all major development projects. In the end of the Seventh Plan and later, some important measures and decision were made for the environmental protection and management. In 1988, His Majesty‟s Government of Nepal prepared the “National Conservation Strategy, 1988” and endorsed it. The objectives of the NCS were:

- to satisfy the basic material, spiritual and cultural needs of the Nepalese people;
- to ensure sustainable us e of land and renewable resources;
- to preserve biological diversity of the nation, and
- to maintain essential ecological and life support systems.

In the year 1990, the Council for the Conservation of Natural and Cultural Resources was set up. Unfortunately, implementation of environmental program, such as the EIA policy stated in the Seventh Plan, could not been realized to the extent previewed,. This was largely due to lack of coordination among

Sectoral Programmes, lack of qualified and experience skilled manpower, lack of appropriate legislation, funds and appropriate institutional arrangements.

It was only during the Eighth Five Year Plan (1992-1997), the EIA process was made mandatory in the major development projects. The Eighth Plan clearly maintained the environmental policies for five years in the plan document.

The role of environmental considerations in national governmental policy has assumed greater prominence with the promulgation of the new Constitution, which contains certain provisions regarding the responsibility of the state to the protection of the environment. Under the previous Constitution, (1962), the role of the natural environment in the country"s social and economic life was not mentioned. However, under the new "*Constitution of the Kingdom of Nepal, 1990*, which arose following the period of political realignment in Nepal, places upon the State a duty to incorporate environmental matters into its policy process. The pertinent section, Article 26(4) , proclaims:

> „The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness, and the State shall also make arrangement for the special protection of the rare wildlife, the forests and the vegetation."

In order to speed up the matter of Environmental Protection in the Country HMG/Nepal established the "Environmental Protection Council" in 1992. The objective was to formulate and implement national environmental policies, plans, and programs related to environmental conservation, and to coordinate the environmental related Sectoral Ministries and Institutions. In this direction the first achievement was the formulation of "Nepal Environmental Policy and Action Plan (NEPAP)". NEPAP identified the existing environmental problems connected with the land utilization, forest and pasture management, water resource management, fulfillment of the basic needs, health sanitation, poverty alleviation, conservation and promotion of natural heritage, minimization of adverse environmental impacts, urban industrial development and development of physical infrastructure. It also suggested a work plan to resolve those problems associated with this Sectoral.

To promote and insure the EIA process in major development projects, HMG endorsed the National Environmental Impact Assessment guidelines in 1993, and Environmental Impacts Assessment Guideline for Forestry sector and industrial sector in 1995.

To formulate environmental policies, plans and programs as well as to implement them, the Ministry of Population and Environment (MOPE) was established on 22 September, 1995. The Ministry is also working as secretariat for the EPC.

Now in Ninth Five Year Plan (1997-2002) the government has demarcated the environmental policy and 5 year working plan. The present environment related government policies are broadly based on the State Policies of the Constitution of Nepal. It is the Constitution that has given the direction to the environmental policies and plans formulation in the country.

3. NEPAL ENVIRONMENTAL POLICIES AND ACTION PLAN (NEPAP) 1993

This is an important document giving direction to the government and line ministries on environmental plan and policies of the country. Some major environmental policies presented in the NEPAP are:

- to efficient management of natural and physical resources;

- balance and coordinate development efforts and environmental conservation in order to meet the basic needs of the people in sustainable manner;
- manage and develop and conserve natural, cultural, physical and heritage resources keeping in view of the social, economic and cultural needs and potentialities of the present and future generations;
- identify and mitigate to the extent possible the adverse environmental impact caused, or likely to be caused by the human activities and development projects;
- utilize, manage, develop, conserve and recycle natural and physical resources in a manner that is not detrimental to their ability to yield long term benefits.
- Formulate and implement special protection and conservation policies and plants to safeguard important national heritage resources such as rare wild life species, plants, biodiversity, genetic pools , environmentally sensitive areas, and man-made heritage sites of aesthetic and cultural importance.
- Formulate necessary rules and regulation of various environmental issues to the needed areas and to carry out timely reform of existing legislation.
- Widen the environmental education formally in primary to university level and
- Develop institutions for the effective implementation of environmental laws and policies.

4. SECTORAL ENVIRONMENTAL POLICIES AND PROGRAMMES

Beside the policies and programmes directly related to the environmental management, the Eighth Plan policies emphasized integration of environmental objectives in all sectoral policies. Emphasis was given on appropriate use of resources, higher productivity and efficiency and comparative advantage of different locations while implementing any sectoral programmes such as land use, forest, agriculture, public health, water resources, and energy.

Land Utilization

The Eighth Plan reiterated the programmes addressed to soil erosion, land slide, and declining productivity and suggested a land use policy to effectively tackle the problems. The policy focused on the economically profitable use of land, encouraging agricultural use of irrigated land, extension of urban settlement, industries, and commercial farming on the basis of scientific land use planning. It envisaged developing national land use master plan and update land use statistics through use of Geographical Information System (GIS). In order to ecologically protect the Chure and Bhawar regions, the policy made provision for protection of forest in the regions. The policy also envisaged promoting community and lease-hold forestry in marginal land of all ecological zone.

Agriculture and Forestry

The Eighth Plan had tried to conceptually integrate agriculture and forestry activities. It recognized the farming and forest resource utilization complementary to each other. The Plan viewed agriculture and forestry development as mutually supportive for achieving sustainability in production, improvement in farming, conservation of agro-ecological zones, development of transport and market facilities, linkages between socio-economic development and environmental programmes.

Agriculture

The Agricultural Perspective Plan (APP) has been formulated with a view to launch the agriculture sector of Nepal into a sustainable high growth path. APP states the conditions for both accelerated growth in agriculture and employment which are the keys to reducing poverty in Nepal. It also states explicitly the

ancillary policies through which the APP growth strategy can enhance the environment and circumvent potential environment hazards in the plan.

Policies on agriculture envisaged a shift from food grain production to commercial production of high value crops such as fruits, vegetables, livestock, fisheries, and industrial crops. In order to improve the nutritional situation, production and consumption of local food stuff would be encouraged. The plan foresaw a unified management system at the local level bringing together all government agencies and NGOs under one umbrella agency. Private sector and co-operatives would be encouraged to invest in agriculture. The government planned to gradually withdraw agricultural subsidy while ensuring necessary services through competition.

In order to achieve the policy objectives, the plan suggested various programmes including production of cereal crops, cash crop, spice crops and vegetable. Other programmes that have direct bearing on environment are horticulture extension, nursery establishment, and livestock and agricultural extension services.

Forestry

The policies on forestry seek wide participation from people, promotion of agro-forestry, control of land degradation, and afforestation.

The forestry sector was categorized into different management types: community, leasehold, national and private forest management. It also emphasized watershed management, national parks and wildlife reserves, alternative energy, forest land rehabilitation, and botanical research.

Community Forestry Programme was designed to hand over the national forest to the user groups through district forest offices. Through the leasehold programme, the national forests were leased out to individuals or group of individuals for specific purposes such as establishment of resorts, herb farming, and rearing insects.

The Agro-forestry programme provided incentives (loans, technical supports) to communities to develop industrial forestry adjacent to the industries. A fund is created with the revenue generated from the use of parks and reserves part of which is spent on employment generation for the local people.

Irrigation

The policy tried to promote multiple use (drinking and electricity generation) of small irrigation systems. Conjunctive use of ground water and use of lift irrigation system, and sprinkler irrigation system was the main thrust of the policy. It envisaged private sector participation in irrigation facility development and joint management by user groups, Government and private sector. For these policies to materialize, irrigation line of credit has been introduced.

Energy

The energy policy tried to integrate the hydropower sector with irrigation programme, promote renewable energy use; replace imported petroleum products with electricity; discourage energy inefficient vehicles and machines. It made provision for tax exemption for 10 years for projects of more than 1000 kW and 15 years for projects of up to 1000 kW to private entrepreneurs. It encouraged people to opt for alternative sources of energy. Programmes such as bio-gas, wind energy, bio-mass energy, and solar energy were developed to materialize the policy.

5. NATIONAL ENVIRONMENT ACTION PLAN

Nepal started the preparation and implementation of the Environment-related Action Plans (EAP) after her participation in the United Nations Conference on Environment and Development (UNCED) held at Rio de Janeiro in 1992. In response to the growing awareness about the importance of mainstreaming environmental programmes in the development planning and implementation, Nepal prepared the Nepal Environmental Policy and Action Plan (NEPAP) which was endorsed by the Environment Protection Council in 1993. Since 1993, several institutions have continued the incorporation of selected activities in programme planning and implementation. However, much of the actions still remain to be implemented.

The Ministry of Forests and Soil Conservation is currently finalizing the National Biodiversity Action Plan (NBAP) under the GEF-funded Biodiversity Conservation Project with the objectives of providing a systematic and strategic approach to biodiversity protection in accordance with the Convention on Biological Diversity, to which Nepal is a Party since February 1994. This Action Plan identifies key biodiversity issues, and documents a number of priority programmes in the areas of agriculture, community forests, livestock genetics, rangeland, protected areas, wetland, and non-timber forest products. The NBAP proposes special programmes to address cross-sectoral issues on biodiversity. A time frame and estimated cost is also proposed therein.

The Ministry of Population and Environment (MOPE) has also recently prepared a five-year Strategic Plan with a view to mainstreaming environmental aspects in socio-economic development plans and programmes. This Plan outlines MOPE's mission, goals, strategies, priority activities and outputs. The recommended mission of the Ministry is "to promote environmentally sound and sustainable development and thereby safeguard human health". This Strategic Plan aims to integrate environmental instruments in economic development planning and decision-making; develop and strengthen human resources (knowledge based and technical/scientific) and institutions; institutionalize stakeholders' participation on environmental management; and minimize pollution load through the enforcement of environmental legislation and standards.

The National Conservation Strategy for Nepal endorsed by His Majesty‟s Government of **Nepal** in 1988 was a result of World Conservation Strategy, 1980. The conservation spectrum emphasized by this strategy is wise use, protection, preservation and restoration. In the process of implementing the above strategy, guidelines have been brought into existence. The Nepal Environmental Policy and Action Plan (NEPAP) has been prepared in response to UNCED 1992 with the objectives of sustainable management The Environmental Protection Act of Nepal in 1997 to maintain clean and healthy environment and to protect the environment with proper use and management of natural resources with larger objective of sustainable development. The Nepal has also enacted other sectoral laws on the sectoral environmental issues like wildlife, national parks, and ancient monument protection.

The two main functions of the Ministry of Population and Environment in **Nepal** cover: formulating, refining and implementing EIA guidelines. This function involves three specific activities: (a) preparing, revising and refining sectoral EIA guidelines; (b) encouraging those agencies concerned to conduct EIAs as per approved guidelines before implementing any development project; and (c) examining and approving EIA reports of intersectoral and national importance; and implementing the provisions of, and obligations arising from, international agreements, treaties and conventions on the environment, by: (a) acting as the national agency for international treaties on environment; (b) preparing a strategy to implement the provisions of international treaties; (c) taking a lead role in cooperating with other ministries in fulfilling obligations arising from international conventions, treaties, agreements and declarations; and (d) participating in programmes conducted in pursuance of international conventions.

6. LEGISLATIVE FRAMEWORK

The Ministry of Population and Environment has the mandate to formulate environmental policy, plan and programs, prepare Acts, regulation and guidelines related to environment. Conduct surveys, studies research, disseminate information and carry out publicity, monitoring and evaluation of programs, development of human resources, and act as national and international focal point in the domain of population and environment. It is after the establishment of MOPE, the Environment Protection Act 1996 and Environment Protection Regulation 1997 constituted and enforced in June 1997. The enacted legislation contains various provisions to institutionalize Environmental Impact Assessment (EIA) system, pollution control and heritage conservation policies.

The Constitution of the Kingdom of Nepal, Bikram Sambat (1990) proclaims: "The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness, and the State shall also make arrangements for the special protection of rare wildlife, the forests and the vegetation". Similarly, the Constitution has made it mandatory for the government to seek ratification by a two-thirds majority of Parliament of any treaty or agreement that involves sharing of the natural resources of Nepal and has significant, serious or long-term implications for the country.

Consistent with the initiatives of that time and the then existing policy of government intervention, including actual management of important economic activities, a number of legislative instruments were introduced with environmental implications, including such legislative instruments as: the Private Forest Nationalization Act, 1956; the Lands Act, 1965; the Forest Protection Act, 1956; the Ancient Monuments Protection Act, 1956; the Wild Life Protection Act, 1957; the Aquatic Species Protection Act, 1961; the Malaria Eradication Act, 1965; the Contagious Diseases Act, 1965; the Forest Protection (Special Arrangements) Act, 1967; the Plant Protection Act, 1972; the National Parks and Wildlife Conservation Act, 1973; the King Mahendra Trust for Nature Conservation Act, 1982; the Soil Conservation and Watershed Management Act, 1982; and the Solid Waste Management and Resource Mobilization Act, 1986. Those Acts are all examples of the initiatives taken to empower the government to either manage natural resources or to regulate them so that they become consistent with State policies.

Notwithstanding the lack, until recently, of specially designed and unified legal instruments to comprehensively address environmental and consumer protection issues, there are some 69 different Acts which directly or indirectly provide the basis for regulating and enforcing various environmental protection measures, and for safeguarding the interest of general consumers. Each of the Acts is supplemented by corresponding regulations. While it would be too exhaustive to highlight the provisions of each of the legislative measure, some of the major provisions of the all-embracing type of umbrella legislation, that is, the Environment Protection Act (EPA), 1997.

In view of the scattered nature of the existing Acts and their inadequacy for meeting the needs of the overall environmental problems in Nepal, the need for an umbrella Act has been felt for some time. Following approval by Parliament, the Act received Royal Assent .

The objective of the EPA is to recognize the interdependence between development activities and the environment, and to maintain a clean and healthy environment by minimizing, as far as possible, the impacts of environmental degradation on humans, animal and plant species, and their physical surroundings. The EPA provides the much needed legal basis for the authorities concerned to require an IEE or EIA for all projects with potentially negative impacts on the environment. With the enforcement of the Act, it will not be possible to implement such projects without the approval of the authorities concerned. While the

responsibility to conduct an initial environmental examination is left to individual implementing agencies, all cases requiring an EIA must be referred to the Ministry of Population and Environment. The Ministry can make use of outside expertise for reviewing EIA reports when deciding whether or not to approve a proposal. The implementing agencies can then approve a project with the proviso that the proponent adopt the necessary preventive or mitigatory measures as indicated by the EIA.

Environment-related Provisions in Some Contemporary Major Acts

Acts	Relevant Provisions
Local Self-Governance Act, 1998	Specific environmental scope of work for DDC, VDC and TDC comprising local level environmental planning; forest and biodiversity conservation, land-use management, pollution control, public sanitation, etc.
Environment Protection Act, 1996	Maintain clean and healthy environment and contribute to sustainable development
Forest Act, 1992	Conserve and manage forest and biodiversity
Water Resources Act, 1992	Promote environment assessment, water quality standard, and avoid significant impacts on local environment in the course of water use
Electricity Act, 1992	Avoid environmental effects during electricity generation and transmission
Vehicle and Transport Management Act, 1992	Regulate vehicular exhaust emission according to the standard
Industrial Enterprises Act, 1992	Promote the adoption of industrial pollution control measures, including incentive and disincentive provisions
Pesticide Act, 1991	Regulate the use, production and distribution of pesticide
Labour Act, 1991	Adopt preventative and curative measures for occupational health and safety
Solid Waste (Management and Resource Mobilisation) Act, 1986	Ensure solid waste management through the collection, transportation, recycling, disposal, and the classification of hazardous wastes
Soil and Water Conservation Act, 1982	Ensure soil conservation through land use regulation
King Mahendra Trust for Nature Conservation Act, 1982	Generate fund and manage the nature with people's participation
Tourism Act, 1978	Minimise environmental pollution during mountaineering activities
National Parks and Wildlife Conservation Act, 1973	Declare and manage national parks, wildlife reserves and conservation areas

The Environment Protection Act (EPA), 1996 obliges the approving agency, the Ministry of Population and Environment, to make necessary arrangements to open the EIA report for the general public to render opinions and suggestions. The Environment Protection Rules (EPR),1997 (amendment 1999) further elaborates the public consultation process in order to ensure the participation of different stakeholders right from the scoping to the approval processes. The EPR, 1997 obliges the proponent to issue public notice on the contents prior to the preparation of a scoping report. Once the draft EIA report is prepared, based on the

approved Terms of Reference (TOR), the proponent should conduct a Public Hearing at the project site. Following submission of the EIA report to the Ministry of Population and Environment (MOPE), it should be made public. The MOPE has to legally approve the EIA report within 60 days upon receipt. These legal provisions are meant to enhance the participation of different stakeholders right from the project inception to the implementation of the proposal.

The Forest Act, 1992 and the National Parks and Wildlife Conservation Act, 1973 (amendment 1993 with the inclusion of buffer zone concept) have been found effective in involving local people in forest management and species conservation. A legal provision on benefit sharing has also encouraged the local people in species conservation and has helped resolve conflicts between parks management and the people living in and around the area to some extent.

Most of the legal provisions on environment management are very new and while some require the setting of environmental standards others require extended rules and regulations for enforcement. These regulations have, however, opened avenues for developing and/or amending other measures for environment management.

Various programmes have been launched to maintain the habitat and to increase the number of endangered, threatened and vulnerable wildlife. Continuous and untiring efforts by the government along with its conservation partners, both international and national NGOs as well as the community, have proved successful in bringing about positive changes in the conservation of biological species. The new legal arrangement on buffer zone management, based upon the National Parks and Wildlife Conservation Act, 1973 (amended 1993) has opened new avenues in resolving conflicts between the park management and the local people, especially, conflicts related to access or use of forest resources to meet the requirements of the people living near protected areas, and in preserving agricultural yield and livestock from the wild animals. The Act also introduced the concept of revenue sharing and clearly spelled out that 30 to 50 per cent of the total revenue generated in the protected areas will be used for community development activities. This will be done to promote local people's participation in park management and ultimately in biodiversity conservation. Accordingly, a Buffer Zone Management Rules, 1996 is also in place. This concept has also prompted Nepal to strengthen eco-tourism in the protected areas. The benefit sharing mechanism has contributed a lot to resolving the prevailing conflicts on species conservation.

The Ministry of Housing and Physical Planning (MHPP) and the Department of Metrology (DOM) are the responsible agencies, but due to lack of resource personnel, neither could tackle the problem. The DOM has been unable to monitor air quality because of lack of necessary equipment‟s. In the direction to check air quality of the country, particularly of Kathmandu Valley, the Ministry of Population and Environment (MOPE) has taken measures to stop the diesel operated three-wheeler from the street. It is trying to promote the pollution free public transport system in the Valley.The *Kathmandu Valley Development Authority Act, 1998 (KVDAA)* contains provision for environmental pollution control, but as mentioned, this statues remains to be implemented. Pollution from industrial sources can be regulated by the *Industrial Enterprises Act, (1981).*

The Ministry of Population and Environment (MOPE) in September 1995, the Environment Protection Act (EPA), 1996 and the Environment Protection Rules (EPR), 1997 came into existence. This environmental legislation emphasizes environment conservation and management through internalization of the environment assessment system, pollution control and prevention, conservation of natural heritage sites, operation of environmental funds, additional incentives to minimize pollution, and compensation for environmental damages. Emphasis has also been laid on carrying out environmental impact assessment of the prescribed development projects and programmes. More than 200 types of developmental activities must follow the environmental assessment process. MOPE reserves the right to accept or reject the environmental impact assessment report(s) of the prescribed proposal(s), whereas the concerned ministries

could approve the Initial Environmental Examination (IEE) report(s). Regarding pollution management, the EPR, 1997 envisages an environmental permit system, and the polluters shall have to comply with the environmental standards. A maximum penalty of 0.1 million rupees (1 US $ = Rs. 69) may be imposed upon those who implement projects without receiving approval for the IEE/EIA report.

The EPA, 1996 also empowers the Environmental Inspector to inspect and report on the implementation status of agreed upon conditions. The Act also empowers HMG to constitute the Environment Protection Council and provide policy guidance and suggestions to the government. The Council will consist of environmental experts and representatives of the recognized political parties at the national level. The EPA, 1996 and EPR, 1997 have emphasized public consultation process during the preparation and approval of the EIA reports.

Local Self-Governance Act, 1998: Specific environmental scope of work for DDC, VDC and TDC comprising local level environmental planning; forest and biodiversity conservation, land-use management, pollution control, public sanitation, etc.

Environment Protection Act, 1996: Maintain clean and healthy environment and contribute to sustainable development

Forest Act, 1992: Conserve and manage forest and biodiversity
Water Resources Act, 1992: Promote environment assessment, water quality standard, and avoid significant impacts on local environment in the course of water use

Electricity Act, 1992: Avoid environmental effects during electricity generation and transmission
Vehicle and Transport Management Act, 1992: Regulate vehicular exhaust emission according to the standard
Industrial Enterprises Act, 1992: Promote the adoption of industrial pollution control measures, including incentive and disincentive provisions
Pesticide Act, 1991: Regulate the use, production and distribution of pesticide
Labour Act, 1991: Adopt preventative and curative measures for occupational health and safety

Solid Waste (Management and Resource Mobilization) Act, 1986: Ensure solid waste management through the collection, transportation, recycling, disposal, and the classification of hazardous wastes
Soil and Water Conservation Act, 1982: Ensure soil conservation through land use regulation

King Mahendra Trust for Nature Conservation Act, 1982: Generate fund and manage the nature with people‟s participation

Tourism Act, 1978: Minimise environmental pollution during mountaineering activities

National Parks and Wildlife Conservation Act, 1973: Declare and manage national parks, wildlife reserves and conservation areas

Public Consultation on EA

A Legally-binding obligation. Environment Protection Act (EPA), 1996 obliges the approving agency - the Ministry of Population and Environment - to make necessary arrangements to open the EIA report for the general public to render opinions and suggestions. The Environment Protection Rules (EPR),1997 (amendment 1999) further elaborates the public consultation process in order to ensure the participation of

different stakeholders right from the scoping to the approval processes.The EPR, 1997 obliges the proponent to issue public notice on the contents prior to the preparation of a scoping report. Once the draft EIA report is prepared, based on the approved Terms of Reference (TOR), the proponent should conduct a Public Hearing at the project site. Following submission of the EIA report to the Ministry of Population and Environment (MOPE), it should be made public. The MOPE has to legally approve the EIA report within 60 days upon receipt. These legal provisions are meant to enhance the participation of different stakeholders right from the project inception to the implementation of the proposal.

The Forest Act, 1992 and the National Parks and Wildlife Conservation Act, 1973 (amendment 1993 with the inclusion of buffer zone concept) have been found effective in involving local people in forest management and species conservation. A legal provision on benefit sharing has also encouraged the local people in species conservation and has helped resolve conflicts between parks management and the people living in and around the area to some extent.

Most of the legal provisions on environment management are very new and while some require the setting of environmental standards others require extended rules and regulations for enforcement. These regulations have, however, opened avenues for developing and/or amending other measures for environment management.

7. CONFLICT RESOLUTION THROUGH BENEFIT SHARING

Eight national parks, four wildlife reserves, one hunting reserve and three conservation areas have ensured, in situ, conservation of biological diversity in about 18 per cent of the total area of the country. Various programmes have been launched to maintain the habitat and to increase the number of endangered, threatened and vulnerable wildlife. Continuous and untiring efforts by the government along with its conservation partners, both international and national NGOs as well as the community, have proved successful in bringing about positive changes in the conservation of biological species. The new legal arrangement on buffer zone management, based upon the National Parks and Wildlife Conservation Act, 1973 (amended 1993) has opened new avenues in resolving conflicts between the park management and the local people, especially, conflicts related to access or use of forest resources to meet the requirements of the people living near protected areas, and in preserving agricultural yield and livestock from the wild animals. The Act also introduced the concept of revenue sharing and clearly spelled out that 30 to 50 per cent of the total revenue generated in the protected areas will be used for community development activities. This will be done to promote local people's participation in park management and ultimately in biodiversity conservation

PAKISTAN

Key Issues: Water Pollution, Air Pollution, Solid Waste Disposal, Hazardous Waste, Biodiversity Loss; Land Degradation; Forest Depletion; Natural Disasters; Coastal Pollution; Environment Education, Environment Capacity Building

Policy Framework: National Conservation Strategy, 1993; Provincial Conservation Strategy, 1996;

Key Legislation: Constitution of Pakistan, 1973; Environmental Protection Ordinance (PEPO), 1983;Pakistan Environment Protection Act, 1997; Environmental Quality Standards; Fisheries Act, 1997; Pakistan Environment Protection Ordinance 1983, revised in 1997; The West Pakistan Regulation and Control of Loudspeakers and Sound Amplifiers Ordinance (11), 1965; The Pakistan Agricultural Pesticides Act, 1972 Pesticide rules The Canal and Drainage Act (No. VIII) 1873 amended in 1952, 1965, 1968, 1970; The Sind ligation Act, 1879 amended in 1961, 1969; The West Pakistan Water and Power Development Act, 1958 amended in 1958, 1964, 1967; The West Pakistan Land and Water Development Board (Authority for payment from Board Fund) Rules, 1966; The Greater Lahore Water Supply Sewerage and Drainage, Ordinances 1967; Water supply and Drainage Forest Act, No. XVI), 1927; Wildbirds and Animals Protection Act, 1912; The Punjab Wild Birds and Wild Animals Protection Act (No. XIII), 1955; Punjab Wildlife (Protection, Preservation, Conservation and Management) Ordinance (No. XXI), 1972; specifically related Rules, 1973; West Pakistan Wildlife Protection Ordinance, 1959; Wildlife conservation Wildlife Protection Rules, 1960; Wildlife Protection Ordinance (No. LVI) 1959;

Key Institutions: Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs; Environmental Tribunals; Pakistan Wildlife Management Boards; Ministry of Food and Agriculture Forest Department Forest and wildlife conservation; Water and Power Development Authority; Ministry of Health and Social Welfare; Ministry of Planning and Development; Ministry of Defense; Ministry of Petroleum and Natural Resources; Ministry of Production; Ministry of Science and Technology; Ministry of Water and Power; Pakistan Atomic Energy Commission;

1. INTRODUCTION

Many global environmental problems have emerged since last two decades, like global climate change (green house effect), ozone layer depletion, loss of bio-diversities, deforestation, desertification and rapid population growth. Pakistan‟s contribution to each of these problems whether its share is less or high, each problem has implication on the development of the country as well as on the quality of life of the population. The National Conservation Strategy of **Pakistan** is operating principle of achieving greater public partnership in decision-making. Strategy evolved through extensive process of experts‟ consultations, dialogue with target groups, seminar and meetings. Pakistan adopted a policy in 1993) Sarhad Provincial Conservation Strategy adopted in 1996.

In **Pakistan**, the environmental concerns received minimal mention in the 1st, 2nd, and 3rd 5-year Plans (1951-1965). The 4th Plan was indirectly oriented towards the preservation and protection of the environment, but was not implemented as a result of political change. The 5th Plan mentioned that housing and a healthy living environment were basic human necessities - improvements in the environment also contribute to the economic growth as well as serious environmental problems related to cities were mentioned. The 6th Plan envisaged environmental protection e.g. the reclamation of land through control of salinity and water

logging, and the improvement of slums and squatter settlements received due priority. The 7th Five Year Plan and the 15-year Perspective plan (1988-2003) came together and gave full recognition to the interrelationship between population, resources, environment and development - the Environmental Protection Ordinance (EPO) (1983) made it compulsory to carry out EIA/IEE under Section 8. The Environmental Protection Council and the Pakistan Environmental Protection Agency were made responsible for the implementation of EPO - an environmental profile of Pakistan was prepared in 1987 and subsequently the National Conservation Strategy (NCS) emerged as a policy document on environment - in the 8th Plan (1993-1998) a full chapter on the environment was included. The government started implementing NCS by incorporating its recommendations in the Plan into each development sector, in addition to a separate section on the environment. A NCS unit was set up in the Ministry of Environment, Urban Affairs, Forestry, Wildlife, Fisheries, Local Government, and Rural Development. An Environmental section was also set up in the Planning Commission with similar cells in the Provincial Planning Departments, while Provincial Environmental Protection Agencies were established; Sarhad Provincial Conservation Strategy (SWFP). Objective of securing the economic, social and ecological well-being of the population in the province through the protection/conservation of natural resources and their exploitation on a sustainable basis -pursues through existing institutions to make it implementable. Public consultations at district and village levels have contributed to awareness raising, priority setting and the generation of ideas on local solutions for local problems - built ownership of problem.

2. DEVELOPMENT POLICIES

Pakistan drives its development policies for environment from a document called National Conservation Strategy (NCS). This documents is the main striving force adopted to overcome enormous, complex environmental problems that constraint its efforts to meet people‟s need.

The NCS is organized around the 14 core areas with details of programs needed across the Board to support the changes called for. These core areas are:

- Maintaining soil in croplands
- Increasing irrigation efficiency
- Protecting watersheds
- Supporting forestry and plantations
- Restoring rangelands and improving livestock
- Protecting water bodies and sustaining fisheries
- Conserving bio-diversity
- Increasing energy efficiency
- Developing and deploying re-newables
- Preventing/abating pollution
- Managing urban wastes
- Supporting institutions for common resources
- Integrating and population and environment programs
- Preserving the cultural heritage

Serious efforts to implement the Strategy were initiative in 1995 when a large port folio of projects was prepared in every core area and most of the projects have since been approved by the Federal and Provincial Governments and NGOs. The constraints to accelerate growth are:

- Less than 20% of Pakistan‟s land can be intensively formed, nearly all of which is already cultivated.
- Only half the urban waists are disposed off in sewers, with most remaining untreated.
- Rang lands are producing only 15 to 40% of their potential.

- The total fertility rate, which has remained nearly unchanged for decades, is about 6.5 children per women, putting Pakistan in the group of countries growing fastest in the world.
- Approximately 60% of infant deaths are due to infectious and parasitic diseases most of which can be traced to polluted water.
- Only 30% of the irrigation water diverted at canal heads reaches crop routes, which the rest being lost during application.
- Population of some waterways has reached such a point that fish production in the river Ravi below Lahore has been cut by 5000 tones a years.

The last decades have been international conventions and treaties on endangered species, hazardous wastes, deterioration of the earth‟s protective ozone layer, etc. At the Earth Summit in Rio-de-Janeiro held in 1992, Pakistan joined many nations in their efforts to respond to the pressure being put on its life support system by consumption patterns and growing numbers. National Conservation Strategy of Pakistan has three over-riding objectives i.e. Conservation of Natural Resources, Sustainable Development and Improved efficiency in the use and management of resources.

3. CONSTITUTIONAL FRAMEWORK

In the 1956 Constitution, subjects relating to the environment such as “Forests”, “Protection of wild animals and birds”, “Prevention of cruelty to animals”, “fisheries and agriculture”, “Water”, “Public Health and Sanitation”, “Industries”, “Factories and Boilers” were all in the Provincial List i.e. the Provincial Legislature had exclusive power to make laws with respect to these subjects. In the 1962 Constitution, “Fishing and fisheries outside territorial waters” and “Industries owned wholly or partly by the Central Government or by a corporation set up by the Centre” were placed in the list containing matters with respect to which the Central Legislature had exclusive power to make laws.

As in the 1956 and 1962 Constitutions, the Constitution of Islamic Republic of Pakistan 1973, (including its preamble) does not specify any principle or policy objective which indicate, with regard to Environment, rights and obligations of state as well as its citizens. However, Environment is on the “Concurrent List” of the Constitution, includes the subject of “Environmental Pollution and Ecology” enabling both the Federal and Provincial Governments to address environmental concerns. Thus, under the Article 142, the Parliament (National Assembly and Senate) and the Provincial Assemblies are empowered to make necessary laws accordingly. This provides greater flexibility by enabling Parliament to legislate on matters of national importance and uniform or general applicability, and the Provincial Assemblies to legislate on matters of particular concern to their respective provinces.

4. LEGISLATION FRAMEWORK

Consciousness of the need to enact a framework of environmental law for Pakistan to address emerging environmental issues began to build soon after the UN Conference on the Human Environment held in Stockholm in 1972. However, it was not till 1983 that the Pakistan Environmental Protection Ordinance was promulgated.

The NCS was prepared over a three year period, involving consultative process from all parts of the country, with the following three main objectives, (I) conservation of natural resources (II) sustainable development and (III) improved efficiency in the use and management of resources. The NCS highlighted the need to review existing environmental legislation, including the 1983 Ordinance, in order to update, strengthen, rationalize and improve enforcement of these laws.

This is in spite of the fact that several legislation existed since long, which addressed the environmental issue either directly or indirectly. Although in 1979/80, promulgation of Local Government Ordinances in the four

provinces of Pakistan established institutions and empowered them to prepare and implement schemes for prevention of pollution in air, water and land, and for this purpose they can collect taxes from the citizens. However, since creation of Pakistan, the first major step regarding legislation towards the subject of environment as a take off of the country, was the promulgation of Pakistan Environmental Protection Ordinance (PEPO), 1983. The thrust of this legislation is on motivation and awareness. It seeks to ensure that environmental considerations and concerns are incorporated into national development plans and policies. This ordinance among other things, require EIA of all major development projects, gave statutory cover for the establishment of Pakistan Environmental Protection Council (PEPC), Pakistan Environmental Protection Agency (Pak-EPA) and provincial EPAs, and made provision for the formulation of National guidelines for pollution control. As a result, the National Environmental Quality Standards (NEQS) came into existence. These standards (NEQS) were approved by the PEPC and relate to municipal and industrial liquid effluents, industrial gaseous emissions and motor vehicles exhaust and noise, and came into force for new industrial units on 1-7-1994 and for existing industrial units on 1-7-1996. The PEPO, 1983 was supplemented with the development of National Conservation Strategy which emerged out of 4 years participatory - process - oriented approach of extensive consultations with various interest groups, general public and technical experts. The Cabinet of Pakistan Government adopted the NCS with its 14 core areas in 1992. The PEPO, 1983 was considered being narrow in scope, having some deficiencies, as it did not address many issues critical to the preservation of environment such as in providing guidelines for the protection and conservation of species, habitats and bio-diversity, conservation of renewable and none-renewable resources. The PEPO, 1983 was replaced with the promulgation of a more comprehensive PEPO, 1997, which later enacted as an Act of Parliament of Pakistan and enforced with the name of Pakistan Environmental Protection Act, 1997.

5. INSTITUTIONAL FRAMEWORK

In **Pakistan,** Environment Section in NWFP set up in 1992. Main responsibilities are the scrutiny and approval of projects related to the environment, forestry, wildlife, fisheries and tourism and overseeing implementation of relevant parts of 5 year plans (but understaffed and underqualified); Environment Wing in NWFP established in 1996. Its main tasks are policy formulation, the preparation and execution of environmentally related projects, the coordination and implementation of SPCS, the development and supervision of environmental legislation at the federal and provincial levels, the monitoring and supervision of EPA, the management of funds for sustainable development and the coordination and implementation of international Conventions on the environment. The Environmental Protection Agencies (EPAs) have been set up in all of the four provinces; Pakistan Environmental Protection Council (PEPC) headed by the Prime Minister is actively engaged in countering environmental problems. National Conservation Strategy of Pakistan has three overriding objectives: conservation of natural resources, sustainable development and improved efficiency in the use and management of resources; in reaching these goals, operating on the principles of achieving greater public partnership in development and management, merging environment and economic in decision-making and focusing on durable improvements in the quality of life.

The National Conservation Strategy of **Pakistan** is operating principle of achieving greater public partnership in decision-making. Strategy evolved through extensive process of experts‟ consultations, dialogue with target groups, seminar and meetings. Pakistan adopted a policy in 1993) Sarhad Provincial Conservation Strategy adopted in 1996.

The **Pakistan** Environmental Protection Agency (PEPA) was also established under the Framework Act and was set up to administer and implement its provisions, rules and regulations. Its functions include preparing and implementing national environmental policies and preparing revising and ensuring the enforcement of the National Environmental Standards. Its role also includes the coordination of environmental policies and programmes nationally and internationally, and also assists local councils and authorities in implementing compliance schemes. Legislatively, it is responsible for encouraging the formation and working of NGOs, community and village organizations to prevent and control pollution and promote sustainable development.

PEPA must also be the agency in charge of identifying the needs for initial environmental legislation in various sectors. PEPA must also perform any other function, which the Council may assign to it. The framework legislation also created the Provincial Environmental Protection Agencies, to be run exclusively by the Provincial Governments, and assisted by sectoral Advisory Committees comprised of representatives from academia and NGOs. In **Pakistan**, the Pakistan Environment Protection Council has the power to direct government to prepare, promote and implement projects for the protection, conservation, rehabilitation and improvement of the environment, as well as the prevention and control of pollution and the sustainable development of resources. Under section 3 of the Pakistan Environmental Protection Act, the Pakistan Environmental Protection Council shall approve comprehensive national environmental policies and ensure their implementation with the framework of a national conservation strategy as may be approved by the Federal Government from time to time; and the Pakistan Environmental Protection Agency shall take all necessary measures for the implementation of the national environmental policies approved by the Council as provided in section 5

At the federal level, Ministry of Environment is a main institution in charge of environment, which has divisions on environment, urban development and wildlife. Under the ministry, Pakistan Environment Protection Council (PEPC) and Environmental Protection Agency (EPA) are major authorities on environmental protection. The PEPC formulates environmental legislation, while the EPA is a planning and implementing agency. Other federal ministries make policies on the environment in their responsibilities and implement it. For example, Ministry of Food and Agriculture covers wildlife conservation and national parks management with the support of National Council for Conservation of Wildlife. Water and Power Development Authority WAPDA) is implementing various project in water sector.

Federal Environmental Protection Agency was created under the Ministry of Environment as an implementing agency. At the provincial level, provincial EPA is to be established and has been established in four provinces. The EPA in Punjab is the most active among them. Others are Sind, North-West Frontier Province (NWFP) and Balochistan EPA.

The government institutions for natural resource management are sectorally organized, in line with the general arrangements for administration and development between the federation, provinces, and local bodies. Co-ordination mechanisms for economic planning and project approval are well established, especially for large infrastructure projects. But generally speaking the ministries and attached departments have limited capacities for analysis of environmental impacts, many of which are cross-sectoral, and line agencies are not oriented towards joint facilitation of local developments. Much more collaboration and coordinated extension is needed to promote long - term rational use of resources.

Land and revenue settlement, demarcating state, private, and common property, is the function of the district administration under the provincial boards of revenue, while forest departments oversee local rights to produce in forestlands. Revenue settlement and land consolidation have become difficult, leading to much private litigation. The growing number of household members who have local rights to forests has increased pressure on this resource.

For environmental protection and the prevention of pollution, the Environment and Urban Affairs, Division (EUAD) was established in 1974. With a staff of only four professionals, none of whom are environmental specialists.

Now creation of an upgraded and full-fledged Ministry of Environment is a specific step towards institutional strengthening with the Prime Minister of Pakistan is the Federal Minister alongwith Minister of State as Minister Incharge for the subject of environment having responsibilities for Environment, Urban Affairs, Forestry, Wildlife, Local Government, Rural Development and Energy Conservation.

A high level council with the name of Pakistan Environmental Protection Council (PEPC) was constituted was first established under Pakistan Environmental Protection Ordinance (PEPO) 1983, Chaired by the President of Pakistan, and afterward working under the legal cover of Pakistan Environmental Protection Act (PEPA) 1997, with the chair of Prime Minister.

Environmental protection agencies established in all four provinces focus on industrial and urban pollution problems. The Ministry of Food, Agriculture, and Co-operatives is the lead agency for wildlife conservation, acting through the National Council for Conservation of Wildlife and in support of provincial wildlife departments and boards.

Almost 10,000/- non-governmental organizations (NGOs) are registered in the country, mostly dealing with social welfare issues rather than development or the environment. Many senior officials of these groups are volunteers or part-time workers. Most are experienced individuals, but NGOs lack mid-level professionals and well-trained support staff. Their limited institutional development inhibits their capacity to facilitate sustainable development.

Institutions Created by PEPA, 1997

Briefly, the institutions it provides for are:

Pakistan Environmental Protection Council (section 3): This is headed by the Prime Minister and includes relevant Federal and Provincial Ministers as well as up to 35 representatives from various sectors. Its role (section 4) is one of overview supervision and coordination and, amongst other things:

- to approve the National Environmental Quality Standards (NEQS),
- to approve comprehensive national environmental policies;
- to provide guidelines for the protection and conservation of species, habitats and biodiversity in general and for the conservation of non-renewable resources, and
- to ensure that sustainable development is fully incorporated.

It also has the power to direct any part of government to prepare, submit, promote or implement projects for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution and the sustainable development of resources. This power can be exercised either on the Council's own initiative or on the request of any person or organization. As such, it is possible for a member of the public, an industrial concern or an NGO to seek a solution to an environmental problem through this route.

Pakistan Environmental Protection Agency (the "Federal EPA") (section 5) envisages the central implementing agency for the Act. Its functions and powers are extensive (section 6) and cover all aspects of implementing the Act, including:

- administer and implement the provisions of PEPA and its rules and regulations (paragraph 6(a));
- prepare, revise and establish the National Environmental Quality Standards (subject to prior publication for the purposes of soliciting public opinion) (paragraph 6(e));
- ensure enforcement of the National Environmental Quality Standards (paragraph 6(f));
- establish standards for the quality of ambient air, water and land (paragraph 6(9));
- establish systems for surveys, monitoring, inspection and audit to prevent and control pollution, and to estimate the costs of cleaning up pollution and rehabilitating the environment (paragraph 6(i));
- render advice and assistance in environmental matters (paragraph 6(m));

- encourage the formation and working of NGOs, community organizations and village organizations to prevent and control pollution and promote sustainable development (paragraph 6(s)), and
- take all necessary measures for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution and promotion of sustainable development.

The Federal EPA will not itself necessarily exercise these functions. Section 26 provides that the Federal Government may delegate any of the functions of the Federal EPA to any specific part of the Federal Government, or of a Provincial Government, local council or local authority. Although the relevant Provincial EPA will ordinarily be delegated, such powers for its own Province. It does not follow that a Provincial EPA will necessarily be the relevant body exercising delegated functions.

It is important to additionally note that in exercising its functions, the Federal EPA and the Provincial EPAs are bound by directions given to them in writing by the Federal Government. Similarly, a Provincial EPA is bound by directions given to it by the Provincial Government (section 27). This has potential for either positive or negative influence from external sources.

- **Provincial Environmental Protection Agencies (section 8):** These will exercise those powers and functions of the Federal EPA which have been delegated to them by the Provincial governments which were delegated to them by the Federal government pursuant to section 26.
- **Provincial Sustainable Development Funds (section 9):** These are to be set up to provide financial assistance to environmental projects and to further the objectives of PEPA.
- **Environmental Tribunals (section 20):** These are to be set up to try the more serious offences under PEPA as well as issue arrest warrants section 21) and act as an appeal body from the directions or orders or an EPA (section 22).
- **Environmental Magistrates (section 24):** These will be judicial magistrates especially empowered by the High Court to try the less serious offences under the Act.

Prevention and Settlement of Environmental Disputes

The procedure for avoidance or prevention of environmental disputes may be characterized as relatively new and emerging, deal with concepts which have a short history that still need to be further elucidated and articulated in order to render it more fully acceptable to the International Community, while settlement of disputes procedure is, by contrast, traditional and well established, although deeply rooted in the long history but still require special attention in connection with their formulation to deal with specific problems of environment and development.

In the filed of environment, certain damage may occur for which no monetary compensation, however large, and no efforts at restoration, however, diligent, would ever return the damaged area, property or resources to their original conditions. Accordingly, it would be far better to prevent or avoid the occurrence of such damage in the first place, than to count on corrective or compensatory measures through dispute settlement mechanisms.

The human activities such as, destroy natural or cultural heritage or other protected areas; pollute a marine environment to the extent of permanently affecting its capacity to serve as a sanctuary for the living resources, or its usefulness as a recreational area or a source of other amenities for which there is no market value; and activities that destroy the species of wild fauna and flora that become irreplaceable. It is clear that such damage to the environment cannot be satisfactorily rectified through disputes settlement procedures that address only the question of monetary compensation or reparation.

There are some basic elements of a dispute avoidance mechanism such as, prior consultation, fact-finding, commission of inquiries, conciliation, mediation and compliance mechanism.

Pursuant to above, national legislation have to establish administrative mercenaries or quasi-judicial bodies to handle appeals from the various decisions concerning licenses, project approvals, environmental protection orders, enforcement notices and closing orders. The main objective has been to avoid the delays, technicalities of procedure and expenses inherent in normal judicial proceedings.

Pakistan Environmental Protection Act (PEPA), 97 provide activities regulated by Pakistan Environmental Protection Agency (Pak-EPA) and also by provincial EPAs and focused on primary areas. Such as NEQS, IEE, EIA and EPO (Reference Sections 11, 12 and 16 respectively). These sections serve as preventive approach, which includes avoidance and prevention of environmental dispute.

Mechanism for Integrating Environmental Considerations in Development Decision Making at Central, State/Provincial and Local Levels.

The effective implementation of environmental legislation pre-supposes the existence of appropriate basic principles in that legislation and the mechanism in development decision making for integrated environmental considerations is somehow taken as new approach which sets out the broad objectives and the bane principles of environmental management and sustainable development for framework legislation.

Section 4(1) (e) of the national framework legislation i.e. Pakistan Environmental Protection Act, 1997 provides the provision for such a mechanism under functions and powers of the Pakistan Environmental Protection Council. Hence, PEPC is a very high level forum of decision making. The functions and powers of the PEPC specified, inter-alia, by coordinating integration of environmental principles and concerns of sustainable development in decision making process for formulation of national development plans and policies.

6. PARTNERSHIP AND PUBLIC PARTICIPATION

The environment is an important, if not the most important, public resource. The manner of its current use affects the welfare of both present and future generations. The public should, therefore, have a right not only to participate in decisions affecting the management and status of the environment but also to institute legal proceedings in vindication of the public interest. There are four basic elements to the principle of public participation:

- access to information held by public authorities;
- participation in decision-making processes;
- the creation of public awareness on environmental issues; and
- access to judicial and administrative proceedings, including redress and remedy.

The drafting of Pakistan Environmental Protection Act, 1997 itself result of a highly consultative public participatory work. The first draft of Pakistan Environmental Protection Act was circulated in 1993 among large number of individuals, groups, media. parliamentarians, federal and Provincial Government functionaries, Federation of Pakistan Chambers of Commerce & Industry, Bar Councils and Associations, Journalists, educational institutions and NGOs. special workshops were also held in the provinces to elicit view and comment. On the basis of feed back received from extensive consultation and participatory work, the final draft was placed before the parliament for enactment as a law.

The involvement of public participation provided in the Pakistan Environmental Protection Act, 1997 includes:

- Under Section 4(2) " The Council may, either itself or on the request of any person or organization, direct the Federal Agency or any Government Agency to prepare, submit, promote or implement projects for the protection, conservation"s, rehabilitation and improvement of the environment, the prevention and control of pollution, and the sustainable development of sources, or to undertake research in any specified aspect of environment."

- Under Section 5(6) " for assisting the Federal Agency in the discharge of its functions, the Federal Government shall establish Advisory Committees for various sectors, and appoint as members thereof eminent representatives of the relevant sector, educational institutions, research institutions and non governmental organization. "

- Under Section 6(1)(e) "Provided that before seeking approval of the Council, the Federal Agency shall publish the proposed National Environmental Quality Standers for public opinion in accordance with the prescribed procedure,"

- Under Section 6(1)(O) "Provide information and guidelines to the public on environmental matters, "

- Under Section 8(6) " For assistance of the Provincial Agency in the discharge of its functions, the Provincial Government shall establish sector Advisory Committees for various sectors and appoint members from amongst eminent representative of the relevant sector, educational institutes, research institutes and non-governmental organizations."

- Under Section 12(7) " The Federal Agency shall maintain separate Registers for initial environmental examination and environmental impact assessment project, which shall contain brief particulars of each project and a summary of decisions taken thereon, and which shall be open to inspection by the public at all reasonable hours and the disclosure of information in such Registers shall be subject to the restrictions specified in sub-section (3)."

SRI LANKA

Key Issues: Air Pollution, Deforestation; Solid Waste Disposal Health Hazards; Air Pollution; Water Pollution; Soil Erosion; Land Degradation; Loss of Biodiversity and Wildlife; Industrial Pollution; Coastal Erosion; Solid Waste Disposal; Inadequate Capacity to manage Environment; Marine Biodiversity; Degradation of Marine Resources; Environment Education; Environment Capacity Building;

Policy Framework: National Conservation Strategy, 1988; National Environmental Action Plan, 1994 updated in 1998

Key Legislation: National Environment Act, 1980; National Environment (Amendment) Act, 1988; Control of Pesticide Act, 1980; Coast Conservation Act, 1981; Coast Conservation (Amendment) Act, 1988;Marine Pollution Prevention Act, 1981; Fisheries and aquatic resources Act, 1996; Forestry Ordinance, the Flora & Fauna Act, the Fisheries Act; National Environmental (Protection and quality) Regulation, 1990; National Environmental (Noise Control) Regulation,1996; National Environmental (Noise Control) Amendment Regulation,1997;

Key Institutions: Ministry of Environment and Natural Resources; Department and Mahaweli Authority; Department of Wildlife Conservation; Coastal Conservation Department; National Environmental Steering Committee, Metrological Department; Ministry of Agriculture, Lands and Forestry; Natural Resources, Energy and Science Authority; Ministry of Fisheries and Aquatic Resources; Ministry of Transportation, Environment, and Women's Affairs; Wayamba Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; Central Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; National Planning Department; Board of Infrastructure Investment; Regional Industry Service Committees; Industrial Development Board; Provincial and local governments; Sri Lanka Standards Institute

1. INTRODUCTION

The past few decades has seen a transformation in Sri Lanka from a traditional agricultural based rural economy with sustainable life styles to a more diversified and commercialized economy trying to move away from total dependence on agriculture to solve the growing problems of unemployment and poverty. Successive Governments allocated more and more resources for the construction of dams, irrigation works, expanded the area under cultivation depleting forests, established industries, created infra-structure, expanded urban centers to achieve a rapid economic growth rate to alleviate poverty. These development programmes and pressures of an increasing population resulted in the degradation and depletion of natural resources. Although, the legislative framework for the protection of the environment, such as the Forestry Ordinance, the Flora and Fauna Act, the Fisheries Act and Coast Conservation Act were in place, the institutional capacity for their implementation of development programmes. Continuing poverty accelerated the rate of environmental degradation. Problems associated with economic activities such as land degradation and deforestation, air and water pollution, health hazards, loss of biodiversity and climate changes emerged and recognizing these, the Government passed a National Environment Act in 1980. To strengthen the institutional capacity to implement laws and regulations a regulating body called the Central Environment Authority was established. A separate Ministry for environment was also established. Thus in the eighties the government began to pay more attention to the environment.

With the 1992 Rio Earth Summit, the Government of Sri Lanka began to follow a more focused and a concerted policy towards sustainable development. During medium-term 1996- 2000 the Government will further pursue the objectives of accelerating economic growth, while ensuring equity and a higher quality of life, particularly for the poor by following a strategy which has the following main features.

- Market friendly economic policies and the private sector to be the engine of growth.
- Raising overall investment by creating a conductive policy environment, peace and stability.
- Development of ports, shipping and financial and capital markets to be major regional service center.
- Policy measures to make industry and agriculture internationally competitive.
- Promotion of exports through appropriate tax tariffs, interests and credit policies.
- Welfare programmes to mobilize the resources of the poor for the development process.

Private investments in manufacture and infra-structure development

A National Environment Action Plan was developed to provide the policy framework for sustainable development. A participatory approach was followed in preparing this policy. In addition, a Forestry Master plan to determine land use and promote forestry development as well as a Coastal Zone Management Plan was developed. A National Biodiversity Action Plan has been prepared with World Bank Assistance to protect and manage biodiversity. In order to integrate environment concerns into development plans, the National Planning Department has introduced environment screening of all public sector investment projects. Environment Impact Assessment (EIA) has been made statutory for global trade and international cooperation. Twenty percent of the export earnings of Sri Lanka is derived from agriculture exports consisting mainly of tea, rubber and coconut. Volatile commodity prices have an adverse impact on the export earnings and the economy. The market restrictions on garment exports etc., restrict the growth of Sri Lankan industry and exports. The limitations the ability to generate export earnings and physical limitations to expansion of agriculture make it extremely difficult to mobilize domestic resources for development, a more equitable trading system supportive of sustainable development is needed. In the context of limited domestic resources enhanced international cooperation is vital for achieving the goal of sustainable development. Since economic development is essential for the prevention of environmental degradation, trade and the transfer of funds and technology should not be subjected to environment conditionalties.

2. CONSTITUTIONAL FRAMEWORK

Sri Lankan Environmental Management Policy originates from the country's supreme law that is the Constitution. The 1978 Constitution recognizes that the state shall protect, preserve and improve the environment for the benefit of the community (Article 24(14)), as principles of state policy. The Constitution also recognizes that it is the duty of every person in Sri Lanka "to protect nature and conserve its riches" (Article 28 (f)). The pledge given in the 1978 Constitution to safeguard the environment was formally institutionalized with the enactment of the National Environmental Act No.47 of 1980. This Act established the Central Environmental Authority (CEA) in 1981 as the premier state agency responsible for the "formulation and implementation of policies and strategies for the protection and management of environment in Sri Lanka".

The Constitutional pledge for the management of environment was further strengthened by the Thirteenth Amendment to the Constitution which dealt with the devolution of power and administrative responsibility in a number of areas including environment. The Thirteenth Amendment states that the Protection of environment within the province to the extent permitted by or under any law made by parliament is the responsibility of the Provincial Council (Ninth Schedule, List 1 section 37). In addition to this, the Thirteenth Amendment to the Constitution lists the following areas related to environment as devolved subjects: environmental health; establishment and maintenance of herbaria; some functions of land use and

land improvement; preservation protection and improvement of stock and prevention of animal diseases, regulation of mines and mineral development, fees under the fauna and flora protection ordinance; and land development ordinance.

However, the subject of land which is the important aspect of environment has been devolved to the provincial councils, subject to special provisions. Some of these provisions are:

a) National Land Commission appointed by the Central Government would be responsible for formulation of national policy with regard to the use of state land;
b) The Commission include representatives of the provincial councils in the Island;
c) This Land Commission will have a technical secretariat representing all the relevant disciplines required to evaluate the physical and socio-economic factors relevant to natural resource management;
d) National policy on land use will be based on technical aspects (not on political or communal aspects) and the commission will lay down general norms in regard to the use of land, having regard to soil, climate, rainfall, soil erosion, forest cover, environmental factors and economic viability; and
e) Provincial councils should exercise the power vested on them with regard to the land subject having due regard to the National Policy formulated by the National Land Commission.

Ambiguously, some important environmental subjects are listed under the concurrent list, for which, both provincial and Central Government had to agree on the implementation of the remaining powers which were held concurrently. Such subjects are soil erosion, social forestry and protection of wild animals and birds, and protection of the environment.

Under the Amendment, each provincial council had the authority to enact and implement any statute related to their responsibilities. On the basis of these provisions, the North Western Provincial Council (NWP) passed its own environmental statute and created its own Environmental Authority, the Wayamba Environmental Authority (WEA). Other provincial councils have not so far enacted any such statute. After Wayamba Environmental Authority was established, there are conflicts between central governmental and provincial authorities over the jurisdiction of certain activities. Undertaking EIA process for Norochole thermal power plant is a good example. Finally both the Central Government and provincial authorities had to undertake separate EIAs.

The NWP environmental statute has also prescribed the projects and undertakings which are required to obtain lEE and EIA. This prescribed list does not include large development projects such as power generations and major irrigation works. In the event of conflicts between a provincial statute and an Act of Parliament with respect to a subject in the Concurrent List, the provincial statitute takes precedence within the province. This has led to a situation where large scale projects which are not prescribed by the NWP environmental statute would be exempted from the EIA requirement.

Further, devolution of environmental management has been proposed by the devolution proposals presently under review and discussion. Under this proposal environment appears in List I that specifies the preserved subjects and the List 2 that specifies the subjects devolved to the Regional Council. List I makes reference to "National Environment" List 2 refers to "Forestry and Protection of the Environment within a Region". This means that National Policy concerns come within the Central Government while the regional policies and implementation comes under the provinces.

Other environmental provisions proposed by the devolution proposal are:

(i) Every citizen is entitled to own property alone or in association with others subject to the preservation and protection of the environment and the right of the community (Article 21 (1));
(ii) State shall protect and preserve and improve the environment and safeguard the reefs, shores, forests, lakes, water courses and wildlife of Sri Lanka (Principles of state policies -Article 53(6)); and
(iii) Protect and improve the environment and conserve its riches" (Fundamental duties -Article 54 (6)).

The reserved list that contains subjects that shall be exercised by the Central Government includes following environment related functions:
(i) Protection of marine and aquatic resources in keeping with international obligations and measures to enforce such obligation;
(ii) Policy and national programmes relating to coast conservation;
(iii) National Plans on environment and conservation including conservation of flora and fauna in keeping with international obligation; and
(iv) Intervention in instances of national (natural and environmental) disasters

Other constitutional provisions available for environmental protection are provisions to obtain writ from the Court of Appeal against administrative acts or omissions (Article 140). eg. the EFL Ltd has requested a writ of *certiorari* to cancel or quash the decision of the Secretary to the Ministry of Forestry and Environment to approve the Upper Kotmale Hydro Power Project (CA No.1023/98). The EFL Ltd. also has requested a writ of *mandamus* and writ of *prohibition* from the Court of Appeal under article 140 of the Constitution to direct authorities to take action to stop disastrous sand mining (CA No. 673/97). Under the Article 126 of the Constitution, a citizen sought redress from the Supreme Court for violating his right to life that include a right to an environment suitable to live in and right to breathe air of acceptable quality that supports life (SCFR 569 /98).

3. INSTITUTIONAL FRAMEWORK

Sri Lanka's current constitution established a strong president with an appointed prime minister and an elected Parliament. Ethnic problems spurred creation of nine provincial governments, which have taken on increasing responsibilities for environmental management. Beginning in the early 1980s, Sri Lanka passed several laws designed to integrate environment into its economic development program. A coastal zone management program was established that addressed new tourist development as well as coastal erosion issues. More far-reaching was the National Environmental Act of 1981, which established *(a)* the Central Environmental Agency, *(b)* the requirement for EIAs, and *(c)* with amendments in 1988, a strengthened EIA process and a new environmental protection licensing system, which affected all development-oriented government agencies. The government has been assisted by strong donor interest in environmental programs and institution strengthening, yet efficient government management has been frustrated by a lack of rewards and incentives for action and by the large numbers of ministries, subministries, and agencies whose jurisdictions often overlap.

Key Ministries and Environmental Matters

Ministry of Environment and Forestry

The evolutionary process was the creation, in 1989, of a Cabinet-rank ministry to deal specifically with environmental issues, thus underpinning government recognition of the importance of the subject. Since its establishment, the Ministry of Environment and Forestry has taken over policy-making and interministerial coordinating functions from CEA. The latter function is now undertaken through interministerial coordinating committees set up for various purposes. The Secretary to the Ministry chairs the committees. CEA, on the other hand, acts as the implementing agency for the policies of the Ministry.

The Ministry of Environment and Forestry is also the national focal point for matters concerning the various international Conventions related to environment and to which Sri Lanka is a signatory. The Ministry has set up a Montreal Protocol Unit within its structure to coordinate all matters related to the Montreal Protocol on Substances that Deplete the Ozone Layer. A Sri Lankan scientist, who is the technical adviser to the Ministry, heads the Unit.

Ministry of Transportation, Environment, and Women's Affairs (M/TEWA). In conjunction with the Ministry of Policy, Planning, and Implementation, M/TEWA is principally responsible for environmental policy. The ministry was established in 1990. Efforts to strengthen the environmental component of this ministry and its predecessor have been undertaken by USAID and a number of other donor agencies with steady, albeit limited, success.

Ministry of Internal and International Commerce and Food

The Sri Lanka Export Development Board (SLEDB) and the Department of Commerce, which come under the Ministry of Commerce, are the two State agencies which are concerned with trade-related environmental policy issues.

(a) Sri Lanka Export Development Board

SLEDB is the premier State institution with regard to the promotion and development of exports. With regard to the tea sector, its focus is more on value-added tea products, as opposed to traditional bulk tea exports. The Board constitutes a channel through which product sector-oriented advisory committees and exporter associations which function under its auspices can invite attention to environment related issues which affect trade.

(b) Department of Commerce

The Department of Commerce, which has trade councillors attached to Sri Lanka Missions in several countries, serves as a source of information concerning markets for environmentally friendly products vis-à-vis the external trade policies of Sri Lanka. It also plays an important role in cases where Sri Lanka is a signatory to international trade-related agreements which have a bearing on environmental policy decisions.

Ministry of Agriculture and Lands

The Ministry of Agriculture and Land plays a vital role as the ministry responsible for policy decisions concerning land use, soil degradation and soil conservation, all of which have an important bearing on environmental policy decisions pertaining to the tea sector.

The Land-use Policy Planning Division of the Ministry is in the process of preparing a land-use policy planning document which involves the consolidation of several existing Acts relating to land use, soil conservation etc.

The Department of Agriculture, which functions under the purview of the Ministry of Agriculture and Lands, also has a Land and Water Use Division which considers policy issues related to the use of agricultural land.

Ministry of Science and Technology

The Sri Lanka Standards Institution (SLSI) and the Ceylon Institute for Scientific and Industrial Research (CISIR), which come under the purview of the Ministry of Science and Technology. Some of the functions

and services of SLSI and CISIR relate to policy decisions on environmental issues. SLSI, which has laboratory facilities and qualified staff, implements an export certification scheme for non-traditional export products from Sri Lanka. However, tea and tea products are excluded from that scheme. SLSI also plays a significant role in regard to the certification of products under the ISO 9000 series. It is expected to play a similar role in respect of the ISO 14000 series encompassing the environmental management systems.

CISIR, which also has laboratory facilities and qualified staff, carries out analyses of samples as a service on a commercial basis, to determine harmful residues or contaminants, if any, in manufactured tea. Its services, therefore, bear upon environmentally related policy decisions, albeit in an indirect way.

Ministry of Mahaweli Development

The Ministry of Mahaweli Development is responsible for the development of infrastructure and economic activities, as well as the social development of settlers related to a major river diversion project, i.e., the Mahaweli River. The Mahaweli Authority of Sri Lanka (MASL), which comes within the purview of the Ministry of Mahaweli Development, is responsible for the implementation of all activities related to the Mahaweli River diversion project.

MASL has authority over tea plantations in the upper Mahaweli region, which have been, or may in future, be declared protected areas. It therefore plays a role in environmentally-related policy decisions affecting those plantations. The Forestry and Environment Division of MASL works on all environmentally-related activities of the tea plantation areas (particularly with regard to issues related to soil erosion and catchments for hydropower generation) within the purview of MASL as well as coordinating those activities with the other agencies concerned and the private tea plantation companies.

National Development Council

The National Development Council (NDC) is a high-level body which was recently established by the government, to examine policy issues related to areas of economic importance and make recommendations directly to the President. It comprises experienced professionals, both from the public and private sectors. Analyses and recommendations that may be made by NDC in relation to the plantation sector and which encompass environmental issues will have a bearing on policy decision-making.

Central Environmental Authority

In **Sri Lanka**, the *National Environmental Act; 1980 (amended in 1988)* established both a Central Environmental Authority and Environmental Council. The Central Environmental Authority is a corporate authority with executive functions in the field of environmental management. The Authority is empowered with administration of the framework legislation. This includes co-ordinating all regulatory activities relating to the discharge of wastes and pollutants, and ensuring local authorities are promoting compliance. Its objective is to encourage the prudent use and conservation of land resources. The Council is comprised of senior officers from the various ministries, which involve the environment, with representation from non-governmental organisations and professionals with expertise in environmental protection and management. The Council's role is to advise the Authority on environmental matters. The Authority then recommends to the Minister the basic policy on the management and conservation of the country's natural resources not only in order to obtain the optimum benefits from them, but also to preserve the same for future generations. The national environmental legislation provides for comprehensive institutional coordination in the context of the devolution of power introduced through constitutional reforms in the country. A National Environmental Steering Committee has also been set up, which is responsible for integrating environmental management issues into the policies of the sectoral agencies.

As a manifestation of its policy perspective for the integration of environmental conservation with development, the Parliament, through the National Environmental Act (NEA) No. 47 of 1980, established CEA in the same year as the premier State institution for the protection and management of the environment and for dealing with related matters. Under the Act, CEA was provided with wide powers to perform its assigned functions and duties. NEA also established an Environmental Council comprises senior officials as representatives of practically every Cabinet-rank ministry, including all development ministries. The Council also includes the Chief Executive Officer and three other members of CEA to represent the interests of voluntary agencies, i.e., non-governmental organizations (NGOs) in the field of environment. The functions of the council are to:

- To provide CEA with general advice on matters pertaining to its responsibilities, powers, duties and functions;
- To advise on any matters referred to it by CEA.

The Council serves as a structural arrangement for representing and integrating sectoral environmental interests into the policy decision-making process and also as a coordinating body for the different ministries and agencies. CEA is empowered to delegate any of its powers, duties and functions to any government department or local authority, with the concurrence of the minister in charge of the particular government department or local authority. However, such power of delegation does not preclude CEA from exercising its responsibility to protect the environment and from administering the provisions of NEA.

The enactment of the National Environmental Amendment Act No. 56, 1988, provided for the enhancement of the scope and powers of CEA to respond to the evolving developmental needs. The salient features of the amendments are:

A wider provision for CEA to engage in "the protection, management and enhancement of the environment; for the regulation, maintenance and control of the quality of the environment; and for the prevention, abatement and control of pollution";

The widening of the composition of the Environmental Council to include seven members who represent the interests of voluntary agencies (i.e., NGOs) instead of the earlier total of three, and two members from among those persons with adequate expertise or experience in environmental protection and management.

To achieve the above objectives, CEA is structured into three main functional divisions: a Natural Resources Management Division, an Environmental Protection Division and an Environmental Promotion Division. Each division is headed by a director. CEA carries out its functions with a staff of around 200, of whom 75 are professionals.

The *Central Environmental Authority* (CEA), placed within M/TEWA, was established by the National Environmental Act in 1980 to be responsible for implementing environmental programs and standards. CEA's effectiveness was hampered by its lack of regulatory authority until 1988 amendments to the National Environmental Act gave it legal authority to issue and enforce the environmental protection licensing scheme as well as oversee EIAs conducted by project-approving agencies. Given its broad duties, CEA lacks sufficient staff and financial resources to meet demands for increased industrial pollution control or engage other agencies in environmental enforcement.

The *Ministry of Finance, Planning, Ethnic Affairs, and National Integration* is the central economic planning ministry of Sri Lanka. Among its responsibilities, the ministry guides the annual Public Investment Program, which is a mandatory planning document appraising all public investments planned for the next five years.

The *National Planning Department* is responsible for preparing the Public Investment Program and appraises the economic and financial viability of all projects submitted to the Cabinet for approval. It has established an informal environmental working group to review the environmental impacts of projects as needed. The National Water Council falls under this department and is the focus of an Asian Development Bank project to develop a strengthened legal and institutional framework for water resource management.

The *Urban Development Authority* (UDA) has wide powers to acquire, develop, and dispose of lands and properties and to exercise stringent controls on urban development activities. UDA has established industrial estates in various regions of the country by acquiring land for development and selecting industries via a committee comprised of representatives from the Ministry of Industrial Development, Board of Investment, provincial councils, and the Industrial Development Board.

The *Board of Infrastructure Investment*, which recently replaced the Secretariat for Infrastructure Development and Investment, has a leading role in infrastructure-financing policies in Sri Lanka and is the counterpart institution for USAID's Promotion of Private Infrastructure Project. In 1993, the secretariat developed guidelines for build-own-operate/build-own-transfer (BOO/BOT) projects to be used by prospective investors and state agencies promoting private financial packages from infrastructure projects.

The *Board of Investment (BOI) of Sri Lanka* is responsible for promoting, approving, and assisting foreign investment and is empowered to grant a wide range of incentives to projects in selected sectors. Renamed and expanded in 1992, BOI's objectives are to broaden the economic base of the country and generate economic development, in addition to promoting foreign investment. BOI is also responsible for planning and overseeing industrial development in three export promotion zones and three industrial estates, including environmental oversight and EIA compliance. BOI also has environmental jurisdiction over industries it approves for location outside export promotion zones and industrial estates and has authority for issuance of environmental protection licenses to these industries.

The *Ministry of Industrial Development* (M/ID) has major responsibility for tracking and promoting industrial development, facilitating private sector growth, providing industrial infrastructure, assisting domestic industry in financing investments, and strengthening regional industrial development strategies. M/ID has the lead responsibility for implementing Sri Lanka's new industrial estatesiting program for polluting industries, a key component of its national industrialization policy.

The *Industrial Development Board* is responsible for promoting and developing small- and medium-sized industries and has established some of the nation's first industrial estates prior to creation of UDA. These estates are equipped with basic facilities such as water supply, roads, drainage, waste disposal, electricity, and telecommunications.

Regional Industry Service Committees (RTSCs) serve as regional extensions of M/ID in planning and promoting industrial expansion at the local level and providing technical assistance to local industries. Efforts are being made to strengthen the committees' ability to develop industrial estates programs effectively in each region. The committees have recently formed committees that include the Industrial Development Board, UDA, and CEA in establishing regional industrial policies, particularly with respect to industrial estates.

The *Fiscal Incentives Committee* oversees implementation of Sri Lanka's fiscal incentives policies to encourage investment in advanced technologies. These incentives apply to *(a)* technologies that provide new products and services and process raw materials locally that are currently imported in processed form and/or *(b)* utilize local resources to produce public utilities and infrastructure services. Of particular interest to the

U.S. Asia-Environmental Partnership (US-AEP), the committee provides duty and turnover tax waivers for the import of advanced environmental technologies.

Ministry of Housing, Construction, and Public Utilities. Within this ministry the *National Water Supply and Drainage Board* is the principal agency for developing urban and rural water supply and urban sewerage schemes. It is responsible for removing water from the Kelani Ganga for supplying the Colombo Metropolitan Area and has lead responsibility for monitoring and maintaining sewerage systems in the cities of Colombo and Kataragama.

4. OTHER KEY INSTITUTIONS

Provincial and local governments. Under CEA's industrial classification scheme, all industries that fall in the "low-polluting" category are regulated by local authorities. This includes both licensing under the environmental protection licensing system as well as carrying out enforcement activities. The North Western Provincial Council, which has jurisdiction over Kurunegala, currently has the most autonomy on environmental matters and enacted a Provincial Environmental Act in 1993.
The *Sri Lanka Standards Institute* sets product standards (most of which are not mandatory), which currently number more than 1,200, for manufactured products, agricultural commodities, industrial raw materials, and production processes. Sri Lanka has adopted the ISO (International Organization for Standardization) 9000 series standards (ISO 9000 to 9004) on quality management and assurance and ISO 10011 standards on environmental management systems; no accreditation program is in place, however, and few firms are certified. At the request of CEA, the institute developed national standards, including tolerance limits on industrial and domestic effluent, air emission norms, noise level criteria, and classification of industries. The institute could play a lead role in ISO 14000, but little interest now exists generally in Sri Lanka in establishing an accreditation/certification program.

Research institutes. Several government research institutions gather environmental data and provide environmental monitoring services. These include the Agrarian Research and Training Institute, the Central and Regional Agricultural Institutes, and the Rubber Research Institute, among other agriculturally focused entities.

5. LEGISLATIVE AND POLICY FRAMEWORK

The first legislation related to environment was passed by the British Colonial Government to control the land resource, by the government taking over unused or unutilized land from the public. The Crown Lands Ordinance (1840) declared that all forests, waste, unoccupied or uncultivated land shall presumed to be the property of the Crown until the contrary thereof be provided. This ordinance encouraged the use of land, increasing environmental damage. Subsequently, a number of conservation and protection oriented Acts such as Forest Ordinance (1907), Fauna and Flora Protection Ordinance (1937) and the Soil Conservation Act (1951) were posed to mitigate the environmental damage. After that, more than 100 separate statutes have been enacted over the last 100 years that have some connection with environmental protection and natural resources management.

Most of these statutes follow regulatory policing and control approach. State protectionism was always stressed. This tendency continued until 1972, the year on which United Nations Conference on the Human Environment was held which stressed the need for environmental management rather than protection by the state. From late 1960s, to the mid 1990s, emphasis was laid on participatory environmental management. Several Acts were revised to focus more on participatory approach. The revisions in 1996 to the Fisheries and Aquatic Resource Act envisaged the setting up of Fishery Management Committee, the 1988 revision to the Irrigation Ordinance mandated former organizations, and the Forest Ordinance revision of 1988

contained provisions for participatory forestry. Public participation was also introduced to the Environmental Impact Assessment process by the National Environmental (Amendment) Act of 1988.

The focus has now moved to a wide-ranging, comprehensive framework for environmental management for sustainable development. These new statutes seek to move away from simple regulation to an effective management framework, which enables government officials to interact with community resource users and privatesector. The Mines and Minerals Act No.33 of 1992 provides mechanisms for reducing pollution resulting from mining. The new draft National Environmental Bill presents a framework for National Environmental Policy, involving both the public and private sector. Section 2 of this draft bill states 'every person shall make every practicable effort to follow the path of sustainable development. The section 3 includes the objectives of sustainable development. A draft Forestry Bill has also been developed. A draft Water Resources Bill is also under preparation for managing the available water resources. Amendments to the Coast Conservations Act are also under way.

Implementation of environmental policies falls to M/TEWA, a relatively weak ministry within the government. CEA's enforcement capabilities and political weight within the bureaucracy are widely recognized by government, business, and nongovernmental organization (NGO) sectors as being deficient. CEA relies principally on its own agency's resources to conduct monitoring, even though the agency's technical and laboratory capacity is limited. Industry does not generally monitor itself

Sri Lanka developed a National Environmental Action Plan (NEAP) in 1991, which was revised and strengthened in 1994. Of particular relevance to US-AEP is the NEAP's emphasis on combining national economic development and sound environmental management by building environmental considerations into all levels of policy planning to achieve sustainable economic development. The NEAP focuses on clean industrialization, based not only on the long-run costs of disregarding the environment but also on Sri Lanka's shortage of energy resources and the lack of international competitive advantage in polluting industries.

6. INDUSTRIAL POLICIES AND LAWS

Under the government's economic liberalization program, tariffs have been substantially reduced, although some effective rates of protection still exceed 100 percent (e.g., for paper and metal products). External liberalization in manufacturing has been accompanied by internal deregulation and privatization of a large number of state-owned enterprises, causing a decrease in the share of publicly owned, value-added manufacturing from 60 percent in 1981 to 15 percent in 1991. As mentioned in section 3, BOI administers a series of incentives for new and existing manufacturing companies to invest in advanced technologies.

The various ministries with important roles to play in economic and environmental policies have historically communicated poorly among themselves. In an attempt to rectify this problem, in the early 1990s the GOSL established an Interministerial Environmental Council consisting of permanent ministry secretaries to coordinate environmental policies with other government policies and plans. This council no longer exists, but the GOSL has recently established a council to review major project proposals, including industrial estates and major industrial facility expansions with respect to their economic and environmental viability. The fifteen-member inter-ministerial council includes CEA, BOI, UDA, M/ID, and the Water Supply and Drainage Board. In spite of attempts to improve coordination, integration of environmental concerns into industrial policy is currently limited. One promising exception is the GOSL's recent adoption of a policy for siting high-polluting industries on industrial estate.

7. PUBLIC INFORMATION POLICIES AND LAWS

At present, the only public disclosure requirements in place are for EIAs, which must be made public and available for comment before a project decision pursuant to the National Environmental Act. NGOs have worked effectively with government to ensure that this unusual and highly effective window on government is carefully maintained. Under the new environmental statute pending before the Sri Lanka legislature, public disclosure of environmental information would become a mandatory requirement for government agencies.

Legal and Policy Developments of Particular Relevance to Industrial and Urban Environmental Management

Industrial Siting Policy. In 1994 the Cabinet adopted a policy requiring that all new industries that are classified as high polluting (as defined by CEA) be located on industrial estates. In addition, all new industries classified by CEA as "high polluting" must be located on industrial estates if they generate large quantities of solid and liquid wastes. M/ID is implementing this policy and recently initiated a program to foster development of industrial estates throughout the country. With the assistance of the USAID mission's *Natural Resources and Environmental Policy Project* (NAREPP), M/ID has assessed a number of candidate sites and is developing industrial estate siting and development policies and practices.

Private Sector and Academia

With the high cost of capital (currently in the mid-20 percent range), Sri Lankan industries are having a difficult time obtaining financing for new investment. This issue, combined with the fact that investment in environmental equipment is generally viewed as nonproductive, has resulted in a low level of environmental expenditures. In general, industries in Sri Lanka view environmental concerns as imposed by CEA; the notion that good environmental management is important to competitiveness has not been widely accepted. Environmental considerations are usually made in a reactive mode, for example, in response to an enforcement action, and typically involve adding end-of-pipe "quick fixes" that do not consider the potential for clean production.

Given this situation, industry has little interest in ISO 14000; a recent survey found that less than 15 percent of the industries surveyed had even heard of ISO 14000. The two largest business organizations in Sri Lanka, however, described below, have recently become seriously engaged in environmental matters.

Federation of Chambers of Commerce and Industry of Sri Lanka. The federation and Ceylon Chamber of Commerce have the greatest breadth of contact with Sri Lankan industries. Since 1995 the federation has worked closely with CEA and M/ID to heighten industry awareness of environmental concerns and of industries' obligations under Sri Lanka's laws and standards, including workshops and training programs.

Ceylon Chamber of Commerce. With the assistance of USAID's NAREPP project, the chamber has established an environmental unit that will act as an information clearinghouse on environmental issues for the private sector. Events during its first year of operation have included a workshop for local environmental consultants, an industry survey of environmental concerns, and formation of an environmental task force (including industry, NGOs, and CEA). The chamber's environmental activities are focused on representing private sector interests in national environmental policy and on providing guidance to industry on environmental regulations, environmental business opportunities, and clean technologies.

Other private sector environmental initiatives in Sri Lanka include the following:
ITMIN is a new private sector venture, launched in December 1994 to serve as an information broker on innovative technologies. Startup funds have been provided by the United Nations Development Programme but with the express objective of leveraging these funds to establish a self-supporting venture. ITMIN currently has a mix of government and private shareholders, including the Ceylon Institute of Scientific and Industrial Research. ITMIN manages *CleaNet*, an initiative funded by the World Bank to provide an online

clearinghouse of specialized information on environmental technologies, including assistance available locally and internationally. It has recently become operational and provides information on environmental technologies developed and used in Asia.

Environmental engineering and consulting. The number of environmental firms serving industrial needs is small. CEA maintains a list of environmental companies but does not evaluate these firms on the basis of performance. These firms are typically small and not aligned with major, internationally recognized environmental engineering firms. The only in-country presence of the large firms is through project offices under donor assistance programs.

8. ACADEMIC AND RESEARCH INSTITUTIONS

Given the limited capacity of environmental companies, academic and research institutions do much of the environmental monitoring and pollution control technology evaluation for Sri Lankan industry. The *Ceylon Institute of Scientific and Industrial Research* is a quasi-governmental research organization, partially financed by government funding and revenues generated from consulting. The institute's board of directors is appointed by the minister of science and technology. The institute plays a leading role in the United Nations Industrial Development Organisation's industrial waste minimization program and is accredited to certify laboratories under ISO standards.

Many *university departments* target environmental research on specific issues and offer master of science courses in environmental subjects, including the University of Colombo (environmental sciences), PGIA/University of Peradeniya (environmental economics and natural resource management programs), University of Kelaniya (environmental chemistry and resource management), University of Sri Jayawardenepura (forestry), and University of Moratuwa (environmental engineering, environmental planning, and town and country planning).
Universities also play major roles in private sector consulting, particularly in monitoring, assessment of treatment technologies, and provision of turnkey packages, in partnership with private engineering companies for wastewater treatment facilities. Moratuwa, for example, conducts extensive consulting services to private companies, particularly in designing wastewater treatment facilities and conducting effluent and ambient water quality monitoring.

Center for Environmental Studies. Founded in 1992 at Peradeniya University, the center promotes programs in environmental education, research, and consultancy. The center also conducts regular training workshops on EIAs for state, private sector, and NGO officials and has just announced a year-long postgraduate course on EIA beginning August 1996. The course will cover concepts and definitions, evolution of environmental policy, EIA process in Sri Lanka, ecological foundations, socioeconomic dimensions, techniques in environmental assessment, project planning, and case studies.

The *National Building Research Organization,* part of UDA, is a research and development entity concerned with the built (housing and construction) environment. The Environmental Division carries out industrial pollution surveys and monitoring as well as monitoring the quality of air and surface and drinking water. Industrial estate sitings and solid waste disposal surveys and planning recommendations are also provided by the division.

9. FINANCIAL INSTITUTIONS

Commercial banks. Sri Lanka's banking sector suffers from a lack of competition and financial innovation. Although more than twenty commercial banks exist, competitive forces are weakened by the two state-owned commercial banks, which control about 60 percent of the sector's assets. In addition, the foreign banking sector has declined in importance since its years of rapid expansion.

Development finance institutes. The two private development finance institutes are the National Development Bank and the Development Finance Company of Ceylon. The latter has an environmental unit with two environmental engineers, who are responsible for reviewing the environmental impacts of every project applying for loans. Although environmental aspects of proposed projects is a major concern, the Development Finance Company of Ceylon does not actively promote clean technologies or "innovative technologies," opting instead for conventional technologies, which are viewed as having lower risks

The *Pollution Control and Abatement Fund* provides assistance to industries to encourage investment in pollution technologies. Funds are available through the National Development Bank, Development Finance Company of Ceylon, Sampath Bank, Hatton National Bank, and Commercial Bank for matching grants for pollution prevention audits and investment loans for implementation of audit findings. The loan program has not been used extensively by industry, primarily because it is not very concessional.

The Ministry of Forestry and Environment provides leadership for formulating and reviewing national environmental policy. The policy formulation mandate of the ministry include setting standards, developing and reviewing regulations and providing advice on macro-economic policies to promote sustainability.

The Central Environmental Authority (CEA) established in 1981 under the National Environmental Act No.47 of 1980 is the main body that is responsible for the implementation of policies and strategies for the protection and management of the environment in Sri Lanka (Section 10 of the NEA of 1998). Major duties of CEA include:

(i) to recommend to the Minister on national environmental policy, the criteria for the protection of any portion of the environment with respect to the use of values to be protected, the quality to be maintained, the extent to which the discharge of wastes may be permitted without detriment to the quality of the environment, long range development use and planning relating to the protection and management of the environment;
(ii) to undertake surveys as to causes, nature, extent and prevention of pollution;
(iii) to conduct research on environmental degradation and develop criteria for the protection and improvement of the environment;
(iv) to specify standards, norms and criteria for the protection of beneficial uses and for maintaining the quality of environment;
(v) responsible for all regulatory activities relating to the discharge of waste and pollutant to the environment;
(vi) evaluation of the beneficial and adverse impacts of development proposal on the environment; and
(vi) provide recommendations and directives on certain aspect of environmental pollution to the local authorities;

10. PROVINCIAL LEVEL ENVIRONMENTAL MANAGEMENT

Except for the North Western Province, there are no separate Environmental Statutes for other provinces. Therefore provincial environmental activities are also regulated under the NEA No.47 of 1980 as amended.

Three types of committees have been instituted within the provincial administrative set- up to regulate and monitor the functions decentralized to province.

(i) District Environmental Law Enforcement Committee (DELEC) chaired by the District Secretary. This committee has been initiated by the District Secretary on the instruction of the Environment

Ministry. The Provincial Commissioner of Local Government represent the provincial council at this meeting.

(ii) Divisional Steering Committee (DSC) has been established as per instruction given by the Environment Ministry. This committee is chaired by the Divisional Secretary.

(iii) Divisional Environmental Council (DEC) chaired by the Chairman of the Pradeshiya Saba.

The role of the District Secretary under the DELEC are to: ensure that environmental Law is enforced by the relevant Police Stations and Local Authorities; investigate into public complaints regarding environmental problems; convene Committee meetings at least once in two months.

The role of Divisional Secretary under (DSC) are: coordination among all relevant agencies (Government and Non Governmental) within the Division; preparation of action plans to protect and manage divisional environment programme.

Chairman, Pradeshiya Saba under (DEC) is responsible for identification of local environmental problems and propose solutions; preparation of proposals to improve and protect environment and submit same to divisional secretary‟s committee; ensure public participation in environmental projects and programmes; conducting awareness creation programmes; and issuing Environmental Protection Licences (EPL) to 20 small scale industries as directed by the Ministry.

In the provincial environmental management, it can be observed that the Central Environment Ministry has failed to accept Provincial Council as the main Provincial Authority in the field of environment activities related to the province. It is criticised that the Ministry maintains its linkages from the centre to periphery through government agencies such as District Secretary and Divisional Secretary by-passing Provincial councils. This situation has created a major communication gaps between the province and the centre.

Administration of the DS offices has been taken over by the Government depriving the Provincial Council its implementation arm at the divisional level.

Environment Ministry has withdrawn its environment officers from the Pradeshiya Sabas and attached them to Divisional Secretary's office. Environmental concerns enjoy very low priority within Provincial Councils System and receive minimal financial and administrative support due to:

(i) Absence of suitable legal framework within the Provincial Council system to monitor and regulate environment;

(ii) Absence of a uniform organization structure which accepts the Provincial Council as the Apex Body in environmental activities within the province;

(iii) Inter agency differences/Conflicts i.e. Government Agencies prefer to maintain their own identities without giving due consideration to devolved powers; and

(iv) Unavailability of sufficient trained professional cadre at the provincial level to handle activities.

Local authorities are concerned only in collecting of revenues through licence and pay little or no attention to protect and preserve environment. Therefore, enforcement is hardly done to regulate activities that harm to the environment. No clear and definite criteria/standards are followed in certain activities that damage the environment, such as gemming, land usage for various development projects. Public participation is minimal due to lack of a clear vision and an approach to environment related projects.

CONCLUSION

South Asia has witnessed a steady worsening of governance standards, essentially because of mutual distrust and threats from internal and external sources. In fact, institutional and policy shortcomings, has been one of the major causes behind overall sustainable development failures. The sub-region has suffered from lack of continuous focused attention to environmental and resource management by the national governments.

At the national level, an encouraging trend in recent years has been that environment ministries and state agencies have been restructured and empowered with greater institutional strength to promote better vertical and horizontal co-ordination amongst different agencies. New legislations, including strengthening of existing laws has empowered executives and also enabled judicial institutions to oversee the effective enforcement of environmental measures.

The prominent trans-national arrangements for strengthening the sub-regional institutional framework for sustainable development are the South Asian Association for Regional Co-operation (SAARC), South Asian Co-operative Environmental Programme (SACEP) and South Asian Preferential Trading Arrangement (SAPTA).

Good governance requires the reform of decision-making processes so that local communities are included as participants. Public participation can take many forms ranging from the implementation of government-created policies, through the devolution of decision-making authority. In its deepest form, public participation seeks to involve civil society in all steps of planning, implementation and evaluation of policies and actions. Benefits of local community empowerment include increased public eagerness to participate in local programs, leading to better implementation of decisions as well as community enrichment and the building of social capital. Most SE Asian countries are presently involved in a process of decentralization that can support sustainable development.

Long before the end of the last century, declining environmental quality and increasing public concern over the environment, both locally and globally, had begun to create a demand for the strengthening of environmental protection within South Asia Policy-makers therefore began the decade of the 1990s with a mandate to improve the state of the environment in region. Whether or not they have succeeded is perhaps a subjective judgment, biased to some extent by an individual‟s social and economic welfare-improvements in some dimensions of environmental quality have been, and are continuing to be achieved, especially among the more developed economies. While most environmental trends are negative, several positive changes can be discerned in the state of policy responses across the region. Among these are the improvement in governance by public authorities through strengthening of institutions; enhancements in the formulation and implementation of policies; growing environmental awareness and public participation; increasing others, globalization offers vast new opportunities for improvements in social-economic welfare.

Globalization is perhaps best conceptualized as an accelerator of change, rather than as a process that necessarily entails positive or negative outcomes. The challenge and the opportunity for the South Asian region are those of harnessing the processes of globalization to the goals of sustainable development, including reductions in poverty and improvements in the environmental performance of economic activity. Indeed, it is difficult to imagine that the challenges of sustainable development in the region can be met without effective deployment of the tremendous resources and know-how that are contained within the global economy as a whole. At the core of this process is the private market economy. But public policy also has a crucial role to play in shaping processes of private investment and in creating the enabling environment in which private investment takes place.

In many countries of South Asia Environment ministries have, too, developed more close relations with state planning institutions in spirit of partnership to achieve coordinated sustainable development goals, as planning institutions have the ability to take a more long-term view of development issues. Environment

ministries in many countries in the region are still either not central in the government decision-making structure, or have limited influence over sectoral agencies. Thus, in order to implement a sustainable development approach, which integrates economic, environmental and social priorities at an institutional level, a planning or development agency has often proven to be a better place to bring sectoral ministries and offices together to harmonize their approach. Many institutions of Asia and Pacific region have incorporated environmental concerns into their economic decision-making through their Five Year Plans. Often there are specific environmental sub-sections within a planning ministry that provide environmental inputs into the National Plan after organized consultations with working groups from other sectoral ministries, including the environment ministry, as well as experts

REFERENCES

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Centre for Science and Environment, State of Indian Environment: Citizen‟s fifth report 1999.
3. Central Pollution Control Board: Annual Report 1999-2000.
4. Central Pollution Control Board: Pollution control acts, rules regulations, rules and notifications issued thereunder, 1998.
5. Country Profile on Environment –Nepal, 1997, JICA.
6. Central Bureau Statistics, 1994a. A Compendium on the Environmental Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
7. CBS, 1994, A Compendium on Environmental Statistics in Nepal, Central Bureau of Statistics, Kathmandu, Nepal.
8. CBS, 1997, Statistical Year Book of Nepal, Central Bureau of Statistics, Kathmandu, Nepal
9. CBS, 1998, A Compendium on Environmental Statistics 1998 Nepal, Central Bureau of Statistics, Kathmandu, Nepal.
10. Coast Conservation Act, 1981 No.57: to make provisions for Coast Conservation including the preparation of a Coastal Zone Management Plan based on the surveys within the zone including all coastal wetlands with an indication of their significance as fisheries or Wild life habitats (section 11) and taking over some functions of Crown Lands Ordinance No.8 of 1947. 1981 No.59 Marine Pollution Prevention Act: to provide for the prevention, reduction and control of pollution in Sri Lanka waters and for matters connected with including power to take action against any marine pollution caused to the living marine resources and wildlife.
11. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
12. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, lslamabad. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
13. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
14. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
15. Human Development Report 1999, UNDP.
16. JICA Annual Report, 1999, JICA.
17. Ministry of Environment and Forests, Environmental Action Plan: India (New Delhi, 1993)
18. Ministry of Environment and Forests, Policy Statement for Abatement of Pollution (New Delhi, 1992).
19. Ministry of Environment and Forests, Annual Report, 1995-96 (New Delhi, 1996),

20. 19. MoEF (1997) White paper on pollution in Delhi with an action plan. New Delhi: Ministry of Environment and Forests.
21. 20. Mahaweli Authority of Sri Lanka Act, 1979 No.23 establish the Mahaweli Authority of Sri Lanka. The jurisdiction of the Authority is within any area that may be developed with the water resources of the Mahaweli or any major river, declared as a special area.
22. National Conservation Strategy and Policy Statement on Environment and Development (New Delhi, June 1992).
23. National Planning Commission (1992). The Eight Plan. His Majesty"s Government of Nepal, Singh Durbar, Kathmandu, Nepal.
24. New ERA, 1990. "Basic Issues in Environmental Management in Nepal. Kathmandu.
25. National Environment Act, 1980 No.47: to establish a Central Environmental Authority and matters connected therewith including recommendation to the government a system of rational exploitation and conservation of aquatic and wildlife resources, with special attention to the threatened species of fish and flora and a system of park and wildlife management.Amended by No.56 of 1988.
26. National Environmental Action Plan (1998-2001), 1998, Ministry of Forestry and Environment.
27. Oli, K. P., 1996. "Legal instruments for sustainable environmental management in Nepal, in Environment and History, vol. 2, No. 2, special issue on South Asia, Cambridge, U.K.
28. Planning Commission, Eighth Five Year Plan, 1992-97, vol. I (New Delhi, 1992.
29. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority Act, No.7 of 1979.
30. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority (Amendment) Act, No.7 of 1987.
31. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation (Amendment) Act, No.64 of 1988.
32. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation Act, No.57 of 1981.
33. Pachauri, R.K.; Sridharan, P.V. (1998) *Looking Back* to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
34. Report of the Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (New Delhi: Department of Science and Technology, 15 September 1980).
35. The State of the Environment, 1984-1985 (New Delhi: Centre for Science and Environment 1982.
36. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
37. The World Fact Book 1999, CIA.
38. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report), JICA Nepal Office, Kathmandu, Nepal.
39. UNDP/GEF, 1999, Country Programme Strategy: Nepal, Kathmandu, Nepal.
40. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal World Bank, September 1998.
41. World Development Report, Knowledge for Development 1998/99.
42. World Development Indicators, 1999, The World Bank.
43. World Development Report, 1999, The World Bank.

1. Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER V

JUDICIARY AND ENVIRONMENT IN SOUTH ASIA

The Judiciary plays a crucial role in promoting the goals of sustainable development. Judicial institutions serve as agencies for interpreting legislation relating to environmental issues, integrating emerging principles of law within the holistic paradigms of sustainable development, providing a coherent and comprehensive strategy for handling diverse sectoral laws into a cross-sectoral approach, ensuring effective implementation of legislation and, in recent years, providing opportunities for people, to canvass for the protection of fundamental rights to a satisfactory environment. The rule of law becomes particularly important as regulations and procedures which govern human activity serve to limit conflicts arising from competing claims (social, economic and ecological) on scarce resources whilst ensuring sustainable development. Connections and linkages between different forms of activity and their environmental consequences are subject to different interpretations and reflect an inherent complexity of issues. The judiciary, therefore, is called upon to resolve such issues without compromising the fundamental goals of civil society.

In Bangladesh, India, Sri Lanka, and Pakistan, the Supreme Courts have given broad interpretations of the "fundamental right to life" under each country's Constitution, providing a entrenched legal foundation for the public's right to a healthy environment, the protection of the environment the public's right to information. The interpretation of constitutional rights was broadened in Bangladesh in the 1995 Supreme Court decision of *Dr. Mohiuddin Farooque* v. *Secretary*, *Ministry of Communication*, *and Government of the Peoples' Republic of Bangladesh.* This was a petition against various Ministries and other Authorities for not fulfilling their statutory duties to mitigate air and noise pollution caused by motor vehicles in the city of Dhaka. The Petitioner argued and the Court agreed, that although the Constitution of Bangladesh contained no specific right to a safe and healthy environment, this 'right to life' was enshrined within the sprit of the Constitution. This interpretation was supported by Constitutional prohibitions on actions detrimental to life, body or property, Similarly, In Pakistan, the courts have given a broad interpretation to the 'right to life' stating that persons must not only be able to sustain life, but also to enjoy it. Present judicial system in India, Pakistan, Sri Lanka and Bangladesh has evolved from institutions established during the colonial period. The traditional role of the judiciary that of settlement of disputes (civil jurisdiction) and the trial and-punishment of those charged with crimes (criminal jurisdiction) has thus evolved over a considerable period of time. The basic elements of a modern system of civil and criminal justice have been in operation in most of the sub-continent for more than a century and in Nepal at least since 1951, when the Interim Constitution was promulgated.

The Court has adopted and set procedures that become the guiding law for the sub-ordinate courts in the country. The most important innovation has been the Public Interest Litigation that enables individuals and organizations to file a writ petition with the objective of protecting environmental resources and benefiting the affected people. The Supreme Court of India has also established specialized High Court benches known as Green Benches. Similarly, in Pakistan the superior courts exercise jurisdiction conferred under Articles 184(3) and 199 of the Constitution. The 1997 Environmental Protection Act provides for Environmental Tribunals that will have exclusive jurisdiction to try offences under the Act. Likewise, Nepal‟s 1997 Environmental Protection Act provides for the designation of a Prescribed Authority before which environmental cases are to be filed. However, appropriate rules for designating such an authority have not yet been formulated and environmental cases continue to be brought before the ordinary courts. An active

judiciary has the potential to establish the rights of people to enjoy certain environmental rights and seek judicial intervention where these are violated. The judiciary may also act as a check on government policies that disrupt fragile ecological balances and generate awareness and consciousness amongst policy makers through court verdicts and orders. However, there is a need for specialist environment courts that can facilitate more consistent and speedier environmental decision-making. These courts would reduce the number of cases brought before the Supreme Courts and High Courts and reduce the administrative costs, as a single combined jurisdiction would be cheaper than multiple separate tribunals.

The structure of judicial institutions in South Asian countries have not substantially changed in the last decade, but the Supreme Courts of many countries have taken the crucial lead in interpreting environmental laws and giving judgments that have far-reaching impact on environmental management. The Supreme Court of India, for example, has adopted and set procedures which have become the guiding law for all the lower courts in the region. Specialised benches known as "Green Benches" have been set up to implement directives and encourage expertise in matters related to environmental issues. The Government of India enacted the *National Environmental Tribunal Act* in 1995, to effect an expeditious handling of cases regarding the damages arising from the handling of hazardous wastes. Similarly, in Pakistan, the *Environmental Protection Ordinance 1997* provides for the establishment of Environmental Tribunals which have exclusive jurisdiction to try environmental offences. The *Environmental Protection Act, 1997* in Nepal, provides for a Prescribed Authority for environmental cases. These courts have facilitated consistent less expensive and more efficient decision-making in the area of environmental disputes and need to continue to be developed in the region.

The Indian Constitution is amongst the few in the world that contains specific provision on environmental protection. The Chapters, Directive Principles of State Policy and the Fundamental Duties explicitly enunciates the national commitment to protect and improve the environment. Judicial interpretation has strengthened this constitutional mandate. Recently, the Courts have recognized the right to a wholesome environment as being implicit in the fundamental right to life, which is discussed later in the chapter.

The use of the term „Environment" in the Article is crucial. It covers all factors affecting life, air, water, sand, sound etc. Thus, it became a pious duty of the states to protect environment from all activities that are hazardous to public health.

Article 48 A is one of the Directive Principles of State Policy which are non-justifiable, nevertheless these principles are Fundamental in Governance of the country and serve a useful purpose as regards administrative and legislative policy making. These Courts now have started implementing Directive Principles of State Policy to the extent possible. Thus the direction of Article 48A has become an obligation of the State and all State organizations including Courts. If the State does not abide by this constitutional obligation, the Court will be left with no alternative but to intervene effectively by issuing appropriate writs, orders and directions including the directions in the furtherance of constitutional goals enshrined in Article 48 A.

Thus, Constitution of India has made a joint responsibility of the State and every citizen of India to protect the natural environment and to improve the deteriorating environment. The Directive Principles, although, unenforceable by a courts, are being cited by judges as complementary to the fundamental rights. In several environmental cases the courts have been guided by the language of Article 48A.

BANGLADESH

Key Issues: Pendency of Cases, Technical and Scientific nature of Cases; Cumbersome Procedures; Dissemination of Judgments; Training of Judges and Advocates; Execution and Compliance of Courts Orders; and Education and Awareness

Key Institutions: Supreme Courts; High Courts; District Courts; Tribunals, Authorities; Agencies etc. Appellate Division; Additional District and Session Judge Court; Sub-judge and Assistant Session Judge Court; Assistant Judge Court; District Magistrate Court; Thana Magistrate Court; Metropolitan Magistrate Court; Division Special Judge Court; Special Tribunal Judge Court; Small Case Court; and Village Court

1. INTRODUCTION

On the fact of activism by the civil society, the judiciary in Bangladesh has started responding to cases seeking environmental justice. Judicial activism contributes to proper implementation of environmental laws and allows the vast majority of the backward section access to the justice system.

As a result of progressive interpretation by the judiciary of some constitutional and legal provisions, „public interest litigation" (PIL) and „right to environment" have received express legal recognition. The cases decided by the judiciary have tended to activate the executive, create wider awareness and affected the value system of the administration and the society. In the cases on environment decided so far by the judiciary, directions have been given to the government agencies to perform their statutory functions. All these decided cases have addressed issues on sustainable development, precautionary principle, participation and access and are rather landmark decisions.

With increased number of PILs in Bangladesh, the environmentalists and the civil society places confidence in the judiciary in redressing the grievance of the downtrodden and the deprived. In deciding some of the cases the judiciary has endorsed the innovations that justice require in one recent incident, the High Court even intervened and issued *suo moto* rule to protect a public garden from encroachment.

Great advances have been made in the region in access to justice, providing wider standing for aggrieved parties and an expansion of substantial and procedural matters related to public interest litigation. The judiciary has extended the eligibility for public interest standing so that weaker sections of society are not denied access to environmental justice, particularly in respect of a subject matter of great public concern. The 1996 Supreme Court of **Bangladesh** (Appellate Division - Civil) in *Dr. Mohiuddin Farooque* v. *Bangladesh*, *Represented by the Secretary, Ministry of Irrigation, Water Resources & Flood Control*, extended the interpretation of "any person aggrieved" in the Constitution of Bangladesh to include not just individually affected persons, but also to the people in general, as a collective and consolidated personality. In this case, the petitioner, the Secretary General of the Bangladesh Environmental Lawyers Association, had filed a petition on behalf of a group of people in the district of Tangail whose life, property, livelihood, vocation and environmental security were seriously being threatened by the implementation of a flood control plain. The

Court concluded that the petitioner should be given *locus standi* to maintain the writ position, because the cause the Association *bona fide* espoused, both in respect of fundamental rights and constitutional remedies, is a cause of an indeterminate number of people in respect of a subject matter of great public concern.

In **Bangladesh** a landmark judgment delivered by the Supreme Court of Bangladesh in 1999 held that an Association of Environmental Lawyers had standing to present a writ petition in the public interest. The petition had raised, questions regarding the legal validity of a flood action plan prepared without any participation of concerned and affected persons which threatened aversely to affect the lives and livelihood of substantial sections of people and to have adverse environmental and ecological effects. The Supreme Court has admitted public interest petitions relating to industrial safety (fires in garment factories), environment (the gas explosion in Magurchhara), corruption (illegal granting of public land without following proper procedures), inhuman custodial practices (imposition of bar fetters in judicial custody and confinement of rape victims (in handcuffs) and other women in "safe" custody).

Dr: Mohiuddin Farooque v Bangladesh and Others, Civil Appeal No. 24 of 1995,17BLD (AD) 1997, Vol. XVII, pp 1-33,1 BLC (AD), 1996,pp 189-219,in Okidi C. (ed), Compendium of judicial Decisions on Matters Related to Environment, Vol. I-National Decisions, December 1998, UNEP

In the present case, the Bangladesh Environmental Lawyers' Association (BELA) alleged that no EIA had been undertaken in relation to certain PAP Projects when they were required. It arose for decision whether BELA had sufficient interest in the matter to acquire standing under Article 102 of the Bangladesh Constitution. The Court held that if someone pursues a public cause involving a public wrong or injury, he need not be personally affected or have a personal interest. He must, however be espousing a bona fide public cause, and not be "a mere busybody, or interlope/; or pursuing some other dubious goal such as publicity or serving a foreign interest."

The basis of this decision is the liberal interpretation of Article 102 of the Bangladesh Constitution which gives the Supreme Court the jurisdiction to hear a complaint from " person aggrieved". The Court decided that Article 1 02 is to be read in the context of the whole scheme and objective of the Constitution, including Article 7(1) which vests all power in the people and is to be exercised for the people‟s welfare. Article 102 is therefore not for the exclusive use by individuals but also citizens as a whole when there is a public injury or public wrong or breach of a fundamental right affecting an indeterminate number of people. On the facts, BELA was espousing a public cause, in respect of fundamental rights and constitutional remedies. It was pursuing a cause affecting an indeterminate number of people and devoted its resources to the cause. BELA neither was acting bona fide and nor pursuing an oblique purpose nor was it a "mere busybody". Therefore BELA was held to possess the threshold stage of locus standi.

The Constitution is the supreme embodiment of the will of the people of Bangladesh and such all actions must be taken for the welfare of the people for whose benefits all powers of the Republic vest the people and the exercise of such power shall be acted through the supremacy of the Constitution. If justice is not easily and equally accessible to every citizen are then can hardly be a Rule of Law. If access to justice limited to the rich, the more advantaged and more powerful sections of society, then the poor and the deprived have no stake in the Rule of Law and they will be more readily available to turn against it. Ready and equal access justice is a sine qua non for the maintenance of the Rule of law. Where there is a written Constitution and an independent judiciary and the wrongs suffered by any section of the people are capable of being raised and 1tilated publicly in a court of law there is bound to be respect for the Rule of Law. The preamble of our institution really contemplates a society where there will unflinching respect for the Rule of Law and the welfare of citizens.

2. PRINCIPLES APPLIED, ADOPTED AND EVOLVED BY THE JUDICIARY

The Constitution of Bangladesh has the expression 'aggrieved persons' must be understood keeping in view of the pronounced scheme and objectives of the Constitution. The Constitution is a living document and therefore its interpretation should be liberal to meet the needs of the time and demands of the people. By referring to the various provisions of the Constitution of Bangladesh. It ensures liberties and socioeconomic justice exhorted for a purposeful application to all categories of the population.

As for Part II of the Constitution, containing Fundamental Principles of State Policy, Article 8(2) provides that the principles set out in this Part "shall be a guide to the interpretation of the Constitution and of the other laws of Bangladesh:' It is constitutionally impermissible to leave out of consideration Part II of Constitution when an interpretation of Article 102 needs a guidance. As for (iv), Part III of the Constitution bestows Fundamental Rights on the citizens and other residents of Bangladesh. Article 44(1) guarantees the right to move the High Court Division in accordance with Article 102 (1) for the enforcement of these rights. Article 102(I) is therefore a mechanism for the enforcement of Fundamental Rights which can be enjoyed by an individual alone in so far as individual rights are concerned, but which can also be shared by an individual in common with others when the rights pervade and extend to the entire population and territory. Article 102 (1) especially cannot be divorced from Part III of the Constitution. As for (v), the other provisions of the Constitution which will vary from case to case may also come to play a role in interpreting Article 102 of the Constitution.

Article 102 therefore is an instrumentality and a mechanism, containing both substantive and procedural provisions, by means of which the people as a collective personality, and not merely as a conglomerate of individuals, have devised for themselves a method and manner to realize the objectives, purposes, policies, rights and duties which they have set out for themselves and which they have strewn over the fabric of the Constitution. With the power of the people looming large behind the Constitution horizon it is difficult to conceive of Article 102 as a vehicle or mechanism for realizing exclusively individual rights upon individual complaints. The Supreme Court being a vehicle, a medium or mechanism devised by the Constitution for the exercise of judicial power of the people on behalf of the people, the people will always remain the focal point of concern of the Supreme Court while disposing of justice or propounding any judicial theory or interpreting any provision of the Constitution. Viewed in this context interpreting the words ('any person aggrieved" meaning only and exclusively individuals and excluding the consideration of people as a collective and consolidated personality will be a stand taken against the Constitution. There is no question of enlarging locus standi or legislation by Court. The enlargement is writ large on the face of the Constitution. In a capitalist laissez faire concept of private ownership of the instruments and means of production and distribution, individual rights carry the only weight and the judiciary exists primarily to protect the capitalist rights of the individuals, but in the Constitution Article 13, a Fundamental Principle of State Policy, provides that the people shall own and control the instruments and means of production and distribution under three forms, namely, (a) state ownership, that is, ownership, by the State on behalf of the people; (b) cooperative ownership, that is, ownership by cooperatives on behalf of the members and (c) private ownership, that is, ownership by individuals. Where there is a State ownership on behalf of the people of the instruments and means of production and distribution the concept of exclusive personal wrong or injury is hardly appropriate. The High Court Division cannot under the circumstances adhere to the traditional concept that to invoke its jurisdiction under Article 102 only a person who has suffered a legal grievance or injury or an adverse decision or a wrongful deprivation or wrongful refusal of his title to something is a person aggrieved. This is not to say that Article 102 has nationalized each person‟s cause as every other persons cause.

The traditional view remains true, valid and effective till today in so far as individual rights and individual infraction thereof are concerned. But when a public injury or public wrong or infraction of a fundamental right affecting an indeterminate number of people is involved it is not necessary, in the scheme of our

Constitution, that the multitude of individuals who have been collectively wronged or injured or whose collective fundamental rights have been invaded are to invoke the jurisdiction under article 102 in a multitude of individual writ petitions, each representing his own portion of concern. In so far as it concerns public wrong or public injury or invasion of fundamental rights of an indeterminate number of people, any member of the public, being a citizen, suffering the common injury or common invasion in common with others or any citizen or an indigenous association, as distinguished from a local component of a foreign organization, espousing that particular cause is a person aggrieved and has the right to invoke the jurisdiction under Article 102.

As to the apprehension of floodgates the people as a whole is no doubt a flood and the Constitution is the sluice- gate through which the people control [their] own entry. The Courts will be prudent enough to recognize the people, when the people appear through an applicant, as also those who masquerade under the name of the people. Taking up the people's causes at the expense of his own is a rare phenomenon, not a commonplace occurrence. It was held that the association appellant was wrongly held by the High Court Division not to be a "person aggrieved" in the facts and circumstances of the case and we hold further that the appellant is "any person aggrieved" within the meaning of both Article 102(1) and Article 102(2)(a) of the Constitution. The appeal was allowed and Writ petition No.998 of 1994 remanded to the High Court Division for hearing on merit. There will be no order as to costs.

The court further held that traditional rule as to locus standi is that judicial remedy is available only to a person who is personally aggrieved. This principle is based on the theory that the remedies and rights are correlative and therefore only a person whose own right is violated is entitled to seek remedy. In case of private individual and private law this principle can be applied with some strictness, but in public law this doctrine cannot be applied with the same strictness as that will tantamount to ignoring the good and well being of citizens, more be particularly from the view point of public good for whom the state and the Constitution exist. 'Bela' is actively working in the field of environmental problems of the Bangladesh. It is to be kept in mind that 'Bela' has got no direct personal interest in the matter, strictly speaking it is not an aggrieved person if we just give a grammatical construction to the phrase 'aggrieved person which means person personally aggrieved. In the Constitution nowhere the expression aggrieved person has been defined. An expression appearing in the Constitution must get its light and sustenance from the different provisions of the Constitution and from the scheme and objective of the Constitution itself.

INDIA

Key Issues: Pendency of Cases, Technical and Scientific nature of Cases; Cumbersome Procedures; Dissemination of Judgments; Training of Judges and Advocates; Execution and Compliance of Courts Orders; Education and Awareness

Key Institutions: Supreme Courts; High Courts; District Courts; Tribunals, Authorities; Agencies; District and Village Panchayat etc.

1. INTRODUCTION

The main sources of law in India are the Constitution, statutes (legislation), customary law and case law. Statutes are enacted by Parliament, state legislatures and Union Territory legislatures. Besides, there is a vast body of laws known as subordinate legislation in the form of rules, regulations as well as bye-laws made by Central/State governments and local authorities like municipal corporations, municipalities, gram panchayats and other local bodies. This subordinate legislation is made under the authority conferred or delegated either by Parliament or state or Union Territory legislatures concerned. Judicial decisions of superior courts like Supreme Court and High Courts are important sources of law. Decisions of Supreme Court are binding on all courts within the territory of India. As India is a land of diversities, local customs and conventions which are not against statute, morality, etc. are to a limited extent also recognized and taken into account by courts while administering justice in certain spheres.

Whenever a problem of ecology is brought before the court, the court is bound to bear in mind Article 48A of the Constitution and Article 51A (g)... When the court is called upon to give effect to the Directive Principles and the Fundamental Duty, the Court is not to shrug its shoulders and say that priorities are a matter of policy and so it is a matter for the policy making authority. The least that the court may do is to examine whether appropriate consideration are borne in mind and irrelevancies excluded. In appropriate cases, the court may go further, but how much further will depend on the circumstances of the case. The court may always give necessary direction. Similarly, The Andhra Pradesh High Court has interpreted Article 48A as imposing „as obligation" on the government, including courts, to protect the environment

2. JUDICIARY

One of the unique features of the Indian Constitution is that notwithstanding the adoption of a federal system and existence of Central Acts and State Acts in their respective spheres, it has generally provided for a single integrated system of courts to administer both Union and state laws. At the apex of the entire judicial system exists Supreme Court of India with a High Court of each state or group of states, and under High Courts, there is a hierarchy of subordinate courts. There is separation of judiciary from executive. Panchayat courts also function in some states under various names like Nyaya Panchayat, Panchayat Adalat, Gram Kachheri, etc., to decide civil and criminal disputes of petty and local nature. Different state laws provide for different kinds of jurisdiction of courts.

Each state is divided into judicial districts presided over by a district and sessions judge, who is the principal civil court of original jurisdiction and can try all offences including those punishable with death. He is the highest judicial authority in a district. Below him, there are courts of civil jurisdiction, known in different states as munsifs, sub-judges, civil judges and the like. Similarly, criminals judiciary comprises chief judicial magistrate

3. PUBLIC INTEREST LITIGATION

In **India** Public Interest Litigation (PIL) was conceived and evolved by the Supreme Court of India as Judicial response to the constitutional mandate for securing social justice and for harnessing the judicial system for creating a just and humane society. The Court chose to break away from the traditional straitjacket judicial procedures and practices of administering justice. As the judiciary became more responsive to the needs of the time, it had to redefine the existing concepts of law; broaden the horizon of substantive and procedural laws; create new rights; develop new strategies for extending the arms of justice t all sections of society; and give effects to an „affirmative" judicial relief system. Far from being a static collection of rules, the legal system became a dynamic and self-evolving process in the hands of a progressive judiciary committed to ushering in a new and just social order. PIL, or „Social Action Litigation"s, arose as a result of such conscientisation and commitment of the Indian judiciary to social and constitutional goals.

Courts have applied the public trust doctrine in regard to the management of natural resources and the environment, and in some states have given consideration to the concept of inter-generational and intra-generational equity. In the 1988, Supreme Court of **India** decision of *Rural Litigation and Entitlement Kendera* v. *State of U.P.*, the Court ordered that unauthorised and illegal mining in the Dhera Dun District, which was adversely affecting the ecology of the region, be stopped. The Court specifically remarked that the area was a gift of nature to mankind and a bequest of the past generations to the future.

Underlying many recent cases is a clear judicial concern for the integration of environment and development in decision-making. The 1988 Supreme Court of India decision in *M.C. Mehta* v. *Union of India and others*, provides an example of the advancement of the concept of sustainable development. Here the Court observed that while it was conscious that its decision to prevent tanneries, which were polluting the River Ganga from operating until they installed primary effluent treatment plants, could bring unemployment, the decision to defend and improve the environment for present and future generations had become an imperative goal.

4. JUDICIAL ACTIVISM

The Indian Constitution is amongst the few in the world that contains specific provisions on environmental protection. The directive principles of the State Policy and the fundamental duties chapter explicitly enunciate the national commitment to protect and improve the environment. Judicial interpretation has strengthened this constitutional mandate. This approach has led the Supreme Courts in this region to adopt, apply, evolve and derive a range of Principles to guide the development of environmental jurisprudence. Notable amongst the fundamental norms recognized by the court are:

(1) Every person enjoys the right to a wholesome environment, which is a fact of the right to life guarantied the Constitutions.

(2) Enforcement agencies are under an obligation to strictly enforce environmental laws;

(3) Government agencies may not plead non-availability of funds, inadequacy of staff or other insufficiencies to justify the non-performance of their obligations under environmental laws;

(4) The „polluter pays principle" which is a part of the basic environmental law of the land requires that a polluter bear the remedial or clean up cost as well as the amount payable to compensate the victims of pollution;

(5) The „precautionary principle" requires government authorities to anticipate, prevent and attack the causes of environmental pollution. This principle also imposes the onus of proof on the developer or industrialist to slow that his or her action is environmentally benign;

(6) Government development agencies charged with decision making ought to give due regard to ecological factors including;

(a) the environmental; policy of the central and State Government;

(b) the sustainable development and utilization of natural resources;

(c) the obligation of the present generation to preserve natural resources and pass on to future generations an environmental as intact as the one we inherited from the previous generation

(7) Stringent action ought to be taken against contumacious defaulters and person who carry on industrial or development activity for profit without regard to environmental laws;

(8) The power conferred under an environmental statue may be exercised only to advance environmental protection and not for a purpose that would defeat the object of the laws;

(9) The state is the trustee of all natural resource, which are by nature meant for public use and enforcement. The public at large is the beneficiary of the seashore, running water, air, forests and ecologically fragile land. These resources cannot be converted into private ownership.

5. RIGHTS AND PRINCIPLES ADOPTED, APPLIED AND EVOLVED BY THE INDIAN COURTS WHILE ADJUDICATING ON ENVIRONMENT MATTERS

i) Right to a Wholesome Environment

The Stockholm Declaration of United Nations on Human Environment, 1972, affirms both aspect of environment1, the natural and the man-made and the protection is essential to his well-being and to the enjoyment of basic human rights i.e. right to life itself. The right to have living atmosphere congenial to human existence is a right to life. In India, The Supreme Court fortified and expanded the fundamental right enshrined in Part III of the Constitution. In the process, the boundaries of the fundamental right to life and personal liberty guaranteed in Article 21 of Indian Constitution of India were expanded to include environmental protection.

ii) Doctrine of Locus Standi

The doctrine of *locus standi,* applicable in the traditional private law litigation has been considered liberalized by the Indian courts in Private Interest Litigation. The traditional concept of standing is based on the doctrine of aggrieved person. The courts have accepted a new approach by allowing any member of the public to seek judicial redress for a legal wrong caused to a person to seek judicial redress for a legal wrong caused to a person or to a determinate class of person who by reason of poverty, helplessness or disability or socially disadvantages position is unable to approach the court directly. This modification of traditional *locus standi* could be termed as representative standing as the representative of another person or group of person. The concept of representative standing refutes the traditional assumption that only a petition motivated by self-interest will present a case. The Supreme Court and the High Courts of **India** have exercised jurisdiction and passed orders ensuring, preparing and preventing of ecological damage. This has been achieved by superior courts entertaining writ petitions by way of public interest litigation. Public interest litigation is in the nature of

a class action brought about by filing a writ petition with a view to protect ecology, prevent pollution and bring benefit to the victim by having the court award damages in appropriate cases. The orthodox rule that the petitioner must have a personal interest in order to have a *locus standi* to file a writ petition has been eliminated. Individual environmentalists, non-Governmental organisations and others have been filing writ petitions relating to different types of polluting industries as well as for the law enforcement and implementation of the provisions of the environmental Acts.

iii) Doctrine of Parens Patriae

The Bhopal gas leak disaster, the passing of the Bhopal Gas Disaster (Processing of claims) Act of 1985, the unsuccessful attempt of the Union Government to try the casein an American Court, the subsequent settlement deal between the Union Carbide Corporation and the Union Government etc. are common knowledge today. Hence it is enough to say that Supreme Court took help of the doctrine of parens partiare to hold the Bhopal Gas Disaster (Processing of Claims) Act of 1985, which took away the rights of the individual victims to claims compensation independently and vested the same with the Union Government valid.

The concept of parens patriae literally means‟ parent of the country‟ and refers traditionally to the role of the state as a sovereign and guardian of person under legal disability**. It is known both in India and abroad. The doctrine has its roots in the common law concept of the royal prerogative‟. The royal preprogative included the right or responsibility to take case of persons who were legally unable to take proper case of themselves.

iv) Precautionary Principle

A basic shift in the approach to environmental protection occurred initially between 1972 and 1982. Earlier the concept was based on the „assimilative capacity‟ rule as revealed from Principle 61 of the Stockholm Deceleration of the United Nations Conference on Human Environment of 1972. The said principle assumed that science could provide policy makers with the information and means necessary to avoid encroaching upon the capacity of the environment to assimilate impacts and it presumed that relevant technical expertise would be available when environmental harm was predicted and there would be sufficient time to act in order to avoid such harm. But in the 11th principle of the UN General Assembly Resolution on World Charter for Nature, 1982, the emphasis shifted to the „Precautionary Principle‟ and this was reiterated in the Rio Deceleration of 1992 in its Principle 15.

The principle of precaution involves the anticipation of environmental harm and taking measures to avoid it or to chose the least environmentally harmful activity. It is based on scientific uncertainty. Environmental protection should not only aim at protecting health, property and economic interest but also protect the environment for its own sake. Precautionary duties must not only be triggered by the suspicion of concrete danger but also by concern or risk potential. Indian Courts in tanneries in the State of Tamil Nadu from discharging untreated effluent into agricultural fields, waterways, open lands and waterways. The Supreme Court noted that although the leather industry is a major foreign exchange earner for India and provided employment, it does not mean that this industry has the right to destroy the ecology, degrade the environment or create health hazards. Sustainable development, and in particular the **polluter pays principles and the precautionary principle**, have become a part of customary international law. Even though section 3(3) of India's Environment Protection Act 1986, allows the Central Government to create an authority with powers to control pollution and protect the environment. This authority shall implement the precautionary principle and the polluter pays principle, and identify the (1) loss to the ecology/environment; and (2) individuals/families who have suffered because of the pollution, and then determine the compensation to reverse this environmental damage and compensate those who have suffered from the pollution. The

Collector/District Magistrates shall collect and disburse this money. If a polluter refuses to pay compensation, his industry will be closed, and the compensation recovered as arrears of land revenue. If an industry sets up the necessary pollution control devices now, it is still liable to pay for the past pollution it has generated.

v) Polluter Pays Principle

The „Polluter Pays Principle" was promoted by the organization for Economic Co-operation and Development during the 1970s when there was great public interest in environmental issues. During this time there were demands on Government and other institutions to introduce policies and mechanisms for the protection of the environment and the public from the threats posed by pollution in a modern industrialized society.

The polluter pays principle means that the absolute liability for harm to the environment extends not only to compensate the victims of pollution but also the cost of restoring the environmental degradation. Remediation of the damaged environment is part of the process and such the polluter is liable to pay the cost to the individual"s sufferers as well as the cost to the individual sufferers as well as the cost of reversing the damaged ecology. Supreme Court of India in, *Vellore Citizens Welfare Forum* v. *Union of India* noted that although the Respondent leather industry was a major foreign exchange earner for India and provided employment, it did not mean that it had the right to destroy the ecology, degrade the environment or create health hazards. The Court ordered the Central Government to establish an authority to deal with the situation created by the tanneries and other polluting industries in the State of Tamil Nadu. This authority was to implement the precautionary principle and the polluter pays principle and identify the loss to the ecology/ environment , and the loss to individuals and families who had suffered because of the pollution, and then determine the compensation

vi) Doctrine of Public Trust

The ancient Roman Empire developed a legal theory known as the „Doctrine of the Public Trust". It was founded on the ideas that Government held certain common properties such as rivers, seashore, forests and the air in trusteeship for the free and unimpeded use of the general public. The Public Trust Doctrine primarily rests on the principle that certain resources like air, sea, waters and the forests have such a great importance to the people as a whole that it would be wholly un justified to make them a subject of private ownership. The said resources being a gift of nature, they should be made freely available to everyone irrespective of the status in life. The doctrine enjoins upon the Government to protect the resources for the enjoyment of the general public rather than to permit their use for private ownership or commercial purposes. Courts have applied the public trust doctrine in regard to the management of natural resources and the environment, and in some states have given consideration to the concept of inter-generational and intra-generational equity. In the 1988, Supreme Court of **India** decision of *Rural Litigation and Entitlement Kendera* v. *State of U.P.*, the Court ordered that unauthorised and illegal mining in the Dhera Dun District, which was adversely affecting the ecology of the region, be stopped. The Court specifically remarked that the area was a gift of nature to mankind and a bequest of the past generations to the future.

vii) Intergenerational Equity

Intergenerational equity means, the right of each generation of human beings to benefit from the cultural and natural inheritance from past generation as well as the obligation to preserve such heritage for future generations. The Supreme Court in Ganesh Wood Products case recognized the obligation of the present generation to preserve natural resources for the next and future generations as Inter-gnerational equity means

the concern for the generations to come. The present generation has no right to imperial the safety and well-being of the next generation or the generations to come thereafter.

The Court relied on the intergenerational equity and explained Intergenerational equity means the concern for the generations to come. The present generation has no right to imperil the safety and well-being of the next generation or the generations to come thereafter. Similarly, in the CRZ Notification Case the Court observed that environmental statutes were enacted to ensure a good quality of life for unborn generations since it is they who must bear the brunt of ecological degradation.

viii) Public Liability

The responsibility and liability of the industry has been emphasised by the judiciary's support of the polluter pays principle. This principle was specifically addressed in India with the 1996 Supreme Court decision *Indian Council for Enviro-Legal Action* v. *Union of India*, where an action was brought to stop and remedy the pollution caused by several chemical industrial plants in Bichhri village, Udaipur District, Rajasthan. The Court noted the finding in the *Oleum Gas Leak Case II* under which an enterprise that is engaged in a hazardous or inherently dangerous activity which results in harm to anyone, is strictly and absolutely liable to compensate all those who are affected by the accident. This rule strayed from the exceptions of strict liability set forth in *Rylands* v. *Fletcher* to suit better the particular conditions in India. The Court strongly endorsed the polluter pays principle, under which the financial costs of preventing or remedying damage lie with those who cause the pollution. This principle also played a role in another 1996 Supreme Court of India decision, *Vellore Citizens Welfare Forum* v. *Union of India*. Here the Court noted that although the Respondent leather industry was a major foreign exchange earner for India and provided employment, it did not mean that it had the right to destroy the ecology, degrade the environment or create health hazards. The Court ordered the Central Government to establish an authority to deal with the situation created by the tanneries and other polluting industries in the State of Tamil Nadu. This authority was to implement the precautionary principle and the polluter pays principle and identify the loss to the ecology/ environment , and the loss to individuals and families who had suffered because of the pollution, and then determine the compensation to reverse the environmental damage and compensate those who had suffered.

ix) Right to Information

The public's right to know has been emphasized in India in *Bombay Environment Action Group, Shaym H.K. Chainani Indian Inhabitant, Save Pune Citizen's Committee* v. *Pune Cantonment Board*, a 1986 decision in the High Court of Judicature, Bombay. In this case, the Court upheld the right to information and the rights of recognized social action groups to obtain such information, stating that the disclosure of information in regard to the functioning of the Government and the right to know flows from the right of free speech and expression guaranteed under the Constitution. The Court also said "people's participation in the movement for the protection of the environment cannot be over-emphasised." To stimulate public participation, people need education. The Petitioner, M.C. Mehta in the 1992 (*M.C. Mehta* v. *Union of India and Others)*, asked the Supreme Court to issue direction to cinema halls, radio stations and schools and colleges to spread information relating to the environment. The Petitioner made this application on the grounds that the Indian Constitution required every citizen to protect and improve the natural environment, including forests, lakes, rivers and wildlife, and to have compassion for living creatures. To fulfill these obligations to the environment, the Petitioner argued that people need to be better educated about the environment. The Court agreed and noted that it was the Government's obligation to keep citizens informed about such matters, and hence issued the requested directions.

PAKISTAN

Key Issues: Pendency of Cases, Technical and Scientific nature of Cases; Cumbersome Procedures; Dissemination of Judgments; Training of Judges and Advocates; Execution and Compliance of Courts Orders; Education and Awareness

Key Institutions: Supreme Courts; High Courts; District Courts; Tribunals, Authorities; Agencies etc.

1. INTRODUCTION

The Judiciary of Pakistan has played a positive role in preventing degradation of the environment and in controlling pollution. Besides exercising their ordinary jurisdiction, the superior courts have also exerted extraordinary jurisdiction conferred by the Constitution. Such jurisdiction are available to the High Courts and Supreme Court under Articles 184(3) and of the Constitution. The superior courts have taken up and decided several cases under this jurisdiction. These courts have also tackled many cases of public interest on the subject. Such jurisdiction was exercised through filing of regular petitions or receipt of complaints through letters from concerned citizens or social activists. Many times the courts initiated suo moto action. In the process, the courts passed important orders and land judgments on environmental issues. They issued appropriate directions to concerned Government.

2. JUDICIARY

The Supreme Court of Pakistan has always sought to enforce the laws and regulations pertaining to the protection of the environment. In reaching its conclusion, the Court has relied not only on the law and Constitution of Pakistan, which are binding on the Court, but has also invoked international conventions, declarations and protocols. In doing so, the Court favoured the international conventions for the enforcement of internationally recognized standards of environmental protection. The issue of protection of environment is of vital importance not only to the people of Pakistan but the people of the world. The environmental issue transcends national boundaries and geographical barriers. There is a growing consensus among the nations, and the people of Pakistan agree with this consensus, that there is a definite need to consolidate and strengthen the environment protection legislation. The judiciary of Pakistan is alive to its responsibility and has played and will continue to play its due role in preventing all forms of environmental nuisance, pollution, degradation and ecological disaster so as to protect and safeguard the ecological balance of nature in our one and only planet, earth.

The superior judiciary and in particular, the Supreme Court of Pakistan, has played a positive and constructive role in preventing the degradation of the environment and preserving a sustainable ecological balance of nature. Several judgments have been rendered in cases relating to the prohibition of environmental degradation and maintaining a clean and pure environment. The Supreme Court of Pakistan also resorted to the exercise of extraordinary jurisdiction under Article 184(3) of the Constitution by entertaining petitions pertaining to maintaining clean environment, this being an issue of great public importance. In the case of Shehla Zia vs Wapda (PLD 1994 SC 693) some citizens of Islamabad forwarded a petition to the Supreme Court of Pakistan complaining the construction of a grid station in their locality. The Court formulated 2 questions for resolution: one, first, whether any government agency has a right to endanger the life of citizens

by its actions without the consent of such citizens, and secondly, whether zoning laws vest rights in citizens which could not be withdrawn or altered without the citizens consent? The petitioners had relied on Article 9 of the Constitution which guarantees right to life, liberty and security of person. While interpreting this article, the Court observed that the word „life" is very significant as it covers all aspects of human existence. Life has not been defined in the Constitution but it does not mean that it can be restricted only to vegetative or animal life or mere existence from conception to death, the Court added. It went on to state that life includes all such amenities and facilities, which a person born in a free country is entitled to enjoy legally and constitutionally.

In another case (PLD 1998 SC 102), the Supreme Court took *suo moto* notice of a news report to the effect that certain businessmen were purchasing land in the coastal area of Baluchistan for use of dumping hazardous nuclear and industrial waste. The Court asked for a report on the matter from the Provincial Government. It turned out that there was no substance in the report. The Court nevertheless issued directions to the Government that no person shall be allotted land for dumping nuclear or industrial waste. The Court directed that the Government should submit a list of persons to whom land in the coastal area of Baluchistan has already been allotted. It further directed that a condition must be inserted in the agreement of allotment to the effect that the land should not be used for the dumping of nuclear or industrial waste. Furthermore, a similar undertaking was to be obtained from the allottee of the land in the coastal area, the Court concluded.

In another Human Right case (1996 SCMR 543), the Supreme Court directed the Provincial Government of Sindh to take effective measures with regard to eliminating the pollution caused by the smoke emitting vehicles. The Court ordered that all vehicles, whether privately owned or owned by government departments, should be regularly inspected and checked. The Court further asked for emergency checks to be carried for the purpose by the concerned officials. The Court directed that motorcycles and auto-rickshaws must not be allowed to ply without silencers and that the use of pressure horns and multi-tones horns, must be prohibited.

In the case, General Secretary, W. P. *Salt Mines Labour Union vs Director, Industries and Mineral Development, Government of the Punjab* (1994 SCMR 2061), the Supreme Court expressed the view that the provisions of clean and unpolluted drinking water to the citizens was a fundamental right, enshrined in Article 9 of the Constitution, and that any effort or activity which deprives the citizens of this right is violative of the Constitution. The Court, therefore, prohibited further mining in the area as it may contaminate the water reservoir or water course, used for drinking water by the residents. The Court went on to elaborate that the Constitution provides for the right to life and ensures the dignity of man. With these two important rights, it would be difficult to conceive life in which a person does not get the minimum clean atmosphere and unpolluted environment. The Court further stated that it will not hesitate to stop the functioning of a factory which creates pollution and environmental degradation.

The precautionary principle was applied in Pakistan by the Supreme Court in 1992 Human Rights case, *Ms. Shehla Zia and others* v. *WAPDA.* The Court advocated the precautionary principle for the legal system, including both the judiciary and the various regulatory agencies, when responding to scientific uncertainties in the evidence before them. It was emphasised that a policy of sustainable development should be adopted to strike a balance between economic progress and prosperity and to minimise possible hazards.

3. CITIZEN SUITS (PAKISTAN):

Ms. Shehla Zia and Others v Wapda) PLD) 1994) SC 693, heard on 12 February 1994) in Okidi C. (ed») Compendium of Judicial Decisions on Matters Related to Environment, Volume One-National Decisions) December 1998) UNEP/UNDP,

Citizens concerned by the construction of a new power grid station wrote to the Supreme Court requesting an order under Article 184 (3) of the Pakistan Constitution. "the said Article provides without prejudice to the provisions of Article 199, the Supreme Court shall, if it considers that a question of public importance with reference to the enforcement of any of the Fundamental Rights conferred by Chapter I of Part II is involved have the power to make an order of the nature mentioned in the said Article." The right, which the citizens sought to have enforced, was stated in Article 9. " which reads that no person shall be deprived of life or liberty save in accordance with law."

The Court construed the notion of life broadly to include "all such amenities and facilities which a person born in a free country is entitled to enjoy with dignity; legally and constitutionally". The term was to be given a wide meaning, "to enable a man not only to sustain life but to enjoy it." Accordingly, the suit, although initiated by citizens with no direct interest in the power grid station, was allowed to proceed. It was accepted that the evidence on the effects of electromagneticism had not been conclusively proven, but that there was a possibility of adverse effects. Due to these risks, it was held that the proposed grid represented a threat to the fundamental right to life (as broadly interpreted by the Court). Therefore, an order to protect the public was issued under Article 184. The Court ordered an investigation into the proposed grid and the likelihood of adverse effects on health, as well as series of measures involving consultation and access to information.

Most of the cases pertaining to the environment were decided on the basis of Article 9 of the Constitution which provides for, *inter alia,* the right to life.

In the case of *Shehla Zia v. WAPDA* (PLD 1994 SC 693), the Supreme Court expanded and enlarged the scope of the right to life, and held that life does not simply mean animal life or vegetative existence. It stated that the word "life" is significant as it covers all facets and aspects of human existence. The court went on to observe that life includes such amenities and facilities to which a person born in a free society is entitled. The Court concluded that the installation or construction of a grid station or transmission line in the vicinity of a populated area may expose the residents to the hazards of electromagnetic fields and is therefore violative of Article 9 of the Constitution.

In another case (PLD 1994 SC 102), the Supreme Court took *suo moto* notice of a news report to the effect that certain businessmen were purchasing land in the coastal area of Balochistan to use for the dumping of hazardous nuclear and industrial waste. The Court asked for a report on the matter from the Provincial Government. It turned out that there was no substance in the report. The Court nevertheless issued directions to the Government that no person shall be allotted land for the dumping of nuclear or industrial waste. The Court further directed that the Government should submit a list of persons to whom land in the coastal area of Balochistan has already been allotted. It further ordered that a condition must be inserted in the agreement of allotment to the effect that the land should not be used for the dumping of nuclear or industrial waste. Furthermore, a similar undertaking was to be obtained from the allotee of the land in the coastal area.

In the the case of *General Secretary, W.P. Salt Miners Labour Union v. Director, Industries and Mineral Development, Government of the Punjab* (1994 SCMR 2061), the Supreme Court expressed the view that the provisions of clean and unpolluted drinking water is a fundamental right enshrined in Article 9 of the Constitution. Any effort or activity which deprives the citizen of this right is violative of the Constitution. The Court therefore prohibited further miming in the area as it may contaminate the water reservoir used as drinking water by the residents. The Court went on to elaborate that the Constitution provides for the right to life and ensures the dignity of man. The Court further stated that it will not hesitate to stop the functioning of a factory, which creates pollution and environmental degradation.

As a result of the court's observations and judgments, together with appropriate directions and instructions issued to the Government and public authorities, remedial actions and measures were undertaken. These included the shifting of hazardous and dangerous machinery and installations away from residential areas, inspecting premises to ensure compliance with the law, and controlling pollution and degradation of the environment. The pronouncements also served an important purpose in arousing public opinion and bringing about public awareness on the issue of protecting and preserving the environment. As a result, many cases are presently pending before the Supreme Court in its original jurisdiction for safeguarding the environment.

It was only recently that countries began to realize the harmful consequences of their development activities. Recognition of this fact has been perhaps one of the most difficult but important achievements of mankind. The UN Conference of Human Environment in 1972 in Stockholm, had a major impact on making humanity realize this common concern and that the international community should take steps to pressure and protect the environment. The member countries were also asked to pass necessary legislation to adopt administrative measures for its effective enforcement. Pakistan has actively perused the case of environmental protection and has become a party to all most every important international declaration, agreements and conventions on the subject, which are around 27 in number.

It would, therefore, be proper for the Government to establish an Authority or Commission manned by internationally known and recognized scientists having no bias and prejudice to be members of such Commission whose opinion or permission should be obtained before any new grid station is allowed to be constructed. Such Commission should also examine the existing grid stations and the distribution lines from the point of view of health hazards and environmental pollution. If the Government in time takes such a step, much of the problem in future can be avoided. Article 9 of the Constitution provides that no person shall be deprived of life or liberty save in accordance with law. The word "life" is very significant as it covers all facts of human existence. The word "life" has not been defined in the Constitution but it does not mean nor can be restricted only to the vegetative or animal life or mere existence from conception to death. Life includes all such amenities and facilities, which a person born in a free country is entitled to enjoy with dignity, legally and constitutionally. A person is entitled to protection of law from being exposed to hazards of electromagnetic fields or any other such hazards which may be due to installation and construction of any grid station, any factory, power station or such like installations. Under the common law a person whose right of easement, property or health is adversely affected by any act of omission or commission of a third person in the neighborhood or at a far-off place, is entitled to seek an injunction and also claim damages but the Constitutional rights are higher than the legal rights conferred by law be it municipal law or the common law. Such a danger as depicted, the possibility of which cannot be excluded, is bound to affect a large number of people who may suffer from it unknowingly because of lack of awareness, information and education and also because such sufferance is silent and fatal and most of the people who would be residing near, under or at a dangerous distance of the grid station or such installation do not know that they are facing any risk or are likely to suffer by such risk. Therefore, Article 184 can be invoked because a large number of citizens throughout the country cannot make such representation and may not like to make it due to ignorance, poverty and disability. Only some conscientious citizens are aware of their rights and the possibility of danger come forward. The word "life" in terms of Article 9 of the Constitution is so wide that the danger and encroachment complained of, would impinge on the fundamental rights of a citizen. In this view of the matter the petition under Article 184(3) of the Constitution of Pakistan, 1973 is maintainable.

The word "life" in the Constitution has not been used in a limited manner. A wide meaning should be given to enable a man not only to sustain life but also to enjoy it. Article 14 provides that the dignity of man and subject to law, the privacy of home shall be inviolable. The fundamental right to preserve and protect the dignity of man under Article 14 is unparalleled and could be found only in a few Constitutions of the world. Where life of citizens is degraded, the quality of life is adversely affected and health hazards are created affecting a large number of people, the Court in exercise of its ~ jurisdiction under Article 184(3) of the

Constitution may grant relief to the extent of stopping the functioning of units which create pollution and environmental degradation.

In these circumstances, before passing any final order, with the consent of both the parties a Court appointed Commissioner is to examine and study the scheme, planning device and technique employed by Authority and report whether there was any likelihood of any hazard or adverse effect on health of the residents of the locality. Commissioner might also suggest variation in the plan for minimizing the alleged danger. Authority was to submit all the plans scheme and relevant information to the Commissioner. The citizens will be at liberty to send to the Commissioner necessary documents and material, as they desire. These documents were to reach Commissioner within two weeks. Commissioner was authorized to call for such documents of information from Authority and the citizens which in its opinion was necessary to complete its report. The report should be submitted within four weeks from the receipt of the order after which further proceedings were to be taken. Authority was further by affording public hearing to the persons filing objections. This procedure shall be adopted and continued by WAPDA till such time the Government constitutes any commission or authority as suggested above.

4. PUBLIC TRUST (PAKISTAN)

Human Rights Case (Environment Pollution in Balochistan), PLD, 1994 Supreme Court 102 (Pakistan) in Okidi C. (ed), Compendium o/ judicial Decisions on Matters Related to Environment, Vol - National Decisions, December 1998, UNEP/UNDP,

No direct representations were made to the Court on this matter Instead, the Court made the orders based upon a newspaper report which had alleged that the coastline of Balochistan was to be used to dump chemical and nuclear waste. Relying on Article 9 and Article 184 (3), the Court first ordered that the paper be requested to supply more information and that the Chief Secretary of Balochistan be queried regarding the nature of the land permits issued in the region. Upon receipt of this information the Court, through Saleem Akhtar J, ordered a number of control mechanisms to be applied to future permits which would restrict the nature of activities permissible on the Balochistan coastline. There were also orders requiring that the area be monitored to ensure that illegal dumping did not take place.

The judge noticed a news item reported by APP published in 'Dawn' dated 3 July 1992 entitled "N -Waste to be dumped in Balochistan." ln the report apprehension has been expressed that business tycoons are making attempts to purchase coastal area of Balochistan and convert it into dumping ground for waste material which may be a big hazard to the developing ports of Guwadar, Pasni, Ormara and Jiwani. The coast land of Balochistan is about 450 miles long. To dump waste materials including nuclear waste from the developed countries would not only be hazard to the health of the people but also to the environment and the marine life in the region.ln their view, if nuclear waste is dumped on the coastal land of Balochistan, it is bound to create environmental hazard and pollution. This act will violate Article 9. It is, therefore, necessary to first enquire from the Chief Secretary, Balochistan whether coastal land of Balochistan or any area within the territorial water of Pakistan has been or is being allotted to any person. If any allotment has been made or applicants have applied for allotment, then full particulars should be supplied. A letter may also be written to the Editor 'Dawn referring to the news item requesting him to supply further particulars or give the name and address of the reporter of APP from whom necessary information may be obtained. ORDER in compliance with the notice issued on 9 July 1992, the Chief Secretary had made inquiries from various departments. The officials present have reported that no plot has been allotted to any party for dumping nuclear waste. The

Commissioner, Makran Division has pointed out that the law enforcing agencies on the high seas are always on the alert and can locate any vessel from a distance of more than 500 miles. It may be noted that no one will apply for allotment of land for dumping nuclear or industrial waste.

This would be a clandestine act in the garb of a legal and proper business activity. The authorities are therefore not only to be vigilant in checking the vessels but also regularly check that the allottees are not engaged in dumping industrial or nuclear waste of any nature on the land or in the sea or destroying it by any device. It seems that Balochistan Development Authority and with all the relevant terms have allotted the plots and conditions. In these circumstances, the following interim order is passed:

(1) The Balochistan Development Authority should submit to the Assistant Registrar, Supreme Court, Karachi, a list of persons to whom land on the coastal area of Balochistan have been allotted giving their name and full address along with copies of the letters of allotment, lease or license which may have been issued in their favor. (2) The Government of Balochistan and the Balochistan Development Authority are directed that if any application for allotment of coastal land is pending or in future any party applies for allotment of such land then full particulars of such applicants shall be supplied to the Assistant Registrar, Supreme Court of Pakistan, Karachi before making any allotment to any such party; (3) The Government functionaries, particularly the authorities which are charged with the duty to allot the land on coastal area should insert a condition in the allotment letter/license/lease that the allottee/tenant shall not use the land for treating, burying or destroying by any device waste of any nature including industrial or nuclear waste in any form. The Balochistan Development Authority should also obtain similar undertaking from all the allottee to whom the allotment has been made for ship-breaking, agriculture or any other purpose whatsoever. Before parting with the order they record their appreciation for the officials present who have shown their interest and keenness in tackling the problem. Such eagerness coupled with public awareness can eliminate much of the problems creating health hazard to the citizens.

SRI LANKA

Key Issues: Pendency of Cases, Technical and Scientific nature of Cases; Cumbersome Procedures; Dissemination of Judgments; Training of Judges and Advocates; Execution and Compliance of Courts Orders; Education and Awareness

Key Institutions: Supreme Courts; High Courts; District Courts; Tribunals, Authorities; Agencies etc.

1. INTRODUCTION

In the case of Sri Lanka, a recent study records that fundamental rights jurisdiction has expanded monumentally over the past few years. From a trickle of cases in the late seventies and early eighties there is now a flood of such applications pending before the Supreme Court.

One reason for this huge growth is attributed to the fact that the fundamental rights jurisdiction provides a remedy which is a relatively quick one. Applications are made before the highest court, there is no appeal. Thus fundamental rights proceedings begin and terminate with a single application in the Supreme Court. In most cases an application is disposed of within two years, and on many occasions even quicker. This is relatively quick compared to other areas of the law where proceedings, including the appeal or appeals, take much longer to conclude.

2. JUDICIARY

The Sri Lanka Supreme Court, it is reported that it has begun to interpret many of the provisions dealing with fundamental rights liberally. This is particularly true of Article 12 (the right to equality before the law and equal protection of the law) and Article 13 (freedom from arbitrary arrest and detention). Initially the Supreme Court had been reluctant to make orders against the state. This has now changed and the Court has developed a vibrant fundamental rights jurisdiction in recent years. This willingness to deliver an order against the state where a violation has been established and the expansion of the jurisdiction though a process - of interpretation are other reasons why the court docket has grown.

3. PRINCIPLES APPLIED BY THE JUDICIARY

The Supreme Courts and High Courts in many countries of South Asia have innovated the concept of "public interest litigation" and opened-up an epistolary access to justice to entertain and examine violations of fundamental and constitutional rights of large sections of people. It lowered the threshold of locus standi or the 'standing-to-sue' by promoting public-spirited persons to litigate on behalf of the deprived sections of society. Secondly, the rigidity of rule of pleading (even a postcard was treated as a petition) and burden of proof was relaxed and in appropriate cases the court itself set-up fact finding Commissions. The court held that "the constitutional promise of a social and economic transformation to usher in an egalitarian social order and a welfare state was the justification for this liberal judicial approach". Effective solutions to the problems peculiar to this transformation were not available in the traditional judicial system. The proceedings in a public interest litigation are, therefore, intended to vindicate and effectuate public interest by prevention of violation of the rights, constitutional or statutory, or sizeable segments of the society, which owing to poverty, ignorance, social and economic disadvantages cannot themselves assert - and quite often not even aware of those rights. The technique of public interest litigation has provided a speedy and effective remedy for violation of fundamental rights. In order that these public causes are brought before the Courts, the procedural techniques, judicially innovated, especially for the benefit of public interest action recognized

the concomitant need to lower the locus standi thresholds so as to enable public-minded citizens or social-action-groups to act as conduits between these classes of persons and the forum for the assertion and enforcement of their rights.

JUDGEMENTS FROM VARIOUS SOUTH ASIAN COUNTRIES EVOLVING, ADOPTING AND APPLYING RIGHTS AND PRINCIPLES FOR THE PROTECTION AND CONSERVATION OF ENVIRONMENT

(I) Right to a Wholesome Environment

1. In **India**, **Bangladesh**, **Sri Lanka** and **Pakistan**, the Supreme Courts have given broad interpretations of the "fundamental right to life" under each country's Constitution, providing a entrenched legal foundation for the public's right to a healthy environment, the protection of the environment the public's right to information. The interpretation of constitutional rights was broadened in **Bangladesh** in the 1995 Supreme Court decision of *Dr. Mohiuddin Farooque* v. *Secretary*, *Ministry of Communication*, *and Government of the Peoples' Republic of Bangladesh.* This was a petition against various Ministries and other Authorities for not fulfilling their statutory duties to mitigate air and noise pollution caused by motor vehicles in the city of Dhaka. The Petitioner argued and the Court agreed, that although the Constitution of Bangladesh contained no specific right to a safe and healthy environment, this 'right to life' was enshrined within. This interpretation was supported by Constitutional prohibitions on actions detrimental to life, body or property. Similarly, in **Pakistan**, the courts have given a broad interpretation to the 'right to life' stating that persons must not only be able to sustain life, but also to enjoy it. The Courts have applied the public trust doctrine in regard to the management of natural resources and the environment, and in some states have given consideration to the concept of inter-generational and intra-generational equity.

2. In **Bangladesh**, under Part VI, Article 102 (1) of the High Court, on application of any person aggrieved, may give directions or orders to any person or authority, including any person performing any function in connection with the affairs of the Republic, as may be appropriate for the enforcement of any of the fundamental rights conferred by Part III of this Constitution. Where on an application made under clause (1) or sub-clause (a) of clause (2), an interim order is prayed for and such interim order is likely to have the effect of - (a) prejudicing or interfering with any measure designed to implement any socialist programme, or any development work; or (b) being otherwise harmful to the public interest, the High Court shall not make an interim order unless the Attorney-General has been given reasonable notice of the application and he (or an advocate authorised by him in that behalf) has been given an opportunity of being heard, and the High Court Division is satisfied that the interim order would not have the effect referred to in sub- consolidated personality. The Court considered the submissions made by the Bangladesh Environmental Lawyers Association in the writ, and concluded that the Association should be given locus standi to maintain the writ petition stating that in this case, the Association is a 'person aggrieved' within the meaning of Article 102 of the Constitution "because the cause it bona fide espouses, both in respect of fundamental rights and constitutional remedies, is a cause of an indeterminate number of people in respect of a subject matter of great public concern"

3. In case of *Dr Mohiuddin Farooque v* **Bangladesh**, Represented by the Secretary, Ministry of Irrigation, Water Resources & Flood Control & Others 48 DLR 1996, Supreme Court of Bangladesh interpreted that the fundamental right to life included the protection and preservation of the environment - the interpretation of „any person aggrieved" in the Constitution of Bangladesh. Articles 31 and 32 of Constitution encompasses protection and preservation of environment as a fundamental right - „any person aggrieved" can be a person/s without any interest in the cause beyond the interest of the general people of the country.

4. In an another case the Petitioner, Dr. Mohiuddin Farooque, Secretary-General of the **Bangladesh** Environmental Lawyers Association (BELA), filed this petition writ petition no. 300 of 1995 against the Secretaries of the Ministries of Communication, Environment, Health, Home Affairs and Industries, and others to require them to perform their statutory duties and mitigate air and noise pollution caused by motor vehicles in the city of Dhaka. It was argued that although the Constitution of Bangladesh contained no specific right to a safe and healthy environment, this right was inherent in the "right to life" enshrined in Article 32. The petitioner stated that this interpretation of Article 32 is supported by Article 31, which prohibits actions detrimental to life, body or property. The Court ordered that effective measures be taken by the concerned authorities.

5. In *Virendra Gaur vs State of Haryana* and *Samatha vs State of Andhra Pradesh* (**India**), the Supreme Court held that environment, ecology, air, water pollution, etc. should be regarded as amounting to violation of the right to life assured by article 21 of the Constitution. In other words, the court has given wider and enlarged interpretation of the right to life guaranteed under article 21 of the Constitution to include any obstacle in the free and full enjoyment of life any person. In view of this environmental pollution will also be regarded as an interference in the right to enjoy life and shall be enforceable as a Fundamental Right and courts could be approached under articles 32 and 226 of the Constitution of India. The Indian courts adjudicated in a number of petitions filed before Supreme Court and the high courts. In *Subash Kumar V. State Of Bihar* AIR 1991 SC 420 Kn. Singh and N. D. Ojha Jj, the Petitioner filed a public interest petition in terms of Article 32 of the Constitution, pleading infringement of the right to life guaranteed by Article 21 of the Constitution, arising from the pollution of the Bokaro river by the sludge/slurry discharged from the washeries of the Tata Iron and Steel Company Limited (TISCO). The Court observed that Article 32 is designed for the enforcement of fundamental rights. The right to life enshrined in Article 21, includes the right to enjoyment of pollution-free water and air for the full enjoyment of life. If anything endangers or impairs the quality of life, an affected person or a person genuinely interested in the protection of society would have recourse to Article 32.

6. In *Chhetriya Pardushan Mukti Sangharsh Samiti vs. State of U.P*., and Others (AIR 1990 SC 2060 Sabyasachi Mukharji, C. J. And K.N.Saikia, J.) case, a letter written to the Court was treated as a Writ Petition under Article 32 of the Constitution of **India**. The letter written by Chhetriya Pardushan Mukti Sanghartsh Samiti, alleged environmental pollution in the Sarnath area. It was also alleged therein that the Jhunjhunwala Oil Mills and refinery plant are located in the green belt area, causing environmental pollution in the thickly populated area and were proving a serious health hazard. It was alleged that people were finding it difficult to eat and sleep. The Petitioners sought directions from the Court. The Court observed that, “Article 32 is a great and salutary safeguard for preservation of fundamental rights of the citizens. Every citizen has a fundamental right to have the enjoyment of quality of life and living as contemplated by Art. 21 of the Constitution.

7. In *Kinkri Devi and Another vs. State of Himachal Pradesh and Others* (AIR 1988 Himachal Pradesh 4 P. D. Desai, C. J. And R. S. Thakur, J. **India**), the Petitioners sought an order of the Court to have a mining lease cancelled, to restrain the Respondents from operating the mines covered by the lease in such a manner as to pose a danger to the adjoining lands, water resources, pastures, forests, wildlife, ecology, environment and the inhabitants of the area, and for compensation for the damage caused by the uncontrolled quarrying of the limestone. The court issued the interim directions that no lease for mining of limestone to be granted or renewed nor temporary permits issued till the report of the Committee is received and further orders made by the Court. The Court observed that in Articles 48A and 51A(g) there is both a constitutional pointer to the State and a constitutional duty of the citizens not only to protect but also to improve the environment and to preserve and safeguard the forests, the flora and fauna, the rivers and lakes and all the other water resources of the country, and went on to state: "To ensure the attainment of the constitutional

goal of the protection and improvement of the natural wealth and environment. and to protect the people inhabiting the vulnerable areas from the hazardous consequences of the arbitrary exercise of the power of granting mining leases and of indiscriminate operation of mines on the strength of such leases without due regard to their life, liberty and property, the court will be left with no alternative but to intervene effectively…"

8. In the case of *Ratlam Municipality vs.. Vardhichand*, (AIR 1980 SC 1622 V.R. Krishna Iyer And Chinnappa Reddy. Jj.), an application was made under Section 133 of the Criminal Procedure Code seeking an order from the Magistrate's Court, directing the Municipal Council of Ratlam to take necessary action to stop the stench caused by open drains and public excretion by slum dwellers for want of public lavatories. The Magistrate made order as prayed for, but it was reversed on appeal to the Court of Sessions. On further appeal, the High Court as well as the Supreme Court upheld the order of the Magistrate. The defence of the Municipality was that notwithstanding the public nuisance, it did not have the funds to carry out the necessary activities and that this exonerates it from statutory liability. In rejecting the defence of the Municipality, the Supreme Court observed that the Criminal Procedure Code applies to statutory bodies and others regardless of their financial standing, just as human rights under Part III of the Constitution have to be respected by the State regardless of budgetary provisions. Section 133 of the Criminal Procedure Code considered in conjunction with Section 123 of the Municipalities Act, empowers the Court to require a municipality to abate a nuisance by taking affirmative action within a stipulated time. In arriving at this conclusion, the Court stated, "Public nuisance because of pollutants being discharged by big factories to the detriment of the poorer sections, is a challenge to the social justice component of the rule of law. Likewise, the grievous failure of local authorities to provide the basic amenity of public conveniences drives the miserable slum-dwellers to ease in the streets, on the sly for a time, and openly thereafter, because under nature's pressure, bashfulness becomes a luxury. A responsible Municipal Council constituted for the precise purpose of preserving public health and providing better facilities cannot run away from its principal duty by pleading financial inability. Decency and dignity are non-negotiable facets of human rights and are a first charge on local self-governing bodies. Similarly, providing drainage systems, not pompous and attractive, but in working condition and sufficient to meet the needs of the people, cannot be evaded if the Municipality is to justify its existence. A bare study of the statutory provisions makes this position clear".

9. In **Pakistan**, in case of General Secretary, West Pakistan Salt Miners Labour Union (Cba) Khwra, Khelum Vs. The Director, Industries And Mineral Development, Punjab Lahore 1996 Sc Mr 2061 Supreme Court, a Petition was filed in the Supreme Court under Article 184 (3) of the Constitution against the pollution of the water supply source to the residents and mine workers of Khewra. The spring Mitha Pattan was the only major source of drinking water in the area. Accordingly, a water catchments area was reserved and grant of mining leases in the area was prohibited prior to 1911. Notwithstanding the prohibition, the authorities concerned had granted mining leases in the catchments area. The Petitioners alleged that as a result, poisonous waste water discharged from the mines polluted the reservoir creating a health hazard, and that the allotment and grant of leases for mining in the catchments area was illegal and mala-fides, and prayed for cancellation of licenses. The Court allowed the petition stating that persons exposed to such danger are entitled to claim that their fundamental right to life guaranteed to them by the Constitution has been violated and that there is a case for enforcement of fundamental rights by giving directions or passing orders to restrain the parties and authorities from committing such violation or to perform their duties. Quoting Article 184(3) of the Constitution, the Court observed that "It is well settled that in human rights cases/public interest litigation under Article 184(3), the procedural trappings and restrictions, precondition of being an aggrieved person and other similar technical objections cannot bar the jurisdiction of the Court. The Court also appointed a Commission with powers of inspection, recording evidence etc. to monitor the implementation of the Orders. Additionally all the mines operating adjacent to the catchments area were to take measures to the satisfaction of the Commission, which will prevent pollution of the reservoir, stream and catchments area.

10. In case of Dumping of Nuclear and Industrial Waste In Re: Human Rights Case(Environment Pollution In Balochistan, Pakisatan) Human Rights Case No: 31-K/92(Q)- A news item entitled "N-Waste to be dumped in Balochistan" was published in "Dawn", a daily newspaper in its issue dated 3 July 1992. In the report, concern was expressed that certain businessmen were making attempts to purchase coastal areas of Balochistan and convert it into dumping grounds for waste material. The Supreme Court having taken note of the news item issued an Order requiring Chief Secretary of Balochistan to provide the Court with full information on the allocation or the receipt of applications for allocation of coastal land in Balochistan or any area within the territorial waters of Pakistan. The reports revealed that land had been allotted in addition to the Pakistan Navy and Maritime Agency for defence purposes, for purposes such as ship breaking and agriculture. The Court in this acse passed the order that " 1. The Balochistan Development Authority should submit to the Assistance Registrar, Supreme Court, Karachi a list of persons to whom land on the coastal area of Balochistan have been allotted giving their names and full addresses along with copies of the letters of allotment, lease or license which may have been issued in their favour. 2. The Government of Balochistan and the Balochistan Development Authority are directed that if any application for allotment of coastal land is pending or in future any party applies for allotment of such land, then full particulars of such applicant shall be supplied to the Assistant Registrar, Supreme Court of Pakistan, Karachi before making any allotment to any such party. 3. The Government functionaries, particularly the Authorities which are charged with the duty to allot the land in coastal areas should insert a condition in the allotment letter/license/lease that the allotee/tenant shall not use the land for dumping, treating, burying or destroying by any device, waste of any nature including industrial or nuclear waste in any form. The Balochistan Development Authority should also obtain similar undertaking from all those to whom allotments have been made for ship breaking, agriculture, or any other purpose.

11. In Ms. Shehla Zia and Others V. Wapda Human Rights Case (No: 15-K Of 1992 Supreme Court, Pakistan) the Respondent authority was constructing a grid station in a residential area. The Petitioners who were residents in the vicinity alleged that the electromagnetic field created by the high voltage transmission lines at the grid station would pose a serious health hazard to them. The Court observed that as one cannot ignore that energy is essential for present-day life, industry, commerce and day-to-day affairs. The more energy that is produced and distributed, the more progress and economic development becomes possible. Therefore, a method should be devised to strike a balance between economic progress and prosperity and to minimize possible hazards. In fact a policy of sustainable development should be adopted. The Court held that constitutional rights are higher than rights conferred by other laws i.e. municipal law, common law. Therefore a conscientious citizen, aware of the rights vested under the Constitution and alive to the possibility of danger, could invoke Article 184 on behalf of a large number of citizens who cannot make such representations due to poverty, ignorance or any such disability. (ix) The Court refrained from making any order, in view of the inconclusive nature of the evidence placed on record. However, with the consent of both parties the Court appointed NESPAK, as Commissioner, *inter-alia*, to examine and study the scheme employed by WAPDA and report whether there is any likelihood of any hazard or adverse effect on the health of the residents of the locality.

12. In **Sri Lanka**, in case of the Environmental Foundation Limited and Others the Attorney-General and Others (Supreme Court of Sri Lanka S.C. Application No. 128/91 G. P. S. De Silva, C. J., K.M.M.B. Kulatunga, J., And P. Ramanathan, J. Petitioners include residents of Nawimana and Weragampita villages in the South of Sri Lanka, as well as a company which is devoted to environmental protection), in 1987 the Southern Group took over a rock quarry near Petitioners' villages. Petitioners allege that they have suffered serious injury to their physical and mental health, and serious damage to their property, as a result of large-

scale blasting which commenced at the quarry in 1987. Petitioners claimed violations of their rights under various articles of the Constitution: Article 3 (sovereignty is in the people and is inalienable and includes fundamental rights); Article 11 (no person shall be subjected to cruel, inhuman or degrading treatment); Article 14(1)(g) (every citizen is entitled to freedom to engage in any lawful occupation); Article 14(1)(h) (every citizen is entitled to freedom of movement and choosing his residence). In its judgment the Court listed the terms of the settlement. The number of blastings was limited to three days a week (Monday, Wednesday, Friday), and if there is a necessity to increase the number, the Monitoring Committee (two persons nominated by Petitioners, two persons from the Southern Group, the Gamma Niladhari of the villages of Nawimana and Weragampita, and the Government Agent, Matara) must approve the change. If the blasting cannot be done on one of these three days, it can be done on an alternative day suitable to the Southern Group if 24 hours written notice is given to the Gamma Niladhari. Contingencies preventing a scheduled blasting include bad weather and inability of the police to be present. Blasting will take place between 10:00 a.m. and 5:00 p.m. There should be at least a 20 second time lapse between each blasting, and electronic detonation and the safety fuse method must be used. The depth of a borehole cannot exceed 8 feet. The number of blastings per day is not stipulated. The police must maintain a monthly report.

(II) Intergenerational Equity

1. The Supreme Court in India has held that Precautionary Principle is part of the environmental law of the country. In the Vellore Citizens‟ Welfare Forum vs Union India, the Court has held that the „precautionary principle‟ requires government authorities to anticipate, prevent and attack the causes of environmental pollution. This principle also imposes the onus of proof on the developer or industrialist to slow that his or her action is environmentally benign; Government development agencies charged with decision making ought to give due regard to ecological factors including; the environmental; policy of the central and State Government; the sustainable development and utlization of natural resources; the obligation of the present generation to preserve natural resources and pass on to future generations an environmental as intact as the one we inherited from the previous generation Stringent action ought to be taken against contumacious defaulters and person who carry on industrial or development activity for profit without regard to environmental laws; The poor conferred under an environmental statue may be exercised only to advance environmental protection and not for a purpose that would defeat the object of the laws; The state is the trustee of all natural resource which are by nature meant for public use and enforcement. The public at large is the beneficiary of the sea-shore, running water, air, forests and ecologically fragile land. These resources cannot be converted into private ownership.

2. In **India** in *M.C. Mehta vs. Union of India and Others*(AIR 1988 Supreme Court 1037 E.S. Venkataramiah And K.N. Singh J.J.) case requested the court to prevent tanneries, which were polluting the River Ganga, from operating until they installed primary effluent treatment plants. In the context of this case, the following passages from the United Nations Conference of the Human Environment held in 1972 in Stockholm were quoted by the Court in its judgment: "Both aspects of man's environment, the natural and the manmade, are essential to his well being and the enjoyment of basic human rights - even the right to life itself. The protection and improvement of the human environment is a major issue which affects the well being of peoples and economic development throughout the world, it is the urgent desire of the peoples of the whole world and the duty of all governments." "What is needed is an enthusiastic but calm state of mind and intense but orderly work...To defend and improve the human environment for present and future generations has become an imperative goal...Achievement of this environmental goal will demand the acceptance of responsibility by citizens and communities and by enterprises and institutions at every level." Intergenerational equity means the concern for the generations to come. The present generation has no right to imperil the safety and well-being of the next generation or the generations to come thereafter.

3. Similarly, in the CRZ Notification Case[Ganesh Wood Prodcut AIR 1996SC149, 159,163, **India**] the Court observed that environmental statutes were enacted to ensure a good quality of life for unborn generations since it is they who must bear the brunt of ecological degradation. In the judgment, the Court cited from the report of the World Commission on Environment and Development. "...Environmental protection and sustainable development must be an integral part of the mandates of all agencies of governments, of international organizations, an of major private-sector institutions. These must be made private-sector institutions. These must be made responsible and accountable for ensuring that their policies, programmes, and budgets encourage and support activities that are economically and ecologically sustainable both in the short and longer terms.

(III) Principle of Sustainable Development

1. In fact, there are some very illustrative examples from the recent rulings of South Asian courts. In the case of "Mohiuddineen Farooque vs. **Bangladesh** (1996)", the key issue which emerged was whether the fundamental right to life also included the protection of environment, the ecological balance and pollution. In another ruling, "Rural Litigation and Entitlement Kendera vs. State of Uttar Pradesh (1988) where the court looked at the balance between the tapping of minerals for development, on the one hand and the preservation of the environment on the other. Furthermore, in the case of *Chhetriya Pardushan Mukti Sangharsh Samiti vs. State of Uttar Pradesh* (1990), the Supreme Court ruled that every citizen has a fundamental right to the enjoyment of quality of life, including of course, the quality of the environment.

2. The Petition (*Tehri Bandh Virodhi Sangarsh Samiti and Others vs. The State of Uttar Pradesh and Others*-Supreme Court of **India** Writ Petition No. 12829 Of 1985 K.N Singh, J. And Kuldip Singh, J) under Article 32 of the Indian Constitution was filed in the Supreme Court in the public interest. The petitioners prayed that the Union of India, State of Uttar Pradesh and the Tehri Hydro Development Corporation be restrained from constructing and implementing the Tehri Hydro Power Project and the Tehri Dam. The main grievance of the Petitioners was that in preparing the plan for the project the safety aspects have not been adequately taken into consideration. It was asserted that as the area in which the dam is to be constructed is prone to earthquakes, the construction of the dam will pose a serious threat to the life, ecology and the environments of the entire northern India. Constitution of India -Article 32.The Court sated that it does not possess the requisite expertise to render any final opinion on the rival contentions of the experts. The Court can only "investigate and adjudicate the question as to whether the Government was conscious to the inherent danger as pointed out by the Petitioners and applied its mind to the safety of the dam. We have already given facts in detail which show that the Government has considered the question on several occasions in the light of the opinion expressed by the experts". In view of the material on record, the Court did not find any good reason to issue a direction restraining the respondents from proceeding with the implementation of the project and accordingly, the petition was dismissed.

3. *Sachidanand Pandey vs. State of West Bengal*, AIR 1987 SC 1109 O. Chinnappa Reddy And V. Khalid Jj. The Petitioner challenged the decision of the Government of West Bengal (**India**) to allot a portion of six acres of land from a zoological garden for the construction of a five star hotel. The Court rejected the petition stating that upon consideration of all the relevant facts and circumstances, it felt assured that the proposed garden hotel would improve the ecology and environment of the land concerned. The Court observed that society's interaction with nature is so extensive today that environmental issues have assumed proportions affecting all humanity. Industrialization, urbanization, the population explosion, over exploitation of resources, depletion of traditional sources of energy and raw materials, the disruption of natural ecological balances and the destruction of a multitude of animal and plant species are all factors

which have contributed to environmental degradation. The Court also observed "When the Court is called upon to give effect to the Directive Principle and the fundamental duty, the Court is not to shrug its shoulders and say that priorities are a matter of policy and so it is a matter for the policy-making authority. The least that a Court may do is to examine whether appropriate considerations are borne in mind and irrelevancies excluded. In appropriate cases, the Court may go further, but how much further must depend on the circumstances of the case. The Court may always give necessary directions. However, the Court will not attempt to nicely balance the relevant considerations. When the question involves the nice balancing of relevant considerations, the Court may feel justified in resigning itself to acceptance of the decision of the authority".

4. In **Sri Lanka**, an appeal under Section 23dd of National Environmental Act by Ceylon Electricity Board Secretary, Ministry of Environment (1995) Cecil Amarasinghe, Secretary, Ministry Of Environment by the Ceylon Electricity Board. The Ceylon Electricity Board (CEB) has appealed against the decision of the Central Environmental Authority (CEA) to refuse to approve the Upper Kotmale Hydropower Project (the UKH project). The CEA refused to concur in the decision of the Ministry of Irrigation, Power and Energy, the project-approving agency (PAA), which recommended that this project be approved. As the case involved a variety of technical issues, a panel of experts was assembled to consider these issues and make a report which the Secretary, Ministry of Environment considered to reach this, decision. The project has a long history, beginning with the formulation of a master plan study by the FAO in 1968. In 1985-87 the Japanese International Co-operation Agency (JICA) carried out a feasibility study of the project, and the CEB subsequently carried out an environmental impact assessment (EIA). The EIA report admitted that this feasibility study, which recommended two dam sites on technical and economic grounds only, did not adequately consider environmental issues. An engineering services study was carried out in 1993-94.The technical evaluation committee (TEC) of the PAA identified several environmental impacts of the UKH project, including impacts on seven of Sri Lanka's waterfalls. The TEC found that these environmental considerations as well as others were not given adequate consideration in the EIA. The TEC recommended that other alternatives in the EIA be considered further. The PAA, however, went ahead and approved the UKH project, in spite of the TEC's recommendation. The Secretary, Ministry of Environment reviewed United States case law dealing with EIA and concluded that an adequate and rigorous consideration of alternatives is at the heart of the EIA decision making process. In addition, the EIA must produce information sufficient to permit a reasonable choice of alternatives as far as environmental aspects are concerned.

5. In an another appeal Under Section 23 of the National Environmental Act, Sri Lanka By G.L.M. Kamal Fernando Secretary, Ministry Of Environment Appeal No. 1/95 D. Nesiah, Secretary, Ministry of Environment. G.L.M. Kamal Fernando) who, appealed against the decision of the Divulapitiya Pradeshiya Sabha (PS) denying him the virtue of an Environmental Protection Licence (EPL) for his brick kiln. The Central Environmental Authority (CEA) had earlier granted authority for the erection of this brick kiln subject to several conditions. The CEA had subsequently delegated its power of issuing license for such brick kilns to the PS. In a related litigation, Appellant's father had constructed another brick kiln on land belonging to him, and his neighbour (the fifth respondent in this case) took the case to court arguing that the kiln should be 200 yards from a residence. The Magistrate's Court of Negombo agreed, and as this condition could not be satisfied, the court ordered that this kiln be closed. Appellant subsequently made a "site clearance application" to the CEA to construct a brick kiln on his land, which adjoins his father's land. CEA's inspecting officer originally stated that clearance could be granted, but the CEA subsequently imposed conditions of a 200 metre distance from the home of the third and fifth respondents (husband and wife), and a 30 foot chimney. CEA explained that as the Negombo Magistrate's Court had imposed the 200 metre limit on Appellant's father, CEA would impose this limit on Appellant as the brick kilns were in the same area. The CEA stated that it had no general rule regarding the distances that had to be maintained between brick kilns and residential premises. Appellant did not make a formal application for an EPL application, but both

he and the PS proceeded on the basis that the “site clearance application” was an EPL application. Even though Appellant did not make a formal EPL application, the Secretary held he has jurisdiction to entertain this appeal, as the site clearance application is a pre-EPL procedure. This site clearance allows the industrialist to obtain building approval and other necessary legal authorisations, and to begin construction with a reasonable degree of certainty that an EPL will be granted when formally applied for, if site clearance conditions are met. The law would be rendered ridiculous if a person to whom site clearance is denied has to make a formal EPL application and obtain a formal refusal before he can exercise his right to appeal. The site clearance process is part of the EPL process, and thus when site clearance is refused, a right to appeal arises under section 23E. As the PS has in unambiguous terms refused to issue a license, even before an application has formally been made, this is deemed to be a refusal to grant an EPL. The Secretary then reviewed the merits of the appeal, and held that there was no technical basis for the stipulation of a 200 meter distance. The stipulation was not based on CEA general guidelines, or the recommendation of any of the inspecting officers, and was therefore unreasonable and unjustified. As the Appellant's father has no interest in Appellant's land, and their brick kilns are separate, the litigation in the other case will not bind Appellant. The Secretary stated that the CEA must establish general guidelines for industrial siting and stipulation of EPL conditions. General conditions may be varied where exceptional circumstances justify a variation on scientific grounds. In this case, CEA's new Rule 3 which provides for a 100 meter distance between brick kilns and residences, subject to variation in exceptional circumstances, is acceptable.

6. In case of (Keangnam Enterprises Limited Vs. E.A. Abeysinghe And Eleven Others C. A. Application No. 259/92 Court of Appeal), the Petitioner-Company was engaged in the rehabilitation of the Ambepussa-Dambulla-Anuradhapura road and was extracting stone from the quarry for that purpose. The informants who obtained the Magistrate's Court order were a group of residents of the area who claimed to be affected by the blasting operations carried out by the Company. During the course of the proceedings the Court allowed separate applications from the Road Development Authority and four workers from the quarry who claimed that their livelihood would be affected if the quarry was shut down, to be added as parties. The main argument of the Petitioner-Company in the Court of Appeal was that the Magistrate's power to make orders under Chapter IX of the Criminal Procedure Code (Sections 98 to 106) had been taken away by the provisions of the National Environmental Act No. 47 of 1980 as amended by Act No. 56 of 1988. Under Section 23A of the amended NEA, no person was allowed to discharge, deposit or emit waste into the environment which would cause pollution except under the authority of a license issued by the Central Environmental Authority (CEA) and in accordance with such standards and other criteria as may be prescribed under the Act. Section 29 of the Act declares, "The provisions of the Act shall have effect notwithstanding anything to the contrary in the provisions of any other written law." At the time that the Magistrate made his orders the Petitioner Company had applied for but had not obtained a license from the CEA. It had commenced blasting operations on 1.9.1991 on the strength of a letter dated 10.07.1991 from the Director, CEA, to the Kurunegala Pradeshiya Sabha which stated that an environmental protection license "shall be obtained by the developer" and that "the developer shall submit an application for the said license to the CEA one month prior to the commencement of manufacturing operations.” A permit was eventually issued to the Petitioner-Company on 19.06.1992 after the Magistrate had made his restraining and conditional orders and after the Petitioner Company had filed this revision application in the Court of Appeal. The mere application for a license was not sufficient compliance with Section 23A of the Act and the Petitioner-Company had also acted in violation of the conditions stipulated in the letter of 10.07.1991 from the Director, CEA. Since the Petitioner-Company was not in possession of a license from the CEA as required by the Act, he could not invoke the provisions of the Act to defeat the action in the Magistrate's Court. The Magistrate had jurisdiction to make orders under Chapter IX of the Criminal Procedure Code if satisfied with the information furnished by the Informants regarding the nuisance, which they complained of. Therefore, the revision application would be dismissed. However, since the Petitioner Company had subsequently obtained a license from the CEA it was at liberty to revert to the Magistrates Court where the main inquiry under Section 101 of the Code was still pending and make submissions based on the provisions

of the National Environmental Act as amended, with a view to have the orders made by the Magistrate annulled.

7. In (S. C. Amarasinghe and three Others Vs. the Attorney General and three Others S. C. (Spl.) No. 6/92 Supreme Court Of Sri Lanka), the Petitioner sought to quash an Order of the President of Sri Lanka dated 21.10.1992 made under Section 2 of the Urban Development Projects (Special Provisions) Act No. 2 of 1980 declaring that upon the recommendation of the Minister in charge of urban development he was of opinion that the lands described in the schedule to the Order were urgently required for an urban development project. The Attorney-General and, the Road Development Authority were made respondents. It was common ground that the lands in question were to be acquired in connection with the construction of an expressway from Colombo to Katunayake. The Petitioners contended in the Supreme Court that there had been a failure of natural justice as there had been no hearing prior to making the order, despite the fact that under Section 2 of the Act the urban development project had to be one "which would meet the just requirements of the general welfare of the people". (1) As the Order under Section 2 of the Urban Development Projects (Special Provisions) Act has of itself no adverse impact on a citizen's property, liberty or livelihood and does not deprive him of or affect title to or possession of property, a public hearing was not required at that stage. (2) The available material did not indicate that the decision to build the expressway was unreasonable and therefore the Court would not interfere. (3) Section 3 of the Urban Development Projects (Special Provisions) Act did not take away the powers of the superior courts, which were enshrined in the Constitution. (4) Section 7 of that Act did not empower the State to take over privately owned land under the State Lands (Recovery of Possession) Act without first acquiring the land under the Land Acquisition Act. (5) The provisions of Sections 23AA and 23BB of the National Environmental Act as amended were not applicable, as no orders had yet been made listing any "prescribed projects". However, the Central Environmental Authority had power to call for an EIA in respect of any new project under Section 10(h) of the Act and the Court took note that the Respondents had given an undertaking that an EIA would be prepared and made available for public scrutiny for 30 days, which would be the appropriate stage at which to consider public representations on environmental factors.

8. In **Bangladesh**, (under Part VI, Article 102 (1) of the Constitution) the High Court Division, on application of any person aggrieved, may give directions or orders to any person or authority, including any person performing any function in connection with the affairs of the Republic, as may be appropriate for the enforcement of any of the fundamental rights conferred by Part III of this Constitution. Where on an application made under clause (1) or sub-clause (a) of clause (2), an interim order is prayed for and such interim order is likely to have the effect of - (a) prejudicing or interfering with any measure designed to implement any socialist programme, or any development work; or (b) being otherwise harmful to the public interest, the High Court Division shall not make an interim order unless the Attorney-General has been given reasonable notice of the application and he (or an advocate authorised by him in that behalf) has been given an opportunity of being heard, and the High Court Division is satisfied that the interim order would not have the effect referred to in sub-clause (a) or sub-clause (b). *Dr. Mohiuddin Farooque v. Bangladesh and others* (Writ Petition No. 998 of 1994), in which the legality of an experimental structural project of the huge Flood Action Plan of Bangladesh was challenged, the High Court The Court concluded that the petitioner should be given *locus standi* to maintain the writ position, because the cause the Association bona fide espoused, both in respect of fundamental rights and constitutional remedies. Supreme Court allowed the appeal, granting the Petitioner locus standi to move the High Court Division under Article 102 of the Constitution, stating that the expression "any person aggrieved" in Article 102 of the Constitution is not confined to individual affected persons only, but extends to the people in general, as a collective and consolidated personality.

9. In another case, the Petitioner, Dr. Mohiuddin Farooque, Secretary-General of the **Bangladesh** Environmental Lawyers Association (BELA), filed this petition writ petition no. 300 of 1995 against the

Secretaries of the Ministries of Communication, Environment, Health, Home Affairs and Industries, and others to require them to perform their statutory duties and mitigate air and noise pollution caused by motor vehicles in the city of Dhaka. It was argued that although the Constitution of Bangladesh contained no specific right to a safe and healthy environment, this right was inherent in the "right to life" enshrined in Article 32. The petitioner stated that Article 31, which prohibits actions detrimental to life, body or property, supports this interpretation of Article 32. The Court ordered that effective measures be taken by the concerned authorities.

10. The High Court Division of **Bangladesh**, in the case of *Dr. Mohiuddin Farooque v. Bangladesh and others others* (48 DLR 1996, p.438) stated that the right to life includes the right to fresh air and water and a situation beyond animal existence in which one can expect normal longevity of life. Hence, it appears that the right to a healthy environment has now become a fundamental right, as was with case laws, which puts an additional responsibility upon the judiciary to ensure that Rule of Law is guaranteed in cases where the sustainability of a proposed development project is questionable. And those victims of a breachable public law and a judicial precedent are appropriately collated by the judiciary. The Bangladesh Constitution states that no one can be denied the right to life and property except in accordance with law and if those rights are taken away, compensation must be paid. The laws that regulate a development programme in a particular sector usually allow objections to be raised and provide for compensation of all rights and interests affected by relevant projects. Therefore, the people who are adversely affected have the right to ask for compensation.

11. In Kinkri Devi and Another Vs. State of Himachal Pradesh, **India** and Others case((AIR 1990 SC 2060 Sabyasachi Mukharji, C. J. And K.N.Saikia,), the Petitioners sought an order of the Court to have a mining lease cancelled, to restrain the Respondents from operating the mines covered by the lease in such a manner as to pose a danger to the adjoining lands, water resources, pastures, forests, wildlife, ecology, environment and the inhabitants of the area, and for compensation for the damage caused by the uncontrolled quarrying of the limestone. The court issued the interim directions that no lease for mining of limestone to be granted or renewed nor temporary permits issued till the report of the Committee is received and further orders made by the Court. The Court observed that in Articles 48A and 51A(g) there is both a constitutional pointer to the State and a constitutional duty of the citizens not only to protect but also to improve the environment and to preserve and safeguard the forests, the flora and fauna, the rivers and lakes and all the other water resources of the country, and went on to state: "To ensure the attainment of the constitutional goal of the protection and improvement of the natural wealth and environment. And to protect the people inhabiting the vulnerable areas from the hazardous consequences of the arbitrary exercise of the power of granting mining leases and of indiscriminate operation of mines on the strength of such leases without due regard to their life, liberty and property, the court will be left with no alternative but to intervene effectively…"

12. In **Pakistan,** in case (1994 SCMR 2061), of General Secretary, West Pakistan Salt Miners Labour Union (Cba) Khwra, Khelum Vs. The Director, Industries And Mineral Development, Punjab, Lahore Supreme Court, a Petition was filed in the Supreme Court under Article 184 (3) of the Constitution against the pollution of the water supply source to the residents and mine workers of Khewra. The spring Mitha Pattan was the only major source of drinking water in the area. Accordingly, a water catchments area was reserved and grant of mining leases in the area was prohibited prior to 1911. Notwithstanding the prohibition, the authorities concerned had granted mining leases in the catchments area. The Petitioners alleged that as a result, poisonous waste water discharged from the mines polluted the reservoir creating a health hazard, and that the allotment and grant of leases for mining in the catchments area was illegal and malafides, and prayed for cancellation of licenses. The Court allowed the petition stating that persons exposed to such danger are entitled to claim that their fundamental right to life guaranteed to them by the Constitution has been violated and that there is a case for enforcement of fundamental rights by giving directions or passing orders to

restrain the parties and authorities from committing such violation or to perform their duties. Quoting Article 184(3) of the Constitution, the Court observed that "It is well settled that in human rights cases/public interest litigation under Article 184(3), the procedural trappings and restrictions, precondition of being an aggrieved person and other similar technical objections cannot bar the jurisdiction of the Court.

13. In case(Case No: 31-K/92(Q) of Dumping of Nuclear and Industrial Waste Re: Human Rights Case (Environment Pollution in Balochistan, Pakisatan) Human Rights -A news item entitled "N-Waste to be dumped in Balochistan" was published in "Dawn", a daily newspaper in its issue dated 3 July 1992. In the report, concern was expressed that certain businessmen were making attempts to purchase coastal areas of Balochistan and convert it into dumping grounds for waste material. The Supreme Court having taken note of the news item issued an Order requiring Chief Secretary of Balochistan to provide the Court with full information on the allocation or the receipt of applications for allocation of coastal land in Balochistan or any area within the territorial waters of Pakistan. The reports revealed that land had been allotted in addition to the Pakistan Navy and Maritime Agency for defence purposes, for purposes such as ship breaking and agriculture. The Court in this case passed the order that " 1. The Balochistan Development Authority should submit to the Assistance Registrar, Supreme Court, Karachi a list of persons to whom land on the coastal area of Balochistan have been allotted giving their names and full addresses along with copies of the letters of allotment, lease or license which may have been issued in their favour. 2. The Government of Balochistan and the Balochistan Development Authority are directed that if any application for allotment of coastal land is pending or in future any party applies for allotment of such land, then full particulars of such applicant shall be supplied to the Assistant Registrar, Supreme Court of Pakistan, Karachi before making any allotment to any such party. 3. The Government functionaries, particularly the Authorities which are charged with the duty to allot the land in coastal areas should insert a condition in the allotment letter/license/lease that the allotee/tenant shall not use the land for dumping, treating, burying or destroying by any device, waste of any nature including industrial or nuclear waste in any form. The Balochistan Development Authority should also obtain similar undertaking from all those to whom allotments have been made for ship breaking, agriculture, or any other purpose.

14. In Ms. Shehla Zia and Others Vs. Wapda Human Rights Case (PLD 1994 SC 693) (Pakistan), the Respondent authority was constructing a grid station in a residential area. The Petitioners who were residents in the vicinity alleged that the electromagnetic field created by the high voltage transmission lines at the grid station would pose a serious health hazard to them. The Court observed that at present, scientific evidence regarding the possibility of adverse biological effects from exposure to power-frequency fields as well as the possibility of reducing or eliminating such effects, is inconclusive. The remaining question is how the legal system, including both the judiciary and the various regulatory agencies, should respond to this scientific uncertainty. In such a situation, the precautionary principle should be applied. To stick to a particular plan on the basis of old studies or inconclusive research cannot be said to be a policy of prudence and precaution. One cannot ignore that energy is essential for present-day life, industry, commerce and day-to-day affairs. The more energy that is produced and distributed, the more progress and economic development becomes possible. Therefore, a method should be devised to strike a balance between economic progress and prosperity and to minimize possible hazards. In fact a policy of sustainable development should be adopted. The Court held that constitutional rights are higher than rights conferred by other laws i.e. municipal law, common law. Therefore a conscientious citizen, aware of the rights vested under the Constitution and alive to the possibility of danger, could invoke Article 184 on behalf of a large number of citizens who cannot make such representations due to poverty, ignorance or any such disability.

15. Public interest litigation in environment matters has been an important aspect of development in Sri Lanka‟s environmental laws. Although the Constitution does not have specific provisions on "right to life" but various provisions have been used as a basis for environmental actions. In **Sri Lanka,** in case of the Environmental Foundation Limited and Others the Attorney-General and Others (Supreme Court of Sri Lanka S.C. Application No. 128/91 G. P. S. De Silva, C. J., K.M.M.B. Kulatunga, J., And P. Ramanathan, J. Petitioners include residents of Nawimana and Weragampita villages in the South of Sri Lanka, as well as a company which is devoted to environmental protection), in 1987 the Southern Group took over a rock quarry near Petitioners' villages. Petitioners allege that they have suffered serious injury to their physical and mental health, and serious damage to their property, as a result of large-scale blasting which commenced at the quarry in 1987. Petitioners claimed violations of their rights under various articles of the Constitution: Article 3 (sovereignty is in the people and is inalienable and includes fundamental rights); Article 11 (no person shall be subjected to cruel, inhuman or degrading treatment); Article 14(1)(g) (every citizen is entitled to freedom to engage in any lawful occupation); Article 14(1)(h) (every citizen is entitled to freedom of movement and choosing his residence). In its judgment the Court listed the terms of the settlement. The number of blastings was limited to three days a week (Monday, Wednesday, Friday), and if there is a necessity to increase the number, the Monitoring Committee (two persons nominated by Petitioners, two persons from the Southern Group, the Gamma Niladhari of the villages of Nawimana and Weragampita, and the Government Agent, Matara) must approve the change. If the blasting cannot be done on one of these three days, it can be done on an alternative day suitable to the Southern Group if 24 hours written notice is given to the Gamma Niladhari. Contingencies preventing a scheduled blasting include bad weather and inability of the police to be present. Blasting will take place between 10:00 a.m. and 5:00 p.m. There should be at least a 20 second time lapse between each blasting, and electronic detonation and the safety fuse method must be used. The depth of a borehole cannot exceed 8 feet. The number of blastings per day is not stipulated. The police must maintain a monthly report.

16. The Supreme Court of **Nepal** in Godavari Marble case under Article 88 of the 1990 Constitution has given that the right to life a fundamental right under Article 11(1) of 1962 Constitution. The court went to the extent of saying that as it is of the policies of the state as envisaged in the Constitution under the „Directive Principles and Policies of the State‟ that the State shall give priority to the protection of the environment and also to the prevention of further damage to the environment due to physical development activities, the petitioner has locus standi in this case.

(V) Access to Information and Public Participation

1. The establishment of the right to a satisfactory environment at the constitutional level has proved crucial in public rights, since it has permitted the use of existing constitutional resources for the protection of fundamental rights. Public interest litigation has been successful in India and the Sri Lanka where private individuals have challenged government decisions. In India in *M.C. Mehta v. Union of India*, the court accepted a petition for a writ of *mandamus* to restrain a series of tanneries from disposing of effluent into the River Ganges. The Court ordered the closure of the tanneries until such time as primary waste treatment systems were installed, despite the fact that the Court was aware that the order would cause economic hardship. The Court noted Article 48-A of the Constitution which provides that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country and Article 51-A which imposes as one of the fundamental duties of every citizen the requirement to protect and improve the natural environment including forests, lakes, rivers, wildlife and to have compassion for living creatures. It is interesting to note that the Court also quotes with approval the Declaration adopted by the United Nations Conference on the Human Environment held at Stockholm in 1972 to support its decision. In *D.D. Vyas v. Ghaziabad Development Authority* the court declared that petitioners' standing could not be challenged because they were "public spirited citizens who were rightly reminding the authorities of their duties enshrined in the Constitution."

2. On two occasions, the question of the standing of the Bangladesh Environmental Lawyers Association (BELA) was kept open: *Dr Mohiuddin Farooque v. The Election Commission and others* (47 DLR 235) and *Dr. Mohiuddin Farooque v. Bangladesh and others* (Writ Petition No. 891 of 1994). The second case relates to 903 polluting industries and factories where the High Court Division of the Supreme Court issued a *rule nisi* in the nature of mandamus. However, in *Dr. Mohiuddin Farooque v. Bangladesh and others* (Writ Petition No. 998 of 1994), in which the legality of an experimental structural project of the huge Flood Action Plan of Bangladesh was challenged, the High Court Division initially rejected the Petition on the ground that the Petitioner in that case was an organisation, the Bangladesh Environmental Lawyers Association, and that they had no standing. The Petitioner referred a Leave Petition to the Appellate Division where the Court granted leave to decide the *locus standi* in the category of public litigation. In this same case, a local resident of the project whose land had been acquired for the project filed a fresh petition. The High Court issued a *rule nisi* on the respondents to show the legality and public interest in terms of the project. It was held that the *locus standi* in so far as it concerns public wrong or public injury or the invasion of fundamental rights of an indeterminate number of people, any member of the public being a citizen suffering the common injury or common invasion in common with others, or any citizen or indigenous association as distinguished from a local component of a foreign organisation as espousing that particular cause as the person aggrieved and has the right to invoke what you call the judicial review jurisdiction under Article 102 of the Constitution.. The Citizen suits are encouraged as the role of the judiciary can be undermined if a vigilant civil society does not play the role of a watchdog. This cannot be possible unless relevant information is disseminated.

3. In India (*M.C. Mehta vs. Union of India and Others* Supreme Court of India Writ Petition (Civil) No. 860 Of 1991 The Chief Justice, G.N. Ray, J., And A.S. Anand, J.) the petitioner, M.C. Mehta filed this application in the public interest, asking the Supreme Court to: (1) issue direction to cinema halls that they show slides with information on the environment; (2) issue direction for the spread of information relating to the environment on All India Radio; and (3) issue direction that the study of the environment become a compulsory subject in schools and colleges. Petitioner made this application under Article 51A(g) of the constitution which requires every citizen to protect and improve the natural environment, including forests, lakes, rivers and wildlife, and to have compassion for living creatures. To fulfil these obligations to the environment, the Petitioner argued that people needed to be better educated about the environment. The Court noted the world-wide concern about environmental matters and the enormous increase in human population in the last fifty years, as well as changes in lifestyles, have necessitated that environmental issues be given more attention, and that it is the Government's obligation to keep citizens informed about such matters. The Court issued the following directions: (1) The State Governments and Union Territories will require, as a condition of licenses to all cinema halls, touring cinemas and video parlours, that at least two slides/messages provided by the Ministry of Environment, and which deal with environmental issues, will be shown free of cost as part of each show. Failure to comply with this order is grounds for cancellation of a license. (2) The Ministry of Information and Broadcasting will start producing short films which deal with the environment and pollution. One such film will be shown, as far as practicable, in one show every day by the cinema halls. (3) All India Radio and Dooradarshan will take steps to make and broadcast interesting programmes on the environment and pollution. The Attorney-General has said that five to seven minutes can be devoted to these programs each day on these radio/TV stations. (4) The University Grants Commission will take appropriate steps to require universities to prescribe a course on the environment. They should consider making this course a compulsory subject. As far as education up to the college level, every State Government and every Education Board connected with education up to the matriculation stage, as well as intermediate colleges, is required to take steps to enforce compulsory education on the environment in a graded way.

.

4. In another case, M.C. Mehta, the petitioner, filed a writ petition (*M. C.Mehta vs.. Union of India and Others* AIR 1988 Supreme Court 1115 E.S. Venkataramiah And Kn. Singh Jj.) in the Supreme Court for the

prevention of nuisance caused by the pollution of the River Ganga by tanneries and soap factories on the banks of the river, at Kanpur. The Supreme Court issued several directives to the Kanpur Municipal Corporation to prevent and control pollution of the River Ganga at Kanpur. While making its order the Court observed that nuisance caused by the pollution of the River Ganga was widespread and was a serious public nuisance. On account of failure of authorities to carry out these statutory duties for several years, the water in the River Ganga at Kanpur has become so polluted that it can no longer be used by the people either for drinking or bathing. The Court expressed the view that "having regard to the need for protecting and improving the environment which is considered a fundamental duty under the Constitution, it is the duty of the Central Government to direct all educational institutions to teach at least one hour a week lessons relating to the protection and improvement of the natural environment including forests, lakes, rivers, and wild life in the first ten classes"

5. In the present case (Bombay Environment Action Group Shaym H.K. Chainani **Indian** Inhabitant, *Save Pune Citizen's Committee vs.. Pune Cantonment Board*, Bombay Appellate Side Writ Petition No. 2733 Of 1986 Dharmadhikari And Sugla, Jj), the Petitioners addressed letters to the Respondents, the Pune Cantonment Board, requesting that they be granted inspection of applications made to the Board for building permits and the related plans. The Board refused to accede to this request stating that it was under no legal obligation to provide the public with access to such documents. The Petitioners filed the Writ Petition in the Supreme Court for a declaration/direction that it was incumbent upon the Cantonment Board to disclose all such documents to the Petitioners and grant them an opportunity to inspect them. The Supreme Court upheld the right to information and the rights of recognized social action groups to obtain such information, stating that the disclosure of information in regard to the functioning of the Government and the right to know flows from the right of free speech and expression guaranteed under Article 19 (l)(a) of the Constitution. The Court also said "People's participation in the movement for the protection of the environment cannot be over-emphasized. It is wrong to think that by trying to protect the environment they are opposing the various development projects." The Court also stated that the Cantonment's Executive Officer could refuse permission if it is found that a request for inspection is not made for a genuine purpose or it will be against public interest to grant such inspection.

6. In view of the importance of the environment and in the light of article 51 A(g) of the Constitution the Supreme Court in its several judgments held that it is the duty of the Central Government to direct all educational institution through out India to teach at least once a week the lesion relating to protection and improvement of natural environment…. The Central Government shall get text books printed and circulate free of cost (M C Metha vs union of India (AIR 1988 Sc 1037). In another MC Metha‟s case (AIR 1992SC 382), it was observed‟ we are in a democratic polity where dissemination of information is the foundation of the system. Keeping the citizen informed is an obligation of the Government. It is equally the responsibility of the society to adequately educate every component of it so that the social level is kept up.

7. In Sri Lanka there is no law which generally requires the notification of potentially affected parties prior to the making of developmental decisions. However, developmental decisions which affect the rights of particular citizens may attract the common law principles of natural justice. The administrative law applicable in Sri Lanka is the same as that applicable in England and the prerogative writs of certiorari, mandamus, prohibition and *quo warranto* are available in Sri Lanka through the High Courts and the Court of Appeal. These principles would in many cases require notification and the granting of an opportunity of being heard. Elaborate provisions are contained in the NEA (Chapter IV C of the NEA) for the notification and participation of the public in project design and approval. Every EIA (Section 23BB(3) of the NEA) or Initial Environmental Examination (IEE) in respect of listed projects is required to be made public through notifications in the press and the Gazette for 30 days. A public hearing thereafter is optional. The public has a right of access to the EIA and IEE documents.

8. For example, under Section 23e of the National Environmental Act By E.M.S. Niyaz Secretary, Ministry of Environment (1995) D. Nesiah, Secretary, Ministry Of Environment.E.M.S; Niyaz (Niyaz) appealed against the decision of the Poojapitiya Pradeshiya Sabha (the PS) canceling the Environmental Protection License (EPL) issued to him under Section 23B of the National Environmental Act. Niyaz operates a sawmill, and the EPL covers the discharge of waste and transmission of noise from this saw mill. Section 23D of the National Environmental Act allows the Central Environment Authority (CEA) to cancel an EPL, and Section 23E gives the party whose EPL is cancelled a right to appeal to the Secretary, Ministry of Environment. The Secretary, Ministry of the Environment, set aside the cancellation of the EPL of Niyaz, stating that the PS did not hold a proper inquiry with the participation of Niyaz and any complainants. Once an EPL is granted, it creates legal rights and obligations in the licence holder. This license can only be cancelled after a fair hearing. In this case, the PS did not give Niyaz a hearing or any opportunity to make representations prior to the cancellation of his EPL, and this decision is contrary to law and the National Environmental Act.

9. The Constitutional Provisions in **India** provides for free access to relevant information and the availability of alternate sources of technical expertise can provide for an informal basis for public decision. When the environmental impact of a proposed project is particularly is high, public scrutiny of the case should be mandatory and wherever feasible, the decision should be subject to prior public approval, preferably referendum. Access to Government records helps litigants construct the necessary fact base for legal action. „The Right to Know which is derived from the concept of speech do not absolute, is a factor which should make one wary, when secrecy is claimed which can, at any rate, have no repercussion on public security". Justice Mathew in State of Uttar Pradesh vs Rajnarayanan (AIR 1975SC 865). Justice Bhagwati in the Judges transfer case (AIR 1982SC 149) recognised the Right to Know to be implicit in the Right to Free Speech and Expression. In the case of Denish Trivedi vs Union of India, the Supreme Court once again acknowledges the vital importance of open government in the participative democracy.

10. In Reliance Petro-Chemical vs. Proprieties of **Indian** Express Bombay (P) Ltd (Writ Petition 1997(4) SCC 306, Supreme Court of India) the Indian Supreme Court recognized the right to know as emanating form the right to life. People have a right to know in order to be able to take part in a participatory development in the industrial life and a democracy. The strong link between article 21 of the Constitution and the Right to Know is evident in environmental matters where secret Government decision may affect health, life and livelihood.

11. In **India** (M.C. Mehta V. Union of India and Others, AIR 1989 SC 140) the petitioner, M.C. Mehta filed this application in the public interest, asking the Supreme Court to: (1) issue direction to cinema halls that they show slides with information on the environment; (2) issue direction for the spread of information relating to the environment on All India Radio; and (3) issue direction that the study of the environment become a compulsory subject in schools and colleges. Petitioner made this application under Article 51A(g) of the constitution which requires every citizen to protect and improve the natural environment, including forests, lakes, rivers and wildlife, and to have compassion for living creatures. To fulfill these obligations to the environment, the Petitioner argued that people needed to be better educated about the environment. The Court noted the world-wide concern about environmental matters and the enormous increase in human population in the last fifty years, as well as changes in lifestyles, have necessitated that environmental issues be given more attention, and that it is the Government's obligation to keep citizens informed about such matters. The Court issued the following directions: (1) The State Governments and Union Territories will require, as a condition of licenses to all cinema halls, touring cinemas and video parlours, that at least two slides/messages provided by the Ministry of Environment, and which deal with environmental issues, will be shown free of cost as part of each show. Failure to comply with this order is grounds for cancellation of a license. (2) The Ministry of Information and Broadcasting will start producing short films, which deal with

the environment and pollution. One such film will be shown, as far as practicable, in one show every day by the cinema halls. (3) All India Radio and Dooradarshan will take steps to make and broadcast interesting programmes on the environment and pollution. The Attorney General has said that five to seven minutes can be devoted to these programs each day on these radio/TV stations. (4) The University Grants Commission will take appropriate steps to require universities to prescribe a course on the environment. They should consider making this course a compulsory subject. As far as education up to the college level, every State Government and every Education Board connected with education up to the matriculation stage, as well as intermediate colleges, is required to take steps to enforce compulsory education on the environment in a graded way.

12. The Supreme Court of **India** in the Case of *M.C Mehta v. Union of India,* ruled that environmental education should be compulsory. The Petitioner, asked the Supreme Court to issue direction to cinema halls, radio stations and schools and colleges to spread information relating to the environment. The Petitioner made this application on the grounds that the Indian Constitution required every citizen to protect and improve the natural environment, including forests, lakes, rivers and wildlife, and to have compassion for living creatures. To fulfill these obligations to the environment, the Petitioner argued that people need to be better educated about the environment. The Court agreed and noted that it was the Government's obligation to keep citizens informed about such matters, and hence issued the requested directions. The Ministry of Environment and Forests has instituted "Paryavaran Vahinis" from 1992-1993 with the basic objective of creating environmental awareness through people's participation. In addition, 3,000 eco-clubs have been set up in schools with the Ministry's assistance.

13. The public's right to know was emphasized in *Bombay Environment Action Group (*Writ Petition No.2733 of 1986 in the High Court of Judicature, Bombay). In this case, the Supreme Court of **India** upheld the right to information and the rights of recognized social action groups to obtain such information, stating that the disclosure of information in regard to the functioning of the Government and the right to know flows from the right of free speech and expression guaranteed under the Constitution. The Court also said "people's participation in the movement for the protection of the environment cannot be over-emphasised." To stimulate public participation, people need education.

14. In another case (Petition No. 1994 SCMR 2061) the Supreme Court of Pakistan expressed the view that the provisions of clean and unpolluted drinking water is a fundamental right enshrined in Article 9 of the Constitution. Any effort or activity that deprives the citizen of this right is violative of the Constitution. The Court therefore prohibited further mining in the area as it may contaminate the water reservoir used as drinking water by the residents. The Court went on to elaborate that the Constitution provides for the right to life and ensures the dignity of man. The Court further stated that it would not hesitate to stop the functioning of a factory that creates pollution and environmental degradation. As a result of the court‟s observations and judgments, together with appropriate directions and instructions issued to the Government and public authorities, remedial actions and measures were undertaken. These included the shifting of hazardous and dangerous machinery and installations away from residential areas, inspecting premises to ensure compliance with the law, and controlling pollution and degradation of the environment. The pronouncements also served an important purpose in arousing public opinion and bringing about public awareness on the issue of protecting and preserving the environment.

(VII) Liability and Compensation

1. In Bihhri case (India (1996) 3 SCC 212) of Indian Council for Enviro-Legal Action V. Union Of **India**, the petitioner, the Indian Council for Enviro-Legal Action sought action to stop and remedy the pollution caused by several chemical industrial plants in Bichhri village, Udaipur District, Rajasthan. The Respondents operated heavy industry plants there, producing chemicals such as oleum (a concentrate form of sulphuric acid), single super phosphate and the highly toxic "H" acid (the manufacture of which is banned in

western countries). Respondents operated these plants without permits which caused serious pollution of the environment.. Several people in nearby villages are alleged to have contracted diseases due to the pollution, some of whom had died. The court noted the finding in the Oleum Gas Leak Case II under which an enterprise that is engaged in a hazardous or inherently dangerous activity, which results in harm to anyone, is strictly and absolutely liable to compensate all those who are affected by the accident. Such liability is not subject to the exceptions of strict liability set forth in Rylands v. Fletcher. This rule is suited to conditions of India. The Court also endorsed the polluter pays principle, under which the financial costs of preventing or remedying damage lie with those who cause the pollution. Sections 3 and 5 of the Environment (Protection) Act 1986 empower the Central Government to take necessary measures to protect the environment. Accordingly, the Central Government will determine the amount of money needed to carry out remedial measures in this case. Respondents are liable to pay to improve and restore the environment in this area. Respondents are "rogue industries", and hence all their plants and factories in Bichhri village are ordered to be closed. Villagers can institute suits in the appropriate civil courts to claim damages from respondents.

2. In Span Motels case (.C. Mehta V. Kamal Nath And Others Supreme Court Of **India** (1997), Supreme Court Cases 388 Kuldip Singh) the Court took notice of an article which appeared in the **Indian** Express stating that a private company "Span Motels Pvt. Ltd.", had a direct link, had built a motel on the bank of the River Beas on land leased by the Indian Government in 1981. The motel used earthmovers and bulldozers to turn the course of the River Beas, create a new channel and divert the river's flow. The course of the river was diverted to save the motel from future floods. The Supreme Court of India held that prior approval for the additional leasehold land, given in 1994, is quashed and the Government shall take over the area and restore it to its original condition. Span Motels will pay compensation to restore the environment, and the various constructions on the bank of the River Beas must be removed and reversed. Span motels must show why a pollution fine should not be imposed; pursuant to the polluter pays principle. This ruling is based on the public trust doctrine, under which the Government is the trustee of all natural resources, which are by nature meant for public use and enjoyment. Court relied on these cases to rule that the government committed patent breach of public trust by leasing this ecologically fragile land to Span Motels when it was purely for commercial uses.

3. In Bhopal case(Charan Lal Sahu V. Union of India (Bhopal Case – II) Air 1990 Supreme Court of **India** 1480 Sabyasachi Mukherji, C. J., K.N. Singh, S. Ranganathan, A. M. Ahmadi And K.N. Saikia, Jj),following the Bhopal (**India**) Gas Leak tragedy when over 3000 people were killed by the leak of a highly toxic Methyl Isocyanate (MIC) gas from a storage tank at the Bhopal plant of Union Carbide (India) Ltd., the Government of India, acting as parens patriae, passed the Bhopal Gas Disaster (Processing of Claims) Act (1985) to take over and pursue the claims of the victims, as they were unable in their circumstances to pursue their claims fully and properly. The Petitioner challenged the validity of the Bhopal Gas Disaster (Proceedings of Claims) Act, 1985 in the Supreme Court. The Supreme Court held that the Act was valid and that the State had rightly taken over the exclusive right to represent and act on behalf of every person entitled to make a claim, as a majority of the victims were poor and illiterate. Consequently, the exclusion of the victims from filing their own cases was held to be proper. The Court also held that the Act only deals with civil liability and as such does not curtail or affect rights in respect of criminal liability.

4. In Union Carbide case Charan Lal Sahu V. Union Of India (Bhopal Case – II) AIR 1990 Supreme Court of **India** 1480 Sabyasachi Mukherji, C. J., K.N. Singh, S. Ranganathan, A. M. Ahmadi And K.N. Saikia, Jj), (Union Carbide Corporation V. Union Of India And Others (Bhopal - I) Air 1990 Sc 273 R. S. Prathak, C. J., E.S. Venkataramiah, Ranganath Misra, M. N. Venkatachalliah, And N. D. Ojha Jj) , the Union Carbide Corporation filed an application in revision in the Supreme Court of **India**, in terms of Section 155 of the CPC, against the order of the Bhopal District Court, in a claim for damages made by the Union of India on behalf of all the claimants, under the Bhopal Gas Leak Disaster (Processing of Claim) Act, 1985. Damages were sought on behalf of victims of Bhopal gas leak disaster. The Court ordered that the Union Carbide Corporation should pay a sum of U.S. Dollars 470 million (Four hundred and seventy million) to the

Union of India in full settlement of all claims, rights and liabilities related to and arising out of the Bhopal gas disaster.

5. Under Oleum Gas Leak Case (M.C. Mehta and Others V. Shriram Food and Fertilizer Industries and Union of **India** () Air 1987 Sc 965 P.N. Bhagwati C. J., D. P. Madan and G. L. Oza. Jj) , the Petitioner, in the Supreme Court of **India**, sought the closure of a chlorine plant of Shriram Foods and Fertilizers Industries situated in a densely populated area, following the disastrous consequences of a leakage of oleum gas from the plant in December 1985, as a result of which one person died and several suffered serious harm. Following the gas leak, the District Magistrate acting under Section 133 of the Criminal Procedure Code, granted the management of the company 7 days to remove the dangerous substance from the company's premises. Subsequently, the Inspector of Factories ordered the closure of the chlorine and sulphuric plants. The closure of the plant affected 4000 employees and was firmly opposed by the management and the labour unions. The question before the court was whether the chlorine plant should be allowed to re-start operations. The Supreme Court was of the view that, considering the large scale unemployment and industrial dislocation that the shortage of products like chlorine would create; the plant should be permitted to re-start subject to detailed conditions. The Court made observations regarding the importance of zoning of industries and providing green belts around hazardous industries. The Court also recommended the setting up of an Environmental Court. Referring to the many cases that are coming before the courts for adjudication, involving issues of environmental pollution, ecological destruction and conflicts over natural resources, the Court stated that it might be "desirable to set up Environmental Courts on a regional basis, with one professional judge and two experts drawn from the Ecological Sciences Research Group, keeping in view the nature of the case and expertise required for its adjudication. There would be of course a right of appeal to this Court from the decision of the Environmental Court"

6. This was the second in a series of petitions (M.C. Mehta and Others V. Shriram Food and Fertilizer industries and Union of India; Oleum Gas Leak Case - II) AIR 1987 Sc 982 P.N. Bhagwati C. J., D. P. Madan And G. L. Oza. Jj.) were filed in the Supreme Court of India following the leakage of gas from the chlorine and sulphuric acid plants at Shriram Fertilizers Industries in December 1985. The Company argued that every breach of the conditions specified in the previous Order should not warrant closure of the plant. The Court modified the conditions subject to which permission was granted to Shriram to re-open the chlorine plant in its order dated February 1986. The Court observed that if for any reason, Shriram does not comply with any of those conditions and is therefore unable to re-open the caustic chlorine plant, it will be open to Shriram to re-start the other plants in respect of which permission has been given by the Court by order dated 17th February, 1986, so long as it can do so without operating the caustic chlorine plant. With regard to the liability of occupiers/officers, the Court restricted liability to an amount equivalent to their annual salary. The earlier Order was modified by holding that the Chairman/Managing Director were liable, except where “sabotage" or " an Act of God " is pleaded and proved.

7. This case (M.C. Mehta and Others V. Shriram Food And Fertilizer Industries and Union of India (Oleum Gas Leak Case - III) Air 1987 Sc 1026 P.N. hagwati C. J., And G. L. Oza, Ranganath Misra, M.M. Dhutt And K.N. Singh, Jj) was the third in a series of petitions to the Supreme Court which followed in the wake of the Oleum gas leak in December 1985, at Shriram Fertilizers Industries. The Petitioner filed this case under Article 32 of the Constitution, which provides for a writ against the State in case of breach of fundamental rights. Shriram contended that a writ should not issue as it was a public company and not a State. The Supreme Court held that under Article 32(l) of the Constitution it is free to devise any procedure appropriate for the particular purpose of the proceeding, namely, enforcement of a fundamental right and also has the power to issue whatever direction, order or writ as may be necessary in a given case including all incidental and ancillary power necessary for the enforcement of a fundamental right. The power of the Supreme Court is not only injunctive in ambit, that is preventing the infringement of fundamental rights, but it is also remedial in scope and provides relief against a breach of the fundamental rights already committed. In the circumstances, the Court has the power to grant compensation in appropriate cases. The Court also

said that compensation could be awarded against Shriram Food and Fertilizer Corporation thereby bringing private corporations within the purview of Article 32 of the Constitution.

8. In the 1988 Supreme Court of **India** decision under Rural *Litigation and Entitlement Kendera* v. *State of U.P.*, the Court ordered that unauthorized and illegal mining in the Dhera Dun District, which was adversely affecting the ecology of the region, be stopped. The Court specifically remarked that the area was a gift of nature to mankind and a bequest of the past generations to the future. Under this case(C. Mehta and Others Vs. Shriram Food and Fertilizer Industries and Union of **India** (Oleum Gas Leak Case - I) AIR 1987 SC 965 P.N. Bhagwati C. J., D. P. Madan And G. L. Oza. Jj) , (M.C. Mehta and Others V. Shriram Food and Fertilizer Industries and Union of **India**), the Petitioner, in the Supreme Court, sought the closure of a chlorine plant of Shriram Foods and Fertilizers Industries situated in a densely populated area, following the disastrous consequences of a leakage of oleum gas from the plant in December 1985, as a result of which one person died and several suffered serious harm. The Supreme Court in its judgment inter alia also recommended the setting up of an Environmental Court. Referring to the many cases that are coming before the courts for adjudication, involving issues of environmental pollution, ecological destruction and conflicts over natural resources, the Court stated that it might be "desirable to set up Environmental Courts on a regional basis." The Government of India based on the direction of the Supreme Court formulated the Public Liability Insurance Act, 1991 and the National Environment Tribunal Act, 1995

(VIII) Precautionary Principle

1. The principle of precaution involves the anticipation of environmental harm and taking measures to avoid it or to chose the least environmentally harmful activity. It is based on scientific uncertainty. Environmental protection should not only aim at protecting health, property and economic interest but also protect the environment for its own sake. Precautionary duties must not only be triggered by the suspicion of concrete danger but also by concern or risk potential. The Supreme Court in India has held that Precautionary Principle is part of the environmental law of the country. In the Vellore Citizens‟ Welfare Forum Vs Union of India, the Court has held that the Precautionary Principle in the context of the municipal law means:
(i) Environmental measures-by the State Government and the statutory authorities- must anticipate, prevent and attack the causes of environmental degradation;

(ii) Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;

(iii) The onus of proof is on the actor or the developed industrialist to show that his action is environmentally benign.

2. In the later case, A.P. Pollution Control Board Vs Prof M. V. Navudu (Retd.) and Others6 has elaborated the new concept of burden of proof referred in the above case. The Court observed:

It is to be noticed that while the inadequacies of science have led to the „precautionary principle‟ the said „precautionary principle‟ in its turn, has led to the special principle of burden of proof in environmental cases where burden as to the absence of injurious effect of the change the status quo (wynne, Uncertainty and Environmental Learning, 2 Global Environmental Change 111(1992) at p.123). This is often termed as a reversal of the burden of proof, because otherwise in environmental cases, those opposing the change would be compelled to shoulder the evidentiary burden, a procedure which is not fair. Therefore, it is necessary that the party attempting to preserve the status qo by maintaining a less-polluted state should not carry the burden of proof and the party who wants to alter it, must bear this burden. (See James M. Olson, Shifting the Burden of Proof).

3. The Supreme Court in **India** has held that Precautionary Principle is part of the environmental law of the country. In the Vellore Citizens‟ Welfare Forum vs Union India, the Court has held that the Precautionary Principle in the context of the municipal law means: Environmental measures-by the State Government and the statutory authorities- must anticipate, prevent and attack the causes of environmental degradation; Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation; The onus of proof is on the actor or the developed industrialist to show that his action is environmentally benign.

4. In the case, A.P. Pollution Control Board (**India**) vs Prof M. V. Navudu (Retd.) and Others has elaborated the new concept of burden of proof referred in the above case. The Court observed: It is to be noticed that while the inadequacies of science have led to the „**precautionary principle'** the said „precautionary principle‟ in its turn, has led to the special principle of burden of proof in environmental cases where burden as to the absence of injurious effect of the change the status quo (wynne, Uncertainty and Environmental Learning, 2 Global Environmental Change 111(1992) at p.123). This is often termed as a reversal of the burden of proof, because otherwise in environmental cases, those opposing the change would be compelled to shoulder the evidentiary burden, a procedure that is not fair. Therefore, it is necessary that the party attempting to preserve the status quo by maintaining a less-polluted state should not carry the burden of proof and the party who wants to alter it, must bear this burden[148]The Supreme Court of **India** in Vellore Citizens Case, Petitioner held that the Polluter Pays and Precautionary Principles have been accepted as part of the law of the land. Article 21 of the Constitution of India guarantees protection to life and personal liberty. It further held that: Even otherwise once these principles are accepted as part of the customary international law there would be no difficulty in accepting them as part of the domestic law. It is almost an accepted proposition of law that the rule of customary international law which are not contrary to the municipal law shall be followed by the courts of law. The Court clarified that environmental measures-by the State Government and the statutory authorities- must anticipate, prevent and attack the causes of environmental degradation; Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing the measures to prevent environmental degradation; The onus of proof is on the actor or the developed industrialist to show that his action is environmentally benign.

5. In 1994, the Supreme Court of **Pakistan** quoted principle 15, holding that it seemed reasonable to take preventive measures straight away instead of maintaining the status quo because there was no conclusive finding on the effect of electromagnetic fields on human life. The best known of case is the Sehla Zia v. WAPDA, which concerned the construction of on electricity grid station in a residential area. The Plaintiffs alleged that the electromagnetic field from the high voltage transmission threatened nearby residents with the serious health risk. The action was under the Article 9 of the Constitution of Pakistan. Which sates that no person shall be deprived of life or liberty save in accordance with the law. The court concluded that the legal system should respond to the situations of uncertainty by applying the principle 15 of the Rio Declaration

6. The Supreme Court in **India** has held that Precautionary Principle is part of the environmental law of the country. In the Vellore Citizens‟ Welfare Forum vs Union India, the Court has held that the Precautionary Principle in the context of the municipal law means: Environmental measures-by the State Government and the statutory authorities- must anticipate, prevent and attack the causes of environmental degradation; Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason

for postponing measures to prevent environmental degradation; The onus of proof is on the actor or the developed industrialist to show that his action is environmentally benign.

7. In the case, A.P. Pollution Control Board (**India**) vs Prof M. V. Navudu (Retd.) and Others has elaborated the new concept of burden of proof referred in the above case. The Court observed: It is to be noticed that while the inadequacies of science have led to the „precautionary principle" the said „precautionary principle" in its turn, has led to the special principle of burden of proof in environmental cases where burden as to the absence of injurious effect of the change the status quo. This is often termed as a reversal of the burden of proof, because otherwise in environmental cases, those opposing the change would be compelled to shoulder the evidentiary burden, a procedure that is not fair. Therefore, it is necessary that the party attempting to preserve the status quo by maintaining a less-polluted state should not carry the burden of proof and the party who wants to alter it, must bear this burden (See James M. Olson, Shifting the Burden of Proof, 20 Envtl. Law p.891 at 898 (1990). (Quoted in Vol.22 (1998) Har. Env. Reiew p509 at 519, 550).

.

8. The Supreme Court of **India** in Vellore Citizens Case, Petitioner held that the Polluter Pays and Precautionary Principles have been accepted as part of the law of the land. Article 21 of the Constitution of India guarantees protection to life and personal liberty. It further held that: Even otherwise once these principles are accepted as part of the customary international law there would be no difficulty in accepting them as part of the domestic law. It is almost an accepted proposition of law that the rule of customary international law which are not contrary to the municipal law shall be followed by the courts of law. The Court clarified that environmental measures-by the State Government and the statutory authorities- must anticipate, prevent and attack the causes of environmental degradation; Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing the measures to prevent environmental degradation; The onus of proof is on the actor or the developed industrialist to show that his action is environmentally benign.

1.
2.

9. The Supreme Court of India adopted and applied a range of Principles to guide the development of environmental jurisprudence. Notable amongst the fundamental norms recognized by the court are: Every person enjoys the right to a wholesome environment, which is a fact of the right to life guaranteed under Article 21 of the Constitution of India; Enforcement agencies are under an obligation to strictly enforce environmental laws; Government agencies may not plead non-availability of funds, inadequacy of staff or other insufficiencies to justify the non-performance of their obligations under environmental laws; The „polluter pays principle" which is a part of the basic environmental law of the land requires that a polluter bear the remedial or clean up cost as well as the amount payable to compensate the victims of pollution. In this spirit the Supreme and high courts in India adjudicated several matters applying the cardinal principle of „polluter pays principle".

10. The Supreme Court of **India** in Bichhri Case has held „Polluter Pays Principle" to be a sound principle and has observed: We are of the opinion that any principle evolved in this behalf should be simple, practical and suited to the conditions obtaining in this country. It further observed: The polluter pays principle demand that the financial costs of preventing or remedying damage caused by pollution should lie with the undertaking which cause the pollution, or produce the goods which cause the pollution Under the principle it is not the role of the Government to meet the cost involved in either prevention of such damage, or in carrying out remedial action, because the effect of this would be to shift the financial burden of the pollution incident to the taxpayer…."

11. The petitioner, the **Indian** Council for Enviro-Legal brought action to stop and remedy the pollution caused by several chemical industrial plants in Bichhri village, Udaipur District, Rajasthan. The Respondents operated heavy industry plants there, producing chemicals such as oleum (a concentrate form of sulphuric acid), single super phosphate and the highly toxic "H" acid (the manufacture of which is banned in western countries). Respondents operated these plants without permits, which caused serious pollution of the environment. Several people in nearby villages are alleged to have contracted diseases due to the pollution, some of whom had died. The court noted the finding in the Oleum Gas Leak Case II under which an enterprise that is engaged in a hazardous or inherently dangerous activity, which results in harm to anyone, is strictly and absolutely liable to compensate all those who are affected by the accident. Such liability is not subject to the exceptions of strict liability set forth in Rylands v. Fletcher. This rule is suited to conditions of India. The Court also endorsed the polluter pays principle, under which the financial costs of preventing or remedying damage lie with those who cause the pollution. Sections 3 and 5 of the Environment (Protection) Act 1986 empower the Central Government to take necessary measures to protect the environment. Accordingly, the Central Government will determine the amount of money needed to carry out remedial measures in this case. Respondents are liable to pay to improve and restore the environment in this area. Respondents are "rogue industries", and hence all their plants and factories in Bichhri village are ordered to be closed. Villagers can institute suits in the appropriate civil courts to claim damages from respondents.

12. In the Vellore Citizens Welfare Forum (**India**) case, it was prayed that action mat be taken to stop tanneries in the State of Tamil Nadu from discharging untreated effluent into agricultural fields, waterways, open lands and waterways. The Supreme Court noted that although the leather industry is a major foreign exchange earner for India and provided employment, it does not mean that this industry has the right to destroy the ecology, degrade the environment or create health hazards. Sustainable development, and in particular the polluter pays principles and the precautionary principle, have become a part of customary international law. Even though section 3(3) of India's Environment Protection Act 1986, allows the Central Government to create an authority with powers to control pollution and protect the environment. This authority shall implement the precautionary principle and the polluter pays principle, and identify the (1) loss to the ecology/environment; and (2) individuals/families who have suffered because of the pollution, and then determine the compensation to reverse this environmental damage and compensate those who have suffered from the pollution. The Collector/District Magistrates shall collect and disburse this money. If a polluter refuses to pay compensation, his industry will be closed, and the compensation recovered as arrears of land revenue. If an industry sets up the necessary pollution control devices now, it is still liable to pay for the past pollution it has generated.

13. In this case (The Member-Secretary, Kerala State Board for Prevention and Control of Water Pollution, Kawadiar, Trivandrum Vs. the Gwalior Rayon Silk Manufacturing (Weaving) Company, Ltd., Kazhikode and Others AIR 1986 Kerala 256 V.S. Malimath, C. J. And K. Sukumaran, J.) Kerala Pollution Control Board, the Company claimed that it had installed a treatment plant and was therefore entitled to a rebate, which has been provided under the Act on the installation of treatment plant by the industry. This claim was declined. The legality of the levy of cess was thereupon challenged in the writ petitions. The present writ appeals are taken against the findings of the Judge in the writ petitions. If the plant installed is one, which gives a satisfactory treatment of the trade effluent, rebate could be given under Section 7 of the Cess Act so long as the treatment of the effluent is effective from the point of view of the Pollution Act. The Court was also of the view that the question involved is not a mere interpretation of a section of a statute but has larger overtones with a direct nexus to the life and health of the people. A reference to a treaty, protocol or convention is permissible while interpreting laws that have a link or background with such document. The Court surveyed recent international action in the area of environmental protection, including the 1972 United Nations Conference on the Human Environment, and national measures to develop environmental legislation and said that these had a direct connection with the enactment of the comprehensive Pollution Act, which the Court could not disregard.

(IX) Doctrine of Locus Standi

3.

1. The doctrine of locus standi, applicable in the traditional private law litigation has been considered liberalized by the **Indian** courts in Private Interest Litigation. The traditional concept of standing is based on the doctrine of aggrieved person. The courts have accepted a new approach by allowing any member of the public to seek judicial redress for a legal wrong caused to a person to seek judicial redress for a legal wrong caused to a person or to a determinate class of person who by reason of poverty, helplessness or disability or socially disadvantages position is unable to approach the court directly. This modification of traditional locus standi could be termed as representative standing as the representative of another person or group of person. The concept of representative standing refutes the traditional assumption that only a petition motivated by self-interest will present a case.

In contrast to representative standing a petitioner under citizen standing sues not as a representative of others but in his own right as a member of the citizinary to whom a public duty is owed. The citizen standing cases include: the environmental impact of limestone quarrying in the Mussourrie Hills, leakage of oleum gas from a chemical plant in Delhi etc. None of the these case have been brought on behalf of a determinate group of person who suffer from poverty or social oppression, rather the petitioners raised claims shared by the public generally. Thus , the justification for development of citizen standing is not to improve access to justice for the poor, but to vindicate rights that are so diffused among the public generally that no traditional individual right to be enforced

In practice, Indian jurisprudence demands that the distinction between representative and citizen standing has vanished. Neither the court nor the parties make the distinction. Instead, the two originally separate rationales for expanded standing seems to have merged in a single doctrine of public interest standing. The Supreme Court has held:
While public interest litigation brought before the court not for the purpose of enforcing the right of the individual against another, as it happens in the case of ordinary litigation, it is intended to prosecute and vindicate public interest which demands that violation of constitutional or legal right of a large number of people, who are poor, ignorant or socially and economically in disadvantages position for that would be destructive of the rule of law.

2. **Pakistan** - have been constituted with exclusive jurisdiction to try serious offences under the Ordinance (s. 20) minor offences related to pollution by motor vehicles and the violation of rules and regulations etc to be tried by Environmental Magistrates (ss. 21 & 24). For dispute resolution to dispute avoidance**, Pakistan (ss**. 11, 12 & 16 EPA) has adopted preventative approach (NEQS, IEE, EIA and EPO). The Jurisdiction was exercised through filing of regular petitions or receipt of complaints through letters from concerned citizens or social activists - may times the court initiated *suo moto* action - in the process the courts passed important orders and land judgements on environmental issues. The "aggrieved" can file complaint with Environmental Tribunal after giving 30 days notice to federal pr provincial agency. Penalties (fines) have been enhanced where necessary -Tribunal and Magistrates empowered to award compensation for losses/damages - Tribunal may also recover monetary benefits from offenders.

3. In **Bangladesh**, one popular method in addressing issues relating to sustainable development and environment is the initiation of what has been known as public interest litigation which is again categorised according to their nature as social action or class action litigation or citizen suits. In the field of environmental jurisprudence they are also called Public Interest Environmental Litigation. The highest courts of many countries have evolved the emerging environmental jurisprudence. The question of *locus standi* or standing is often an important issue in such litigation. In the case of *Kazi Moklesur Rahman* (26 DLR (SC) 44), the Supreme Court granted him standing although he was not a resident of the enclaves acceded to India under the 1973

treaty. The judicial process is playing an effective role in integrating environmental and ecological consequences and in making development sustainable, both in terms of rights and duties. To do that the expansion of the concept of the "person aggrieved" or standing is crucial to make up the spirit of the emerging human values so strongly realised and advocated by the new generation of activists. A lot can be achieved by using the legal mechanism and Bangladesh Courts are ready to make their own contribution on that behalf. BELA"S third case (1994) High Court verdict in favour of compensation and Appellate Division judgement allowing organizations like BELA to pursue the claims of disadvantaged people.

4. Bangladesh Environmental Lawyers Association (BELA) was kept open: *Dr Mohiuddin Farooque v. The Election Commission and others* (47 DLR 235) and *Dr. Mohiuddin Farooque v. Bangladesh and others* (Writ Petition No. 891 of 1994). The second case relates to 903 polluting industries and factories where the High Court Division of the Supreme Court issued a *rule nisi* in the nature of mandamus. However, in *Dr. Mohiuddin Farooque v. Bangladesh and others* (Writ Petition No. 998 of 1994), in which the legality of an experimental structural project of the huge Flood Action Plan of Bangladesh was challenged, the High Court Division initially rejected the Petition on the ground that the Petitioner in that case was an organisation, the Bangladesh Environmental Lawyers Association, and that they had no standing. The Petitioner referred a Leave Petition to the Appellate Division where the Court granted leave to decide the *locus standi* in the category of public litigation. In this same case, a local resident of the project whose land had been acquired for the project filed a fresh petition. The High Court issued a *rule nisi* on the respondents to show the legality and public interest in terms of the project. It was held that the *locus standi* in so far as it concerns public wrong or public injury or the invasion of fundamental rights of an indeterminate number of people, any member of the public being a citizen suffering the common injury or common invasion in common with others, or any citizen or indigenous association as distinguished from a local component of a foreign organisation as espousing that particular cause as the person aggrieved and has the right to invoke what you call the judicial review jurisdiction under Article 102 of the Constitution.. The Citizen suits are encouraged as the role of the judiciary can be undermined if a vigilant civil society does not play the role of a watchdog.

5. The 1996 Supreme Court of **Bangladesh** (Appellate Division - Civil) decision in *Dr. Mohiuddin Farooque* v. *Bangladesh*, *Represented by the Secretary, Ministry of Irrigation, Water Resources & Flood Control*, extended the interpretation of "any person aggrieved" in the Constitution of Bangladesh to include not just individually affected persons, but also to the people in general, as a collective and consolidated personality. In this case, the petitioner, the Secretary General of the Bangladesh Environmental Lawyers Association, had filed a petition on behalf of a group of people in the district of Tangail whose life, property, livelihood, vocation and environmental security were seriously being threatened by the implementation of a flood control plain. The Court concluded that the petitioner should be given *locus standi* to maintain the writ position, because the cause the Association *bona fide* espoused, both in respect of fundamental rights and constitutional remedies, is a cause of an indeterminate number of people in respect of a subject matter of great public concern.

6. MC Mehta v Union of **India**: court accepted the position for a writ of mandamus to restrain a series of tanneries from disposing of effluent into the River Ganges - the court ordered the closure of the tanneries until such time as primary waste treatment systems were installed despite the fact that the ct was aware that the order would cause economic hardship - the court noted Article 48-A and 51-A of the Constitution also quotes with Approval the Declaration adopted at the UN Conference on Human Environment in 1972; in DD Vyas v Ghaziabad Development Authority, the Act declared that petitioners' standing could not be challenged because they were "public spirited citizens who were rightly reminding the authorities of their duties enshrined in the Constitution " Any individual/citizen having common cause can go to courts under the writ jurisdiction.

4.

7. The Supreme Court and the High Courts of **India** have exercised jurisdiction and passed orders ensuring curing, preparing and preventing of ecological damage. This has been achieved by superior courts entertaining

writ petitions by way of public interest litigation. Public interest litigation is in the nature of a class action brought about by filing a writ petition with a view to protect ecology, prevent pollution and bring benefit to the victim by having the court award damages in appropriate cases. The orthodox rule that the petitioner must have a personal interest in order to have a *locus standi* to file a writ petition has been eliminated. Individual environmentalists, non-Governmental organizations and others have been filing writ petitions relating to different types of polluting industries as well as for the law enforcement and implementation of the provisions of the environmental Acts.

(X) Public Trust Doctrine:

The ancient Roman Empire developed a legal theory known as the „Doctrine of the Public Trust". It was founded on the ideas that Government held certain common properties such as rivers, seashore, forests and the air in trusteeship for the free and unimpeded use of the general public. The Public Trust Doctrine primarily rests on the principle that certain resources like air, sea, waters and the forests have such a great importance to the people as a whole that it would be wholly un justified to make them a subject of private ownership. The said resources being a gift of nature, they should be made freely available to everyone irrespective of the status in life. The doctrine enjoins upon the Government to protect the resources for the enjoyment of the general public rather than to permit their use for private ownership or commercial purposes.

1. In the Span Motels case (Supreme Court Of India (1997) Supreme Court Cases 388 Kuldip Singh, J.,)M.C. Mehta V. Kamal Nath And Others, the Court took notice of an article which appeared in the Indian Express stating that a private company "Span Motels Pvt. Ltd.", had a direct link, had built a motel on the bank of the River Beas on land leased by the Indian Government in 1981. The motel used earthmovers and bulldozers to turn the course of the River Beas, create a new channel and divert the river's flow. The course of the river was diverted to save the motel from future floods. The Supreme Court of India held that prior approval for the additional leasehold land, given in 1994, is quashed and the Government shall take over the area and restore it to its original condition. Span Motels will pay compensation to restore the environment, and the various constructions on the bank of the River Beas must be removed and reversed. Span motels must show why a pollution fine should not be imposed; pursuant to the polluter pays principle. This ruling is based on the **public trust doctrine**, under which the Government is the trustee of all natural resources, which are by nature meant for public use and enjoyment. Court relied on these cases to rule that the government committed patent breach of public trust by leasing this ecologically fragile land to Span Motels when it was purely for commercial uses.

2. M.C. Mehta v Kamal Nath and Others (1977) SCC 388 (India) in Okidi C. (ed), Compendium a/Judicial Decisions on Matters Related to Environment, Vol.l-National Decisions, December 1998, The Indian Express carried a report detailing the activities of private company, Span Motels Private Limited, in which the family of Kamal Nath (a former Minister for environment and Forests) had a financial interest. The "company had built a club on the bank of the River Beas. Along other dubious activities, it was revealed that the Motel used earth-moving machinery to obstruct the course of the river and reclaim large areas of land around the Motel The Newspaper report alleged that the Motel was attempting to divert the course of the river in order to save itself from future floods. The Supreme Court acted upon the report because, if he allegations were proven correct, the activities of the Motel constituted a breach of the public trust. The notion of public trust was discussed at length in the judgments. The discussion included Roman law, Indian and American cases, and academic opinion. It was held that, without any specific laws, which deal with the use of public "resources, the executive is bound by the doctrine of Public Trust. As such it cannot 'abdicate the natural resources" and convert them into private ownership. The state was held to be a trustee and therefore under a legal duty to protect 1atural resources.]

„This case illustrate the classic struggle between those members of the public who would preserve our rivers, forests, parks and open lands in their pristine purity and those charged with administrative responsibilities who, under the pressures of the changing needs of an increasingly complex society, find it necessary to encroach to some extent upon open lands heretofore considered inviolate to chance. The resolution of this conflict in any given case is for the legislature and not the courts. If there is a law made by Parliament or the State legislatures the courts can serve as an instrument of determining legislative intent in the exercise of its powers of judicial review under the Constitution. But in the absence of any legislation, the executive acting under the doctrine of public trust cannot abdicate the natural resources and convert them into private ownership, or for commercial use. The aesthetic use and the pristine glory of the natural resources, the environment and the ecosystems of our country cannot be permitted to be eroded for private commercial or any other use unless the courts find it necessary, in good faith, for the public good and in public interest to encroach upon the said resources. Coming to the facts of the present case, large area of the bank of River Beas, which is part of protected forest, has been given on a lease purely for commercial purposes to the Motels. The Himachal Pradesh Government committed patent breach of public trust by leasing the ecologically fragile land to the Motel management. Both the lease transactions are patent breach of the trust held by the State Government."

(XI) Polluter Pays Principles:

1. The Supreme Court of India adopted and applied a range of Principles to guide the development of environmental jurisprudence. Notable amongst the fundamental norms recognized by the court are: Every person enjoys the right to a wholesome environment, which is a fact of the right to life guaranteed under Article 21 of the Constitution of India; Enforcement agencies are under an obligation to strictly enforce environmental laws; Government agencies may not plead non-availability of funds, inadequacy of staff or other insufficiencies to justify the non-performance of their obligations under environmental laws; The „polluter pays principle" which is a part of the basic environmental law of the land requires that a polluter bear the remedial or clean up cost as well as the amount payable to compensate the victims of pollution. In this spirit the Supreme and high courts in India adjudicated several matters applying the cardinal principle of „polluter pays principle".

The Supreme Court of India in Bichhri Case has held „Polluter Pays Principle" to be a sound principle and has observed: We are of the opinion that any principle evolved in this behalf should be simple, practical and suited to the conditions obtaining in this country. It further observed: The polluter pays principle demand that the financial costs of preventing or remedying damage caused by pollution should lie with the undertaking which cause the pollution, or produce the goods which cause the pollution Under the principle it is not the role of the Government to meet the cost involved in either prevention of such damage, or in carrying out remedial action, because the effect of this would be to shift the financial burden of the pollution incident to the taxpayer…."

2. The petitioner, the Indian Council for Enviro-Legal brought action to stop and remedy the pollution caused by several chemical industrial plants in Bichhri village, Udaipur District, Rajasthan. The Respondents operated heavy industry plants there, producing chemicals such as oleum (a concentrate form of sulphuric acid), single super phosphate and the highly toxic "H" acid (the manufacture of which is banned in western countries). Respondents operated these plants without permits, which caused serious pollution of the environment. Several people in nearby villages are alleged to have contracted diseases due to the pollution, some of whom had died. The court noted the finding in the Oleum Gas Leak Case II under which an enterprise that is engaged in a hazardous or inherently dangerous activity, which results in harm to anyone, is strictly and absolutely liable to compensate all those who are affected by the accident. Such liability is not subject to the exceptions of strict liability set forth in Rylands v. Fletcher. This rule is suited to conditions of

India. The Court also endorsed the polluter pays principle, under which the financial costs of preventing or remedying damage lie with those who cause the pollution. Sections 3 and 5 of the Environment (Protection) Act 1986 empower the Central Government to take necessary measures to protect the environment. Accordingly, the Central Government will determine the amount of money needed to carry out remedial measures in this case. Respondents are liable to pay to improve and restore the environment in this area. Respondents are "rogue industries", and hence all their plants and factories in Bichhri village are ordered to be closed. Villagers can institute suits in the appropriate civil courts to claim damages from respondents.

3. In the Vellore Citizens Welfare Forum (India) case, it was prayed that action mat be taken to stop tanneries in the State of Tamil Nadu from discharging untreated effluent into agricultural fields, waterways, open lands and waterways. The Supreme Court noted that although the leather industry is a major foreign exchange earner for India and provided employment, it does not mean that this industry has the right to destroy the ecology, degrade the environment or create health hazards. Sustainable development, and in particular the polluter pays principles and the precautionary principle, have become a part of customary international law. Even though section 3(3) of India's Environment Protection Act 1986, allows the Central Government to create an authority with powers to control pollution and protect the environment. This authority shall implement the precautionary principle and the polluter pays principle, and identify the (1) loss to the ecology/environment; and (2) individuals/families who have suffered because of the pollution, and then determine the compensation to reverse this environmental damage and compensate those who have suffered from the pollution. The Collector/District Magistrates shall collect and disburse this money. If a polluter refuses to pay compensation, his industry will be closed, and the compensation recovered as arrears of land revenue. If an industry sets up the necessary pollution control devices now, it is still liable to pay for the past pollution it has generated.

4. In case (Air 1986 Kerala 256) Kerala Pollution Control Board, the Company claimed that it had installed a treatment plant and was therefore entitled to a rebate, which has been provided under the Act on the installation of treatment plant by the industry. This claim was declined. The legality of the levy of cess was thereupon challenged in the writ petitions. The present writ appeals are taken against the findings of the Judge in the writ petitions. If the plant installed is one, which gives a satisfactory treatment of the trade effluent, rebate could be given under Section 7 of the Cess Act so long as the treatment of the effluent is effective from the point of view of the Pollution Act. The Court was also of the view that the question involved is not a mere interpretation of a section of a statute but has larger overtones with a direct nexus to the life and health of the people. A reference to a treaty, protocol or convention is permissible while interpreting laws that have a link or background with such document. The Court surveyed recent international action in the area of environmental protection, including the 1972 United Nations Conference on the Human Environment, and national measures to develop environmental legislation and said that these had a direct connection with the enactment of the comprehensive Pollution Act, which the Court could not disregard.

5.

5. In another Case, (Rajasthan State Electricity Board V. the Cess Appellate Committee and another with Rajasthan State Electricity Board Vs. Assessing Authority, Member Secretary, Rajasthan Board), the Appellant established a thermal power station on the banks of River Chambal, which consumes water drawn from the river for cooling of the plant. The appellant filed an appeal under Section 13 of the Water (Prevention and Control of Pollution) Cess Act 1977 in respect of the cess. The Supreme Court remitted the matter to the Assessing Authority for reassessment of the cess and gave further directions, which the Authority was required to comply with. The Court said that Section 25(1) has nothing to do with a plant installed for the treatment of effluent, although the grant of consent to a new outlet can be conditional on the existence of a plant for the satisfactory treatment of effluents, to safeguard against pollution of water in the stream.

6. M.C. Mehta v Kamal Nath and Others, 1977, SCC 388 (India) in Okidi C. (ed), Compendium a/Judicial Decisions on Matters Related to Environment, Vol. 1- National Decisions, December 1998,

This Court in Vellore Citizens' Welfare Forum v Union of India explained the "Precautionary Principle" and "Polluters Pays Principle" as under:

"Some of the salient principles of 'Sustainable Development', as culled out from Brundtland Report and other international documents, are Inter Generational Equity, Use and Conservation of Natural Resources, Environmental Protection, the Precautionary Principle, Obligation to Assist and Cooperate, Eradication of Poverty and Financial Assistance to the developing countries. We are, however, of the view that "the Precautionary Principle" and "the Polluter Pays Principle" are essential features of 'Sustainable Development'. The 'Precautionary Principle'-in the context of the municipal law-means: Environmental measures-by the State Government and the statutory authorities- must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The 'onus of proof' is on the actor or the developer/industrialist to show that his action is environmentally benign:"

'The Polluter Pays Principle' has been held to be a sound principle by this Court in Indian Council for Enviro-Legal Action ~ Union of India. The Court observed: "...we are of the opinion that any principle evolved in this behalf should be simple, practical and suited to the conditions obtaining in this country:' The Court ruled that: "...Once the activity carried on is hazardous or inherently dangerous, the person carrying on such activity is liable to make good the loss caused to any other person by his activity irrespective of the fact whether he took reasonable care while carrying on his activity. The rule is premised upon the very nature of the activity carried on" Consequently the polluting industries are 'absolutely liable to compensate for the harm caused by them to villagers in the affected area, to the soil and to the underground water and hence, they are bound to take all I' necessary measures to remove sludge and other pollutants; lying in the affected areas'. The 'Polluter Pays Principle' as interpreted by this Court means that the absolute liability for harm to the environment extends not only to compensate the victims of pollution but also the cost of restoring the environmental degradation. Remediation of the damaged environment is part of the process of "Sustainable Development" and as such polluter is liable to pay the cost to the individual sufferers as well as the cost of reversing the damaged ecology.

7. Indian Council for Enviro-Legal Action and Others v Union of India and Others, 1996,3 SCC 212 (India) in Okidi C. (ed), Compendium of Judicial Decisions on Matters Related to Environment, Vol. 1 - National Decisions, December 1998. In the village of Bichhri in Udaipur (Rajastan), an industrial complex contained numerous units or factories owned by the Respondents. These were all chemical industries and all controlled by the same individuals. The businesses heavily polluted the surrounding environment by failing to treat and dispose of their waste products safety. Applying the 'Polluter Pays' principle, the Court ordered that the companies must pay to restore the damage. Several state authorities, in their positions as public trustees, were responsible for monitoring these factories. The authorities failed to prevent the pollution. The Court held that the writ petition was, in substance, directed against the statutory authorities, which had failed to carry out their duties. It therefore ordered them to conduct the restoration using money from the companies. The standard of liability was held to be absolute liability. Under this standard those responsible for creating a risk, flowing from a hazardous activity, are liable for damage caused as a consequence of this activity, regardless of any precautions taken. This standard was applied due to the very nature-which was hazardous in the extreme-of the original activity. The rule was applied in spite of its rejection in other common law jurisdictions. The court held that the peculiar circumstances of India warranted a stricter standard. This standard acts as the backbone of the Polluter Pays principle in India. A full summary of the

facts, taken from the UNEP Compendium, is provided below and is followed by selected passages from the judgment.

The responsibility of the respondents for causing the pollution in the wells, soil and the aquifers is concerned, it is clearly established by the analysis report referred to in the report of the Central experts' team dated 1 November 1993. Indeed, number of orders passed by this Court, referred to herein before, are premised upon the finding that the respondents are responsible for the said pollution. It is only because of the said reason that they were asked to defray the cost of removal and storage of sludge. It is precisely for this reason that, at one stage, the respondents had also undertaken the de-watering of polluted wells. Disclaiming the responsibility for the pollution in and around Bichhri village, at this stage of proceedings, is clearly an afterthought. We accordingly hold and affirm that the respondents alone are t responsible for all the damage to the soil, to the underground water and to Village Bichhri in general damage which is eloquently portrayed in the several reports of the experts mentioned herein above. NEERI has worked out the cost for repairing the damage at more than Rupees forty crores. Now, the question is whether and to what extent can the respondents be made responsible for defraying the cost of remedial measures in these proceedings under Article 32. Before we advert to this question, it may perhaps be appropriate to clarify that so far as removal of remaining sludge and/or the stoppage of discharge of further toxic wastes are concerned, it is the absolute responsibility of the respondents to store the sludge in a proper manner (in the same manner in which 720 MT of sludge has already been stored) and to stop the discharge of any other or further toxic wastes from its plants including Sulfuric Acid Plant and to ensure that the wastes discharged do not flow into or through the sludge. Now, turning to the question of liability, it would be appropriate to refer to a few decisions on the subject.

6.

8. In Oleum Gas Leak case [M.C. Mehta v Union of India, 1987 J SCC 395], a Constitution Bench discussed this question at length and held thus:

"We are of the view that an enterprise which is engaged in a hazardous or inherently dangerous industry which poses a potential threat to the health and safety of the persons working in the factory and residing in the surrounding areas owes an absolute and non-delegable duty to the community to ensure that no harm results to anyone on account of hazardous or inherently dangerous nature of the activity which it has undertaken. The enterprise must be held to be under an obligation to provide that the hazardous or inherently dangerous activity in which it is engaged must be conducted with the highest standards of safety and if any harm results on account of such activity, the enterprise must be absolutely liable to compensate for such harm and it should be no answer to the enterprise to say that it had taken all reasonable care and that the harm occurred without any negligence on its part. Since the persons harmed on account of the hazardous or inherently dangerous activity carried on by the enterprise would not be in a position to isolate the process of operation from the hazardous preparation of substance or any other related element that caused the harm the enterprise must be held strictly liable for causing such harm as a part of the social cost of carrying on the hazardous or inherently dangerous activity. If the enterprise is permitted to carryon any hazardous or inherently dangerous activity for its profit the law must presume that such permission is conditional on the enterprise absorbing the cost of any accident arising on account of such hazardous or inherently dangerous activity as an appropriate item of its overheads. Such hazardous or inherently dangerous activity for private profit can be tolerated only on condition that the enterprise engaged in such hazardous or inherently dangerous activity indemnifies all those who suffer on account of the carrying on of such hazardous or inherently dangerous activity regardless of whether it is carried on carefully or not... We would therefore hold that where an enterprise is engaged in a hazardous or inherently dangerous activity and harm results to anyone on account of an accident in the operation of such hazardous or inherently dangerous activity resulting, for example, in escape of toxic gas, the enterprise is strictly and absolutely liable to compensate all those who are affected by the accident and such liability is not subject to any of the exceptions which operate vis-a-vis the tortuous principle of strict liability under the rule in Rylands v. Fletcher.

9. In the said decision, the question whether the industry concerned therein was a 'State'within the meaning of Article 12 and, therefore, subject to the discipline of Part III of the Constitution including Article 21 was left open and that no compensation as such was awarded by this Court to the affected persons. He relies upon the observations in the concurring opinion of Ranganath Misra, CJ, in Union Carbide Corpn, the learned Chief Justice referred, in the first instance, to th.epropositions enunciated in Oleum Gas Leak case and then made the following observations in paras 14 and 15: "14. In M. C. Mehta case no compensation was awarded as this Court could not reach the conclusion that Shriram (the delinquent company) came within the meaning of State in Article 12 so as to be liable to the discipline of Article 21 and to be subjected to a proceeding under Article 12 of the Constitution. Thus what was said was essentially obiter. 15. The extracted part of the observations from M C Mehta case perhaps is a good guideline for working out compensation in the cases to which the ratio is intended to apply. The statement of the law ex facie makes a departure from the accepted legal position in **Rylands v Fletcher**. We have not been shown any binding precedent from the American Supreme Court where the ratio of M. C. Mehta decision has in terms been applied. In fact Bhagwati, CJ clearly indicates in the judgment that his view is a departure from the law applicable to western countries."

10. The majority judgement delivered by M N Venkatachaliah, J (on behalf of himself and two other learned Judges) has not expressed any opinion on this issue. We on our part find it difficult to say, with great respect to the learned Chief Justice, that the law declared in **Oleum Gas Leak case** is obiter. It does not appear to be unnecessary for the purposes of that case. Having declared the law, the Constitution Bench directed the parties and other organizations to institute actions on the basis of the law so declared. Be that as it may, we are of the considered opinion that even if it is assumed (for the sake of argument) that this Court cannot award damages against the respondents in these proceedings that does not mean that the Court cannot direct the Central Government to determine and recover the cost of remedial measures from the respondents. Section 3 of the Environment (Protection) Act, 1986, expressly empowers the Central Government (or its delegate, as the case may be) to "take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of environment".. . Section 5 clothes the Central Government (or its delegate) with the power to issue directions for achieving the objects of the Act. Read with the wide definition of "environment" in section 2(a), Sections 3 and 5 clothe the Central Government with all such powers as are necessary or expedient for the purpose of protecting and improving the quality of the environment". The Central Government is empowered to take all measures and issue all such directions as are called for the above purpose. In the present case, the said powers will include giving directions for the removal of sludge, for undertaking remedial measures and also the power to impose the cost of remedial measures on the offending industry and utilize the amount so recovered for carrying out remedial measures.

The law in Oleum Gas Leak case is held to be the law applicable, it follows, in the light of our findings recorded herein before, that Respondents 4 to 8 are absolutely liable to compensate for the harm caused underground water and hence, they are bound to take all that this Court cannot award damages against the respondents in these proceedings that does not mean that the Court cannot direct the Central Government to determine and recover the cost of remedial measures from the respondents. Section 3 of the Environment (Protection) Act, 1986, expressly empowers the Central Government (or its delegate, as the case may be) to "take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of environment". Section 5 clothes the Central Government (or its delegate) with the power to issue directions for achieving the objects of the Act. Read with the wide definition of " environment" in section 2(a), Sections 3 and 5 clothe the Central Government with all such powers as are necessary or expedient for the purpose of protecting and improving the quality of the environment". The Central Government is empowered to take all measures and issue all such directions as are called for the above purpose. In the present case, the said powers will include giving directions for the removal of sludge, for undertaking remedial measures and also the power to impose the cost of remedial measures on the offending industry and

utilize the amount so recovered for carrying out remedial measures. This Court can certainly give directions to the Central Government/its delegate to take all such measures, if in a given case this Court finds that such directions are warranted. We find that similar directions have been made in a recent decision of this Court in Indian Council for Enviro-Legal Action. That was also a writ petition filed under Article 32 of the Constitution.

(XII) Doctrine of Parens Patriae

1. The Bhopal gas leak disaster, the passing of the Bhopal Gas Disaster (Processing of claims) Act of 1985, the unsuccessful attempt of the Union Government to try the casein an American Court, the subsequent settlement deal between the Union Carbide Corporation and the Union Government etc. are common knowledge today. Hence it is enough to say that Supreme Court took help of the doctrine of parens partiare to hold the Bhopal Gas Disaster (Processing of Claims) Act of 1985, which took away the rights of the induividal victims to claims compensation inadependently and vested the same with the Union Government valid.

2. The concept of parens patriae literally means‟ parent of the country‟ and refers traditionally to the role of the state as a sovereign and guardian of person under legal disability. It is known both in India and abroad. The doctrine has its roots in the common law concept of the royal prerogative‟. The royal preprogative included the right or responsibility to take case of persons who were legally unable to take proper case of themselves. In the Indian context, the king as the protector of all citizens and as parent. The position is thus explained by the Calcutta High Court in Chankhani vs Thakur Prasad Shah and it is further elaborated by the Supreme Court in one of its early decisions.

3. In Charan Lal Sahu vs Union of India, the validity of the Bhopal Gas Disaster (Processing of claims) Act of 1985 was challenged on the ground that it allows the State to teke away the right of the victims to claim compensation themselves. To decide the validity of the Act, Supreme Court discussed the doctrine of parens patriae in detail and asserted that the prerogative of the doctrine is inherent in the supreme power of every state, whether that power is lodged in a most beneficent function. In India, the preamble to the Constitution read within article 38, 39 and 39A of the Directive Principles of State Policy enjoins the states to take up there responsibilities. The Government is within its duty to protect and control persons under disability. It is the protective measure to which a social welfare state is committed. Supreme Court after discussing two American decision in support of its view concluded that conceptually and from the jurisprudencetal point of view it is possible to authorize the Central Government to take over the claims of the victims because they were under disability in pursuing their claims.

Doctrine should be further expanded to do justice to the victims. Thus, if it is found that the victims cannot be compensated through ordinary legal process or that the resources of the defaulter company are not sufficient to pay the victims, the State should undertake the responsibility to compensate them. Only the one can say that the State has discharged its duty as a parent towards its unfortunate children. This is the real spirit of the doctrine of parens patriae. Perhaps many precedents are not available to substantiate this proposition. But this expansion may be viewed as the first step towards the formulation of a new jurisprudence to held State vicariously liable and compensate the victims of polluters.

4. The Supreme Court in Oleum Gas leak Case1I laid the principle of Absolute Liability. The Court declared the liability to be absolute and refused the limit itsel to the decision in Rayland vs Fletcher which evolved a strict liability. In this classic something in his land which is likely to cause damage to others, then he is held to be prima facie liable for any damages caused by the escape of that dangerous thing. The liability in Rayland vs Fletcher is considered to be a „strict liability‟ because no defense is permitted on the grounds that the thing escaped without that person‟s willful act, default or neglect or even that he had no knowledge

of its existence. However, this rule was limited because it applied only to non-natural user of a land and it did not apply to the things naturally on the land where the escape was due to an act of God or an act of a stranger or the default of the person injured etc. but the Supreme Court refused to follow this decision of the British court saying that it need not be inhibited by the law that prevails in England or any other foreign country. By refusing to recognize the defense of Rylands vs Fletcher the Supreme court went on to attach an absolute liability on the polluter. It observed that an enterprise which is engaged in a hazardous or inherently dangerous industry owes an „absolute" and non-delegable duty to the community to ensure that no harm results to anyone by such acts. Ultimately, the Court held that any such industry which causes har by its hazardous operation is „strictly" and absolutely" liable to compensate all those affected by the accident and such liability is not subject to any of the exceptions recognized in Rylands vs Fletcher. In this progressive judgment the Supreme Court emphasized the significance of judicial activism. It observe

(XIII) Dispute Settlement

1. A survey of national environmental legislation reveals an important range of judicial mechanisms for environmental management. Apart from the express consecration of environmental policy in constitutional form, legislative provisions relating to environmental management can be found in such diverse laws as the Penal Codes, often in provisions relating to nuisance. In the field of environmental litigation, there is no clear provision for the establishment of Environmental Court or Tribunal to deal with environmental cases in **Nepal**. At present, environmental cases could be brought before the ordinary Courts under different legislation as specified in the respective laws. In the 1988, Supreme Court of **India** decision under Rural *Litigation and Entitlement Kendera* v. *State of U.P.*, the Court ordered that unauthorized and illegal mining in the Dhera Dun District, which was adversely affecting the ecology of the region, be stopped. The Court specifically remarked that the area was a gift of nature to mankind and a bequest of the past generations to the future. Under this case(AIR 1987 Sc 965), (M.C. Mehta and Others Vs. Shriram Food and Fertilizer Industries and Union of **India**), the Petitioner, in the Supreme Court, sought the closure of a chlorine plant of Shriram Foods and Fertilizers Industries situated in a densely populated area, following the disastrous consequences of a leakage of oleum gas from the plant in December 1985, as a result of which one person died and several suffered serious harm. The Supreme Court in its judgment inter alia also recommended the setting up of an Environmental Court. Referring to the many cases that are coming before the courts for adjudication, involving issues of environmental pollution, ecological destruction and conflicts over natural resources, the Court stated that it might be "desirable to set up Environmental Courts on a regional basis." The Government of India based on the direction of the Supreme Court formulated the Public Liability Insurance Act, 1991 and the National Environment Tribunal Act, 1995

2. Another recent development is the tendency of the courts to encourage a sort of specialisation in the field of environmental disputes. In the *Vellore Citizen's Welfare Forum* case, the Supreme Court observed that the High Court of Tamil Nadu would be better placed to ensure that the orders of the Supreme Court were faithfully implemented. Consequently, a request was made to the Chief Justice of Tamil Nadu to constitute a special "Green Bench." These benches developed an expertise in the area, and are therefore better able to effectively deal with the problems that arise. In fact, as the Court observed in *Vellore Citizen's* case, such benches already exist in various High Courts across the country. This institution of special benches becomes all the more necessary, given the fact that environmental disputes raise questions of ever increasing complexity, questions to which a generalistic judge might consequently find harder to find answer. This development will ensure that justice is done not only to the environment but also to the people affected by the degradation and also to the alleged polluter.

3. Under this case, (*M.C. Mehta and Others vs. Shriram Food And Fertilizer Industries and Union of India* (Oleum Gas Leak Case - I) AIR 1987 SC 965 P.N. Bhagwati C. J., D. P. Madan And G. L. Oza. Jj),

the Petitioner, in the Supreme Court, sought the closure of a chlorine plant of Shriram Foods and Fertilizers Industries situated in a densely populated area, following the disastrous consequences of a leakage of oleum gas from the plant in December 1985, as a result of which one person died and several suffered serious harm. Following the gas leak, the District Magistrate acting under Section 133 of the Criminal Procedure Code, granted the management of the company 7 days to remove the dangerous substance from the company's premises. The Court made observations regarding the importance of zoning of industries and providing green belts around hazardous industries. The Court also recommended the setting up of an Environmental Court. Referring to the many cases that are coming before the courts for adjudication, involving issues of environmental pollution, ecological destruction and conflicts over natural resources, the Court stated that it might be "desirable to set up Environmental Courts on a regional basis, with one professional judge and two experts drawn from the Ecological Sciences Research Group, keeping in view the nature of the case and expertise required for its adjudication. There would be of course a right of appeal to this Court from the decision of the Environmental Court"

4. In India Public Interest Litigation (PIL) was conceived and evolved by the Supreme Court Of India as Judicial response to the constitutional mandate for securing social justice and for harnessing the judicial system for creating a just and humane society. The Court chose to break away from the traditional straitjacket judicial procedures and practices of administering justice . As the judiciary became more responsive to the needs of the time, it had to redefine the existing concepts of law; broaden the horizon of substantive and procedural laws; create new rights; develop new strategies for extending the arms of justice t all sections of society; and give effects to an „affirmative" judicial relief system. Far from being a static collection of rules, the legal system became a dynamic and self-evolving process in the hands of a progressive judiciary committed to ushering in a new and just social order. PIL, or „Social Action Litigation"s, arose as a result of such conscientisation and commitment of the Indian judiciary to social and constitutional goals. In Articles 21, 32 and 226- Article 136 and 137 I n Virendra Gaur vs State of Haryana and Samatha vs State of Andhra Pradesh, the Supreme Court held that environment, ecology, air, water pollution, etc. should be regarded as amounting to violation of the right to life assured by article 21 of the Constitution. In other words, the court has given wider and enlarged interpretation of the right to life guaranteed under article 21 of the Constitution to include any obstacle in the free and full enjoyment of life any person. In view of this environmental pollution will also be regarded as interference in the right to enjoy life and shall be enforceable as a Fundamental Right and courts could be approached under articles 32 and 226 of the Constitution of India. In an another case where the Supreme Court intervened to protect the forest wealth and wildlife from the ravages of mining in and around Sariska sanctuary in the Alwar district of Rajasthan, the court viewed its own constitutional role thus: *The issues of environmental must and shall receive the highest attention from this court.*

5. In the 1988 Supreme Court of India decision of *Rural Litigation and Entitlement Kendera* v. *State of U.P.*, the Court ordered that unauthorized and illegal mining in the Dhera Dun District, which was adversely affecting the ecology of the region, be stopped. The Court specifically remarked that the area was a gift of nature to mankind and a bequest of the past generations to the future.

6. Great advances have been made in the region in access to justice, providing wider standing for aggrieved parties and an expansion of substantial and procedural matters related to public interest litigation. The judiciary has extended the eligibility for public interest standing so that weaker sections of society are not denied access to environmental justice, particularly in respect of a subject matter of great public concern. The 1996 Supreme Court of Bangladesh (Appellate Division - Civil) decision in *Dr. Mohiuddin Farooque* v. *Bangladesh*, *Represented by the Secretary, Ministry of Irrigation, Water Resources & Flood Control*, extended the interpretation of "any person aggrieved" in the Constitution of Bangladesh to include not just individually affected persons, but also to the people in general, as a collective and consolidated personality. In this case, the petitioner, the Secretary General of the Bangladesh Environmental Lawyers Association, had

filed a petition on behalf of a group of people in the district of Tangail whose life, property, livelihood, vocation and environmental security were seriously being threatened by the implementation of a flood control plain. The Court concluded that the petitioner should be given *locus standi* to maintain the writ position, because the cause the Association *bona fide* espoused, both in respect of fundamental rights and constitutional remedies, is a cause of an indeterminate number of people in respect of a subject matter of great public concern.

7. In this case (*Charan Lal Sahu vs. Union of India* (Bhopal Case – II) AIR 1990 Supreme Court 1480 Sabyasachi Mukherji, C. J., K.N. Singh, S. Ranganathan, A. M. Ahmadi and K.N. Saikia, Jj), following the Bhopal Gas Leak tragedy when over 3000 people were killed by the leak of a highly toxic Methyl Isocyanate (MIC) gas from a storage tank at the Bhopal plant of Union Carbide (India) Ltd., the Government of India, acting as parens patriae, passed the Bhopal Gas Disaster (Processing of Claims) Act (1985) to take over and pursue the claims of the victims, as they were unable in their circumstances to pursue their claims fully and properly. The Petitioner challenged the validity of the Bhopal Gas Disaster (Proceedings of Claims) Act, 1985 in the Supreme Court. The Supreme Court held that the Act was valid and that the State had rightly taken over the exclusive right to represent and act on behalf of every person entitled to make a claim, as a majority of the victims were poor and illiterate. Consequently, the exclusion of the victims from filing their own cases, was held to be proper. The Court also held that the Act only deals with civil liability and as such does not curtail or affect rights in respect of criminal liability.

8. In this case (*Union Carbide Corporation vs. Union of India and Others* (Bhopal - I) AIR 1990 SC 273 R. S. Prathak, C. J., E.S. Venkataramiah, Ranganath Misra, M. N. Venkatachalliah, And N. D. Ojha Jj), the Union Carbide Corporation filed an application in revision in the Supreme Court, in terms of Section 155 of the CPC, against the order of the Bhopal District Court, in a claim for damages made by the Union of India on behalf of all the claimants, under the Bhopal Gas Leak Disaster (Processing of Claim) Act, 1985. Damages were sought on behalf of victims of Bhopal gas leak disaster. The Court ordered that the Union Carbide Corporation should pay a sum of U.S. Dollars 470 million (Four hundred and seventy million) to the Union of India in full settlement of all claims, rights and liabilities related to and arising out of the Bhopal gas disaster.

9. Under this case, (*M.C. Mehta and Others vs. Shriram Food and Fertilizer Industries and Union of India* (Oleum Gas Leak Case - I) AIR 1987 SC 965 P.N. Bhagwati C. J., D. P. Madan And G. L. Oza. Jj), the Petitioner, in the Supreme Court, sought the closure of a chlorine plant of Shriram Foods and Fertilizers Industries situated in a densely populated area, following the disastrous consequences of a leakage of oleum gas from the plant in December 1985, as a result of which one person died and several suffered serious harm. Following the gas leak, the District Magistrate acting under Section 133 of the Criminal Procedure Code, granted the management of the company 7 days to remove the dangerous substance from the company's premises. Subsequently, the Inspector of Factories ordered the closure of the chlorine and sulphuric plants. The closure of the plant affected 4000 employees and was firmly opposed by the management and the labour unions. The question before the court was whether the chlorine plant should be allowed to re-start operations. The Supreme Court was of the view that, considering the large scale unemployment and industrial dislocation that the shortage of products like chlorine would create, the plant should be permitted to re-start subject to detailed conditions. The Court made observations regarding the importance of zoning of industries and providing green belts around hazardous industries. The Court also recommended the setting up of an Environmental Court. Referring to the many cases that are coming before the courts for adjudication, involving issues of environmental pollution, ecological destruction and conflicts over natural resources, the Court stated that it might be "desirable to set up Environmental Courts on a regional basis, with one

professional judge and two experts drawn from the Ecological Sciences Research Group, keeping in view the nature of the case and expertise required for its adjudication. There would be of course a right of appeal to this Court from the decision of the Environmental Court"

10. This was the second in a series of petitions (*M.C. Mehta and Others vs. Shriram Food and Fertilizer Industries and Union of India*; Oleum Gas Leak Case - II) AIR 1987 SC 982 P.N. Bhagwati C. J., D. P. Madan And G. L. Oza. Jj.) that were filed in the Supreme Court following the leakage of gas from the chlorine and sulphuric acid plants at Shriram Fertilizers Industries in December 1985. The Company argued that every breach of the conditions specified in the previous Order should not warrant closure of the plant. The Court modified the conditions subject to which permission was granted to Shriram to re-open the chlorine plant in its order dated 17th February, 1986. The Court observed that if for any reason, Shriram does not comply with any of those conditions and is therefore unable to re-open the caustic chlorine plant, it will be open to Shriram to re-start the other plants in respect of which permission has been given by the Court by order dated 17th February, 1986, so long as it can do so without operating the caustic chlorine plant. With regard to the liability of occupiers/officers, the Court restricted liability to an amount equivalent to their annual salary. The earlier Order was modified by holding that the Chairman/Managing Director were liable, except where “sabotage" or " an Act of God " is pleaded and proved.

11. This case (*M.C. Mehta and Others vs.. Shriram Food and Fertilizer Industries and Union of* India (Oleum Gas Leak Case - III) AIR 1987 Sc 1026 P.N. hagwati C. J., And G. L. Oza, Ranganath Misra, M.M. Dhutt And K.N. Singh, Jj) was the third in a series of petitions to the Supreme Court which followed in the wake of the Oleum gas leak in December 1985, at Shriram Fertilizers Industries. The Petitioner filed this case under Article 32 of the Constitution, which provides for a writ against the State in case of breach of fundamental rights. Shriram contended that a writ should not issue as it was a public company and not a State. The Supreme Court held that under Article 32(l) of the Constitution it is free to devise any procedure appropriate for the particular purpose of the proceeding, namely, enforcement of a fundamental right and also has the power to issue whatever direction, order or writ as may be necessary in a given case including all incidental and ancillary power necessary for the enforcement of a fundamental right. The power of the Supreme Court is not only injunctive in ambit, that is preventing the infringement of fundamental rights, but it is also remedial in scope and provides relief against a breach of the fundamental rights already committed. In the circumstances, the Court has the power to grant compensation in appropriate cases. The Court also said that compensation could be awarded against Shriram Food and Fertilizer Corporation thereby bringing private corporations within the purview of Article 32 of the Constitution.

(XIV) Right of Indigenous People

1. The Supreme Court of India in its judgment taken the indigenous people (tribal) and their practices to be the part of larger perspective of environment management. The case (Rural Litigation and Entitlement Kendera V. State oof U.P. AIR 1988 Sc 2187 Ranganathan Misra and Murari Mohan Dutt, Jj.) arose when the Supreme Court directed a letter received from the petitioner alleging unauthorized and illegal mining in the Dehra Dun area which adversely affected the ecology of the region and caused environmental damage, to be registered as a writ petition under Article 32 of the Constitution, and issued notice on the Respondents. Having considered several reports made by Committees of Experts appointed by the Supreme Court to examine the environmental implications of limestone mining in the Dehra Dun Valley, the Court, by order dated October 19, 1987, ordered that mining in the area should be stopped. The Court said, "The writ petitions before us are not inter-party disputes and have been raised by way of public interest litigation and the controversy before the Court is as to whether for social safety and for creating a hazardless environment for the people to live in, the mining in the area should be stopped or permitted." The Court stated that the Doon Valley limestone is a gift of nature to mankind and that forests provide the green belt and are a bequest

of the past generations to the present. It also remarked that the problem of forest preservation and protection was no more to be separated from the life style of the tribal people.

2. In an another case (Ambica Quarry Works Vs. State Of Gujarat, and Others AIR 1987 Sc 1073 Sabyasachi Mukharji And K.N. Singh, Jj), the State Government rejected an application for renewal of a mining lease under section 2 of the Forest (Conservation) Act 69 of 1980, which requires permission to be obtained from the Central Government for using forest areas for non-forest purposes. The appeal in the Supreme Court centred on the question of a proper balance between the need of exploitation of the mineral resources lying within forest areas, the preservation of ecological balance, and curbing the growing environmental deterioration. In dismissing the appeals, the Supreme Court said that the rationale underlying the Forest (Conservation) Act was recognition of the serious consequences of deforestation, including ecological imbalances, and the prevention of further deforestation. The Court observed that in this case the renewal of the mining leases will lead to further deforestation or at least will not help reclaiming the areas where deforestation has taken place. The primary duty the Court said, was to the community and that duty took precedence in these cases. The obligation to the society must predominate over the obligation to the individual.

3. In Bangladesh, in the case of *Dr. Mohiuddin Farooque v. Bangladesh and others,* the Court reiterated Bangladesh‟s commitment "in the context of engaging concern for the conservation of environment irrespective of the locality where it is threatened. In this judgement it is expounded, "Articles 31 and 32 of our Constitution protect life as a fundamental right. It encompasses in its ambit the protection and preservation of its environment, ecological balance free from pollution of air and water, sanitation without which life can hardly be enjoyed. Any act or omission contrary thereto will be in violation of this same right to life." Many sectoral laws explicitly contain provisions to inform local people about projects and to both invite and resolve objections raised. For example, the 1927 Forest Act requires the inquiry and settlement of all private claims when restrictions are to be imposed when the status of a public forest is changed through re-classifying it as a reserved or protected forest. The 1920 Agricultural and Sanitary Improvement Act and the 1952 Embankment and Drainage Act explicitly guarantee the rights of local populations and interest holding parties in proposed project areas to examine and raise objections to the project being considered. If the process for raising objections under sectoral laws cannot be availed (in most cases these opportunities are not given), a private person may lodge a civil litigation against the development project. Many such litigations have been contested in Bangladesh, although mostly against land acquisition and not in the case of projects likely to have adverse environmental impacts. However, such proceedings are possible under the law, although assembling the necessary evidence to prove anticipated damages would be a difficult task. Furthermore, neither legal rights nor interests can be extinguished without appropriate compensation..

Conclusion:

The judiciary is an important partner in the goal towards sustainable environmental management and this needs to be supported. Linkages between environmental institutions and courts of all levels can help to increase judicial awareness and understanding of critical issues, in order to promote effective interpretation of constitutional rights and progressive environmental legislation. Specialty environmental courts or tribunals need to be created and empowered as effective institutions focussing directly on the management of the environment.

The judicial arm of government plays a central role in promoting the goals of sustainable development and in facilitating the integration of environment in development decision-making. It does so by redefining existing legal concepts and moulding emerging principles of law with a view to giving these a sense of coherence and

direction, while always acting within the framework of legislation and law and without trespassing on the spheres of the legislative and executive branches of government. Summary of the Chapter

The South Asia region holds the distinction in terms of innovative judicial approach to public interest issues in general and environmental issues in particular. In countries such as **Bangladesh, India, Nepal and Sri Lanka**, access to justice has been greatly facilitated due to liberalisation of the rule of *locus standi*. This has enabled any public-spirited individual or a group to seek redressal of grievances from the higher judiciary. However, significance of so-called judicial 'activism' and innovations associated with it largely depend upon the judicial set up in a country, awareness on the part of the local communities as well as social activists. For instance, in **India**, the birth of public interest environmental litigation has been facilitated by the human rights jurisprudence established by the High Courts as well as the Supreme Court of India. Various tools and techniques devised by the apex court in India have been firmly rested on the bedrock of 'judicial review' (Article 32), which itself is a fundamental right. As a result, invoking of the writ jurisdiction of the higher judiciary has not been confined to preventive directions, but has extended to 'remedial justice' too. The growing volume of PIEL, especially in India, has been strongly nurtured by the understanding that judges do not merely 'find' the law. Often the judges have jettisoned apologist postures in this regard and considered judicial activism as a necessary and inevitable part of the judicial process.

In South Asia, the Supreme Courts and High Courts have taken the lead in interpreting laws and giving directions, which have had far reaching impact on environmental management. Sri Lankan courts have taken proactive role on adjudicating environment matters. Like wise, the Supreme Court in India, for example, in recognizing the role of environmental protection in sustainable development and growth, has been establishing mechanisms for institutionalizing judicial dispensation in environmental matters. The Court has adopted and set procedures that become the guiding law for the sub-ordinate courts in the country. The most important innovation has been the Public Interest Litigation that enables individuals and organizations to file a writ petition with the objective of protecting environmental resources and benefiting the affected people. The Supreme Court of India has also established specialized High Court benches known as Green Benches. Similarly, in Pakistan the superior courts exercise jurisdiction conferred under Articles 184(3) and 199 of the Constitution. The Environmental Protection Act, 1997 of Pakistan provides for Environmental Tribunals that will have exclusive jurisdiction to try offences under the Act. Likewise, Nepal‟s 1997 Environmental Protection Act provides for the designation of a Prescribed Authority before which environmental cases are to be filed. However, appropriate rules for designating such an authority have not yet been formulated and environmental cases continue to be brought before the ordinary courts. An active judiciary has the potential to establish the rights of people to enjoy certain environmental rights and seek judicial intervention where these are violated. The judiciary may also act as a check on government policies that disrupt fragile ecological balances and generate awareness and consciousness amongst policy makers through court verdicts and orders. However, there is a need for specialist environment courts that can facilitate more consistent and speedier environmental decision-making. These courts would reduce the number of cases brought before the Supreme Courts and High Courts and reduce the administrative costs, as a single combined jurisdiction would be cheaper than multiple separate tribunals

Some of the areas in which the judiciaries in South Asia have contributed to this process include incorporation of the principle of sustainable development, the polluter pays principle, the precautionary principle, and the principle of continuous mandamus in the corpus of international and national law; invocation of the extraordinary jurisdiction of the Supreme Court in environmental matters; public participation, including substantive and procedural matters relating to public interest litigation; the *erga omnes* character of environmental matters and the problem of applying *inter partes* procedures in environmental dispute resolution; limits of the concepts of “aggrieved person” and “locus standi” in regard to environmental damage; inter-generational and intra-generational equity; court commissions to ascertain facts and an authoritative assessment of the scientific and technical aspects of environment and development

issues; interpretation of constitutional rights including right to life and right to a healthy environment; public‟s right to information; obligation for continuous environmental impact assessment; application of the public trust doctrine in regard to natural resources and the environment; corporate responsibility and liability; approaches to judicial reasoning in environment related matters including the importance of traditional values and ideas, and the importance of promoting public awareness and environmental education at secondary and tertiary levels. Underlying many recent cases is a clear judicial concern for the integration of environment and development in decision-making.

In **Bangladesh**, **India, Sri Lanka** and **Pakistan**, the Supreme Courts have given broad interpretations of the "fundamental right to life" under each country's Constitution, providing a entrenched legal foundation for the public's right to a healthy environment, the protection of the environment the public's right to information. The interpretation of constitutional rights was broadened in **Bangladesh** in the 1995 Supreme Court decision of *Dr. Mohiuddin Farooque* v. *Secretary*, *Ministry of Communication*, *and Government of the Peoples' Republic of Bangladesh.* This was a petition against various Ministries and other Authorities for not fulfilling their statutory duties to mitigate air and noise pollution caused by motor vehicles in the city of Dhaka. The Petitioner argued and the Court agreed, that although the Constitution of Bangladesh contained no specific right to a safe and healthy environment, this 'right to life' was enshrined within. This interpretation was supported by Constitutional prohibitions on actions detrimental to life, body or property. Similarly, in **Pakistan**, the courts have given a broad interpretation to the 'right to life' stating that persons must not only be able to sustain life, but also to enjoy it. The Courts have applied the public trust doctrine in regard to the management of natural resources and the environment, and in some states have given consideration to the concept of inter-generational and intra-generational equity.

References

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Sun Lin and Lal Kurukulasuriya; UNEP‟s New Way Forward: Environmental Law and Sustainable Development, 1995.
3. UNEP Compendium of Summaries of Judicial Decisions in Environment related Cases (With Special Reference to Countries in South Asia); 1998.

Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTERVI

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: WATER

BANGLADESH

Key Issues: Trade Effluents; Ground Water Contamination; Wastewater Treatment; Cleaning of Rivers; Water quality Management; Human Health;

Policy Framework: Fourth and Fifth Five-Year Plan, 1990-2002; National Environment Policy, 1992; National Environment Management Action Plan, 1992;

Key Legislation: Water Supply and Sewerage Authority Ordinance 1963; Laws and Regulation on Industrial Wastewater Control Effluent Standards Environmental Pollution Control Ordinance 1997; Environmental Conservation Act of 1995; Environmental Conservation Rules of 1995; Water quality standard Environmental Pollution Control Ordinance 1997; Effluent standard;

Key Institutions:
Ministry of LGRD & C; Ministry of Water Resource; Ministry of Environment and Forest; Ministry of Agriculture; Ministry of Health and Family Welfare

1. INTRODUCTION

Traditionally, water sources depend on rainfall and surface water. Groundwater is also the major source of drinking and industrial water for its abundance and stable supply from aquifers. More than 200 rivers cross the country form a complex. Most of these cross boundary rivers are tributaries or distributors of Ganges-Brahmaputra-Meghna rivers as 57 rivers originate outside the boundary of Bangladesh. The total length of river courses including their tributaries within Bangladesh is about 24,140 km covering 9,770 km2. Salinity of the river water seasonally increases in estuary area with the critical limit for crop production. Water with high salinity moves into inland in May. Low flow of Ganges river induces high salinity in the Southwest region. This causes degradation of natural mangrove Sundarban, the only Ramsar site in Bangladesh.

Sewerage system is installed partially only in Dhaka. In other region, untreated wastewater is discharged directly to rivers. Rain water flows into sewerage system at the time of heavy rain and wastewater flows up because the capacity of sewerage system is limited. Toilets are built on the water and feces are directly dropped into the river.

Major industrial source of water pollution are the following industries.
1) Non-ferrous metal; 2) Industrial chemical production; ;3) Tanneries; 4) Refineries; and 5) Pharmaceuticals

The main industrial areas are Dhaka, Chittagong, Khulna, and Bogra districts. The Department of Environment has listed 1,176 factories that cause pollution. These are categorized into the following 9 types:

1) Chemical including pharmaceutical; 2) Paper and pulp; 3) Sugar; 4) Food and tobacco; 5) Leather; 6) Industrial dyes; 7) Petroleum; 8) Metals; and 9) Power generation

There are about 7000 large medium industrial units operating in Bangladesh, with major concentrations of these in Dhaka, Chittgong and Khulna and a few smaller pockets, mostly on the banks of the rivers. The industries are discharging their effluent directly to the rivers or nearby canals causing frequent fish-kills and adversely affecting the health of residents of adjoining areas who use the contaminated water for drinking, washing, bathing etc.

Pollutants/contaminants present in industrial effluent can be categorized as follows:

a) non-specific, bio-degradable organic materials that deplete oxygen (tanneries, textiles, food products, pulp and paper)
b) Refractory, xenobiotic compounds that may induce varying levels of chronic responses in aquatic life and/or direct human users (textiles, in the form of synthetic' dyes and organic chemical industries such as in Chittagong).
c) Nitrogen compounds that are either toxic for specific receptors, chemically reducing (i.e. exerting demand on oxygen) or stimulating certain types of biological growths causing budget imbalances in aquatic ecology (almost exclusively from the urea fertilizer industry, but also from tanneries) and
d) Pollutants susceptible to bio-accumulation in the food chain. This impact is probably less significant from industrial discharges than from agricultural chemicals. Bio-accumulation is possible with certain heavy metals, as with some organic compounds used in textiles and found as intermediate and final products in various types of organic chemical industries. The Bangladesh Chemical Industries Corporations DDT plant in Chittagong issues and manufactures bio-accumulative compounds that may exert a heavy toll on certain components of the biological ecosystem.

2. WATER POLLUTION

Major industrial source of water pollution are the following industries: 1) Non-ferrous metal
2) Industrial chemical production; 3) Tanneries; 4) Refineries; 5) Pharmaceuticals

The main industrial areas are Dhaka, Chittagong, Khulna, and Bogra districts. The Department of Environment has listed 1,176 factories that cause pollution. These are categorized into the following 9 types: 1) Chemical including pharmaceutical; 2) Paper and pulp; 3) Sugar; 4) Food and tobacco; 5) Leather; 6) Industrial dyes; 7) Petroleum; 8) Metals; 9) Power generation. Feces also pollutes due to lack of proper sanitation facilities in spite of increasing population both in rural and urban areas. This results in high levels of nitrate in surface water, eutrophication and serious implication of water-borne diseases. Fertilizers and agrochemicals including pesticides are suggested to cause pollution. Averaged annual consumption of fertilizers is estimated to be 100 kg/ha according to the National Minor Irrigation Development Project.

Groundwater

Arsenic contamination of groundwater is a serious problem especially for tube wells. Arsenic content exceeds 0.05 mg/L as the national standard. It is estimated that more than 20 million people drink arsenic contaminated water. Other groundwater pollution is as follows. Salinity in coastal areas, the Southeast and the Southwest region. Iron in the central part of the country. Manganese Boron in western, central and northern region Phosphorus, phosphate and nitrate in all part of the country, especially in the coastal area.

Arsenic contamination of groundwater is a serious problem especially for tube wells. Arsenic content exceeds 0.05 mg/L as the national standard. It is estimated that more than 20 million people drink arsenic contaminated water. Other groundwater pollution is as follows. Salinity in coastal areas, the Southeast and the Southwest region. Iron in the central part of the country. Manganese Boron in western, central and northern region Phosphorus, phosphate and nitrate in all part of the country, especially in the coastal area

Schedule 10 of Bangladesh Environment Conservation Rules, 1997 provides water standard and standard of liquid discharges from the industries respectively. The other relevant legislation are: Environmental Conservation Act of 1995; Environmental Pollution Control Ordinance 1997; Effluent standard; Drinking water quality standard; Result of water monitoring;

3. OTHER POLLUTION

Sediments

Sediment is significantly increasing in the coastal area. Large volume of sediments run off through Ganges river and Brahmaputra river to the coastal area.

Solid Waste Management

In Dhaka, 3,000 tons of waste is generated everyday. Wastes are disposed at 4,500 collection pints, among which 1,950 are concrete made and 2,450 are street bins. Nearly 5,000 sweepers are engaged in the collection services by hand cart. 184 trucks and 2,080 hand cart are used to transport these waste to landfill sites or open dumps. Collection services are supervised by using telecommunication system. wireless sets, jeeps and motorcycles. However, solid waste management system is inadequate. Uncollected wastes are burned in improper way and illegally dumped into rivers and canals. Industrial waste and medical waste are not properly treated and are disposed with other general waste.

Energy Conservation and Alternative Energy

According to the Fourth Five Years Plan, energy sector was emphasized. Promotion or natural gas utilization, energy conservation, high efficiency electricity supply and promotion of NGO‟s participation to the biomass utilization program are presented as targets. However, actual plans to achieve these targets are not mentioned. A hydropower plant exists at Kaptai in southeastern part of the country. The plant has 230 MW of capacity and generates 5 to 7 % of total electricity generation. Primary Energy Production (1998): Types Calories (Unit: petacalories) Share (%) Coal and lignite Crude oil 2.3 Natural gas 96.3 Geothermal and wind Hydro 1.4 Nuclear Biomass Source.

Water Resources

Traditionally, water sources depend on rainfall and surface water. Groundwater is also the major source of drinking and industrial water for its abundance and stable supply from aquifers. More than 200 rivers cross the country and form a complex. Most of these cross boundary rivers are tributaries or distributors of Ganges-Brahmaputra-Meghna rivers as 57 rivers originate outside the boundary of Bangladesh. The total length of river courses including their tributaries within Bangladesh is about 24,140 km covering 9,770 km2. Salinity of the river water seasonally increases in estuary area with the critical limit for crop production. Water with high salinity moves into inland in May. Low flow of Ganges river induces high salinity in the

Southwest region. This causes degradation of natural mangrove Sundarban, the only Ramsar site in Bangladesh.

Wastewater Management

Sewerage system is installed partially only in Dhaka. In other region, untreated wastewater is discharged directly to rivers. Rain water flows into sewerage system at the time of heavy rain and wastewater flows up because the capacity of sewerage system is limited. Toilets are built on the water and feces are directly dropped into the river. The institutions which are actively working in the area are: Department of Public Health Engineering, Ministry of Local Government , Rural Development and Cooperatives, Water Supply and Sewerage Authority.

LEGISLATIN

In Bangladesh there exist various legislation for the conservation of water from various sources. Most importantly the following legislation have been legislated by the Government of Bangladesh: Water Supply and Sewerage Authority Ordinance 1963; Laws and Regulation on Industrial Wastewater Control Effluent Standards Environmental Pollution Control Ordinance 1997; Environmental Conservation Act of 1995; Environmental Conservation Rules of 1995; Water quality standard Environmental Pollution Control Ordinance 1997; Effluent standard

BHUTAN

Key Issues: Trade Effluents; Ground Water Contamination; Wastewater Treatment; Cleaning of Rivers; Water quality Management; Human Health

Policy Framework: Paro Resolution on Environment and Sustainable Development (1990); National Environment Strategy

Key Legislation: Electricity Act 200; Forest and Nature Conservation Act 1995, Mines and Management Act 1995 and the Environmental Assessment Act 2000

Key Institutions: National Environment Committee; Planning Commission; National Environment Commission; Ministry of Rural Development; Ministry of Rural Development
Bhutan Electricity Authority

1. INTRODUCTION

Water constitutes a very important natural resource for Bhutan, primarily in the form of major north-south rivers, with a dense network of small, mainly rain-fed tributaries. The annual renewable freshwater resource per capita is estimated at 58,930 cubic meters, indicating that Bhutan is not currently under water stress. Traditionally, the most important use of water was for irrigation of crops, watering of animals and domestic use by rural households. With the inception and development of hydropower projects in the mid-1980s, however, the role of water resources, which are estimated to be able to generate more than 30,000 MW of power, has increased tremendously. Consequently, hydropower has become the dominant sector in Bhutan, comprising about 40% of the nation‟s total revenue.

Despite these seemingly abundant resources, with the increasing population of Bhutan have come with signs of water scarcity and consequent conflict between irrigation and domestic consumption. Indeed, real problems of insufficient water at the ground level exist, be it for drinking or for irrigation. A recurrent, unresolved issue is the conflict over water resources during peak agricultural season in areas with scanty water; rainfall can often be erratic, and irrigation canals are often damaged by landslides during the peak period.

2. WATER RESOURCE MANAGEMENT

In 2001, the nation‟s first water body, the Bhutan Water Partnership, was launched with a mandate to coordinate and prepare policy documents, strategic vision documents and action plans in the water resource sector. This inter-Ministerial organization replaces the ad hoc coordination previously found and is intended to ensure the sustainable utilization of water resources, maximizing economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

The holistic management of freshwater as an acute and vulnerable resource with economic dimensions, and the integration of sectoral water plans and programs within the framework of national economic and social policy, are thus of paramount importance for action in Bhutan. Better management of urban water resources, for example – including the elimination of unsustainable consumption patterns by metering of usage – is contributing substantially to the alleviation of poverty and improvement of the health and the quality of life of the poor.

At the same time, availability of clean and sufficient supply of water for drinking, in both urban and rural areas, is a prerequisite for healthy living and has been emphasized throughout the nation‟s development. After more than 25 years of implementing water supply schemes, more than two-thirds of Bhutanese now have safe drinking water close to their communities and coverage of basic latrines in rural areas was 82%.

The water and sanitation sector received a significant stimulus in 1992 when His Majesty the King issued a Royal Decree stressing that every household must have at least a simple pit latrine. The decree also reaffirms that primary responsibility for operation and maintenance of rural water supply schemes lies with users. A pilot National Baseline Water Quality Survey also has been undertaken to initiate development of a national water quality database for major watersheds in Bhutan.

Interventions in water and sanitation have resulted in notable improvements in water- and hygiene-related illnesses, including skin diseases and worm infestations. Even so, children and women still face particular health risks and poor personal and home hygiene remain the leading causes of ill health among Bhutanese children. In urban areas, engine oil from automobile workshops is often drained directly into nearby streams despite legal prohibitions. At the same time, establishing basic facilities in remote communities over rugged terrain makes the target of providing increased coverage to the more than 30% of Bhutanese households that still do not have safe drinking water difficult.

Nevertheless, water is being made a priority among communities that are also concurrently working toward numerous other needs, including establishing community schools. Drinking water in public and private water supplies is now being tested in some areas for bacteriological, chemical and physical properties to meet the minimal physical and aesthetic criteria.

The multisectoral nature of water resource development is recognized, as well as the multi-interest utilization of water resources for water supply and sanitation, agriculture, industry, urban development, hydropower generation, inland fisheries, transportation and recreation. Special attention will be given to the growing effects of urbanization on water demands and usage and to the critical role played by local and municipal authorities in managing supply, use and overall treatment of water, for which particular support is required. The scarcity of freshwater resources and the escalating costs of developing new resources have a considerable impact on natural, industrial, agricultural and human settlement development and economic growth. Bhutan cannot afford to be complacent about this crucial resource, nor any of its other natural resources.

3. LEGISLATION

There is a need to use some of the significant financial resources arising from hydropower export for domestic watershed management. The Electricity Act, 2001 has now provided a firm legal footing for exploitation of the huge hydropower resources and has provided for the establishment of the Bhutan Electricity Authority, which will be entrusted with the responsibility of setting technical and safety standards for hydropower facilities. The Act also lays the framework for the formation of private power companies, inviting private sector participation in the electricity supply industry.

In addition, although legislation related to abstraction and utilization of freshwater and disposal of wastewater is almost absent, there are initiatives to create an enabling environment with clear water policies and legislation. For example, preparation of a Water Act that could reduce the conflict that currently exists will be a major achievement, as will development of practical management instruments such as preparation of a water resource inventory, and strengthening of institutional capacities and human resources.

INDIA

Key Issues: Trade Effluents; Ground Water Contamination; Wastewater Treatment; Cleaning of Rivers; Water quality Management; Human Health

Policy Framework: National Conservation Strategy and Statement on Environment and Development, 1992, Policy Statement on the Abatement of Pollution, 1992;

Key Legislation: Water (Prevention and Control of Pollution) Act, 1974; Water quality standard; BIS standards; EPA standards and CPCB standards; Effluent standard; EPA standards; Drinking water quality standard; CPHEEO (Environment Hygiene Committee) standards; WHO standards; BIS standards; Result of water monitoring; CPCB Guidelines for water quality control; Environment Protection Act, 1986 and Water (Prevention & Control of Pollution) Act, 1974; Water (Prevention & Control of Pollution) Cess Act, 1977

Key Institutions: Ministry of Environment and Forests (MoEF); National River Conservation; Directorate and National Lake Conservation Directorate; Central Pollution Control Board (CPCB); State Pollution Control Board(s); Ministry of Water Resources; Ministry of Agriculture; Ministry of Industry; Ministry of Urban Development and Poverty Alleviation; Central Public Health and Environmental Engineering Organisation; Ministry of Health; Bureau of Indian Standard;

1. INTRODUCTION

It is estimated that 75 to 80% of water pollution by volume is caused by domestic sewage. The remaining is industrial wastewater which is more toxic. The major industries causing water pollution include: distilleries, sugar, textile, electroplating, pesticides, pharmaceuticals, pulp & paper mills, tanneries, dyes and dye intermediates, petro-chemicals, steel plants etc. Non-point pollution such as fertilizer and pesticide run-offs in rural areas is also emerging as a major cause of concern. Only 60% of chemical fertilizers is utilised in soils and the balance is leached into soil polluting the ground water. Excess phosphate run-off is leading to eutrophication in lakes and water bodies.

2. WATER POLLUTION

The CPCB has carried out detailed basin and sub-basin wise inventories of pollution load through a net work of 480 stations covering 14 major, 12 medium and 9 minor river basin, 16 other small rivers, 35 lakes and 25 ground water sites. The water quality is monitored for 25 parameters. The criteria parameters include dissolved oxygen (DO), biochemical oxygen demand (BOD) and total coliform. The analysis results of the monitoring data shows that in most of the river stretches of the major rivers, total pollution is rising due to the discharge of untreated/partially treated sewage and industrial effluents from the towns situated on the river banks. Water quality assessment has been completed for river Ganga, Yamuna, Cavery, Godavari, Krishna, Subarnarekha, Brahmani, Baitarni, Narmada. Other grossly polluted river stretches have been identified. Based on monitoring studies conducted by CPCB, the results obtained have indicated that BOD, DO and fecal coliforms in some of the river stretches were found to have reached critical levels.

Coastal Pollution

India has a 6000 km long coast line. Land based and off-shore activities continue to pose threat to coastal areas. A number of chemical, petro-chemical and other industries in the coastal areas have resulted in significant discharge of industrial effluent into coastal water bodies. To illustrate, heavy metals such as lead and cadmium were found in Thane creek of Bombay coast. The Cochin region of Kerala coast has been found affected by petroleum hydrocarbons.

Ground Water Pollution

Due to improper drainage and lack of proper disposal facilities, industries and local bodies use large areas of land as mode of disposal of waste water. Small scale industries located in clusters or industrial estates, not having proper disposal facilities, cause ground water pollution. Several incidents of ground water contamination due to industrial clusters are reported specially due to electroplating units, tanneries, dyeing and printing units etc.

3. STEPS TAKEN/PROPOSED FOR PREVENTION AND CONTROL OF WATER POLLUTION

National River Action Plan

Industries located on the banks of rivers and/or discharging waste water through drains into river, are required to set up pollution control facilities to meet the discharge standards formulated for many industrial sectors. The Central Pollution Control Board has identified 24 areas in the country as critically polluted. These are: Bhadravati (Karnataka), Chembur (Maharashtra), Digboi (Assam), Govindgarh (Punjab), Greater Cochin (Kerala), Kala-Amb (Himachal Pradesh), Parwanoo (Himachal Pradesh), Korba (Madhya Pradesh), Manali (Tamil nadu), North Arcot (Tamil Nadu), Pali (Rajasthan), Talcher (Orissa), Vapi (Gujarat), Visakhapatnam (Andhra Pradesh), Dhanbad (Bihar), Durgapur (West Bengal), Howrah (West Bengal), Jodhpur (Rajasthan), Nagda –Ratlam (Madhya Pradesh), Najafgarh Drain (Delhi), Patancheru Bollaram (Andhra Pradesh), Singrauli (Uttar Pradesh), Ankelshwar (Gujarat), Tarapur (Maharashtra). Out of the 24 areas surveyed for pollution status, action plans in respect of 22 areas have been prepared which are at various stages of implementation.

The Ganga Action Plan was formulated and launched primarily to arrest degradation of river water quality by interception, diversion and treatment of domestic sewage and prevention of toxic and industrial chemical wastes from identified grossly polluting industrial units entering into the river. The National River Action Plan (NRAP) has been conceived as a larger plan to carry out pollution abatement works in all the polluted river stretches. About 44 towns are proposed to be covered under the NRAP in the first instance for pollution abatement. The states covered under NRAP are; Andhra Pradesh, Himachal Pradesh, Karnataka, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh.

Industrial Pollution Control

I. Installation of pollution control equipment among the industries located on the banks of rivers/lakes:

Industries located on banks of rivers and or discharging waste water through drains into river, have been persuaded to set up requisite pollution control facilities to meet the discharge standards.

II. Critically Polluted Areas:

The Central Pollution Control Board in consultation with State Pollution Control Boards has identified 24 areas in the country as critically polluted areas. These are: Bhadravati (Karnataka), Chembur (Maharashtra), Digboi (Assam), Govindgarh (Punjab), Greater Cochin (Kerala), Kala-Amb (Himachal Pradesh), Parwanoo (Himachal Pradesh), Korba (Madhya Pradesh), Manali (Tamil Nadu), North Arcot (Tamil Nadu), Pali (Rajasthan), Talcher (Orissa), Vapi (Gujarat), Visakhapatnam (Andhra Pradesh), Dhanbad (Bihar), Durgapur (West Bengal), Howrah (West Bengal), Jodhpur (Rajasthan), Nagda –Ratlam (Madhya Pradesh), Najafgarh Drain (Delhi), Patancheru Bollaram (Andhra Pradesh), Singrauli (Uttar Pradesh), Ankelshwar (Gujarat), Tarapur (Maharashtra)

Out of the 24 areas surveyed for pollution status, action plans in respect of 22 areas have been prepared, which are at various stages of implementation. The Action Plans for Ankeleshwar (Gujarat) and Tarapur (Maharashtra) are being prepared.

III. Common Effluent Treatment Plants:

A scheme on setting up of Common Effluent Treatment Plants (CETPs) in cluster of small scale industries had been undertaken in the country under a World Bank Scheme on Industrial Pollution Control. Under this scheme, a subsidy of 25% of the total cost of project from the Central Government and 25% subsidy from the State Government was provided. 30% was met through the financial institutions as loan at reduced rate of interest and the balance 20% is met by contributions of the members of the CETPs. Small scale industries discharging wastewater have been encouraged to subscribe to CETPs. So far, 89 CETPs have been constructed. The details of CETPs sanctioned are given in the following table:

Table: STATUS OF CETPs

Sl. No.	State	GOI Subsidy disbursed so far (Rs.in lakhs)	No.of CETPs
1.	Andhra Pradesh	132.00	3
2	Delhi	2300.00	15
3	Gujarat	735.42	7
4	Himachal Pradesh	12.60	4
5	Haryana	11.89	1
6	Karnataka	98.84	3
7	Madhya Pradesh	96.00	3
8	Maharashtra	267.435	9
9	Punjab	19.95	4
10	Rajasthan	100.00	2
11	Tamil nadu	1934.08	36
12	Uttar Pradesh	95.75	2
	TOTAL	**5803.89**	**89**

IV. Coastal Pollution:

For prevention and control of coastal pollution steps taken include;

1. Effluent treatment facility is provided in major polluting industries located in the coastal areas;
2. Show cause notices have been issued against non-complying units by the regulatory agencies;
3. Coastal zone management plans have been evolved and are being implemented as per Coastal Regulation Zone (CRZ).

V. Ground Water Pollution:

1. Ground water quality in critically polluted areas is monitored;
2. Industries discharging wastewater on land are being monitored to comply with the prescribed standards.
3. Central Ground Water Board has been delegated necessary powers under the Environment (Protection) Act, 1986.

VI. Assistance for Abatement of Pollution :

Funds are provided by the Ministry to the State Pollution Control Boards for equipment and specific studies to be completed within a specific time-frame to meet the objectives of the Policy Statement for Abatement of Pollution.

The Ministry of Environment and Forests through the Central Pollution Control Board started monitoring the industries with respect to compliance with the prescribed standards from August, 1997. Out of a total of 2139 industries identified in August, 1997 as grossly polluting industries discharging their effluents into rivers and lakes, 129 industries were complying with the prescribed standards after issue of directions and 494 units were closed. Legal action has been taken for closure in respect of 966 industries and extension of time has been sought in respect of 499 units.

The Policy Statement for Abatement of Pollution, 1992 which was launched in 1992 by the Ministry of Environment and Forests seeks to:

- prevent pollution at source;
- encourage, develop and apply the best available practicable technical solutions;
- ensure that the polluter pays for the pollution and control arrangements;
- focus protection on heavily polluted areas and river stretches.

4. LEGAL FRAME

The constitutional provisions are implemented through environmental protection laws of the country. There are more than 200 statutes having bearing on environmental matter in India. The pollution control acts administered by the Ministry of Environment & Forests are:

1. The Water (Prevention and Control of Pollution) Act, 1974;
2. The Water (Prevention and Control of Pollution) Cess Act, 1977;
3. The Air (Prevention and Control of Pollution) Act, 1981;
4. The Environment (Protection) Act, 1986;
5. The Public Liability Insurance Act, 1991;
6. National Environmental Tribunal Act, 1998.

The above legislations are being implemented through a regulatory machinery. This consists of a Central Pollution Control Board, 25 State Pollution Control Boards and 6 Union Territory Pollution Control Committees, constituted by the Central Government and the Governments of States and UTs respectively under the Water (Prevention and Control of Pollution) Act, 1974. The Government has also delegated powers under Section 5 of EPA to CPCB and to the State Governments under which the regulatory agencies can take appropriate steps for prevention and control of pollution in respect of those areas which were not covered under the Water and the Air Acts.

5. IMPLEMENTATION MACHINERY

For implementation of the pollution control enactments, 25 State Pollution Control Boards and 6 Pollution Control Committees in UTs were constituted under the Water (Prevention and Control of Pollution) Act, 1974. The Central Pollution Control Board was also constituted under the Water (Prevention and Control of Pollution) Act, 1974. The Central Pollution Control Board was constituted by the Central Government and State Pollution Control Boards and Pollution Control Committees were constituted by the respective State Governments. The main functions of the Central Pollution Control Board are to advise the Central Government, coordinate the activities of SPCBs, provide technical assistance and guidance etc. The Government has delegated powers under Section 5 of EPA to CPCB and to the State Governments under which the regulatory agencies can take appropriate steps for prevention and control of pollution in respect of those areas which were not covered under the Water and Air Acts.

6. LAWS AND RELEVANT REGULATIONS

a) The Water (Prevention and Control of Pollution) Act, 1974 and amended up to 1990
An Act to provide for the prevention and control of water pollution and maintaining or restoring quality of water, and for establishment of Boards for the prevention and control of water pollution at the central and state levels Pollution Control Boards.

b) The Water (Prevention and Control of Pollution) Rules, 1975 under section 63 of the Water (Prevention and Control of Pollution) Act, these rules have been framed to define the terms and conditions for functioning of the Central Pollution Control Board and State Pollution Control Boards.

c) The Water (Prevention and Control of Pollution) Cess Act, 1977, and amended by Amendment Act, 1991 and 2003 provides for the levy and collection of cess on water consumed by industries and local authorities.

d) The Water (Prevention and Control of Pollution) Cess Rules, 1978 Under section 17 of The Water (Prevention and Control of Pollution) Cess Act, these rules have been framed to define the: standards for water metering devices, and their locations; conditions for rebate on cess; powers of inspections of industrial installations; the rates of cess for various categories of uses of water, etc.

e) The Indian Fisheries Act, 1987 Fisheries management, protection and conservation

f) The Damodar Valley Corporation (Prevention of Pollution of Water) Act, 1948 Prevention of water pollution in Damodar river.

g) The River Boards Act, 1956

h) The Merchant Shipping (Amendment) Act, 1970 Oil spill, discharge of wastes into coastal waters and on high seas Coast Guard
i) Water Quality Standards for the receiving environment have been specified by the Bureau of Indian Standards. Discharge standards for specific industries have been specified under the Environment (Protection) Act,1986.

The Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974)

Scope of the Act

The Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) is one of the major laws relevant to the environment. Its main objects are the following:-

(a) to provide for the prevention and control of water pollution;
(b) to provide for the maintaining or restoring of wholesomeness of water;
(c) to provide for the establishment of Boards for the prevention and control of water pollution;
(d) to provide for conferring powers on such Boards and assigning functions to such Boards; and
(e) to provide for matters connected with the above.

The Water Pollution Act was taken as relating to a subject not within the competence of Parliament (except as provided in article 249 and 250 of the Constitution). The Act has been enacted in pursuance of resolutions passed by certain States under article 252(1) of the Constitution. The Act applies in the first instance to all the Union Territories and to the following States whose Legislatures have passed the requisite resolution: Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradeash, Rasasthan, Tripura and West Bengal.

The Boards

By sections 3 and 4, the Act provides for the creation of the Central Pollution Control Board and State Pollution Control Boards, Sections 13-15 authorise the establishment of Joint Boards. The main function of the Central Board, under section 16(1) of the Act, is to "promote cleanliness of streams and wells in the States" Section 16(2) provides certain functions in the nature of advice, planning, co-ordination, publication, education and programmes for preventing, controlling and abating water pollution.

The State Boards (section 17) are expected not only to plan comprehensive programmes for the prevention and control of water pollution in the State but also to inspect sewage or trade effluents, works and plants for their treatment, to lay down standards for such effluents and for the quality of receiving waters, to make orders for waste disposal and the like.

Directions by Boards

By section 18 of the Water Pollution Act, power to give "directions" is conferred on-

(a) the Central Government (which can give directions to the Central Board);
(b) the Central Board (which can give directions to the State Boards):
(c) the State Government (which can give directions to the State Board).

In case of conflict between directions given by the Central Board and the State Government, that matter shall be referred to the Central Government for decision. If the Central Board's directions are not complied with by the State Board, the Central Government can order the former to perform the functions of the latter for a specified period.

Control of Pollution of water

Apart from the general powers of the State Boards (section 17), a State Board has statutory powers to obtain information (section 20), to take samples of effluents and have them analysed (sections 21-22) and to enter and inspect premises and vessels (section 23). Violation is punishable under section 40.

Prohibition against pollution

Section 24 prohibits every person from knowingly doing certain acts which cause water pollution. Most important is the prohibition against causing or permitting the entry into any stream or well or sewer or by land of-

i) any poisonous matter;
ii) any noxious matter;
iii) any polluting matter as per standards laid down by the State Board;
iv) any other matter tending to impede the proper flow of water of a stream "in a manner leading or likely to lead to a substantial aggravation of pollution due to other causes or its consequences".

Violation is punishable under section 43.

New outlets and new discharges

Section 25 prohibits the following acts, if committed without the previous consent of the State Board:-

(a) establishment of any industry etc. or any treatment and disposal system likely to lead to discharge of sewage;
(b) bringing into use any new or altered outlet for discharge of sewage; or
(c) beginning to make any new discharge or sewage. Violation is punishable under Section 44.

Section 27 lays down the circumstances in which consent may be granted. Orders refusing consent are, under section 28, appealable to the prescribed appellate authority. They can also be revised by the State Government under section 29.

Power to carry out works

Where consent of the Board is subject to the condition of execution of works and the person to whom such conditional consent is given fails to execute the works, the State Board can get those works executed at his cost, under section 30.

Accidents and emergencies

Where owing to any accident etc. there is any discharge of poisonous, noxious or polluting matter, section 31 imposes on the person concerned an obligation to inform the State Board. Failure to do so is punishable under section 45A, which is the residuary penal provision. By section 32, the State Board is empowered to take emergency measures in case of such accident. Violation is offence under section 41.

Restraint order

In case of apprehended pollution of water of any stream or well, section 33 enables the State Board to apply to the Court for a restraint order. Violation of the restraint order becomes punishable under section 44. Further the Court may authorize the Board to undertake Removal and disposal of the matter.

Power of a Board to give directions

By section 33A of the Water Pollution Act (subject to directions of the Central Government), a Board can, in the exercise of its powers and performance of its functions under the Act, issue directions. Breach of such direction is punishable under section 41.

Penalties

Chapter 7 (sections 41 to 50 of the Water Pollution Act is of considerable importance in practice. The Chapter is headed "penalties and Procedure". The offence created by each section may be stated in brief as under: -

The Water (Prevention & Control of Pollution) Cess Act, 1977:

The Water (Prevention and Control of Pollution) Cess Act, 1977 came into effect on April 1,1978. The Act provides for "the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution constituted under the Water (Prevention and Control of Pollution) Act, 1974".

The schedule I of the Act enlist category of industries for the purpose of levying cess. As per the Act, any amendment to the Schedule I should fulfill the requirement of section 16(2) which state that every such notification shall be laid before each House of Parliament, if it is sitting, as soon as may be after the issue of the notification, and if it is not sitting, within seven days of its re-assembly and the Central Government shall seek the approval of Parliament to notification by a resolution moved within a period of fifteen days beginning with the day on which the notification is so laid before the House of the people, and if Parliament makes any modification in the notification shall thereafter have effect only in such modified form or be of no effect, as the case may be, but without prejudice to the validity of anything previously done thereunder.

The Government twice amended the Schedule I in the year 1992 and 1993. By the 1992 amendment, two entries were made, first to category 10 of the Schedule I, which reads after amendment as „Textile industry (including cotton synthetic and semi- synthetic fibers manufactured from these fibers)" instead of „Textile industry". Secondly to the category 15, which reads after amendment as „Processing of animal or vegetable products industry (including processing of milk, meat, hides and skins, all agricultural products and their wastes)" instead of „Processing of animal or vegetable products industry". This amendment to Schedule-I was notified in Gazette Notification No, 14(E) dated 2.1.1992. By the second amendment in 1993 to the Schedule I, two new entries were made, first to category 14 that reads after amendment as „Power (thermal, diesel) and hydel generating industry" instead of „ Power (thermal, diesel) generating industry". Second entry of „Engineering industry" was separately made as new category. This amendment to Schedule-I was notified in Gazette Notification No, 377(E) dated 16.4.1993.

MALDIVES

Key Issues: Water Pollution; Water quality Management; Marine Pollution; Drinking Water; Human Health

Policy Framework: National Environment Action Plan

Key Legislation: National Environment Action Plan; Environmental Protection and Preservation Act, 1993; Environmental Impact Assessment (EIA), 1994; Fisheries Law of the Republic of Maldives, 87

Key Institutions: Ministry of Home Affairs, Housing and Environment; Maldives Water and Sanitation Authority; Ministry of Tourism

1. INTRODUCTION

The water resources of the Maldives comprise of fresh groundwater that occurs in the porous coral sediments on many islands of the Maldives. The population of Maldives has traditionally been dependent on groundwater from shallow well dug in the ground. It has been estimated that currently 25% of the population depends on groundwater for drinking while the rest of the population uses rainwater and desalinated water for drinking and groundwater for other purposes. The quality of groundwater varies seasonally and across the islands. The superficial hydrogeology of the groundwater aquifers result in ease of pollution by sewage, chemicals and pathogens. Water quality testing carried out to date shows that bacterial contamination of point source water supplies (dug wells) is widespread and that faecal contamination exists in many of these sources on the inhabited islands. The level of faecal contamination is higher on the more densely populated islands, Malé being regarded as having the highest level of bacterial contamination of the groundwater aquifer. However, the controlling factor is not the size of the population of the island, but the house plot size in combination with the presence of cesspits and their interaction with the groundwater aquifer. On the basis of WHO drinking water guidelines there are few groundwater sources in the Maldives fit for potable use without disinfection. The microbiological quality of well water in many growth centres of the Maldives is usually above 50 coliforms per 100ml which renders the water even unfit for bathing under World Health Organisation recreational or bathing water quality guidelines. Improper sewage disposal facilities are the major cause of poor groundwater quality in these islands.

During early 2000 about 60% of the wells in the country were reported to have freshwater (MWSA). The groundwater in Malé is severely depleted. The 5600 household wells have been supplying the water needs of the population of Malé, in the past. At present the water provided by these wells is so saline that it is not fit even for bathing and washing purposes. The situation is further aggravated by the amount of chemicals in the water such as hydrogen sulphide and hydrocarbons. A recent chemical analysis of ground water in Malé shows that it contains high amounts of nitrates and sulphates. In a few wells ammonia was detected at elevated levels (0.4 - 0.6 mg/l) indicative of sewage pollution and raised pH levels (7.5 - 8.0) tended to confirm that the results were significant. Hydrogen sulphide or sewer gas has also been a major threat to well water users in Malé resulting in acute poisoning of two and death of one person in 1997. Hydrogen sulphide makes the water stink and poses different health risks at different levels of exposure. Many household wells have shown elevated levels (0.5 to 3.5 ppm in water and above 100 ppm in the air) of hydrogen sulphide. Hydrogen sulphide in the sewers has also been a major problem for people living near pumping stations around Malé. The situation has improved in many areas since household venting started in 1999. Hydrogen sulphide has also been detected in some wells in Kulhudhuffushi and Hithadhoo, the designated growth centres under the first Regional Development Project. The quality of groundwater in Gan, Addu Atoll has

also rapidly declined in the past few years. Gan has a few garment factories and a regional airport. However, as almost all general purpose water used on Gan originates from two boreholes located on the western side of the island, there is excessive extraction above the demand. Leakages in the distribution network also contribute to the problem in Gan. Increased extraction exceeding natural recharge through rainfall has dramatically depleted the freshwater lens in Malé and other populated islands. This increased extraction is linked with technolog y and lifestyle. Although, many households in Malé and in other islands of the Maldives use low flush toilets and other water saving devices, water conserving lifestyles can be said to be rare.

In many islands, rainwater is mainly used for drinking and cooking purposes. Recent and past water quality tests on rainwater have shown that rainwater in the Maldives is of acceptable potable quality. However, a full analysis of rainwater may be required before impacts of trans-boundary air pollution can be assessed. Many people practice safe collection and storage of rainwater. However, there have been a few incidents when rainwater has been tested positive for faecal coliforms. Rainwater is hardly disinfected, and very few people boil it. Rainwater collection is also encouraged in resorts islands by the Ministry of Tourism to reduce the need for desalination.

Desalination or desalting became necessary when the sustainable yield of the existing groundwater aquifer on some islands was exceeded. Desalinated water is now supplied to almost all households in Malé and Villingilli, the fifth ward of Malé. Malé produces about 4,000 tonnes of desalinated water everyday using the reverse osmosis (RO) process to serve a population of about 74,000 people. At present, Kandholhudhoo is the only other inhabited island that is served with desalinated water via taps in standbays. The need for desalination arose during the dry season of 1998 when the inhabitants of Kandholhudhoo had to fetch water from nearby islands. Kandholhudhoo, the most densely populated island in the Maldives, is served by a reverse osmosis desalination plant with a capacity of 50 cubic meters. The island community operates and maintains the plant. When the population of Kandholhudhoo was served by desalinated water in May 1999, about 28% of the population of the Maldives had access to desalinated water and over 20% of the population almost entirely depended on desalinated water. All tourist resorts rely on desalination to cater for their water needs as the island aquifers could not be tapped and also would not provide sufficient yield. In most resorts, a total production capacity based on 250 litres per capita per day is established.

2. MAJOR POLICY RESPONSES AND INITIATIVES

To face the challenges, an integrated national water resources management master plan is to be developed, in addition to the development and strengthening of monitoring and assessment capabilities. However, this process is currently in its draft stages. Draft regulations on water supply, plumbing, waste disposal, sewerage systems, etc. have been developed. Desalination plants cannot be installed and operated in the country without written permission from MWSA. Therefore, a draft standard for the operation and maintenance of desalination systems has been developed. Strict measures are in places to reduce the amount of pumping for excavation and foundation works. As such, dewatering guidelines have been developed. The tourism regulations have ensured that the groundwater lens of newly developed resort islands are truly conserved and protected. All restaurants and cafes are required to have grease/oil traps according to MWSC specifications. Optimizing rainwater catchment is a priority policy of the government. Rainwater collection tanks are procured and delivered at public and household levels. Household/private tanks are sold on monthly installment basis.

In 1995, the Government of Maldives transferred the water supply and sewerage management of the city of Malé from the Maldives Water and Sanitation Authority (MWSA) to a private company, Malé Water and Sewerage Company Ltd., which was set up for this purpose. MWSC is a joint venture company with Government majority shareholding. In order to protect the interests of consumers as well as the environment, the Maldives Water and Sanitation Authority was given the mandate to act as a regulatory body for the

company. The regulatory body is responsible for setting standards and regulations for water quality in the Maldives and to monitor and enforce them.

MWSC is improving the performance of the existing sewerage system in Malé. Efforts are underway to reduce the level of hydrogen sulphide gas in sewers by sewer ventilation. Leaking catchpits are being replaced by plastic (HDPE) ones to ensure strength and longevity and to virtually eliminate leaks and reduce groundwater contamination. Local traders are introducing different water saving devices into the country. Energy efficient technologies are also being introduced. However, currently there are no tax cuts on environment safe or environmentally friendly products. Inappropriate selection of excreta disposal methods coupled with lack of management skills at community level has resulted in ill-health or other related problems. Small bore sewerage systems installed on 7 islands have had several problems related to design, construction and maintenance. Water quality surveillance is given special focus by the Maldives Water and Sanitation Authority. The Public Health Laboratory carries out daily tests on desalinated water produced in Malé and Villingilli by MWSC. Water test kits have also been provided to regional hospitals. Appropriate training on how to use these test kits have also been given to concerned persons at the Regional Hospitals. Bathing water quality in Malé Swimming Track (or fathaa sarahaddu) is tested regularly to protect swimmers who swim in the area, which is close to sewer outfalls for PS2 and PS9 behind Dharubaaruge. At times when faecal contamination exceeds 100 per 100ml, notice has been given. Water quality monitoring is also carried out for 64 groundwater wells in Malé and water resources of selected islands of selected atolls are assessed every year. A storm water management system is being developed by the Ministry of Home Affairs, Housing and Environment. However, the health concerns of such a plan have not been adequately addressed. Water and sanitation component of the Regional Development Project would provide the venue and forum for detailed investigation and understanding of appropriate technologies and means of water supply and sanitation.

NEPAL

Key Issues: Trade Effluents; Ground Water Contamination; Wastewater Treatment; Cleaning of Rivers; Water quality Management; Human Health

Policy Framework: National Environment Policy and Action Plan 1993 updated in 1998

Key Legislation: Water Resources Act, 2049 (1992); Nepal Drinking Water Corporation Act, (1988); Water Resources Act, 1992; Industrial Enterprises Act 1992; Drinking Water Regulations, 1998; Aquatic Animal Protection Act, 1960; Kathmandu Valley Development Authority Act, 1998; Town Development Act, 1998; Water Resource Regulation, 1993; Environmental Protection Act, 1996; Environmental Protection Regulation, 1997; Municipality Act, 1991; District Development Committee Act, 1991;

Key Institutions:
Ministry of Population and Environment; Ministry of Industry, Commerce and Supplies; Nepal Water Supply Corporate (NWSC); Department of Water Supply and Sewerage (DWSS); Department of Hydrology and Meteorology (DHM);

1. WATER POLLUTION

The issue of water pollution is very critical in Nepal. The study shows that waterborne disease account for 15 percent of all their cases and 8 percent of deaths. The proportion is higher among children and much higher for infants. Recent studies shows that in most part of country the bacteriological quality of water is far from safe.

Many studies have been conducted to monitor the surface and ground water quality of Kathmandu valley as well as other major cities of the Kingdom. In most of all the cases rivers maintain good chemical and biological water quality before it enters the urban areas, where ecological breakdown occurs. In all cases untreated city sewage and industrial effluent increases the pollutant concentration to levels that not only destroy the self-purification capacity of the river but also the aquatic life. The extent of water pollution in and around urban areas is fast becoming a matter of grave concern.

The review of previous studies indicates that domestic wastewater is the main factor affecting river and other water bodies as ponds, lakes and under ground water bodies. Domestic wastewater responsible for over 90 percent river pollutants and other 10 percent is contributed by industrial, agricultural, and services industries. Shallow ground water is extremely polluted because of the lack of sewerage facilities and over 30 percent of the deep-water aquifers are contaminated with colliform bacteria. The common practice of dumping solid waste on the river and stream banks is wide spread and shows no sign of being curtailed. There are different Acts and Regulation as “The Soil and Water Conservation Act”,; “Nepal Water Supply Corporation Act (NWSC); “Solid Waste Act 1986”;′The Canal (Irrigation , Electricity and Related Water Resources Act)” forbid polluting any water resources in the country, but due to lack of enforcement mechanism non of these Acts and Regulations have been implemented.

Over the last three decades the water pollution has became a major threat to urban environment in the country due to uncontrolled discharge from domestic sewage and industrial effluents. Nepal has no environmental ambient water quality standards and few laws specifically to deal with pollution, whether it is surface water, ground water of drinking water. The degradation of both surface and ground water resources

has had adverse impact on the quality of drinking water for human use, as well as harmful effect on aquatic life.

Ground Water

Ground water pollution in city and town has become a serious threat to public health. Major source of ground water pollution is the seepage from septic tanks, domestic sewage, polluted rivers, dumping of domestic and industrial solid waste are some of the major sources. In Kathmandu Valley most of the shallow ground water is contaminated with pathogenic bacteria. Ground water monitoring in Kathmandu Valley reported that over 30 % water samples were contaminated with colliform bacteria. Another major threat to ground water in Kathmandu is land degradation of ground water recharge area and polluted environment.

The water table is generally found at around 15 m from the surface in the northern part of the Terai, whereas it is available near the surface in the southern parts. In the middle part of the Terai, there is a high pressure artesian condition. The top water table is nearly at the surface in the Eastern Terai region, varying from 3 to 4.5 m at some places, while it varies from 3 to 9 m in the Dun Valleys in the Central Terai, and up to 18 m depth in the western Terai. In Kathmandu Valley, the water table ranges from a depth of about 1 to 12 m and a very limited number of aquifer have been reported at about a depth of 450 m.

Watershed /Catchment Management

About 25 % of the world‟s population live in the mountain watersheds of Asia and the Pacific. The Himalayan –Hindkush Mountain Ecosystem is the world‟s youngest and largest mountain ecosystem. In Nepal most of the watersheds are in the state of physical and biological deterioration due to overexploitation of watershed resources by the inhabitants. The systematic programs of soil conservation and watershed management in Nepal started more than two decade ago when His Majesty‟s Government of Nepal (HMG/N) established a Soil Conservation Department in the Ministry of Forest and Soil Conservation.

The soil and Watershed conservation Act, 1982 is the only Act which covers the watershed management in the country. Under this Act Section 4 deals with the measures which may be taken in protected areas while Section 10 deals with the prohibited action in areas where Natural disasters occur or may occur.

Wetlands

Although Nepal is a landlocked country, it has many types of wetlands scattered through the mountain and Terai regions. These wetlands are associated with over 6,000 fast-flowing rivers, rivulets, streams, trench water, lakes and marshy lands, which contribute to 40 percent of the annual flow of the Ganges River. Most of the lakes in the high mountain region are oligotrophic. Lakes in the Terai are oxbow. Lakes in the midland are tectonic. Severe flooding during the summer monsoon and constant seeping of river channels in the Terai has created floodplains and marshy grasslands.

In order to protect the wetland‟s aquatic life, in 1961 his Majesty‟s Government promulgated the Aquatic Life Protection Act, 1961. The Act prohibits the use of poisoning and explosive substances in water bodies, but Act remains ineffective. Much of the legislation concerning protected areas is irrelevant to wetland habitats. The *National Parks and Wildlife Conservation Act (1973)* provides a legal basis for Nepal‟s conservation programme.

Nepal has joined IUCN –the World conservation Union, the World Wildlife fund, CITES, and the Convention on Wetlands of International Importance, (the Ramsar Convention) in 1987. Nepal has not yet joined the Convention on the Conservation of Migratory Species (CMS) of Wild Animals (the Bonn Convention).

Aquatic Life

The Aquatic Animal Protection Act has been in effect since 1961, yet both noxious and explosive materials are increasingly used in water bodies throughout Nepal. Under Section 4, the government is empowered to prohibit through notification in the Nepal Gazette. However, notice under this section has never been published by the government, further demonstrating the Act‟s lack of implementation.

Aquatic life: Wetlands are essential for the protection of endangered and threatened species. Some resources associated with wetland in Nepal are summarized below.

- Some 172 species of fish have been recorded in Nepal dominating in the rivers and streams of the midland and highland zones.
- Ornithologists have recorded 850 species of birds throughout Nepal, of which 190 species are wetland dependent.
- Aquatic reptiles include two threatened species of crocodile, the mugger and gharial. The gharial is endangered throughout its range.
- Of the 370 species of mammals, birds, reptiles, fish and higher vertebrates, which depend on Nepal‟s wetland habitats, around 100 species, are threatened due to misuse of wetland habitats.
- Nepal is rich in diverse flora. Twenty-five percent of the 7,000 species of plants recorded in Nepal are aquatic. Of the 700 species of the medicinal plants and 250 species of endemic plants, 27 are rare, seven are threatened and nine are endangered species of endemic plants.

2. LEGISLATION

There is no coherent legislative and administrative frame work for the conservation of water resources and the maintenance of water quality. In reality, water supply controls are spread over a miscellaneous collection of unrelated statutes and administrative regulations, as listed below:

- *Water Resources Act, 1992*
- *Industrial Enterprises Act 1992*
- Drinking Water Regulations, 1998
- Aquatic Animal Protection Act, 1960
- Kathmandu Valley Development Authority Act, 1998
- Town Development Act, 1998
- Water Resource Regulation, 1993
- Environmental Protection Act, 1996
- Environmental Protection Regulation, 1997
- Municipality Act, 1991
- District Development Committee Act, 1991

The main concer of these legislative controls has been the provision of clean drinking water, health and sanitation schemes and prevention of communicable diseases, pollution prevention from industrial enterprises etc.

The Municipality Act of 1991 empowers Pokhara Municipality to take necessary measures to manage garbage collection and disposal, and pollution control from the lake shore. The Act also makes provisions for enforcing building norms, rules, regulations and the ability to take punitive action against defaulters. Town Development Act 1988 allows the town development committee to enforce land use and building regulations, and implement physical development plans and programs. The Town Development Committee also has the

authority to take punitive action against those who ignore the regulations, and violate the norms and standards set by the committee. Since six Village Development Committees (VDCs) apart from the Pokhara Municipality touches the boundary of the lake, Phewa lake is subjected to the Committees authority derived from Act of 1991. Since the District Development Committee (DDC) is the main coordinating agency for all Village Committees in the district, Kaski the District Committee also has authority over Phewa Lake deriving from the Act of 1991. Phewa Watershed is subjected to the Forest Act, Soil and Water Conservation Act, Water Resources Act, and both the District and Village Committee Acts, Municipality Act, Town Development Act, Aquatic Life Act, 1961, thus each agency operating under their own legal mandate and caring little for others. This situation is continuous and is one of the major causes for environmental noncompliance and poor legal enforcement in the watershed. This resulted in the development of uncontrolled urbanisation and inconsistent land use. For the regulated growth of Pokhara, in 1973 Physical Development Plan was prepared. This was adopted by His Majesty‟s Government of Nepal. Consequently, Pokhara Town Development Committee was established under Town Plan Implementation Act 1972 for implementing the plan. Political upheaval of 1979/80, and political change of 1989 completely destroyed the remnant of respect for land use, and building rules and regulations regarding the lakeside area. Random and haphazard construction activities have taken place in these areas and along the lake side, now culminating into a rapidly deteriorating environmental condition of the lake and its environment. The same people who were against the spirit of 1973 plan regarding the lake side conservation concept, have now come up with the support for that concept. From 1973 to 1995, much water has flown through Phewa lake and land use in the lakeside area and the Pokhara valley has undergone many changes, but so far no serious effort to review and implement the 1973 plan has been undertaken. It was completely encapsulated and ignored. This clearly shows the government‟s unwillingness to comply with the environmental problems and enforcement. With respect to the lake water pollution and poor solid waste disposal system, over the past few years, Phewa Lake and its adjoining catchment areas have experienced few marked changes in terms of environmental quality. In these areas tourism facilities have been established. But serious environmental issues such as lake water pollution and solid waste disposal problems have emerged. Although systematic monitoring of lake water quality is lacking, a recent study indicates that water quality in Phewa Lake is deteriorating due to increase in biological contamination.

PAKISTAN

Key Issues: Trade Effluents; Ground Water Contamination; Wastewater Treatment; Cleaning of Rivers; Water quality Management;

Policy Framework: National Conservation Strategy

Key Legislation: Environmental Protection Ordinance (PEPO), 1983;Pakistan Environment Protection Act, 1997; Environmental Quality Standards; The Canal and Drainage Act, 1873; Water Management and Water Users' Associations Ordinance, 1981; The Punjab Local Government Ordinance, 1979; Balochistan Ground Water Rights Administration Ordinance, 1978

Key Institutions: Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs; Environmental Tribunals

1. INTRODUCTION

The major sources of water pollution are industry, agriculture and municipal liquid and solid wastes. Municipal sewage is mixed with wastewater from industries located in or nearby the cities and then discharged into rivers, canals and other water bodies. Untreated industrial and municipal wastewater from the various industrial estates and urban centres is discharged into common drainage systems, ultimately polluting the rivers. Typical examples are the Swat and the Kabul rivers where domestic and industrial wastes are dumped from the cities of Mingora and Peshawar. IUCN and the government of NWFP are now formulating an action plan to clean up the Kabul and Swat rivers.

The Kabul River has become grossly polluted by untreated domestic/municipal and industrial waste discharges from Peshawar, Charsadda, Nowshera, Mardan and other urban centres. Near Nowshera, untreated industrial waste from Aman Garh is dumped into the river, resulting in a gross deterioration of water quality. The industries that are mainly responsible for the discharge of effluents are tanneries and producers of paper, chemicals, insecticides, textiles, soap, pharmaceuticals and ghee. The dissolved oxygen level has been seriously depleted by organic waste discharges, spent sulphite liquor, spent mineral acids and oxidizable organic compounds. The dissolved oxygen level has been reported as returning to acceptable levels about 6 km downstream of Aman Garh, which indicates a high re-aeration coefficient for that stretch of river.

It is the quality of water with the presence of undesirable substances and microorganisms that make it hazardous when use. It is the alteration of natural quality and character of water with “foreign matter” so as to render it partly or completely unfit for consumption. The polluted water becomes offensive to the senses of the human beings.

The 100% pure water with its chemistry formula (i.e.) H_2O is not available in nature and if prepared in laboratories, its use is restricted for some certain reasons. Only 3% of total quantity is potable water and the remaining 97% water is not fit for human consumption.

The water pollution may be classified as physical, chemical and biological. These types are as follows;

i. Physical Pollution - This pollution includes the physical characteristics like colour, taste, silt content, turbidity, temperature, etc.
ii. Chemical Pollution – This type of pollution covers the presence of chemical compounds such as acids, gases, alkalies and salts.
iii. Biological Pollution – Biological pollution is due to presence of microorganisms in the water.

2. CAUSES OF WATER POLLUTION

The Industrial and Municipal wastes are the main causes of water pollution. Most of the available water in Pakistan, whether it is of ground or surface water has badly polluted.

Municipal wastes comprising of the human excreta, sewage, kitchen wastes and storm water are allowed to flow in the drains, sewers, canals and rivers in untreated state. Thus the water bodies get polluted. The sewage is also used for irrigation purpose as a soil conditioner without having undergone proper treatment. The wastewater has certain nitrates and sulphates, which provide the essential nutrients. In Pakistan 13 million tonnes of human excreta is produced annually. 80% of the excreta in the villages is thrown in the crop fields as manure. In the urban areas about half of the excreta is swashed off in the water borne sewerage system solid wastes. Rate of generation of excreta per head per day is 250 grams. And 20 grams BOD is required for its decomposition. Thus 850,000 tonnes BOD is required in a year. Waste water is produced at the rate of 70% of the consumed quantity. This contains many types of biological, inorganic, organic and industrial compounds, therefore, more BOD is required for its treatment. Waste water per day generated in Lahore and Karachi is 1,000 and 1,600 million litres respectively. In Karachi about 1/10 of the generated sewage is treated and the balance quantity ultimately enters the Arabian Sea. 30% people die because of gastro-intestinal diseases caused by polluted water. Similarly 60% infant deaths also occur in early ages. At world level kids of age 5 years numbering 200,000 expire due to dysentery per annum. Overall 54 million people are seriously affected every year. Human excreta contain many pathogenic microorganisms like protozoa, bacteria, worms and viruses. These harmful organisms make the surface and sub-surface resources polluted. The human beings and other animals are affected when they come in contact or consume the contaminated aquatic life.

3. LEGISLATION

Following are the main enactment on Water Quality and Freshwater Pollution, and their relevant sections.

1. The Pakistan Penal Code, 1860

Section 277 **Fouling water of public spring or reservoir:**

Whoever voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purposes for which it is ordinarily used, shall be punished with imprisonment of either description for a term which may extend to three months, or with fine which may extend to five hundred rupees, or with both.

2. The Canal and Drainage Act, 1873

Definitions

Section 3 **Definitions:**

(1) Canal includes:

(a) all canals, channels and reservoirs constructed maintained or controlled by the Provincial Government for the supply or storage of water:
(b) all works, embankments, structures, supply and escape-channels connected with such canals channels or reservoirs:
(c) all water-courses as defined in the second clause of this section;
(d) all parts of a river, stream, lake or natural collection of water or natural drainage-channel, to which the Provincial Government has applied the provisions of Part II of this Act:

water-course means any channel which is supplied with water from a canal, but which is not maintained at the cost of the Provincial Government, and all subsidiary works belonging to any such channel:
(1) drainage-work includes escape-channels from a canal, dams, weirs, embankments, sluices, groins and other works for the protection of lands from flood or from erosion, formed or maintained by the Provincial Government under the provisions of Part VII of this Act, but does not include works for removal of sewage from towns;
(2) vessel includes boats, rafts, timber and other floating bodies;
(3) Commissioner means a Commissioner of a division and includes any officer appointed under this Act to exercise all or any of the powers of a Commissioner;
(4) Collector means the head revenue-officer of a district and includes a Deputy Commissioner or other officer appointed under this Act to exercise all or any of the power of a Collector;
(5) Canal-officer means an officer appointed under this Act to exercise control or jurisdiction over a canal or any part thereof;
Superintending Canal-officer means an officer exercising general control over a canal or a portion of a canal; Divisional Canal Officer means an officer exercising control over a division of a canal; Sub-Divisional Canal-officer means an officer exercising control over a sub-division of a canal:
(8) District means a district as fixed for revenue-purposes.

Section 20 B **Cutting of supply for any land not being irrigated at site:**

(1) Whenever, on an application or otherwise, the Divisional Canal Officer considers it expedient to terminate the water supply of any land which cannot be used for agriculture or has become unirrigable, he shall give notice of not less than fourteen days to the landowners and the persons responsible for the maintenance of the watercourse through which such supply is conveyed, to show cause why such supply should not be cut off, and after making enquiry, the said Canal Officer may pass orders to stop the complete or partial supply of water.

(2) After expiry of thirty days of the announcement of the decision by the Divisional Canal Officer, if no objection is received and after giving due opportunity of hearing, if any objection is received, the Superintending Canal Officer may confirm or modify it. The decision of the Superintending Canal Officer shall be final and binding on the parties concerned.

Section 33 **Liability when water is unauthorizelly taken from canal or water-course:**

When the water of a canal be used in an unauthorized manner, the Divisional Canal Officer shall, after holding an enquiry, levy charges in the manner and to the extent provided in the rules framed under this Act from the person by whose act such use has occurred, or if such person cannot be identified, from the person on whose land the water has flowed and such land has derived benefit therefrom :

Provided that where the water so used has been supplied through a water-course, the charges shall be levied:

(a) from the person by whose act or neglect such use has taken place; or
(b) if such person cannot be identified, from the person on whose land the water has flowed and such land has derived benefit therefrom; or
(c) if such person cannot be identified or the land on which the water has flowed has derived no benefit therefrom, from all persons chargeable in respect of the water supplied through such watercourse.

Section 55 **Power to prohibit obstructions or order their removal**

Whenever it appears to the Provincial Government that injury to any land or the public health or public health or public convenience has arisen or may arise from the obstruction of any river, stream or drainage channel, such Government may, by notification published in the official Gazette, prohibit, within limits to be defined in such notification, the formation of any obstruction, or may within such limits, order the removal or other modification of such obstruction.

Thereupon so much of the said river, stream or drainage channel as is comprised within such limits shall be held to be a drainage work as defined in section 3.

Section 56 **Power to remove obstructions after prohibition**

The Divisional Canal officer, or other person authorized by the Provincial Government in that behalf, may, after such publication issue an order to the person causing or having control over any such obstruction to remove or modify the same within a time to be fixed in the order.

If within the time so fixed, such person does not comply with the order, the said Canal officer may himself remove or modify the obstruction; and if the person to whom the order was issued does not, when called upon, pay the expenses involved in such removal or modification, such expenses shall be recoverable by the Collector from him or his representative in interest as an arrear of land-revenue.

Section 70 **Offences under Act**
Whoever, without proper authority does any of the following acts, that is to say:

(5) corrupts or fouls the water of any canal so as to render it less fit for the purpose for which it is ordinarily used;
.....……...

shall be liable, on conviction before a Magistrate of such class as the Provincial Government directs in this behalf, to a fine not exceeding two hundred rupees or to imprisonment not exceeding three months or both.

Section 73 Any person in charge of or employed upon any canal or drainage-work may remove from the lands or buildings belonging thereto, or may take into custody without a warrant and take forthwith before a Magistrate or to the nearest police station, to be dealt with according to law, any person who, within his view, commits any of the following offences:

(1) willfully damages or obstructs any canal or drainage-work;
(2) without proper authority interferes with the supply or flow of water in or from any canal or drainage- work, or in any river or stream, so as to endanger, or render less useful any canal or drainage-work.

3. On-Farm Water Management and Water Users' Associations Ordinance, 1981

Section 2 **Definitions:**

.....…….....

(iv) Irrigator, in respect of any land which is irrigated from a water course means any person for the time being directly deriving benefit by such irrigation, and includes a land owner, tenant or lessee of any such land;

(v) Water-course means any channel which is supplied with water from a canal, but which is not maintained at the cost of the Government and such subsidiary works belong to any such channel.

…….....

(vii) Improvement means and includes :

(a) demolishing of old watercourse;
(b) removing of vegetation including trees etc. growing in the way of a water-course sanctioned by Government;
(c) unloading of the banks of the water-course by physical removal of the silt deposit;
(d) clearance of silt from the bed of the water-course;
(e) re-alignment of the watercourse based on engineering survey and design;
(f) installation of pacca nakkas at sanctioned sites,
(g) construction of culverts on the crossings;
(h) brick-lining of weak reaches of the watercourse up to certain fixed limit:
(i) construction, reconstruction or maintenance of buffalo wallows, where required.

Section 3 ……

(4) Where the irrigators of a watercourse jointly responsible with others for the construction, maintenance or improvement of a watercourse or jointly making use of a watercourse with others, have formed themselves into an Association and the same is registered with the Field Officer under the provisions of the Ordinance, he shall, before undertaking the reconstruction, maintenance of improvement of the watercourse, provide an opportunity to the Association to carry out the job of reconstruction, maintenance or improvement of the watercourse.

Section 5 **Field Officer to check maintenance of watercourse:**

Field Officer shall from time to time, make spot-inspection of the watercourse to satisfy himself that it is being maintained and may issue such directions for the proper. maintenance of a watercourse as may be considered necessary.

Section 6 **Formation and registration of association:**

(1) Where the majority of the irrigators of a watercourse agree to associate in the work of reconstruction, maintenance or improvement of the watercourse, they may form an Association to be known as Water Users' Association (Aniuman-e-Absashan).

4. The Punjab Local Government Ordinance, 1979

Section 59 **Private source of water supply:**

(1) All private sources of water supply within the local area of the urban council shall be subject to control, regulation and inspection by the urban local council.

(2) No new well, water-pump or any other source of water for drinking purposes, shall be dug, constructed or provided except with the sanction of the urban local council.

(3) An urban local council may, by notice, require the owner of any person having the control of any private source of water supply used for drinking purposes.

(a) to keep the same in good order and to clean it from time to time of silt, refuse and decaying matter;
(b) to protect the same from contamination in such manner as the urban local council directs: and
(c) if the water therein is proved to the satisfaction of the urban council to be unfit for drinking purposes, to take such measures, as may be specified in the notice to prevent the use of such water for drinking purposes.

Section 61 **Drainage and sewerage schemes for commercial and industrial area:**

(1) An urban local council may through a notice require the owners, tenants and occupiers of commercial and industrial concerns in any area or areas within its local area to have at their own cost prepared a scheme for the adequate and safe drainage and disposal of their wastes and effluent of the quality permitted under the rules or the bye-laws and submit it to the urban local council within the time specified in the notice:

Provided that the time limit may be extended by the urban local council for a maximum period of three months at the request of the owners, tenants or occupiers of the commercial and the industrial units concerned

(2) The drainage, sewerage and disposal scheme as approved by an urban local council with modification, if any, shall be executed and implemented by the owners, tenants or occupiers of the commercial or industrial units at their expense in such manner and within such time as may be specified by an urban local council.

(3) In case of the failure of the owners, tenants or occupiers of the commercial or industrial concerns to comply with the provisions of sub-section (1) and (2) an urban local council may itself prepare the drainage, sewerage and disposal scheme and execute and implement it after approval by Government at its own expense and cost so incurred shall, under this Ordinance, be deemed to be a tax levied on the owners, tenants or occupiers of the industrial and commercial units concerned

5. The Balochistan Ground Water Rights Administration Ordinance, 1978

Section 2 **Definitions:**

(1) In this Ordinance unless there is anything repugnant in the subject or context, the following terms shall be defined as under:

(c) Basin means the surface area within a given water-shed.
(d) Aquifer means a preamble geological formation that stores and transmits water.

Section 3 **Establishment and functions of provincial water board**

(1) There shall be a Provincial Water Board consisting of:
.....…….
(6) The Provincial Water Board will:

(a) Lay down policies for conserving and developing the ground water resources in Balochistan.
(b) Make rules and regulation for use of ground water resources and administering the water rights of various Persons:
(c) Act as a supervising and controlling authority of the various water committees;
.....……

(e) Identify aquifers of ground water and declare such aquifers as it may consider necessary as Designated Ground Water Basins;
(f) Such basins shall be notified by the Board in the official Gazette:
(g) The Board will arrange to determine the existing withdrawal of ground water through tube-wells / open surface wells / Persian wells / karezes or any other means:
(h) All existing open surface wells / tube-wells / karezes / springs and any other device of the extracting ground water will be got registered with the provincial Water Board.
(i) All such registered wells / karezes / springs and other means of extracting ground water will be notified by the provincial Water Board.
(j) The Water Board will also lay down distances between wells / springs and

Section 4 **Establishment of water committee:**

(1) There shall be a water committee in each District to be constituted by the Government.
.....

(c) No person will be allowed to extract ground water designated ground water basins, without the permission of the District Water Committee.
.....……..

(h) The Committee will have the power to stop the extraction of ground water by any unauthorized person.

Section 6 **Offences and penalties:**

(1) Any person contravening any of the provisions of this Ordinance shall be punished with imprisonment of either description for a term which may extend to one year or with fine or with both.

6. The Pakistan Environmental Protection Act, 1997.

National Quality Standards

Discharges or emissions in excess of the National Quality Standards or other standards established by Pakistan Environmental Protection Agency, where ambient conditions so require, has been prohibited.

SRI LANKA

Key Issues: Trade Effluents; Ground Water Contamination; Wastewater Treatment; Cleaning of Rivers; Water quality Management; Human Health

Policy Framework: National Conservation Strategy, 1988; National Environmental Action Plan, 1994 updated in 1998

Key Legislation: National Conservation Strategy, 1988; National Environmental Action Plan, 1994; National Environment Act, 1980; National Environment (Amendment) Act, 1988; National Environmental (Protection and quality) Regulation, 1990;

Key Institutions: Ministry of Environment and Natural Resources; Department and Mahaweli Authority; Central Environmental Authority; Ministry of Agriculture

1. INTRODUCTION

Sri Lanka is endowed with rich water resources emanating from the central highlands that receive rain during the monsoons. The mean annual rainfall ranges between 900mm to 6000mm, with an island wide average of about 1,900 mm, which is about two and a half times more than the world annual mean of 750mm. The country can be divided into wet and dry zones with a mean annual rainfall of 2424 mm and 1450 mm respectively. The total volume of fresh water received annually is 13,230 million m3. The average annual river flow, which is 31% of the rainfall, is 40,680 million m3. Sri Lanka has abundant water resources in aggregated terms, but this overall picture is misleading owing to the high degree of variation in the availability of water, both seasonally and regionally. Surface waters are carried radically from the central hills through 103 distinct river basins covering 90% of the island. Their catchments areas range from 9 to 10327

2. WATER RESOURCES OF SRI LANKA AND CLIMATIC ZONES BASED ON RAINFALL

The Mahaweli is the longest river draining 16% of the country and carries water from the wet zone to the dry zone. Some rivers produce shallow flood plains in their lower reaches referred to as „villus", which may be permanently connected to rivers or remain isolated. Flood plains associated with rivers are best represented along river Mahaweli, the Kala Oya and the Modaragama Aru. The most extensive flood plain of the Mahaweli covers around 50,000 hectares. Riverine marshes and flood plains convey flood waters to downstream regions. Many of the 41 wetland sites are facing threats owing to conversion into housing, agriculture and salt pans, with some affected by siltation and pollution. In the southwestern coastal zone, wetlands act as sponges by gradually releasing flood waters and storm water received from urban areas. Sri Lanka"s inland waters include man made lakes and ponds and marshes, costituting one of the highest densities in the world. The area under water bodies covers 2905 sq. km. or 4.43% of the total land area. The dry zone possesses a sophisticated irrigation system of reservoirs and canals built mainly for rice cultivation. There are 309 major irrigation reservoirs (serving over 80 hectares each) and nearly 18000 minor irrigation reservoirs, of which around 12,000 are currently operational. Some of these reservoirs date back to 4000 years.

Reservoirs can be categorized into two distinct groups, the recently constructed irrigation and hydro power reservoirs such as Kotmale, Victoria and Randenigala in the upper montane course of the Mahaweli River, and the older shallow multipurpose irrigation reservoirs of the lowland dry zone. Both types

of reservoirs are linked to an aquatic network under the control of Mahaweli Authority of Sri Lanka (MASL).

The estimated groundwater potential of the country is 780,000-hectare meters per annum. Rainfall is the primary source of groundwater. Its contribution to the groundwater recharge is estimated to be 7-30% (Anon 2000), or 200 - 600 mm/year. The rate of recharge varies from one geologic formation to another. There are several aquifers with substantial groundwater resources in the limestone area in the north and west of the Island.

Pressure on Water Resources

In the Northwest is a major aquifer with the highest potential spreading over 40 km2 with a water potential 5-20 million m3/year. Rivers often form the main link between interacting ecosystems. There are two aspects of water pollution: the human impact on aquatic systems such as rivers, wetlands, reservoirs and ground water. They arise as a result of direct changes to water bodies through river diversions, the connecting of water sheds, damming of rivers which fragment their longitudinal integrity, and the regulation of rivers which break the lateral gradients or links between land and water. The indirect effects are caused by impacts of land use in the catchment areas such as deforestation, plantations and human settlements. Water resources are at times, subjected to conflicting multiple demands such as domestic uses, agriculture, health and sanitation, inland fisheries, hydropower generation, industrial and commercial uses, recreational and other activities. The stage has been reached where demand for water exceeds availability in some regions, which may lead to a widespread problem of water scarcity in the future with increasing population, urbanisation and industrialisation. Well planned management of water resources is required to harmonise the multiple uses of aquatic resources and avoid possible conflicts in future.

The major intentional (direct) pressures on water resources are agriculture, urbanization and industrialisation that change land use patterns. Excessive use of agrochemicals and chemical fertilisers, release of industrial effluents, domestic waste and sewage and dumping of solid waste into waterways cause unintentional (indirect) pressures. These pressures collectively interact resulting in complex impacts on water resources.

3. POLLUTION OF INLAND WATERS

The major effluent generating industries have been identified as textile dyeing and bleaching, food processing, leather tanning, metal finishing, agro produce, sugar, distilleries, breweries, pulp and paper, leather and tanning and mineral products. According to CEA data, about 50% of the industries with EPL possess pollution abatement measures.

Eutrophication and Blooming in Kotmale Reservoir

Disposal of garbage by open dumping is the prevalent practice of most Local Authorities. Industrial parks set up by the Government provide for the use of clean technology and central water treatment facilities. Industries outside these parks, especially those established prior to the introduction of environment standards adopt engineered waste disposal methods in order to avoid contamination of adjacent water bodies and ground water aquifers.

The major water pollution issues could be categorized as pesticide pollution, nutrient pollution and groundwater pollution due to agriculture and pollution due to industrialization and urbanization.

Recent data is lacking on pesticide residues in water resources. As agrochemicals are extensively used in agriculture, there is little doubt as to the existence of pesticides in water and resultant effect of bioaccumulation in animal tissues.

Eutrophication or the process of nutrient enrichment of stagnant waters due to excessive use of fertiliser, is becoming a critical issue. A case study of the problem of eutrophication and blooming in the recently constructed Kotmale reservoir due to excessive use of fertiliser in its upper Kotmale catchment has been undertaken. The consequent risk of high phosphate levels in Nuwara Wewa and to a lesser extent in Tissa Wewa (both in Anuradhapura District) is severe. Similar studies for the surface waters in Mahaweli System H revealed high agricultural agrochemical inputs. The Kandy Lake and Lake Gregory are also victims of nutrient enrichment. Water quality surveys of many irrigation reservoirs and channels in Mahaweli System „H" in the Anuradhapura and Polonnaruwa districts were ound to contain high nutrient levels.

4. A CASE STUDY ON NUTRIENT ENRICHMENT IN KOTMALE RESERVOIR

The Kotmale reservoir is the upper reaches of the chain of upland hydropower and irrigation reservoirs uilt under the Accelerated Mahaweli Development Project by constructing a dam across a "V" shaped ountain basin. The reservoir was filled upto full supply level in1986. The upper Kotmale catchment area is devoted mostly to tea cultivation with intense fertilizer application. The objective of the study was to assess the limnological status of the reservoir and to monitor the nutrient loading process via its upper Kotmale catchment. The investigations were conducted from 1986. In 1991, the fifth year after it reached full capacity, the reservoir was covered with a thick bloom of Microcystis aeruginosa. The early results of the investigation which is in progress, indicated the following:

• The Kotmale Oya tributary brings the highestload of nutrients through the upper Kotmale catchment, covered with dense tea estates.
• During the rainy season, the nutrient entrapped in the bottom hypolimnetic region of the reservoir was locked due to thermal stratification and was not available to the surface for bloom formation
• The upstream region of the reservoir received high nutrient loads through the Kotmale Oya tributary
• During droughts, when the water level drops below 15m in the upstream region, mixing of nutrients was facilitated and the reservoir reached eutrophic status
• High nutrient concentration (Phosphate and Nitrates), high temperature and high light intensity during droughts were favorable for the initiation of bloom formation in the upstream region
• Bloom formation was thus initiated and drifted towards the dam due to wind action and covered the entire reservoir.

Ground Water Pollution

The unconsolidated sands of the coastal areas act as important storehouses for ground water. Due to high porosity and permeability of the sands, rainwater is stored in the form of lens - like bodies resting on salt water with a transition region of brackish water in between. Fresh water is thus available a few feet below the surface, and in the dry zone coastal areas could lead to severe salt intrusion if ground water is over exploited. About 12000 large diameter shallow wells are used in the dry zone for irrigation with a demand for 8000 more.

The North Western Province is an important example of an agricultural region, which exploited ground water through 130 tube wells and finally suffered as a result of intrusion of salt water in Puttalam, Mannar, Paranthan, Kilinochchi and Mulathivu. In 79% of the wells, run off of fertiliser and agrochemicals resulted in nitrate concentrations being well above levels advocated by the World Health Organisation (WHO) for safe drinking water, with recorded concentrations of over 200 mg/l. In the islands off the peninsula, 50% of the wells contained nitrates above 10 mg/l. Leaching of agrochemicals from intensively cultivated soil is responsible for elevated concentrations of chloride, nitrate and potassium observed in many irrigation wells in many irrigation wells in the Kalpitiya peninsula, with nitrate concentrations of up to 40 mg/l. In these agricultural areas, population density is high, and on sequently bacterial pollution is common from pit latrine soakways. Soil, which is the most effective layer in protecting groundwater through absorption and biological degradation, is bypassed by pit latrines and increases the risk of faecal contamination. Widespread water contamination in the peninsula results from

agricultural washouts and pit latrine soak ways. In some areas in Point Pedro, nitrate concentrations ranged from 122 to 174 mg/l due to sewage pollution.

Pollution due to Urbanization and Industrial Effluents

Urbanisation and industrialisation cause water pollution due to discharge of waste water, sewage, solid waste etc into surface, groundwater and stagnant waters. The condition of the Kelani River and adjacent water bodies indicates the level of such pollution. The Colombo Urban Area (CUA) is bisected by the Kelani River with heaviest pollution in the western part and less pollution in the eastern and northern parts. All natural vegetation except for some small areas of tropical forest, mangrove and swamp vegetation, in this area, have been destroyed by human activity. The Kelani River runs through densely populated areas and receives much organic pollution in the last 50 km stretch due to the discharge of untreated faecal matter. It was estimated that the river discharges 36,000 kg/day of COD compared to an estimated 6000 kg/ day of COD discharged from the Mutwal outfall some 1500m from the shore. In addition, the concentration of total and faecal coliforms at the mouth of the Kelani is greater than in the seawater above the Mutwal outfall. Above figure illustrates the BOD load in San. Sebastian canal where the total load of BOD is 1800 kg/day with industry accounting for only 10%. Thus pollution of the canal is mostly caused by non point sources and by the household

5. LEGAL AND INSTITUTIONAL MEASURES

Degradation of water resources has been recognized as a major environment and social issue. In order to achieve water conservation and for the protection of the quality of water, the following policy measures have been adopted: 1) A National Water Resources Council, supported by the Water Resources Secretariat, have been established to address all water related issues in a holistic manner. This Council will be a high level advisory body comprising government agencies and all stakeholders 2) A Ministry for Water Resources has been established which will oversee the Water Resources Council, the National Water Resources Authority and the Water Resources Tribunal. 3) A Water Resources Law and a master plan for water use are being developed. A national water resources policy will be developed in order to make ptimum use of this resource and to resolve competing demands between irrigation and power generation

4) Incentive schemes are being worked out for water conservation 5) Comprehensive development plans will be prepared for major river basins 6) Water supply and sanitation programmes will extend the coverage of safe drinking water and improved sanitation facilities. 7) Criteria will be established for assessment of ground water resources by setting up of surface and ground water quality monitoring programmes, and developing ambient water quality standards 8) Management plans will be formulated for polluted water bodies

Environmental Impact Assessments (EIA) and Environmental Protection Licence (EPL) In terms of the National Environmental Act, all new industries, which fall into the category of “prescribed projects”, are required to undergo the EIA process. Relevant standards for effluent discharge have been laid down in Gazette No 596/16 of 2nd February 1990. The CEA is responsible for the control of industrial pollution. Local and Provincial Authorities began issuing EPLs to small and medium scale enterprises from January 1994. An EPL is required for a „prescribed“ activity in terms of regulation. 1159/22 of 22nd November 2000. General standards have been laid down for the discharge of effluents into inland surface waters.

SUMMARY

The Earth Summit of 1992 called for the protection of the quality and supply of water resources. The general objective is to provide adequate supplies of water of good quality for the entire population and to safeguard the limited water resources against pollution. The availability of good quality water resources is always paramount to the sustained socio-economic development of countries in the region.

The availability of good quality resources is paramount to the sustained socio-economic development of countries around the world. Maintaining the freshwater resources is one of the most critical and principal elements of sustainability. The water quality situation is serious in developing countries. The alarming situation facing freshwater resources with regard to water shortages and water quality detoriation calls for strategies leading to the reduction of pressure on water resources, while ensuring adequate water supply to the present and future generations. UNCED recognized that there is need for the integrated water resources planning and management taking into account of water quality and quantity.

Although the countries of South Asia region are conscious of the cause of water pollution through natural and man-made sources, efforts to protect the quality of water have considerably lagged behind the pace of development. Several case studies of water quality of selected rivers indicated that the main pollutants of concern are sediment, nutrients, pesticides and fertilizers, salinity, sea-water intrusion, pathogens, organic material, heavy metals and toxic chemicals. The types and extent of river quality problems depend on the factors such as location, ecosystem characteristics, nature of land use, and degree of development.

REFERENCES

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Central Pollution Control Board: Annual Report 1999-2000.
3. Central Pollution Control Board: Pollution control acts, rules regulations, rules and notifications issued thereunder, 1998.
4. Central Pollution Control Board CPCB (2000a) „Polluting industries". Parivesh newsletter 2000.
5. Central Pollution Control Board, Annual Action Plan 1994-95.
6. Centre for Science and Environment, State of Indian Environment: Citizen"s fifth report 1999.
7. Central Bureau Statistics, 1994a. A Compendium on the Environmental Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
8. Conference on Environment and Development, Environment and Urban Affairs Division, Government of Pakistan, Islamabad.
9. Country Profile on Environment –Nepal, 1997, JICA.
10. Coast Conservation Act, 1981 No.57: to make provisions for Coast Conservation including the preparation of a Coastal Zone Management Plan based on the surveys within the zone including all coastal wetlands with an indication of their significance as fisheries or Wild life habitats (Section 11) and taking over some functions of Crown Lands Ordinance No.8 of 1947. 1981 No.59 Marine Pollution Prevention Act: to provide for the prevention , reduction and control of pollution in Sri Lanka waters and for matters connected with including power to take action against any marine pollution caused to the living marine resources and wildlife.
11. 10. Department of Science and Technology, Report of the Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental protection (N. D. Tiwari, Committee) (New Delhi, 15 September 1980.
12. Dahal, L., 1995. "A study on pesticide pollution in Nepal", National Conservation Strategy Implementation Project. National Planning Commission in collaboration the World Conservation Union.

13. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
14. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations .
15. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
16. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
17. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
18. Human Development Report 1999, UNDP.
19. JICA Annual Report, 1999, JICA.
20. Ministry of Environment and Forests, Policy Statement for Abatement of Pollution (New Delhi, 1992.
21. MoEF (1997) White paper on pollution in Delhi with an action plan. New Delhi: Ministry of Environment and Forests.
22. Ministry of Education, 1978, Report of the committee for on-farm water management. Third education project, Ministry of Education, Islamabad, and University of Agriculture, Faisalabad.
23. Mahaweli Authority of Sri Lanka Act, 1979 No.23 establish the Mahaweli Authority of Sri Lanka. The jurisdiction of the Authority is within any area that may be developed with the water resources of the Mahaweli or any major river, declared as a special area.
24. Ministry of Environment and Forests, Annual Report 1993-94.
25. 24. National Planning Commission (1992). The Eight Plan. His Majesty‟s Government of Nepal, Singh Durbar, Kathmandu, Nepal, Adiga, P. B., 1996. Environmental issues, water resources strategy formulation programme, phase I, final draft report. Kathmandu, World Bank (JGF) Project.
26. National Conservation Strategy and Policy Statement on Environment and Development (New Delhi: Ministry of Environment & Forests, June 1992.
27. National Environment Act, 1980 No.47: to establish a Central Environmental Authority and matters connected therewith including recommendation to the government a system of rational exploitation and conservation of aquatic and wildlife resources, with special attention to the threatened species of fish and flora and a system of park and wildlife management.Amended by No.56 of 1988.
28. National Environmental Action Plan (1998-2001), 1998, Ministry of Forestry and Environment.
29. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority Act, No.7 of 1979.
30. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority (Amendment) Act, No.7 of 1987.
31. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation (Amendment) Act, No.64 of 1988.
32. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation Act, No.57 of 1981.
33. Pachauri, R.K.; Sridharan, P.V. (1998) Looking Back to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
34. Shresta, A.P. (1991). Water Resources and Energy. In: Hydropower in Nepal: Issues and Concepts of Development Resources, Kathmandu, Nepal.
35. Sharma, C.K. (1992). River Systems of Nepal. Nepal Heritage Conservation Society, Kathmandu, Nepal.
36. The World Fact Book 1999, CIA.
37. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report), JICA Nepal Office, Kathmandu, Nepal.
38. UNDP/GEF,1999, Country Programme Strategy: Nepal, Kathmandu, Nepal.
39. World Commission on Environment and Development, Our Common Future (New York: Oxford University Press, 1987.
40. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal

41. World Bank, September 1998, World Development Report, Knowledge for Development 1998/99.
42. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
43. World Development Indicators, 1999, The World Bank.
44. World Development Report, 1999, The World Bank.

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER VII

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: ATMOSPHERE

BANGLADESH

Key Issues: Pollution Prevention and Control; Vehicular Pollution; Indoor Pollution; Industrial Pollution; Human Health; Fuel Quality;

Policy Framework: Fourth and Fifth Five-Year Plan, 1990-2002; National Environment Policy, 1992; National Environment Management Action Plan, 1992;

Key Legislation:
Environmental Conservation Act of 1995 Environmental Conservation Rules of 1995; Ambient air standards; Environmental Pollution Control Ordinance 1997; mission standard (fixed or mobile); Factories Act 1965; Motor Vehicles Act 1939; The Environmental Policy of 1992

Key Institutions:
Ministry of Environment and Forest; Department of Public Health andEngineering (DPHE)

1. INTRODUCTION

It is the postindustrial era, where civilization rose to the peak with all amenities of life, with the advent of science and technology. Rapid industrialization and engine driven transports had been and still have been the basic vehicle of today's civilization. This civilization, we have achieved without incorporating the elements of sustainable development in it, and, as a result, it has caused for degradation of global environment, now facing a serious threat from multifaceted environmental problems. The primary pollutants interacting among them or in presence of sunlight may create secondary pollutants like ozone, photochemical smog, acid mists, peroxy accetyl nitrate, formaldehyde, etc. in the atmosphere.

2. AIR POLLUTION IN THE DEVELOPING COUNTRIES

Air pollution is likely to be one of the highest environmental threats in the developing countries in the next millennium. Today, not only environmentalists, but also the members or the public in general are concerned and panic about it. In most third World cities, the enormous pressure for shelter and services has fractured the urban fabric. Much of the housing used by the poor is decrepit. So too, is the essential infrastructure of the city, public transport is overcrowded and overused, as are roads, buses and trains, A growing number of urban dwellers suffer from a high incidence of acute respiratory diseases, asthma etc. linked to air pollution. In fact, air pollution should not have been the major concern in third world cities because of lower levels of industrial development. But in reality, hundreds or such cities have high concentration of industry and ever increasing traffic. As a result air pollution problems have increased rapidly. The following Asian Cities e,g. Shenyang. Bombay, Beijing, Calcutta, Shanghai. Bangkok, Jakarta, Kuala, Lumpur, Delhi, Manila, Lahore, Dhaka are the worst polluted cities in terms of air pollution according to ESCAP State or Environment Report (1990-1995).

The environmental scenario in Bangladesh changed considerably following rapid industrialization. The Ministry of Environment and Forest, and the DoE were created in 1989. As a signatory to Agenda 21,

Bangladesh is committed to implement this international legal instrument through national programs and policies. The Environmental Policy of 1992 was an important development in this regard. Further, the Environment Conservation Rules, 1997, were approved by the Bangladesh National Assembly to restrict and mitigate ever-growing environmental problems in the country.

3. STATE OF AIR POLLUTION IN DHAKA

Air Pollution levels are largely depend on the meteorological condition and topography in a given area in a particular time. Wind causes dispersion but again suspension time is reduced by rain. Pollution level is also being affected by (i) Dilution and Dispersal and (ii) Concentration and confinement. The topography of Dhaka is flat terrain, which is good for dispersion but the type of road network of Dhaka city, the vehicle mix (specially the slow moving Rickshaws), the traffic system and management are *some* of the basic reasons that enhance air pollution in Dhaka city from vehicular sources.

Current DOE data on ambient air quality amply demonstrates that Dhaka City's air quality is really bad. In terms of the presence of Suspended Particulate Matter (SPM), it is rather worse. It is as high as 4 to 5 times of the allowable limit. In terms of gases, though the concentration of nitrogen oxides (NOx) is still within limit (without occasional shoot-up) but concentration of sulfur oxides (Sox) has acceded the allowable limit quite a long ago. The reason for the higher concentration of sulfur oxides in the air, is because of the higher sulfur content in our imported oil. The other issue is the lead content in the ambient air. DOE conducted a series of tests collecting ambient air samples from different points of Dhaka City during 1966-1997 covering residential. At one meter height from ground level, the highest concentration in commercial spot was observed to be 25.1.84 nanogram/cubic meter. Current DOE data however provides a decreasing trend than that of the previous years. (Auto-exhaust is the major cause of air pollution especially in Dhaka City where the agglomeration of Vehicle fleet is higher than any part of the country, which is estimated to cause 50-60% of total air pollution load in Dhaka. The auto exhaust can be classified in to the following categories:

i) Petrol exhaust such as cars, three wheelers, two wheelers; and
ii) Diesel exhaust such as trucks, bus minibus etc.

Dhaka City‟s air is also polluted with carbon monoxide (CO) and Hydrocarbon from vehicular sources, because of the incomplete combustion of fuels in most of our vehicles due to improver maintenance of the engines and use of adulterated fuel and lubricants. Two stroke engine driven vehicles are the worst among the vehicles in terms of emitting these obnoxious gases. It has been identified that two-stroke engines are also a major contributor to ambient HC and PM concentrations. There are about 30000 two-stroke three wheelers (per year increase 3500), 2000 two stroke large tempo, (per year increase 200) and 3000 four stroke three wheelers (per year increase 300) in Dhaka city.

4. CHALLENGE

Recently the Government has taken many important decisions to control the pollution level in Dhaka City. Some of them are mentioned below:

- Banning new registration of two stroke engines, and phasing out of existing two stroke engines within 3-5 years.
- Stringent enforcement of regulation on roadworthy test, emission checks and fitness tests.
- Conversion of Petrol and Diesel driven vehicle to CNG.
- Import of unleaded and low sulfur gasoline for improvement of air quality.
- Dhaka Urban Transport Project (DUTP) has been taken at a cost of US$ 237 million under World Bank assistance. Under this project, major improvement work of the road networks of Dhaka will be taken such as:

(i) Construction of Road Intersections.
(ii) Fly-over.
(iii) Foot-overpass.
(iv) Construction of Bus and Truck Depot and
(v) Development of parking facilities, etc.

It is expected that by improving the transport network of Dhaka city, the level of Air Pollution will come down to allowable limit. Under a million US$ Air Quality Management Project (AQMP) also under World Bank assistance, which will be implemented shortly, DOE will set up check posts in Dhaka city and Chittagong city to check the level of emission from vehicles, including in some other major cities. Under this project, vehicle inspection, air quality monitoring, awareness raising campaign emission inventory, training to the drivers and mechanics of all kinds of vehicles will be undertaken.

The key components are:

(i) improved enforcement;
(ii) setting appropriate standards;
(iii) piloting of pollution control technologies for two-stroke three-wheelers and diesel vehicles; and
(iv) better monitoring and dissemination of information; and overall evaluation.

These components will help to lay a foundation for strengthening institutional capacity for air quality management and developing a comprehensive long-term strategy to reduce air pollution in Dhaka and other cities. This program will also help to improve the institutional capacity for air pollution monitoring and data analysis in Bangladesh, which is crucial to designing further interventions to control urban air pollution. These activities will also raise stakeholder awareness of their respective rules as regards the issues and options relating to vehicular air pollution control.

5. VEHICLE EMISSION

Vehicles‟ concentration to the urban areas as well as lack of regulation on air pollution prevention results in the air pollution in the urban areas. Trucks and buses largely contribute to the pollution. Contribution ratio by the vehicle.

Case Study – Dhaka

Dhaka is now one of the densely populated and busiest cities in the world. After independence, the importance of Dhaka City has increased many folds. But most of the development with respect to the growth of industrial and commercial establishment has happened unplanned. Along with the development in other sector, till recent years the vehicle fleet in Bangladesh and particularly in Dhaka has increased very rapidly growing at over 10 percent per year.

Much of the growth has occurred in the fleet of three wheelers, which are powered by two-stroke engines that are not well maintained and have high exhaust emission. In Dhaka City, the main contributor of air pollution is the transport sector followed by industrial units, garbage and other biomass burning by the slum dwellers and burning of coal and wood by the large number of brick fields in and around the city.

In Chittagong City, vehicular emission and industrial emissions almost equally contribute air pollution problem. In other cities, the problems are not yet acute. Rural areas are still outside the effect of air pollution, in general excepting emissions from brick kiln, which are widespread throughout the countryside.

6. INDUSTRIAL EMISSION

Air pollution by industrial emission has not yet been reported, as Bangladesh is still not so much industrialized. Factories are located intensively at three major cities, Dhaka, Chittagong and Khulna. Factories of pulp, cement and soda emit particle matters.

7. LEGISLATION

Environmental Conservation Act of 1995 Environmental Conservation Rules of 1995 ・Ambient air standards Environmental Pollution Control Ordinance 1997 mission standard (fixed or mobile) Factories Act 1965 Motor Vehicles Act 1939 ・Result of air monitoring ・Guidelines Notes)

The first regulation related to environment in Bangladesh was the Factory Act of 1965, through which workers‟ health-related issues were addressed. This was followed by the earliest recorded environmental protection act, known as the "Water Pollution Control Ordinance, 1970". However, none of these ordinances addressed air pollution problems. This major oversight may have been due to the almost negligible air pollution problems at that time. In view of growing environmental pollution, this ordinance was repealed, and the Environmental Pollution Control Ordinance (EPC), 1977, was promulgated. This ordinance provided for the control, prevention, and abatement of pollution of the environment in Bangladesh. It dealt with pollution of air, surface and ground waters, and soil. Although the order passed under the Environment Protection Control Ordinance 1977 was legally in place, implementation of environmental laws never took place.

Therefore, the Bangladesh National Environmental Policy 1992, Environmental Conservation Act 1995, and the Environmental Conservation Rules (ECR) 1997, now contain relevant policies, such as authority to inspect and regulate facilities, collect samples, impose civil penalties, adopt rules, and implement environmental clearances (see Table 4). Under the Rules of 1997, the following standards have been set.

- Ambient Air Quality Standards
- Vehicular Exhaust Emission Standards
- River Transport (Mechanized) Emission Standards for Gaseous Emission for Industries or Projects

8. IMPLEMENTATION MEASURES

- A prerequisite to the formulation of effective and efficient policy for the control of air pollution is the availability of sufficient reliable data and an analytical framework to assess policy and technical options for control.
- The monitoring of ambient air quality and the compilation of emissions inventories will be strengthened in Dhaka through a program of phased investments in equipment and associated training. This will be accompanied by technical assistance to generate the expertise necessary to develop dispersion models of ambient air quality, propose emission control programmes, and evaluate their costs, effectiveness and feasibility. The lessons learned from Dhaka. Bangladesh‟s largest city with the most urban air pollution problems can then be very useful for the other rapidly growing cities of Bangladesh.
- Technology to reduce emissions from vehicles, in particular, the most highly polluting two-stroke and diesel engines will be tested through the proposed project, thereby providing a clearer picture of the relative cost-effectiveness of the control options available.
- The basis for a regulatory framework to control vehicular pollution will be established by supporting the development of appropriate standards to govern the quality of fuels, lubricants and emissions, and by providing experience with pilot emissions testing programs.
- Acceptance of these new technologies and regulations will be enhanced through training and public awareness to help stakeholders internalize the necessity for changes in behavior.

Implementations of all these measures are expected to bring significant improvement in the air quality of Dhaka city in the beginning of the next millennium.

Every country needs a practical and dynamic set of rules and regulations to prevent and mitigate environmental pollution. This article will focus on policy responses to air pollution in Bangladesh. As monitoring of air is taking place recently, environmental laws have actually been in affect in our country from a long time. These environmental laws existing in Bangladesh may be categorized as follows:

- Protection of environmental health
- Control of environmental pollution
- Conservation of natural and cultural resources

It is indeed strange how air pollution problems have risen over the last decade in many parts of Bangladesh, particularly in Dhaka. Monitoring of ambient air quality in Bangladesh is a very recent phenomenon, initiated in a very limited basis by the Department of Environment (DoE). To date, the DoE has set up four monitoring stations at four divisional towns: Dhaka, Chittagong, Khulna, and Bogra. In addition, the DoE occasionally conducts vehicular emission measurements in Dhaka city (the locations are: Tejgaon, Farmgate, Manik Mia Avenue, Gulshan, Lalmatia, and Agargaon). According to various studies the worst affected areas in Dhaka city include: Hatkhola, Manik Mia Avenue, Tejgaon, Farmgate, Motijheel, Lalmatia, and Mohakhali.

BHUTAN

Key Issues: Vehicular pollution; Indoor Pollution; Forest Fires; Human health

Policy Framework: Paro Resolution on Environment and Sustainable Development (1990); National Environment Strategy;

Key Legislation: The Environmental Assessment Act 2000; Forest and Nature Conservation Act, 1995

Key Institutions: National Environment Commission; Road Safety and Transport Authority; Ministry of Trade and Industry

1. INTRODUCTION

In the Himalayas, climate change is manifested in natural disasters such as flash floods from melting glaciers as well as modifications in natural systems in forests, increased health risks from malaria, lung disorders and other diseases, and noticeable alterations in crop growing seasons. Indeed, melting ice and glacial lake overflow are already more frequent in Bhutan – and were the source of a 1994 glacial flash flood that caused considerable damage in the western district of Punakha – while receding glaciers are bringing in their wake avalanches, soil erosion and dramatic changes in river flow.

Bhutan, where 79% of the population depends on agriculture and natural resources and where hydroelectric power generation is the dominant source of revenue; the negative impacts of climate change would be especially severe. Although the country does not contribute to global emissions of greenhouse gases, it is extremely vulnerable, given its fragile mountain environment, its rich concentration of species and ecosystems, and its lack of resources as a Least Developed Country for adapting to these adverse impacts.

The exact extent of vulnerability of Bhutan to climate change can be better defined only after a scientific analysis of the impacts on the mountain ecosystem. Projects to conduct this analysis of likely impact on water resources, agriculture and livestock are urgently required. Likewise, development of a national policy framework to facilitate implementation of appropriate and effective mitigation measures and adaptation strategies is important.

2. URBAN AIR QUALITY

Urban air quality is emerging as a serious issue for Bhutan with the increase in the number of vehicles in the country rising steadily, primarily in urban areas. In the last year alone, the number of vehicles in the Kingdom grew by 14%, from 14,206 to 16,335. In Thimphu, two-wheelers compose about 45% of the total vehicles, while cars and jeeps account for about 35%. Low fuel quality, poor vehicle maintenance and facilities, and geographical factors such as high altitude and narrow valleys particularly aggravate the problem of vehicular pollution.

Although the absolute number of vehicles per person in Bhutan is still relatively low, the National Environment Commission, in collaboration with the Road Safety and Transport Authority, has begun measuring the emission levels of cars, to be followed soon by the institution of nationally acceptable standards. In addition, the full privatization of the public transport sector was achieved in 1990, with 21 operators managing a fleet of more than 100 buses on 73 routes nationwide. The Royal Government likewise has made plans to enhance mass transport services for commuters in the nation‟s larger towns, and the first city public transport system was introduced in Thimphu in 1999 to reduce pollution in the narrow valley where the capital is located. As noted in Section 2e, the import of inefficient refurbished vehicles also has been banned, as has the import of two-wheelers with two-stroke engines. Efforts are

being made to improve the quality of fuel and to ensure the availability of spare parts in the local market, and footpaths have been constructed to improve traffic movement in urban areas.

Other contributors to urban air pollution include forest fires and the very high level of fuelwood used for heating. In Thimphu alone, the annual consumption of fuelwood is about 916,560 cubic feet. The burning of fuelwood causes particularly high levels of pollution during winter mornings. However, successful interventions have occurred; for example, in the past, the three common kitchens of the Royal Bhutan Police in the capital consumed 4,000 cubic feet of fuelwood a month. Today, with the installation of electric cookers through the Bhutan Trust Fund for Environmental Conservation, fuelwood consumption has virtually been stopped.

3. DOMESTIC AIR POLLUTION

Air pollution from domestic pollution - A recent survey carried out for 8,421 households in Thimphu revealed that 3,902 households have installed bukharis and other heating appliances, which use wood and charcoal. Bukharis are used normally between November and March. Most houses lack proper insulation. Around 50% of heat is lost through ceilings and cracks in door and windows. As a result most of the heat is lost within a few hours, and more firewood needs existing response. The import of two wheelers with two-stroke engines is banned. The import of second hand vehicles is banned. Efforts are being made to improve the quality of fuel and to ensure the availability of spare parts in the local market. More than 96% of the houses in and around Thimphu have electricity connections, of which 60% indicated a willingness to switch over to electrical appliances for heating and cooking. Health impacts due to growing air pollution problems in Bhutan there is an increase in the incidence of acute respiratory tract diseases, cough and colds, bronchitis and asthma. Acute respiratory tract diseases have increased from 10.08% in 1990 to 14.02% in1998, whereas other respiratory diseases have increased from 2.45% in 1990 to 6.82% in1998. Cough and colds, bronchitis and asthma have also gone up from 16% to 22.4% and1.95% to 2.95% during the same period. A budget of Nu. 12.26 million has been allocated for the construction of footpaths to improve traffic movement in urban areas. Nu. 493 million has been allocated for widening and improving 190 km of road. Nu. 546 million has been allocated for the maintenance of 2,756 km of roads. Nu. 134 million has been allocated for the realignment of 27 km of road on the East-West Lateral high ways. An amount of Nu. 10.26 million has been allocated in the 8th Five Year Plan to improve parking areas and develop regulations to improve the urban environment. Industrial pollution industries have taken initiatives to mitigate environmental impacts using de-dusting equipment's such as filters and electrostatic precipitators.

Promote the use of efficient electrical appliances by providing electricity access to all parts of Bhutan. Promote energy-efficient house constructions and improvements of insulation in the existing houses. Government should increase the royalty on firewood in urban areas to discourage firewood use; and encourage use of more energy-efficient stoves such as sawdust bukharis etc. There are no permissible standards for vehicular emission. There are no industry specific emission standards and no guidelines for control of pollution for industries. There are no ambient air quality standards for different pollutants. There is no policy/strategy to mitigate air pollution in urban centres. Institutional capacity is limited knowledge. The Royal Government of Bhutan has to take initiatives to generate primary data and information on status of air quality for Thimphu valley and other major towns in Bhutan.

4. INDUSTRIAL AIR POLLUTION

More thrust on setting up of industrial estates and developing infrastructure to minimize effects of pollution on human health and environment. The Government of Bhutan should take initiative to develop ambient air quality standards for industrial areas. Domestic pollution Government should stop bukharis in cities and promote energy efficient electrical appliance for heating and cooking purposes. .More emphasis should be to supplying electricity connections and cheap electricity to the rural areas to gradually replace bukharis.

5. LEGISLATION

In the legislative realm, the National Environment Commission and the Ministry of Trade and Industry are working on clean technology environmental management programs. Moreover, air quality standards and industry-specific emission standards, as well as the aforementioned vehicle emission standards, are being formulated. The Environmental Assessment Act 2000 lays the base for environmentally sound industrial development. Further possibilities exist in the expansion of urban public transportation, electrical stoves for major wood-burning institutions and subsidized electrical appliances for rural communities.

73 percent of petrol vehicles did not meet the Thai emission standards. More significantly,20% of the vehicles were more than 10 years old while 40% were between five and 10 years. It is nearly two times more than heavy-duty vehicles.The problem of emissions is aggravated by the poor quality of fuel available in Bhutan. Diesel sold has a high sulphur (0.25%) and wax content, and the vehicles are not fitted with high-altitude compensators. As a result vehicles emit more soot. Diesel vehicles are three times more polluting than petrol vehicles.

The lower price of diesel fuel results in larger number of diesel vehicles. Diesel engine vehicles are also kept in start mode for a long period, a minimum of15 minutes to heat the engine during the winter, which results in higher levels of carbon monoxide, nitrogen oxides, hydrocarbons and particulate matter in the atmosphere. CO, HC, and benzene emissions are high in gasoline vehicles compared to diesel vehicles. The percentage emission of CO as related to the age of the vehicle. It also shows the HC emissions as a function of the age of the vehicle. In Bhutan, there are no systematic time series data available on emission load of different pollutants emanating from vehicular sources. Industrial pollution problem arising due to industrial activities is discussed. Air pollution from industries not only affect the health of the workers but also the surrounding environments namely, vegetation. Cement industry. The small-scale cement plants are highly inefficient and do not have pollution control systems. Bhutan's largest cement industry (Penden Cement Authority Ltd.) has modified its plant and installed pollution control devices such as electrostatic precipitators.

The chemical industry is a major source of air pollution. The main pollutants from chemical industries are CO2, CO, SO2, NOx, and particulate matter. Another problem with this industry is the lack of storage space for the raw materials limestone, coal and charcoal. The height of the emission stacks is low result of which emissions are not properly dispersed causing air pollution in the surrounding valley. According to the NEC, the bag filter house is not operated continuously on account of high electricity consumption. Concentration of exhaust gases from petrol vehicles Mining industry Operations in open cast mines are also sources of air pollutants. Dust generated in open cast mines moves downwind and deteriorates the ambient air quality of the surroundings. There are no data available to assess the quality of ambient air in and around mines.

INDIA

Key Issues:
Vehicular Pollution; Industrial Pollution; Indoor Pollution; Forest Fires; Human Health; Fuel Quality

Policy Framework:
National Conservation Strategy and Statement on Environment and Development‟1992, Policy Statement on the Abatement of Pollution, 1992; National Environment Action Plan, 1993; Forest Policy, 1988; Auto Fuel Policy

Key Legislation*:*
Air (Prevention and Control of Pollution) Act, 1981; Ambient air standards; Motor Vehicle Act; 1989; Environment Protection Act, 1986

Key Institutions*:*
Ministry of Environment and Forests; Central Pollution Control Board; State Pollution Control Board; National Environment Engineering Research Institute (NEERI); Ministry of Health; Ministry of Transport; Ministry of Petroleum and Natural Gas; Ministry of Coal and Mines; Ministry of Power; Authorities constituted under the EPA Act

1. Air Pollution:

The ambient air quality in the urban areas of the country has deteriorated to alarming levels. According to World Health Organisation (WHO) statistics, Delhi is listed as the fourth most polluted megacity in the world, while in total six of the largest cities in the country have severe problem of air pollution. In these cities the annual average concentration of SPM exceeds the average WHO standards at least by three times. In Delhi, Calcutta and Kanpur the annual average values of SPM are over 5 times the WHO standards. According to the monitored data, more than 90% of the stations are found to have SPM levels in excess of 75 _g/m3, the mid point of the recommended WHO standard. On the other hand SOx and NOx are reported to be generally low compared to the standards. Based on its long term monitoring data, CPCB has identified 24 places across the country (primarily industrial and compounded with vehicular/fugitive sources) as problem areas. Air quality in various urban centers across the country is classified according to the level of gaseous and particulate matter in low, medium, high and critical categories. The World Bank‟s study finds that there does not appear to be a correlation between the population and the level of air pollution in the cities. Many of the medium size cities have as severe a problem as the mega cities.

A National ambient air quality network comprising of 290 stations covering 90 towns/cities distributed over 24 states and 4 Union Territories has been set up. The pollutants monitored are sulphur dioxide, nitrogen dioxide and particulate matters besides meteorological parameters. The main sources of air pollution include the following: Vehicular, Industrial, Domestic and others

2. Vehicular Pollution:

Vehicular pollution is due to the following :

a) Increase in population of vehicles, particularly personalised vehicles;
b) Most of in-use vehicles (pre-1990) are of old engine design and are high emitters of pollutants;

c) High emissions of carbon monoxide and hydrocarbons from 2 and 3-wheelers, consisting of 2-stroke engines;

d) Inadequate road and traffic network unable to meet the needs of the increasing population;

There is significant increase in vehicular population in the cities.

Year wise vehicular population (in lakhs)

City	**31.3.1975**	**31.3.1985**	**31.3.96**	**31.12.98**
Delhi	2.35	8.41	26.29	31.67
Mumbai	2.21	4.41	7.23	-
Bangalore	0.89	2.78	9.00	-
Calcutta	1.26	3.11	5.60	-
Madras	0.48	1.66	8.11	-
Ahmedabad	0.57	1.77	5.71	-

The CPCB has estimated vehicular pollution load in 12 major cities in 1987,1994 and in 1996 which is given in the following table:

Pollution load from vehicles

S.No	**City**	**Vehicular Pollution Load (Tonnes per day)**			
		1987	**1994**	**1996**	**1999**
1	Delhi	871.92	1046.30	1229.01	1825.00
2	Mumbai	548.80	659.57	785.41	-
3	Bangalore	253.72	304.47	382.71	-
4	Calcutta	244.77	293.71	302.33	-
5	Ahmedabad	243.94	292.73	349.42	-
6	Pune	212.76	255.31	314.93	-
7	Chennai	188.54	226.25	268.28	-
8	Hyderabad	169.03	202.84	208.07	-
9	Jaipur	74.98	88.99	106.315	-
10	Kanpur	71.99	86.17	101.84	-
11	Lucknow	69.58	83.49	95.09	-
12	Nagpur	47.80	57.39	66.03	-

Vehicular pollution contributes major portion of air pollution in the cities. In Delhi, vehicular pollution contributes 64% of the total air pollution as per the estimate carried out by CPCB.

Findings from Survey of vehicular pollution

- Pollution load in Delhi almost equals the combined pollution load of Mumbai, Calcutta and Madras.
- Load due to emissions of carbon monoxide (64%) and hydrocarbons (22%) is the highest in all the cities. This is followed by oxides of nitrogen (12%). Emissions of sulphur dioxide are negligible.
- The major contributors to carbon monoxide and hydrocarbons are the 2-wheelers and 3

wheelers which are mostly powered by the 2-stroke engines.
- The major contributors of oxides of nitrogen are the diesel driven trucks and buses.

3. INDUSTRIAL AIR POLLUTION:

Air Polluting industries include: thermal power plants, iron and steel plants, Smelters, foundries, stone crushers, cement, refineries, lime kilns chemicals and petro-chemical plants etc.

Non-Point Sources and other Activities:

Burning of low grade fuel in urban areas for various purposes is one of the causes of air pollution. In addition tyres, rubber, plastic, garbage etc. are burnt. Such combustion emits toxic pollutants which is quite harmful.

Air Quality Assessment:

A national ambient air quality network comprising of 290 stations covering 90 towns/cities distributed over 24 states and 4 Union Territories has been set up. The pollutants monitored are sulphur dioxide, nitrogen dioxide and suspended particulate matters in industrial and residential areas of major cities of the country.

4. POLLUTION CONTROL

The Government is implementing a plan of action for introduction of unleaded petrol and catalytic converter fitted vehicles, introduction of low sulphur diesel for cleaner diesel vehicles and tighter emission norms for vehicles at the manufacturing stage.

(i) Programme for introduction of unleaded petrol and catalytic converter fitted vehicles in the country:

The Ministry of Petroleum and Natural Gas (MOP and NG), as a first step of reducing lead from petrol, introduced low-lead petrol of 0.15 grams per litre in the 4 metro cities of Delhi, Mumbai, Calcutta and Madras with effect from June 1994.

In addition, to reduce growing air pollution in the metro cities, the MOP and NG, in the Ist phase, introduced unleaded petrol (petrol with a lead content of less than 0.013 grams per litre) on 1.4.1995 in the 4 metro cities (Delhi, Calcutta, Mumbai & Chennai) for 4-wheeler petrol vehicles fitted with catalytic converters. In the IInd phase effective from 1st December, 1998, unleaded petrol was introduced in all capitals of States/Union Territories and other major cities. Unleaded petrol would be supplied throughout the country w.e.f. 1.4.2000 in the IIIrd phase. The programme of introduction of unleaded petrol is described in the following Table:.

Phase- I	1.4.1995	Metro cities of Delhi, Mumbai, Calcutta and Madras
Phase-II	1.6.1998	All other capitals of States/UTs and other major cities.
Phase-III	1.4.2000	Entire country.

(ii) Programme for introduction of low-sulphur diesel in the country in a phased manner has been indicated in the following Table:

Phase- I	1.4.1996	0.5% sulphur sold in Delhi, Mumbai, Calcutta and Madras and the Taj Trapezium.

Phase-II	1.9.1996	0.25% sulphur in the Taj Trapezium.
Phase-III	1.10.1999	0.25% sulphur in the diesel sold in the entire country.

(iii) The programme for introduction of tighter emission norms for new vehicles has been indicated in the following Table:

Phase- I	1990	Emission norms for vehicles introduced for the first time.
Phase-II	1.4.1996	Tighter emission norms introduced throughout the country.
Phase-III	1.4.2000	Stricter emission norms introduced.
Phase-IV	-	0.05% sulphur in diesel and MoP&NG asked to introduce low sulphur diesel

Following the introduction of Euro II emission standards in Delhi, **India** has enforced Euro II standards in at least six more cities – Mumbai, Chennai, Calcutta, Hyderabad, Ahmedabad and Bangalore. The Euro II standards are mandatory for new light commercial and non-commercial vehicles in these cities from January 1, 2001. Euro II standards may also be introduced in Lucknow and Pune on the same date, although a final decision has not been made. Heavy vehicles, such as city transport buses, have already been told to use Compressed Natural Gas (CNG). The Indian government had originally envisaged a national deadline of 2005 for the introduction of the Euro II standards. However, a Supreme Court ruling over air pollution in Delhi forced the government to introduce the standards in the capital. The government has now extended the early phase-in of Euro II in response to pressure from the environment ministry and environmentalists. The roll out of the tighter emission standards to the other cities has been accepted by the Society of Indian Automobile Manufacturers.

(iv) Enforcement :

Effective enforcement and implementation and inspection and maintenance programme for in use vehicles and effective road network and mass transport system and traffic management.

(v) Fuel upgradation

The MoEF has notified (2.4.1996) the major parameters which need to be improved by the oil refinery. The Ministry of Petroleum and Natural Gas have begun a programme for improvement of fuel quality (petrol and diesel) and for upgradation of oil refineries in the country to meet the prescribed specifications.

5. INDUSTRIAL AIR POLLUTION CONTROL:

I. Emission Standards:

Emission standards in respect of all the major air polluting categories of industries have been evolved. The important categories include: Power Plant, Cement, Industry, Metallurgical, Petroleum, Refineries etc. Comprehensive Industry Documents (COINDS) for various industries describing manufacturing process, production capacity, available pollution control technology and emission standards have also been published by CPCB.

II. Ambient Air Quality Standards:

Ambient Air Quality Standards have been prescribed

III. Fuel Quality:

The coal companies are required to wash their coal (ash content not exceeding 34%) before dispatching it to the power plants located at a distance beyond 1000 kms. from the coal mines. The notification issued in this regards makes it mandatory for such thermal power plants to use coal not having ash more than 34%. Coal washing would significantly reduce the ash content and to some extent, sulphur contents of coal may also be reduced. Time bound action programme have been evolved for ensuring pollution control in the air polluting industries.

The problem of increasing pollution in the metropolitan cities has been highlighted in recent years. Vehicular pollution is the primary cause for the deteriorating air quality. The issues need to be tackled by many departments. The Ministry of Surface Transport administers the Motor Vehicles Act under which emission standards are notified. While emission standards, have been notified. In synchronization, must be technology upgradation and corresponding fuel quality, as also cleaner fuels. In this respect, close inter-Ministerial coordination must be maintained. Commensurate effort for road planning and traffic management is required**.** In the long run, the key difference will emerge from the degree of success with which personal transport can be supplemented with public transport including mass rapid transport systems.

This Ministry plays a coordinating role with the concerned ministries and its associated bodies/organization including the Ministry of Road Transport and Highways (MoR and TH), the Ministry of Petroleum and Natural Gas, the Ministry of Heavy Industries and Public Enterprises for up-gradation of automobile technology, improvement in fuel quality, expansion of urban public transport systems and promotion of integrated traffic management as the vehicular emissions is the main cause for deterioration of urban ambient air quality.

6. INSTITUTIONS

The Central Pollution Control Board (CPCB) was constituted in 1974 under the provisions of the Water (Prevention & Control of Pollution) Act, 1974. Subsequently as he Indian environmental legislation evolved, its role expanded to cover the areas of air pollution, hazardous and hospital waste management etc. The main functions of CPCBs spelt out in The Water Act, 1974 and The Air Act, 1981 are to: (1) promote cleanliness of streams and wells in different areas of the States through prevention, control and abatement of water pollution, and (2) improve the quality of air and to prevent, control or abate air pollution in the country. Some of the specific programmes being carried out at present are: Air quality monitoring at the National Ambient air Quality Monitoring Stations conducted by SPCB with assistance from CPCB

7. LEGISLATION

The Constitution of India India is the first country, which has made provisions for the protection and improvement of environment in its Constitution. In the 42nd amendment to the Constitution in 1976, provisions to this effect were incorporated in the Constitution of India. Article 48-A directs the State to make efforts for protection and improvement of the environment and for safeguarding the forest and wild life of the country. Article 51A states that every citizen of India has a fundamental duty to protect the environment The Government of India b) The Environment (Protection) Act, 1986 An Act to provide for the protection and improvement of environment MoEF, CPCB, SPCB among others covering in all 60 authorities from 22 different agencies c) Environment (Protection) Rules, 1986 Under section 6, and 25 of the Environment (Protection) Act, these Rules have been formulated to: stipulate standards for emission or discharge of environmental pollutants; lay down procedure to give directions to potentially polluting agencies; prohibit or restrict setting-up or carrying on of industries/activities in certain areas or handling of hazardous substances; specify procedure of taking samples and submission of reports; and submission of environmental audit reports

In co-ordination with the Ministry of Environment and Forests, the Ministry of Road Transport and Highways has notified the following:

- Vide GSR 779(E) dated 29th August, 2000 extended the more stringent three emission standards known as Bharat State II akin to Euro-II emission standards for registration of motor cards and four wheeler passenger Vehicles with Gross Vehicle Weight (GVW) equal or less than 3500 kg. In Kolkata and Chennai are effective from 1.7.2001. These norms are already effective in NCT of Delhi and Mumbai (including Greater Mumbai) from 1.4.2000 and 1.1.2001 respectively.

- Vide GSR 286(E) dated 24th April, 2001, notified *inter-alia* Mass Emission Standards for vehicle with GVW exceeding 3500 kg. And the same is effective in NCT of Delhi from 24.10.2001. Vide S.O. 731(E) dated 31st July, 2001, these standards are extended to Mumbai (including Greater Mumbai), Kolkata and Chennai and are effective from 31.3.2001.

- Vide GSR 284(E) dated 24th April, 2001, notified Mass Emission Standards for Liquefied Petroleum Gas (LPG) driven vehicles and is effective from 24th May, 2001.

- Vide GSR 853(E) dated 19th November, 2001, notified Mass Emission Standards for Compressed Natural Gas (CNG) driven vehicles to be effective from19th May, 2002. This notification also includes *inter alia* safety and procedural requirements for type approval of CNG and LPG operated vehicles, role of test agency, responsibility of vehicle/kit manufacture/kit supplier, responsibility of owner/users and statutory requirements of registration of vehicles. The notification No. GSR 99(E) dated 9th February, 2000 specifying Mass Emission Standards for Compressed Natural Gas (CNG) driven vehicles ceased to be valid six months after the new notification comes into force.

Environment Pollution (Prevention and Control) Authority (EPCA) for the National Capital Region has submitted its XI and XII Progress Reports. These Reports prominently include the steps taken and monitoring made by the authority on various measures for control of vehicular pollution. During this period, the Authority submitted special reports on Clean Fuels and Standards recommendations as directed by Hon'ble Supreme Court. As a result of the rigorous monitoring by the Authority, the NCR from 1.4.2001, 87 CNG stations have been commissioned and about 53.302 vehicles including 3727 buses are plying on CNG mode in Delhi. In Mumbai, 24 CNG outlets are in operation with about 26,296 vehicles, plying on CNG mode.

The Ministry is involved on the Auto Fuel Policy, recommended by the Expert Committee constituted by the Ministry of Petroleum and Natural Gas on 13th September 2001. This Policy is for the entire country, including major cities and device a road map for its emission norms recommended by the Inter-Ministerial Task Force to the Ministry of Petroleum and Natural Gas and on-going work on ethanol blending of gasoline and use of bio-fuels in transportation by the group set up by the Ministries of Petroleum and Natural Gas and Non-conventional Energy Sources within a period of six months.

Air (Prevention ad Control of Pollution) Act, 1981

The Air (Prevention ad Control of Pollution) Act, 1981 relates to the control of air pollution mainly off industrial pollution. Section 21(1) of the Air Act states that no person shall, without the previous consent of the State Board, establish or operate any industrial plant in air pollution control area. Section 22 states that no person operating any industrial plant, in any air pollution control area shall discharge or cause or permit to be discharged the emission of any air pollutant in excess of the standards laid down by the State Board under clause (g) of sub-section (1) of section 17. The intent of section 22 may be the same as that of Section 24 of Water Act to cover sporadic emissions. Thus, any industrial plant becomes relevant to Air Act consent procedure, if only it is located in any air pollution control area to be declared by the State Government under Section 19. A related provision exists in Water Act, Section 19, by which the Act may be restricted in application to only certain areas of the State. In fact by judiciously using the two sections of the Acts, the State Boards could have initially focussed on significant sources of pollution. Depending upon man power

availability and need, application of the Acts could have been extended to cover other areas over a period of time. However, due to various reasons, in several States, the entire State is declared as Air pollution control area and no area of the State is taken out of the applicability of the Water Act.

Section 2(k) states that industrial plant means any plant used for any industrial or trade purposes and emitting any air pollutant into the atmosphere. Air pollutant is defined in section 2(a) as meaning any solid, liquid or gaseous substance including noise present in the atmosphere in such concentration as may be to tend to be injurious to human beings or other living creatures or plants or properly or environment. Therefore, if only an industrial unit emits substances at such levels resulting in concentrations, which may be injurious to human beings etc., it will qualify to be an industrial plant for the purposes of Section 21 and 22 of the Air Act. The Boards at various fora have pleaded for deletion of these definitions of air pollution because of difficulties in quantifying easily determinable or demonstrable injury to human beings etc. An industrial unit even if located in an air pollution control area, as per the Act, need not necessarily be an industrial plant for the purpose of Section 21. This means that if the Boards could identify such units in an air pollution control area based on accepted criteria, then those units can be considered as not relevant to Section 21 of Air Act and that would be legal as per the Air Act.

Determining certain types/categories of industries as not relevant to Water and Air Acts for the purpose of consent coverage is not against the spirit or even letter of the Acts.

8. OTHER ACTS

The Indian Explosives Act, 1908, the Indian Boiler Act, 1923 primarily applicable to all industrial installations with boiler facility except defence services, steamships/vessels, railways, and hospitals with capacity less than 91 litres. Defines powers of Chief Inspector of Boilers, prohibits use of unregistered or uncertified boilers, lays down procedure of registration of new/existing boilers, and relocation and renewals in existing boilers. Central Boilers Board, Chief Inspector of Boilers (state government), State Departments of Boilers or Department of Factories & Boilers constituted under this and Factories Act

MALDIVES

Key Issues:
Transboundry; Pollution; Vehicular pollution, Indoor Pollution; Human Health
Policy Framework:
National Environment Action Plan
Key Legislation:
Malé Declaration; Environment Protection and Conservation Act, 1997;
Key Institutions:
Ministry of Home Affairs, Housing and Environment

1. INTRODUCTION

Air quality of the Maldives is generally considered to be good and is in pristine state. As the islands of the Maldives are small, the sea breezes flush the air masses over the islands and keep air over the islands fresh from the sea. However, recently it has been observed that transboundary air pollution is affecting the air quality of the Maldives. Local air pollution in Malé is also a growing concern. Transboundary air pollution in the Maldives became first known in 1997, when large parts of the country were affected by haze caused by forest fires in Indonesia. The haze layer blanketed the country between October 1997 and December 1997 and significantly affected the routine lives of the Maldivians. The actual state of the transboundary movement of air pollutants over the Maldives was measured in the Indian Ocean Experiment (INDOEX). INDOEX was carried out by a team of more than 200 international scientists and was led by the Centre for Clouds, Chemistry and Climate (C4) of the University of California. INDOEX results showed widespread pollution over large sections of the Indian Ocean.

2. VEHICULAR POLLUTION

As a means of reducing the traffic problems and improving the air quality in Malé, the Government has banned in December 2000, the import of reconditioned motorcycles which have an engine capacity of less than 150 cubic meters into the country. Similarly, a ban was introduced on the import of cars more than 5 years old into the country. In 1998 and 1999, the Maldives contributed to the Indian Ocean Experiment (INDOEX) which was carried by an international group of scientists. A climate observatory was established at Kaashidhoo in 1998 as part of the Indian Ocean Experiment (INDOEX). The station was developed as a model station for frontline atmospheric research in the tropics. It was aimed at providing an excellent venue for scientists to study a range of critical issues of general interest to the climate research community. The station was shutdown in July 2000 due to technical problems. The observatory is planned to be relocated in Hanimadhoo to continue the climate research under the second phase of INDOEX as Asian Brown Cloud (ABC) with assistance from UNEP. This station will monitor the impact of pollutant emissions in the region

In March and April 1999, the scientists were surprised to find a dense brownish pollution haze layer stretching an area of more than 10 million square kilometers over the Indian Ocean tropical region. Because of the pollution, visibility over the open ocean dropped below 10 km, a visibility that is typically found near polluted regions in the eastern United States and Europe. Local air pollution in Malé is mainly due to particulate emission from vehicles, power generation, and construction related activities. Particulate includes a range of materials such as soot and coral dust. High rise buildings and congestion in Malé has disrupted cross circulation of air and emissions from the increasing number of motor vehicles on the roads are deteriorating the urban air quality of Malé. Though the pollution is visible in certain times, no numerical measures of the level of pollution are available. Elevated particulate levels are implicated in a range of respiratory problems such as asthma, allergic respiratory responses, bronchitis and emphysema. The Health Master Plan identifies outdoor air pollution as a major contributor to

respiratory problems in the Maldives. From the health records, it is seen that the number of cases reported with respiratory problems has been on the increase for the past 5 years.

Land transport exerts pressures on the environment in many ways. Vehicles emit carbon dioxide, carbon monoxide, oxides of nitrogen, sulphur dioxide, lead, particulate materials and volatile organic compounds (VOCs). Traffic noise is also a nuisance associated with land transport. As can be seen from the figure, in a period of not more than two and half years from 1996 the population of vehicles registered in the Maldives more than doubled. Cars represent a very significant number among the registered vehicles and in 1994, 128 new cars were registered and this grew to 315 in 2000 (MPND, 2001). From 1990, the import of motorcycles has increased at an average of 14% per annum. In 2000 alone, 1860 motorcycles were registered. The smallness of the islands and infancy of the land transportation sector has limited the land transport system mainly to Malé and some regional growth centres such as Hithadhoo and Kulhudhuffushi. The increased use of vehicles in Malé is causing not only congestion on the narrow street system but is deteriorating the urban air quality as well.

3. MALÉ DECLARATION

The Maldives is fully committed to implementing the Malé Declaration. The Ministry of Home Affairs, Housing and Environment was designated as the national implementing agency for Malé Declaration. On 3 May 1999 the National Implementing Agency entered into an agreement with United Nations Environment Programme / Environment Assessment for Asia and the Pacific to prepare a baseline study on air pollution and a national action plan. This Action Plan, aimed implementing the Malé Declaration has been developed with the assistance of the United Nations Environment Programme

4. STRATEGIES

The aim of the Action Plan is to establish the necessary framework for addressing air pollution to protect the environment. The Government of Maldives will achieve this through a combination of legislation, regulation, voluntary initiatives and economic instruments. Finding effective ways of preventing air pollution in the Maldives requires commitment and concerted action from all Maldivians, our regional neighbors and the international community.

- Incorporate air pollution prevention into national legislation
- Develop and implement policies for air pollution prevention
- Develop and implement innovative pollution prevention programs
- Develop guidelines, standards and codes of practices to ensure implementation of pollution prevention measures at operational level
- Assess and monitor air pollution levels and its impacts
- Educate the public on pollution prevention and promote sustainable lifestyles
- Build the institutional capacity through training relevant groups in the technical aspects of pollution prevention and by acquiring the necessary tools
- Advance transboundary air pollution prevention through regional protocols and agreements. Participate in international air pollution prevention initiatives.

5. ACTIONS, POLICIES AND MEASURES

In order to achieve the aim and in accordance with the strategies of the action plan, specific actions will be undertaken to achieve the following:
Addressing Air Pollution –

- National Strategy for Action Regular monitoring of air pollution
- Assessment of the impacts of air pollution on human health and assets
- Prevention and management of air pollution at the source level

- Development of suitable coordinating mechanisms for the successful implementation of the Action Plan Capacity building through development of suitable training and educational programmes to enable the Government to effectively implement all aspects of the Action Plan

All components of this Action Plan are interdependent and provide a framework for comprehensive action that should contribute to the control and prevention of air pollution and achieve sustainable development. No component should be seen as an end in itself.

6. MAJOR POLICY RESPONSES AND INITIATIVES

As air pollution is an emerging environmental issue in South Asia, on the initiative of United Nations Environment Programme a declaration to promote regional co-operation in the area of air pollution was agreed in 1998. The Malé Declaration on Control and Prevention of Air Pollution and its likely transboundary effects for South Asia was adopted by Ministers of Environment at the seventh meeting of the Governing Council of South Asia Co-operative Environment Programme (SACEP) in Malé. In 2001, the Government adopted, addressing air Pollution - National Strategy for Action with the aim to establish the necessary framework for addressing air pollution to protect the environment of the Maldives. The action plan calls for regular monitoring of air pollution and to assess the impacts of air pollution on human health and assets, introduction of preventive and management measures for air pollution at the source level, development of suitable coordinating mechanisms for the successful implementation of the air pollution action plan and for building adequate capacity to address the issue of air pollution.

NEPAL

Key Issues: Air Pollution; Inadequate Capacity for Management of Environment; Rapid Urbanization; Natural Disasters; Vehicular pollution; Indoor Pollution; Environment Education; Human Health; Fuel Quality

Policy Framework: National Environment Policy and Action Plan 1993 updated in 1998
Key Legislation: The Environment Protection Act, 1997; Environment Protection Regulation, 1997

Key Institutions: Ministry of Population and Environment; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation

1. INTRODUCTION

The deteriorating atmospheric qualities are the emerging concerns both in urban and rural areas in the country. Major concern is the changes in the air and water quality in many urban areas, which is imposing significant social and economic costs on the population. The high incidence of waterborne and respiratory diseases raises health cost and result in lower level of productivity among those affected. In rural areas it is the domestic indoor pollution that causes respiratory disease and ophthalmic disorder. Atmospheric pollution is a function of anthropogenic activity as well as natural process. Anthropogenic activities as vehicular emission, combustion of biomass and fossil fuels are largely responsible for changing air quality in urban and rural areas. Rural areas are engulfed by heavy indoor air pollution that results from combustion of biomass in the poorly ventilated houses.

In order to prevent atmospheric pollution, the Environment Protection Act was promulgated in 1996 and enforced in 1997 along with the Environment Protection Regulation, 1997. The section 7 of the Act covers the Prevention and control of Pollution.

2. INDUSTRY

Although, the level of industrialization is still at its early stage, localized air pollution problems have become significant. Industries also contribute to increase the ambient load of air pollutants. The potentially adverse environmental impacts are compounded where a number of industries are located in close proximity or in the same region.

Depending upon the fuel type, the pollutants released from industries are: Oxide of Carbon, Sulphur and Nitrogen, and particulate matter. An industrial pollution inventory carried out by the Industrial Pollution Control Management Project (IPCMP) indicated the total number of air polluting industries is estimated at 3,400 of which 47 % are in operation in the Kathmandu Valley. It is reported that the total suspended particulate (TSP) load in ambient air from the sector is 76,390 tons/year, of which 70 % is contributed by brick and allied industries, and 27 % by cement and allied industries. In general TSP load in the Kathmandu Valley atmosphere from medium and large sized industrial sectors is estimated to be 104 tons per day

The main source of air pollution in the Valley is from the combustion of fossil fuels, and dust from industrial sites and processes. The major types of industries responsible for air pollution in Nepal are brick kilns; cement factories; metal casting and allied works.

3. VEHICULAR POLLUTION

Vehicular pollution is a major threat to public health in many urban areas like Kathmandu Valley, Birgunj, Biratnagar, and other major cities. This is mainly because of exponential growth of number of vehicles emitting pollutants in already over exhausted city atmosphere. According to available statistic there are over 0,204 million different type of vehicles registered in Nepal. Out of this large number over 50 percent are two-wheelers. Out of the total population of registered vehicles, over 50 percent are running on the streets of Kathmandu valley. The central development region has the highest traffic density of 30 vehicles per kilometers while in the Far Western development region it is only 2 vehicles per kilometer.

So far detailed study of atmospheric pollution of the whole country is lacking. Most of the studies were directed to assess the atmospheric condition of the Kathmandu Valley alone. Emission loads of some major pollutants such as HC, NO_x, SO^2, TSP etc. are based on information on energy use. It shows that for Kathmandu Valley the total emission load is around 32000 tons. According to the distribution of this value by economic sector, the household sector has occupied the topmost position (40%) followed by transport (36 %) and industry (24.2%). The share of commerce is negligible. The breakdown by pollutant type shows that CO is at the top amongst all, occupying 68.5percent, next is HC (18.2 %) followed by TSP (5.2 %). The World Bank and UNDP funded project URBAIR assessed that the total emissions of TSP and PM are 16565 and 4712 tons respectively, in which brick and cement industries are the main contributors while resuspension from roads and domestic sources have occupied secondary position.

Estimated Emission of Pollutants by Sectors in Kathmandu Valley (1992/93)

Pollutants												
Sector	**CO**	**%**	**HC**	**%**	**No_x**	**%**	**SO_2**	**%**	**TSP**	**%**	**Total**	**%**
Transport	**8290**	**66.7**	**3170**	**25.5**	**664**	**5.3**	**96**	**0.8**	**202**	**1.6**	**12422**	**100.0**
Households	9632	84.9	352	3.1	461	4.1	155	1.4	739	6.5	11339	100.0
Industrial	3592	47.0	2206	28.9	498	6.5	673	8.8	668	8.7	7637	100.0
Commercial	95	73.6	6	4.7	5	3.9	7	5.4	16	12.4	129	100.0
Total	**21609**	**68.5**	**5734**	**18.2**	**1628**	**5.2**	**931**	**3.0**	**1625**	**5.2**	**31527**	**100.0**

In all major cities the total suspended particles and respirable particle concentration is well above the WHO recommended guidelines.

In order to put control on the vehicular emission in Kathmandu Valley, the government has introduced a vehicular colour rating system with respect to the exhaust emission standards. Green stickers for emission testing passed vehicles and red stickers for those failed in the test. This practice in Kathmandu Valley has been introduced by HMG/N since 1995. As of May 1988, nearly 40,000 vehicles were tested and, on an average 50 percent of heavy-duty diesel vehicles and 25 percent of light duty petrol vehicles failed to comply with the prescribed standards (3 percent CO and 65 HSU). However, this standard has been recently changed to 4.5 CO and 75 HSU for petrol and diesel vehicles respectively.

Among the vehicles, buses and trucks, three wheeler and two stroke motorcycles are probably the most significant contributors of air pollution. It is estimated that around 56 tons of CO, 18 tons of hydrocarbon, 7 tons of Oxide of Nitrogen, 0.4 tons of Sulphur Dioxide and 0.69 tons of particulate matter are discharged (daily) through the tail-pipes of the vehicles in Kathmandu. The vehicles in Kathmandu Valley use 79percent of all gasoline and 27 percent of all diesel oil consumed in Nepal. On the basis of energy utilization, the daily pollutant load in the air of Kathmandu Valley estimated to be around 550 tons of CO, 14 tons of No_x and 3.5 tons of SO.

4. DOMESTIC

Smoke from the burning of biomass fuels coupled with poorly ventilated houses poses a serious health hazards for millions of people especially in rural area everyday. Indoor air pollution is a major cause of respiratory disease, imposing high economic cost in terms of lost productivity and treatment.

In rural areas firewood, agricultural residues, and animal dungs are the only fuels used for cooking and for other domestic purpose. Even in remote mountain areas, where electricity is not available and kerosene is beyond the purchasing capacity of population, pine wood chips are used for lighting the houses in the night. In absence of data on fuel consumption in domestic sector it is difficult to project the total atmospheric emission load contributed by this sector.

5. ACCIDENTAL FIRES

During the spring and dry seasons, accidental fires in Terai and inner Terrai region are quite common every year. Most of the houses in these areas are built using agriculture residues or dried forest foliage. So slight negligence sets fire causing loss of property, human life and adverse impact on environment by releasing gases, and particulate matters. The occurrence of fire disaster in residential areas (excluding forest fires) was found in 64 districts in 1994. Whereas it appeared in 72 and 75 districts in 1995 and 1996 respectively. A comprehensive study needs to be made to estimate the adverse impact on environment and loss of property and life.

6. FOREST FIRES

After deforestation, forest fire is the most important cause, which does incalculable harm to extensive forest area. Most of the forest fire that occurs in the country is caused either by ignorance or be deliberate and intentional actions. Even though the record of area affected and damage caused by forest fires is not available, the government has introduced the fire line management to minimize the impact of fire disaster.

During the spring and dry seasons, Nepalese forests are highly affected by fire. Although there is no comprehensive study carried out to assess the loss of property, human life and adverse impact on environment, but it is the major source of greenhouse gases (GHGs).

7. NON-POINT SOURCE OF AIR POLLUTION

Controlled fires are frequently introduced in some national parks and wildlife reserve as a part of habitat improvement. This is also an indigenous technique of pasture management. Farmers believe that burning clears dead organic matter, promotes the re-growth of green matter, and eradicates parasites. However, such activities release major Greenhouse Gases (GHGs) as carbon dioxide, methane and nitrous oxide, and dust particulate.

Similarly, in Terai or midhills and mountain slopes, farmers intentionally set fire to grass or shrub lands as part of soil fertility improvement and to destroy weeds, insects and fungal diseases. Although such practice helps to increase the fertility of the soil, it destroys the many endemic plant species as well as biological species necessary to balance the ecological system. Such forest/grass land fires also cause

high atmospheric pollution releasing oxides of Carbon, dust particulate and other gases. It is estimated that carbon input into atmosphere due to such activities cones to about 8.34 x 107 (min.) to 15.45 x 107 (max) tons/year during the period of 1960 to 1990/91 These differences are basically due to variations in consideration of forest areas.

Pending the formulation and enforcement of the relevant detailed regulation, it is difficult to identify which government agency is responsible for specific functions of pollution prevention and control enforcement, and the preservation of national heritage and environmental preservation. However, it is clear from the EPA that the Ministry of Population and Environment is the main agency for enforcement of pollution prevention and control, and that it can impose restrictions on the use of any material, fuel, equipment or machinery which is found to be having a significant adverse effect on the environment. Likewise, the Ministry of
Population and Environment can appoint "environment inspectors" in order to minimize, mitigate or control pollution and enforce compliance

8. LEGISLATION:

Most of industries either do not have the air pollution control equipment or it is not in functioning. Furthermore, Article 7 (1) of the Environmental Protection Act 1997, and Rule 15 of the Environment Protection Rules, 1997 although prohibits to emit waste in contravention of the prescribed standards, but it is not clear about the atmospheric pollution from the industrial emission. The implementation of provision of the Act and Regulation is further hampered by the absence of ambient air quality standards.

The Environment Protection Act, 1997 provides that as far as the Prevention and Control of Pollution is concerned:

(1) Nobody shall create pollution in such a manner as to cause significant adverse impacts on the environment or likely to be hazardous to public life and people‟s health, or dispose or cause to be disposed sound, heat radioactive rays and wastes from any mechanical devices, industrial enterprises, or other places contrary to the prescribed standards.

(2) If it appears that anyone has carried out any act contrary to sub-section (1) and caused significant adverse impacts on the environment, the concerned agency may prescribed necessary terms in regard thereto or may prohibit the carrying out of such an act.

(3) If it appears that the use of any types of substance, fuel tools or device has caused or is likely to cause significant adverse impacts on the environment, the Ministry may, by a notification in the Nepal Gazette, forbid the use of such substance, fuel, tools or device.

(4) Other provision relating to the prevention and control of pollution shall be as prescribed.

PAKISTAN

Key Issues: Air Pollution; Vehicular Pollution; Inadequate Capacity for Management of Environment; Rapid Urbanization; Vehicular pollution; Indoor Pollution; Environment Education; Human Health; Fuel Quality

Policy Framework: National Conservation Strategy

Key Legislation: The Pakistan Environmental Protection Act, 1997; The Motor Vehicle Ordinance, 1965; The Motor Vehicles Rules, 1969, Rule 155; The Pakistan Penal Code, 1860; The West Pakistan Prohibition of Smoking in Cinema Houses Ordinance, 1960; The Punjab Local Government Ordinance, 1979

Key Institutions: Ministry of Environment, Local Government and Rural Development; Pakistan Environmental Protection Agency (PEPA); Provincial Environmental Protection Agencies; city/town municipalities

1. INTRODUCTION

In Pakistan the problem of atmospheric pollution is restricted to urban centers and the worst hit cities are Karachi, Lahore, Faisalabad, Hyderabad, Quetta, Multan, Peshawar, Rawalpindi and Islamabad. The availability of data on atmosphere in Pakistan is scant but despite data constraint it is a general consensus that the problem is real and acute. The main factors responsible for air pollution are the rapid growth in the number of motor vehicles and industry; and to a lesser extent, thermal power plants etc.

The sources of atmospheric pollution may be natural such as volcanic eruption, smoke, wind blown, dust etc. and anthropogenic such as combustion processes, chemical and petrochemical industries, metallurgical reactions etc.

Limited data are available on the ambient environment in NWFP. However, rapid urbanization and an exponential increase in the number of all types of vehicles has given rise to the deterioration of air quality, especially in the big urban centres of Peshawar, Nowshera, Charsadda, Mardan, Abbottabad, Mingora, Kohat, Bannu and D. I. Khan. Old vehicles which are not properly maintained are particularly a problem. Lead emissions from automobile exhausts are reportedly high in some parts of the cities during specific traffic peak hours. Indiscriminate burning of municipal solid wastes also contributes to air pollution. Dense smoke emissions from foundries, brick kilns and rolling mills in Peshawar and Nowshera have been reported.

Approximately 350 brick kilns are situated in and around Peshawar. On average, a brick kiln producing 800,000 bricks uses large amounts of rubber to start fires and burns a total of eight tons of low-quality coal or 20 drums of used vehicle oil. It is thus staggering to realize the huge amount of hazardous material that is burned by all 350 brick kilns. Hydrocarbon fuel emissions, and especially carbon monoxide, are major air pollutants. Peshawar, like other major cities of Pakistan, is facing a serious air pollution problem from rapidly increasing traffic density. According to the Police Department in Peshawar, in that city alone 143,594 vehicles were registered in 1994 compared with 83,625 in 1989, averaging an annual increase of 10 per cent. If that trend continues the number of vehicles in the city will have doubled by the year 2000.

Carbon monoxide levels from 6 a.m. to 6 p.m. were studied at 16 different locations with maximum traffic density. Twelve of the 16 locations were found to have an average carbon monoxide concentration above the threshold limit of 9 ppm for eight hours of exposure. At one location the average

carbon monoxide concentration reached 35 ppm for one hour's average exposure. Those results suggest that at 12 locations, the carboxyhaemoglobin level present in the blood of people exposed to such concentrations of carbon monoxide for eight hours would be in the range 2.04-4.4.85 per cent, a level that can adversely affect the central nervous system and cause changes in psychomotor functions. Another air pollution survey carried out by EPA at eight locations within the city of Peshawar showed levels of carbon monoxide as high as 14 ppm. Similarly, the levels of nitrogen dioxide and ammonia were also above acceptable levels.

2. INDUSTRIAL

The effluent of a fertilizer factory was found to contain 66 ppm Nitrogen Oxides, 8 ppm Fluorine and 1.02 ppm Ammonia. 520 tonnes of lead is released in our atmosphere every year. Lead level as observed in Karachi is from 0.024 to 0.13 microgram per cubic metre. Particulate emission is increasing at an annual rate of 9% in our atmosphere. In the United States the dust fall ranges from 16 to 24 tonnes per square kilometer per month whereas in Lahore the same was observed to be 500 tonnes per square kilometer in June. In Karachi the dust fall had been found to be 100 tonnes per square kilometer per month in July.

3. VEHICULAR

A comparative study indicates that in Pakistan vehicles emit 25 times more Carbon Monoxide, 20 times more Hydrocarbons and 3.6 times more Nitrous Oxide than those in the United States. Nitrogen Dioxide found in our environment is much more than the United Nations specified limit of 0.05 ppm. The numbers of auto-rickshaws is increasing day by day and thus pollute the environment with their smoke and unbearable noise. In Karachi alone 20,000 auto-rickshaws are in use whereas Lahore has 15,000 rickshaws. At present about 3.5 million registered or unregistered vehicles are running on the roads of Pakistan. This number is increasing at the rate of 10% per annum. About 90% vehicles are in dismal state thus causing more pollution as compared to the new transport. Thus resulting in air pollutants like Carbon Monoxide (CO), Oxides of Nitrogen (NO_x), particulate matters, Hydrocarbons, Sulphur dioxide (SO_2), smoke, dust and lead compounds.

Under the influence of sunlight, nitrogen oxides combine with gaseous hydrocarbons to form a complex variety of secondary pollutants called photochemical oxidants. These oxidants, together with solid liquid particles in the air, make up what is commonly known as smog. The photochemical oxidant family of pollutants includes, among others, ozone, an unstable, toxic form of oxygen; nitrogen dioxide; peroxyacyl nitrates; aldehydes; and acrolein. In air they can cause eye and lung irritation, damage to vegetation, offensive odor, and thick haze.

4. DOMESTIC

The major causes of Carbon dioxide and Carbon monoxide emissions are inefficient and incomplete burning of fuel. However, such emissions can be controlled considerably by proper operation and maintenance of fuel-consuming equipment and vehicles. In Pakistan, burning of fuelwood and biomass accounts for more than 50% of CO_2 emissions while gasoline and fuelwood account for almost 70% of CO emissions. Thus, burning of fuelwood not only produces hazardous emissions, but leads to deforestation and land erosion. This situation can be improved by using fuel-efficient cooking technologies in the rural areas of Pakistan.

5. POLLUTION BY ACCIDENTS/INCIDENT

Pak-American Fertilizer Limited met with an accident in the year 1964. High back-pressure got developed in a pipe which resulted in the blowing up of the valve. In addition to other losses, injuries and damages, the chemical engineer of the factory died on the spot. In January 1997, a tanker of Chlorine Gas was transported from one place to anther, in Lahore, without ensuring the factor of risk and when the

vehicle/tanker approaches in a rushy area the leakage had been started. 20 peoples died due to the Chlorine gas leak tragedy in baga lines, Gari Shahu Lahore. As a result of this disaster it also caused considerable health problems and material loss to peoples living in the vicinity.

The Supreme Court of Pakistan ordered to establish a Commission to Review Environmental Impact of transmission line project. In compliance with the judgement of Supreme Court of Pakistan, the Federal Government under section (3) of the Pakistan Commission of Inquiry Act, 1956, established a Transmission Lines Commission to review the environmental and health related issues of transmission lines and grid station project with the view that these are definite matter of public importance. The Commission‟s area of jurisdiction for proper remedial action include all the areas whether it is rural or urban from where the transmission lines passes and grid station has to be constructed**.**

This Commission also make suggestions for the modification, alteration or substitution of any component to bring it to conformity with the guide lines already provided.

6. INSTITUTIONAL

At the federal level, Ministry of Environment, Local Government and Rural Development is a policy formulation and Pakistan Environmental Protection Agency (PEPA) is the implementing/regulating institution, and the Provincial Environmental Protection Agencies and city/town municipalities are the institutions responsible for the control of atmospheric pollution.

Ministry of Environment, keeping in view that the quality of fuel and mechanical condition/tuning of engine, is mostly responsible for pollution, has undertaken the following strategy and action plan: -

- In August 1993, the Ministry notified National Environmental Quality Standards, *inter-alia*, for motor vehicle exhaust and noise. The Standards prescribe maximum limits of visible and non-visible vehicle exhaust.
- Pakistan Environmental Protection Council in consultation with the Ministry of Petroleum and Natural Resources formulated an action plan on clean fuels. The action plan *inter-alia* recommended the introduction of unleaded gasoline in major cities. The action plan has been forwarded to Ministry of Petroleum and Natural Resources for effective implementation.
- The Pakistan Environmental Protection Council in its 8^{th} meeting has directed Pakistan Environmental Protection Agency to prepare a National Clean Air Plan, which is under preparation. It is expected that this Plan will comprehensively address the Air Pollution issue of Pakistan.
- The Federal Ministry of Environment introduced Compressed Natural Gas (CNG) on experimental basis for its use in cars and now upon its success, many new filling stations are established and are being set up in the private sector.

Air quality above the WHO standards is costing Pakistan about Rs. 25 billion per year from adverse health and other effects. The air quality is being degraded due to vehicular emissions; transport of pollutants from point sources; domestic burning of fuel; wind blow dust etc. all these problems are being dealt at the policy level. Apart from the efforts being made to introduce clean fuels in the country, massive forestry programme is already being implemented in all the four provinces and in the Federal Capital. To protect public health from effects of pollution, national standards and generation of ambient air data are necessary. The Ministry is establishing ambient air quality standards and setting up air monitoring stations in major eight cities of Pakistan so that data on air quality could be generated for taking remedial measures.

7. LEGISLATION

Consciousness of the need to enact a framework of environmental law for Pakistan to address emerging environmental issues began to build soon after the UN Conference on the Human Environment held in Stockholm in 1972. However, it was not till 1983 that the Pakistan Environmental Protection Ordinance was promulgated.

The National Conservation Strategy (NCS) was prepared over a three year period, involving consultative process from all parts of the country, with the following three main objectives, (I) conservation of natural resources (II) sustainable development and (III) improved efficiency in the use and management of resources. The NCS highlighted the need to review existing environmental legislation, including the 1983 Ordinance, in order to update, strengthen, rationalize and improve enforcement of these laws.

This is in spite of the fact that several legislation existed since long which addressed the environmental issue either directly or indirectly. Although in 1979/80, promulgation of Local Government Ordinances in the four provinces of Pakistan established institutions and empowered them to prepare and implement schemes for prevention of pollution in air, water and land, and for this purpose they can collect taxes from the citizens. However, since creation of Pakistan, the first major step regarding legislation towards the subject of environment as a take off of the country, was the promulgation of Pakistan Environmental Protection Ordinance (PEPO), 1983. The thrust of this legislation is on motivation and awareness. It seeks to ensure that environmental considerations and concerns are incorporated into national development plans and policies. This ordinance among other things, require EIA of all major development projects, gave statutory cover for the establishment of Pakistan Environmental Protection Council (PEPC), Pakistan Environmental Protection Agency (Pak-EPA) and provincial EPAs, and made provision for the formulation of national guidelines for pollution control. As a result, the National Environmental Quality Standards (NEQS) came into existence. These standards (NEQS) were approved by the PEPC and relate to municipal and industrial liquid effluents, industrial gaseous emissions and motor vehicles exhaust and noise, and came into force for new industrial units on 1-7-1994 and for existing industrial units on 1-7-1996. The PEPO, 1983 was supplemented with the development of National Conservation Strategy which emerged out of 4 years participatory - process - oriented approach of extensive consultations with various interest groups, general public and technical experts. The Cabinet of Pakistan Government adopted the NCS with its 14 core areas in 1992. The PEPO, 1983 was considered being narrow in scope, having some deficiencies, as it did not address many issues critical to the preservation of environment such as in providing guidelines for the protection and conservation of species, habitats and bio-diversity, conservation of renewable and none-renewable resources. The PEPO, 1983 was replaced with the promulgation of a more comprehensive PEPO, 1997, which later enacted as an Act of Parliament of Pakistan and enforced with the name of Pakistan Environmental Protection Act, 1997.

Pollution is controlled through four main provisions.

- **Discharge or emission in excess of NEQS:** The primary anti-pollutant measure is contained in section 11, this prohibits the discharge or emission of any effluent waste air pollutant or noise in an amount exceeding the National Quality Standards (to be prescribed in the rules and regulations) or ambient standards for air, water or land (set under paragraph 6(g))

- **Motor vehicle emissions in excess of NEQS:** This provision (contained in section 15) applies to motor vehicles and prohibits noise or air pollutants in an amount exceeding the National Quality Standards or ambient standards for air, water or land (set under paragraph 6(9)). It is not possible to be charged under both section Ä11 and section 15 for the same offence- a motor vehicle emission should be charged under section 15.

8. MAIN ENACTMENT ON ATMOSPHERIC POLLUTION

Following are the main enactments and relevant/attractive sections on atmospheric pollution.

1. The Pakistan Penal Code, 1860

Section 278 Making atmosphere noxious to health:

Whoever voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighborhood or passing along a public way, shall be punished with fine which may extend to five hundred rupees.

2. The Motor Vehicle Ordinance, 1965; The Motor Vehicles Rules, 1969

Rule 155 Silencers:

.....

(2) Every motor vehicle shall be so constructed or equipped that the exhaust gases from the engine are not discharged downwards so as to impinge on the road surface.

Rule 163 Emission of smoke vapour or grease:

(1) Every motor vehicle shall be so constructed, shall be maintained in such conditions, and shall be so driven and used that there shall not be emitted therefrom any smoke, visible vapour, grit, sparks, ashes, cinders, or oily substance the emission of which could be prevented or avoided by taking of reasonable steps or the exercise of reasonable care or the omission of which might cause damage or annoyance to other persons or property or endanger the safety of any other users of the road.

(The Penalty for contravention of the above rules is as follows):

3. The Motor Vehicles Ordinance, 1965

Section 112 General provision for punishment of offences not otherwise provided for:

Whoever contravenes any provision of this Ordinance or of any rules made thereunder shall, if no other penalty is provided for the offence under this Ordinance, be punished with fine which may extend to one hundred rupees and if having been previously convicted of such an offence, shall again be guilty of as offence punishable under this section, shall be subject for every such subsequent offence to fine which may extend to five hundred rupees.

4. The West Pakistan Prohibition of Smoking in Cinema Houses Ordinance, 1960

Section 3 Penalty for smoking in cinema houses:

Whoever smokes, during any performance, demonstration or exhibition, in any part of a cinema house reserved for the audience or the spectators, shall be punished with fine which may extend to one hundred rupees.

EXPLANATION: For the purpose of this section, a performance, demonstration or exhibition shall be deemed to commence when the audience or the spectators have entered the cinema house to witness the performance, demonstration or exhibition therein and to continue until they have left the house after the final closing of the performance, demonstration or exhibition.

5. The Punjab Local Government Ordinance, 1979

Section 51 **Functions of Zila Council:**

A Zila Council may and if Government so directs shall undertake all or any of the following functions:

(L) Environmental Pollution:

(liv) preparation and implementation of schemes for the prevention of the pollution of air by gases, dust or other substance exhausted or emitted by automobiles, engines, factories, brick kilns, crushing machines for grain, stone, salt or other material and such other sources of air pollution as the bye-laws may provide; and

(lv) preparation and implementation of schemes for the prevention of pollution of water or land from such sources and in such manner as the bye-laws may provide.

Section 93 **Environmental Pollution:**

(1) An urban local council may prepare and implement schemes for the prevention of the pollution of air by gases, dust or other substances exhausted or emitted by automobile engines, factories, brick kilns, crushing machines for grain, stone, salt or other materials and such other sources of air pollution as the bye-laws may provide.

(2) An urban local council may prepare and implement schemes for the prevention of the pollution of water or land from such sources and in such manner as the bye laws may provide.

SRI LANKA

Key Issues:
Air Quality; Air Contaminants; Industrial Pollution; Vehicular Pollution; Forest Fires; Indoor Pollution; Environment Education;Human Health; Fuel Quality

Policy Framework:
National Conservation Strategy, 1988; National Environmental Action Plan, 1994 updated in 1998

Key Legislation:
Motor Traffic Act No.14 of 1951; Petroleum Products Control Regulation Act No. 34 1979; National Environmental Act (NEA) of 1980; National Environmental (Amendment) Act (NEA) of 1988; Railways Ordinance, 9 of 1902;_Vehicles Ordinance, 4 of 1916; Petroleum Ordinance, 6 of 1887; Airports Authority, 46 of 1979; Factories Ordinance, 45 of 1942; Urban Development Authority Law, 41 of 1978

Key Institutions:
Motor Traffic Department; CEA, NBRO, CMT, CPC and SLSI

1. INTRODUCTION

Air pollution around the metropolitan areas is caused by stationary or mobile emission sources which result from economic activities. Air pollution in the city of Colombo had been recognized as a growing problem since the early 1990s, and a Strategy and Action Plan – Clean Air 2000 was developed as an activity of the Metropolitan Environment Improvement Programme supported by the World Bank. The Plan was meant to supplement the activities recommended by the National Environment Action Plan 1992 – 1995, in addressing the problem of air pollution. It covers recommendations for vehicle inspection and maintenance, fuel reformulation, monitoring of emissions, setting of standards, institutional strengthening, transport planning and traffic management, and the use of economic instruments. The Plan was approved by the National Environmental Steering Committee, which appointed an Implementation Committee to monitor progress. However, the problem of air pollution in the Colombo area, far from abating, has grown considerably in magnitude. In January 2000 the Minister of Forestry and Environment put up a Cabinet Memorandum and gained acceptance for National Policy on Air Quality Management.

2. INSTITUTIONS

The responsibility for air quality management lies with several cross cutting agencies such as the CEA, NBRO, CMT, CPC and SLSI. The CEA has issued ambient air quality standard but not mobile emission standards (National Environmental (Ambient Air quality) Regulation 1996). Monitoring and regulation of motor vehicle emissions, which cause most of the air pollution, is the duty of the Motor Traffic Department under the Motor Traffic Act No.14 of 1951 as amended. Regulations for formulating standards for emissions from diesel vehicles have been gazette under the Motor Traffic Act (Gazette No. 817/6 of 03/05/1994). The Ceylon Petroleum Corporation is accountable for the pollution potential of petroleum fuels (Petroleum Products Control Regulation Act No. 34 1979). Pollution emissions from thermal power generation come under the purview of the Ceylon Electricity Board. National Clean Air 2000 -Action Plan, which was approved by the cabinet, lists the implementation agencies of air quality management and institutional framework. These include CEA, NBRO, CMT, Traffic Police, CISIR, Ministry of Finance, Ministry of Transport and Highways, and UDA.

3. EXISTING POLICIES, LAWS AND REGULATIONS

Sections 23 J and K of the National Environmental Act (NEA) of 1980, which was amended in 1988, prohibit emission of pollutants into the atmosphere. Although discharge standards have been prescribed for liquid wastes, and the Sri Lanka Standards Institution (SLSI) has prescribed emission standards for sulphuric acid plants, these regulations do not address vehicular air pollution. Though, the NEA has given the mandate to the CEA to regulate and control air pollution, little has been achieved in this area due to lack of appropriate regulations. Amendments to the Motor Traffic Act have given sufficient authority to the Department of Motor Traffic and Police Department to control vehicular emissions. An increase in awareness has led to the recognition of the need for increased regulatory control and policy formulation including the formulation of the Clean Air 2000 -Action Plan.

4. CLEAN AIR 2000 ACTION PLAN

Clean Air 2000- Action Plan calls upon existing institutions dealing with urban air pollution control, to play various roles ranging from policy making to air quality monitoring, together with enforcing laws, ensuring regulatory compliance and undertaking research and development of technology for air pollution control. It allows the establishment of functional linkages between many institutions dealing with environmental management. Actions proposed include the establishment of an institutional frame work [among Ministry of Environment, CMT (Commissioner of Motor Traffic), CEA, Traffic Police, NBRO, CISIR, etc.] to manage air pollution in Sri Lanka.

So far implementation of Clean Air 2000 programme has been slow, but some positive developments include phasing out of unleaded petrol by year 2010 and the import of gas conversion kits that allow vehicles to use Liquid Petroleum gas.

5. RELATED LEGISLATION

Motor Traffic Act, 14 of 1951 [Amendment- Motor Traffic Act, No.5 of 1998
This deals with regulations that prohibit, restrict or control the use of motor vehicles.

National Environmental Act 47 of 1980, am mended by Act 56 of 1988

Railways Ordinance, 9 of 1902
This prohibits smoking so as to be an annoyance to any other person, passenger, or official.

Vehicles Ordinance, 4 of 1916
It gives the authority to the minister to make regulations for the purpose of carrying out the provisions of the ordinance, which includes the regulations for regulating the traffic on the roads and streets and for the safety and comfort of passengers and general public.

Petroleum Ordinance, 6 of 1887

This is for regulating the importation of dangerous petroleum and gives power to the minister to make rules to regulate the importation of petroleum.

Petroleum products (Regulation and Control of Supplies) Act, 34 of 1979

This is for regulation and control of the distribution and use of petroleum products with a view to ensuring the fair distribution of such products, and to provide for matters connected therewith or incidental thereto.

Airports Authority, 46 of 1979

Minister may give the authority directions in order to prevent or deal with noise, vibration, pollution or other disturbance attributable to aircraft used for the purpose of civil aviation.

Factories Ordinance, 45 of 1942

Construction/ extension or conversion of any factory building which effects any provision in the ordinance such as ventilation, has to be approved by Chief Inspecting Engineer or District Factory Inspecting Engineer and panel of civil engineers nominated by Commissioner.

It also gives provision to secure and maintain reasonable temperature in workroom using any method that prevents escape into air of any fume likely to be injurious or offensive to persons employed in workroom.

This ordinance also has regulations to secure of maintain adequate ventilation by the circulation of fresh air; render harmless, so far as it is practicable, all fumes, dust and other particles injurious to health generated in the process of work. It also provides for precautions in confined places where dangerous fumes, toxic substances or deficiency of oxygen is likely to occur. Explosives or poisonous gases introduced to gas receiver need be allowed to escape outside the factory after rendering them harmless. Municipal Councils Ordinance 29 of 1947 (Revised in 1956) and Pradeshiya Sabhas Act, 15 of 1987 (Amendment- Pradeshiya Sabhas Act, 14 of 1999] These also have regulations for prevention of pollution caused by factories.

Urban Development Authority Law, 41 of 1978

It gives power and functions to develop environmental standards and prepare schemes for environmental improvements in relevant areas.

National Industrial Pollution Management Policy Statement- 1996

This has the provisions for pollution prevention at source and treatment and proper disposal of industrial wastes, hazardous substances and sludges. It also provides for clustering of polluting industrial units, and protects the environment by siting high polluting industries within industrial estates. Therefore the pollution will be localized, and industrial estates will have common facilities for treatment and safe disposal of wastewater, solid waste and hazardous waste. Air pollution will be controlled at plant level.

Cabinet decisions (declared through a gazette notification on 20.12.94) for the Abatement of Emission of Ozone Depleting Substances

In order to phase out the usage of Ozone Depleting Substances (ODS), the cabinet has announced the phase out dates of ODS (13 chlorofluorocarbons and 3 halons) for new appliances (i.e. year 2000) and servicing existing equipment (i.e. 2005).

Conclusion

Present practice in Southeast Asia shows that relatively strict environmental standards have been adapted from other jurisdictions without much analysis of the compliance costs and enforcement regime required. The result has been non-compliance and lack of enforcement. To work effectively environmental standards must be achievable and be backed up by consistent monitoring and enforcement. The standards and the process of monitoring compliance should be designed to fit the local context. For example, it is often the case that countries do not have sufficient enforcement capability. In addition, full compliance with the regulations would likely create economic hardship for existing enterprises and local communities. In these cases, compliance agreements should be negotiated with polluters. These agreements should include a specified timetable for implementation of control measures so that polluters have time to plan and prepare for gradual modification of their operations to reduce pollution. Technical assistance may be provided to help polluters identify opportunities to reduce pollution through cleaner production techniques or to introduce new technology. The success of environmental standards is measured by the voluntary compliance by potential polluters. New approaches to standard setting needed. These approaches must be more participatory and inclusive of all stakeholders. Programs need to be based on analysis of the costs of compliance and capability of environmental agencies to enforce the standards.

Recognizing the nature and dimensions of the problem, countries of this region, depending on their economic capabilities, have taken initiatives at the national level for the prevention and control of air pollution which include enforcement of regulatory measures, standards, economic instruments and technological improvements. Most of the countries in the region have laid down ambient air quality standards. These relate to the criteria pollutants such as suspended particulate matter, sulphur dioxide and nitrogen dioxide. In addition, several countries have laid down ambient air quality standards in respect of respirable particulate matters.

The setting up the targets in terms of ambient air quality standards and source specific emission standards is the basic prerequisite for air quality management. Over the years, most of the countries in the region have formulated such standards and set up regulatory authorities for their enforcement. Countries like Japan and Singapore have been able to set up stringent standards. The air quality standards are promulgated through legislation and in the process of promulgation, issue of technological feasibility, cost of compliance, prevailing exposure levels, social, economic and cultural conditions are taken into consideration. The strategy for the air pollution control entails a multi-pronged approach including legal, technological and economic instruments. Alongside, strengthening of institutional mechanism for coordination with the stakeholders at various levels is a must for effective air quality management. Monitoring and assessment of pollution and its impact, enforcement of legal provisions, promotion of clean fuels and technologies, fiscal incentives and economic instruments, inter-institutional linkages and public participation are among the key component for formulation of air quality management strategy.

References:

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol.1&2
2. Adhikari Devendra Prasad, October 1999, A Report on Air Pollution Situational Analysis and Management Plan, World Health Organisation/ Nepal and Department of Water Supply and Sewerage, Kathmandu, Nepal.
3. Central Pollution Control Board: Pollution control Acts, rules regulations, rules and notifications issued thereunder, 1998.
4. Centre for Science and Environment, State of Indian Environment: Citizen‟s fifth report 1999
5. Central Pollution Control Board: Annual Report 1999-2000.
6. Central Pollution Control Board CPCB (2000a) „Polluting industries‟. Parivesh Newsletter 2000.

7. Data calculated from Ministry of Environment and Forests, Environmental Action Programme (New Delhi, 1993).
8. Dahal, L., 1995. "A study on pesticide pollution in Nepal", National Conservation Strategy Implementation Project. National Planning Commission in collaboration the World Conservation Union.
9. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, lslamabad. Federal Planning Cell. 1990. Water sector investment planning study. Vol. 1: Main Report. WAPDA, Lahore.
10. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
11. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
12. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
13. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
14. Human Development Report 1999, UNDP.
15. Investigation of Air and Water Quality (Lahore, Rawalpindi, Islamabad), March 2000, JICA.
16. JICA Annual Report, 1999, JICA Country Profile on Environment –Nepal, 1997, JICA.
17. MoEF (1997) White paper on pollution in Delhi with an action plan. New Delhi: Ministry of Environment and Forests.
18. National Planning Commission (1992). The Eight Plan. His Majesty‟s Government of Nepal, Singh Durbar, Kathmandu, Nepal, Central Bureau Statistics, 1994a. A Compendium on the Environmental Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
19. Planning Commission, *Eighth Five Year Plan,* 1992-97, vol. t (New Delhi, 1992).
20. Pachauri, R.K.; Sridharan, P.V. (1998) Looking Back to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
21. PAK-German Urban Industrial Environmental Protection (UIEP) Program, Peshawar, Pakistan (Effects of Air Pollution on Human Health), 1999.
22. Report of the Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (New Delhi: Department of Science and Technology, 15 September 1980).
23. SIAM (1999) Fuel and Vehicular Technology. New Delhi: Society of Indian Automobile Manufacturers.
24. The State of the Environment, 1984-1985 (New Delhi: Centre for Science and Environment 1982
25. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
26. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report), JICA Nepal Office, Kathmandu, Nepal.
27. The World Fact Book 1999, CIA.
28. The Environment (Protection) Act, 1986 (New Delhi: Publications Division, 1986.
29. UNDP/GEF, 1999, Country Programme Strategy: Nepal, Kathmandu, Nepal.
30. World Bank, Economic Developments in India (Washington DC: IBRD, 1995.
31. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal.
32. World Bank, September 1998, World Development Report, Knowledge for Development 1998/99.
33. World Development Indicators, 1999, The World Bank.
34. World Development Report, 1999, The World Bank.
35. WHO/UNEP (1992) Urban air pollution in mega-cities of the World. Oxford

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER VIII

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: CHEMICALS AND WASTES

BANGLADESH

Key Issues:

Hazardous Waste Management; Air Pollution; Water Pollution; Soil Contamination; Safety and Health; Emergency Plans, Public Liability and Compensation; Enforcement and Compliance; Education and Awareness; Social Audit of Industry;

Policy Framework:

Fourth and Fifth Five-Year Plan, 1990-2002; National Environment Policy, 1992; National Environment Management Action Plan, 1992

Key Legislation:

Environment Conservation Act, 1995; Environment Conservation Rules, 1997; Municipality Ordinance 1977; Environmental Pollution Control Ordinance 1997; Environmental Pollution Control Ordinance 1997; Guideline for Solid Waste Management; The Pesticide Ordinance, 1971; The Pesticide Rules, 1985; Notification No. 6/Fertilizer- 21/94/l00 dated 17-4-95; S.R.O No. 160.Law195 Fertilizer (Control) Orders, 1995 under Control of Essential Commodities Act, 1956; The Dangerous Drugs act, 1980; The Drugs (Control) Ordinance, 1982; The Petroleum Act. 1934; The Poison Act, 1919; The Explosive Act, 1923; The Penal Code, 1860; The Forts Act, 1908; The Chillagong Port Authorities Ordinance, 1976; The Coast Guard Act, 1994; The Factories Act, 1965; The Pure Food Ordinance, 1959.

Key Institutions:

Municipal governments; Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; International Institutes of Environment

1. INTRODUCTION

A toxic chemical is one, which on contact with a living organism is capable of killing, injuring, or otherwise impairing that organism. These poisonous substances are hazards in that there is risk depending on the exposure and the manner in which such a substance is handled.

Even though Bangladesh is a developing country with still a low level of development, little industrialization and agrochemical input, it can not live without using certain toxic chemicals or generation of toxic and hazardous wastes. Keeping pace with its program of industrialization, the use of toxic chemicals and generation of toxic wastes is in increasing trend.

More than 5000 MT of different types of pesticides are used annually in Bangladesh. All these chemicals have different degrees of toxicity. It is known that local unauthorized companies formulate numerous pesticide products. These chemicals pose hazard during storage and use. The residues of these chemicals are washed out into the water bodies causing pollution and damage to ecosystem.

Tanneries use chromium based compounds and other chemicals for leather processing and tanning purposes. Many of the chemicals are highly toxic and basic chromium sulfate (chromosol), of which about 3000 MT are used annually, is bio-accumulative in nature.

Chittagong Chemical Complex has been losing about 3.5 MT of mercury per year from its chlor-alkali plant for the last 27 years. This highly toxic metal leaves the plant with liquid effluent discharged into the river and gaseous materials are released to the atmosphere. An estimated 80 MT of mercury has been discharged into the river over 27 years.

In the textile dyeing and printing industry about 3000 MT per year of dyeing chemicals are used. A fraction of these chemicals contain heavy metallic compounds which are toxic and have persistency in the environment. The industry also uses alkali, chlorine and toxic organic matter. With the current emphasis on setting up more textile industries in the country pollution from effluents from this sector will increase. Electroplating industries use chlorinated hydrocarbons, chromium, nickel, copper, zinc and silver salts along with other chemicals like cyanide. Effluents contain these metal ions, acids, alkalis, cyanide, oil and grease, these are discharged without treatment.

Waste from paint industries contains heavy metals like chromiun1, lead, copper, cadmium, organic solvents cyanide etc. Nothing is being done at present to treat the waste before it reaches the ecosystem.

2. AGRICULTURAL WASTES

Nearly 80% of the total population of the country lives in village and most of them depend for their livelihood on agricultural activities. So this agricultural activity contributes a major portion of solid wastes generated in the country-side. Wheat and rice straw, jute sticks, leaves and residues of various other crops constitute this solid waste. It is difficult to quantify the amounts of such wastes generated from agricultural residues due to lack of any such study. But fortunately these residues are mostly reused/either for animal fodder or auxiliary fuel for cooking and meeting other energy need for rural people. Some of these wastes are also used as manure in agricultural lands. Similarly the wastes generated from agricultural farming activities are also reused in the manner described above.

3. DOMESTIC WASTES

Domestic wastes are generally generated from kitchen and household activities, domestic animals, human excreta, sludge from pit and services latrines.

Wastes from Trading centers and industrial activities

Various types of wastes such as garbage, waste papers, cartoons, discarded clothes and weeping wastes are generated in huge amounts from the trading centers. Commercial and industrial activities produce wastes like scrap materials, residues, by-products, sludge, dusts, filter materials, catalyst wastes and sometimes hazardous, toxic and chemical wastes. Leaves, waste papers, grits and other forms of street litters are accumulated by street sweeping while construction wastes include all forms of discarded construction materials and demolition debris.

4. MUNICIPAL WASTES

The cities and towns in Bangladesh are under increasing population pressure due to migration of rural people to urban centers. The present annual growth rate in urban centers varies between 3 and 8 per cent in comparison to the annual average growth rate of 2.01 per cent in Bangladesh. The quantity of

municipal wastes generated in an urban center in Bangladesh is increasing proportionately with the increase in population but the increase in service facilities is lagging behind. As a result, the degradation of the quality of urban environment has become a concern and the importance of efficient municipal waste management in the urban centers is being recognized. Municipal waste is perhaps one of the most potential sources of all troubles associated with urban squalor and disease. It has been realized that if proper waste management plans are not taken for the growing cities and towns, it will cause degradation of the urban environment and severe pollution problems. The responsibility of solid waste management according to the Paurosava Ordinance, 1977 lays on the Paurosava (Municipalities). The sanitation and conservancy section along with the engineering section of the paurosaavas

5. PROBLEMS CAUSED BY SOLID WASTES

All sorts of decomposable garbage and solid wastes including cowdung, oven ash, leaves, kitchen wastes, dust, refuges etc. are dumped in open ground by every household in the country side which produces strong odor during decomposition process and the dumping ground becomes the breeding place for mosquitoes and flies. Fly menace in rural areas is an uncontrollable problem. Flies sometimes carry germs of infectious diseases causing frequent epidemics in the rural areas of Bangladesh. The situation is aggravated due to mass illiteracy and lack of hygiene education.

The market and trading wastes in the countryside after sweeping are also dumped in open ground beside the market and trading places in an unhygienic manner, which also causes air pollution. The industries in Bangladesh do not have any sort of waste treatment plant. Regulatory instruments for control of industrial pollution are not enough and adequate to manage it. As a result all sorts of industrial wastes including solid wastes discharged and thrown into rivers and natural waster bodies in low-lying areas, causing water pollution problem. Most of the rural poor people drink river water directly and use it for cooking, batching, washing and other domestic purposes. So chronic waterborne diseases are seen among most of the rural people. Due to poor socio-economic condition and lack of hygiene education and proper waste management the rural people cannot maintain pollution and disease –free environment.

6. RECYCLING OF SOLID WASTES

In the developed countries, recycling and reclamation are being strongly promoted for conservation of resources and prevention of environmental degradation. Whilst extensive recycling is being practiced in the poorer parts of the developing country, it is not a part of national waste management plans. In Bangladesh wastes of some market value are being reclaimed for salvaging in three stages. The housewives separate the refuse of higher market value such as papers, bottles, fresh containers, old cloths, shoes etc. and sell them to street hawkers. Salvage activities have some economic incentive and are in practice in all households of low to average income. The second stage of salvaging is carried out mostly by children of slum dwellers popularly known as Tokai. They collect the refuse and commercial wastes of low market value from bins and sweeping accumulation centers. The items include broken glass, cans, card board, waste paper, rags, plastics, metals and miscellaneous commercials waste discarded by the households. The third stage of salvaging is done by the refuse pickers when fresh refuse is unloaded by municipal trucks at final disposal site. The reclaimed materials reach the waste and old materials shop through street hawkers who purchase the old materials directly from the households and through refuse collectors who reclaim materials from bins and final disposal sites. The materials collected from bins, sweeping accumulation centers and disposal sites require intermediate processes like washing, drying and sorting. The refuse dealers separate the materials in proper form and sell than to consumers as well as supply them to appropriate processing/remolding mills and factories. The processed materials recycle through market.

Commercial and industrials areas and construction works produce some salvageable materials such as cloth and leather trimmings, building materials, waste boards, papers, metal pieces etc. The construction wastes have good market value and are not usually collected by municipal trucks. The reclaimed MS bars and angles are sold to old materials dealers. The salvaged bricks are used in less important

constructions. Broken bricks are used for making khoa. The debris of demolished concrete and mortars are also sold and used for stabilizing roads and filling low lying areas.

The wastes from sweeping of open areas and roads are accumulated at various locations. The salvageable wastes are reclaimed, the leaves and grass are dried and used as fuel for cooking, the dirt, debris and decomposable organic materials are finally collected by municipal trucks for final disposal.

7. HAZARDOUS WASTES – HOSPITAL AND INDUSTRIAL WASTE

World Bank Technical Paper 93 (on safe disposal of hazardous waste) defines Hazardous waste as other than radioactive wastes, which by reason of their chemical reactivity or toxicity, explosive, corrosive or the other characteristics is likely to cause danger to health or environment whether alone or coming in contact with other substances.

Wastes are generated in almost all human activities-domestic, agricultural, commercial and industrial with wide range of hazard to human health and environment. They can be divided into two groups, one with potentially high risk of damage and the other with less hazard but larger in quantities. Typical wastes in the first category include highly flammable-spent solvents, toxic-persistent pesticides, chlorinated hydrocarbons, PCBs, metallic sludge, hospital wastes, tannery solid wastes; while the second category includes metalliferous sludge, fly ash, phosphogypsum etc.

There are thousands of chemicals being regularly used and new ones are regularly being added to the list. The list of toxic chemicals and hazardous substances is becoming longer and longer too. As Bangladesh is not industrialized yet and modern agricultural practices are limited, quantity and type of toxic chemicals and used hazardous wastes generated are limited too. But as most of the end users are often poor or ignorant about the ill effects of these substances, they do expose themselves and the environment to the damaging effects of these chemicals. Moreover, due to various reasons and needs, the use of toxic chemicals and hazardous substances are increasing in the country. Organ chlorine pesticides are still widely used in the country, and a good number of locally banned ones are being smuggled into the country. Untreated industrial wastes of hazardous nature are being dumped indiscriminately into the water bodies from tanneries, textile dyeing and other industries. Moreover there is growing threat of illegal dumping of toxic wastes in to the country or its territorial Waters.

Bangladesh being the lower riparian state in the South-eastern Himalayan basin, the hazardous wastes discharged in the river-systems at the upper reaches affects the flora and fauna and degrades the riverine ecosystem of Bangladesh while passing through and flushing their wasters into the Bay of Bengal. The sharp decline in fresh water fish catch and increased fish diseases in these rivers is understood to be partly due to this pollution problem.

8. INDUSTRIAL WASTE

In Bangladesh there are about 1176 polluting industries which ultimately discharge their effluents into water bodies. The rivers of Dhaka, Narayanganj, Chittagong and Khulna, are the main recipients of these untreated *effluents* which also contain heavy metals like mercury, copper, cadmium, lead, chromium, arsenic etc. and other toxic compounds like cyanide. Increased, use of agro-chemicals including some toxic pesticides (the dirty dozen) is also positing threat to the human health and the environment. Since 1986 there is a rapid increase of fish diseases, a careful examination may reveal a correlation among the increase in use of agro-chemicals, disposal of untreated industrial and municipal wastes etc. to water bodies.

The government has banned all the PIC listed chemicals except DDT, left over stock of about 500 tons of DDT is now being used only for vector borne diseases control program. The use of DDT for the preservation of dry fish is alarmingly high in Bangladesh. Very recently government has imposed ban on the use of DDT and certain other insecticides. It is worth while to mention here that under the Ministry of Agriculture there is a committee that reviews the list of pesticide for use in the country.

Some chemicals are being used in some factories, plants or installations but it is not possible to identify its hazardous contents because of the absence of technology and proper laboratory facilities. It may be mentioned that aramit sheets are produced from asbestos but it could not be ascertained whether it contains crocedolit. Similarly chemicals imported as transformer oil may contain PCB. But it could not be identified. However, technology and laboratory facilities for identification or the PIC listed chemicals have to be developed.

Preparation of a National Chemicals Profile is under-way. The government is keen to strengthen the capacity for environmentally sound management of chemicals. But the government needs technical and related support to build lip the capacity to identify hazardous chemical, with a view to taking necessary measures for its control

9. WASTE IMPORT IN BANGLADESH

Australia exported 165.000 kg of tin waste in 1972. During January 1993, the United States exported 16,500 kg of plastic waste and United Kingdom exported 7,176 kg of tin waste in April 1993 to Bangladesh.

In 1992, the Bangladesh government purchases more than 6000 tons of Zinc Oxy-Sulphate fertilizer from an US company, with fund provided by the Asian Development Bank. Stroller Chemical Company of South Carolina allegedly mixed 1,000 tons of toxic copper smelting furnace dust into the fertilizer prior to shipping it to Bangladesh. Tests of the fertilizer showed that it contained hazardous levels of lead, which causes neurological problems in children, and cadmium, which causes kidney problems. The Bangladesh government reportedly stopped distribution of the toxic fertilizer after half of it was sold. The remaining 3000 tons is presently under sealed storage and waiting reshipment back to the USA

In 1989, Bangladesh government examined a proposal to import millions of tons of industrial, municipal, hospital and other institutional waste, as well as other unspecified waste from the USA. A firm proposed burning the wastes near the city of Chittagong. Electricity generated from burning the wastes was to be used to convert saline water into chlorine bleach, hydrochloric acid caustic soda and table salt Bangladesh government finally rejected the proposal.

10. ISSUES RELATED TO TOXIC CHEMICALS

These are as follows:

1. Inadequate information of the number and type of industries using toxic chemicals with the Government or private source.
2. Carry out a survey to determine the characteristics and quantities of toxic chemicals
3. Need for developing a suitable programme for oil toxic chemicals.
4. Lack of safety codes for large quantities of chemicals, such as chlorine, ammonia, inflammable petroleum products, technical grade highly poisonous pesticides and solvents used, stored, handled and transported through populated areas.
5. High1y toxic imported chemicals are transported through populated areas without safety codes or emergency preparedness.

6. Lack of emergency response and action plan for accidental release of toxic chemicals in industrial units.
7. Lack of awareness among the local administration and factory management of such needs.
8. Need to strengthen capabilities of the Department of Environment (DOE) to address the management of1oxic chemicals.
9. Lack of laboratory facilities in DOE for monitoring and enforcing control measures.
10. Out of 45 pieces of legislation concerning environmental issues, only 11 are relevant to toxic chemicals.
11. Need for skill manpower for risk assessment and risk management *for* toxic chemicals
12. Promotion and application of clean technology for industries using toxic chemicals.
13. Land use planning, requirements of safety or buffer zones for industries classified as hazardous to public health or the environment.
14. Overlooks issue of toxic chemicals in the articles of the National Environmental Policy, 1992 on industry.
15. Research and development of indigenous technology for environmental pollution and hazard control generated from toxic chemicals.

11. POLICY

The Environmental Policy, 1992 among others, has called for following measure in order to deal with problem relating to toxic chemicals:

- Control in the use of those agro-chemicals including chemical fertilizers which have adverse effect on the fertility and organic properties of the soil
- Safety measures for workers handling agro-chemicals
- Phase out production import and use of pesticides such DDT, Chlorinated hydrocarbons etc. which are persistent and keep on accumulating in the environment
- Promote the use of natural fibers discouraging synthetic fibers;
- Corrective measure in polluting industries
- Ban establishment of industries using potentially hazardous waste as raw material (The present import policy has also imposed ban on import of waste);
- Facilitate environmentally sound disposal and treatment of waste generated within the country though establishing "Waste Permit/Consent Order" system.
- Ensure safety measures of industrial workers exposed to toxic and hazardous waste-
- Regulate strictly the discharge of, industrial, municipal and other waste into water bodies Protect public health from adverse impact of all radio-active substances an their wastes Promote use of fossil fuel from sulfur and lead;
- Control vehicular and industrial emissions:
- *Control* disposal of wastes in the sea~
- Generate public awareness;
- Undertake necessary R&D activities;
- Develop necessary legal framework;
- Buildup capacity as appropriate.

12. EXISTING LEGISLATIVE FRAMEWORK

The Government is well aware about the environmental and health effects of toxic hazardous substances and is committed to environmental protection. The Government is supporting all regional and international initiatives which lead to reduction of these substances protection from those elimination of some very harmful and also in technology transfer and research to equip ourselves better to combat substances in whatever manner it is needed. We are part to the IRPTC Program and London Guidelines on information exchange of toxic chemicals.

The Government has formed a permanent technical advisory committee for examining the suitability of the use of agrochemical in Bangladesh. The activity is up by the Pesticide Ordinance, 1985 and the Pesticide Rules. The Ordinance is for ascertaining the safe use of agrochemical, not to import highly toxic and persistent chemicals and to maintain all necessary precautions during formulation, building, storage, transportation and application in field level to prevent any damage to environment and ecosystem.

The Department of Environment (DOE) is engaged for assuring the safe use and disposal of toxic chemicals and effluent from different industries. The existing industries in most case do not have any effluent treatment plants for neutralizing the toxicity and harmful effect of their pollutants. Those industries have already been directed to build appropriate waste treatment plant for neutralizing the harmful chemicals before disposal into the environment. They have also been directed to maintain all required safety precautions for preventing any damage out of improper handling or accident at work.

For new industries to be set up, an EIA has been made mandatory for them to take appropriate procedure at the planning stage, so that development can be safe and sustainable. These activities of DOE are hacked up by the Environment Conservation Act, 1995 and the Environment Conservation Rules, 1997.

The Environment Conservation Act, 1995 and Environment Conservation Rules, 1997 have been placed at the top as these are considered to be important and worthwhile for protecting the environment from degradation because of wastes produced by industries and vehicles. For the first time in Bangladesh, standards have been set for liquid effluents and gaseous emissions with some legal authority and powers given to the Department of Environment. The Environment Conservation Act, 1995 empowers the Director General, Department of Environment to take all necessary action for conservation of environment and pollution control. Failure to comply with the Environment Conservation Act, 1995 and Environment Conservation Rules, 1997 can be penalised by maximum 5 years imprisonment and for a maximum fine of TK. 100,000. There were legislations for chemical management but these were rather vague both in terms of purpose and punishment. As for example, the Smoke Nuisance Act, 1905 related to the abatement of nuisance arising from the smoke of furnance and fire-places in the country with a maximum penalty.
Following Legal Instruments which address the Management of Toxic Chemicals in Bangladesh:

I. The Environment Conservation Act, 1995
1.1 Environment Conservation Rules, 1997
2. The Pesticide Ordinance, 1971
2.2 The Pesticide Rules, 1985
3. Notification No. 6/Fertilizer- 21/94/l00 dated 17-4-95
4. The Control of Essential Commodities Act, 1956 S.R.O No. 160.Law 195 Fertilizer (Control) Orders, 1995
5. The Dangerous Drugs act, 1980
6. The Drugs (Control) Ordinance, 1982
7. The Petroleum Act. 1934
8. The Poison Act, 1919
10. The Explosive Act, 1923
11. The Penal Code, 1860
12. The Forts Act, 1908
13. The Chillagong Port Authorities Ordinance, 1976
14. The Coast Guard Act, 1994
15. The Factories Act, 1965
16. The Pure Food Ordinance, 1959.

Waste management is a serious of processes ranging from the collection to final disposal. In the intermediate processes, a variety of activities take place such as the transfer of waste, its reduction in

mass and volume, its stabilization and recycling/re-utilization. Solid wastes in Bangladesh are generated mainly from agricultural residues, domestic and municipal sources, trading centers, street weeping, industrial, commercial and construction and farming activities in the country and urban centers.

To promote environmentally sound management of chemicals, Bangladesh has got a pesticide Registration Scheme and has initiated a chemical safety program.

The toxicity and safety of drug items are monitored and controlled by drug administration authority. The government has promulgated drug policy and trying to assure safety and hygiene at all level. Bangladesh do not have industrial chemical legislation. So, it is difficult to control the import of industrial chemicals.

13. SUGGESTED POLICY MEASURES

The present environment policy requires updating. Government may consider among other the following issues towards environmentally sound management of toxic chemicals and hazardous wastes. While doing so, as far as practicable, efforts should be made so as to facilitate implementation of Agenda 21 and the Basel convention on the control of Transboundary Movement of Hazardous Wastes and their Disposal.

Emphasis should be laid on elimination of waste at source to avoid hassle or subsequent disposal. Volume or weight reduction and the attenuation in hazardous characteristics in production process are beneficial both from health risk and cost effectiveness in treatment as well as disposal point of view. -

Recycling, reuse, recovery and conserve raw materials, improve the economics of the overall process and allow for the potential marketing of by-products and energy as compared to treatment and subsequent disposal. Replacement of hazardous chemicals by more easily treatable chemicals, or introduction of technologies, which do not require the use of chemicals, could be an option to avoid pollution and health risk.

Liquid hazardous wastes should be banned from land filling and pretreatment required before disposal. Judicious use of pesticides with biological control methods should be given priority consideration along with traditional crop rotation practices in integrated paste management. Chemical registration scheme may strictly be enforced for controlling import distribution, sale and use of pesticides. Quality control measures through strict specification should also be a part of the scl1eme to avoid adulteration and inferior quality. In the workplace exposure to toxic chemical and hazardous substances and processes should be reduced to avoid or minimize occupational health risk.

Emergency response strategy should be drawn at unit level as well as nationally. Development of a code or guidelines and periodic review of the same for each critical area of activity for such emergency response is a necessity. Adequate legal coverage should be given to the management needs of toxic chemicals and hazardous wastes.

Institutional strengthening including capacity building should be resorted to. Inter-agency coordination should be strengthened so as to ensure proper monitoring and vigilance of hazardous substances in their use, generation, movement, treatment, disposal etc. for sound management. Emphasis should be given on training, awareness generation and information dissemination

BHUTAN

Key Issues: Hazardous Waste Management; Air Pollution; Water Pollution; Soil Contamination; Safety and Health; Emergency Plans, Public Liability and Compensation; Enforcement and Compliance; Education and Awareness; Social Audit of Industry;

Policy Framework: Paro Resolution on Environment and Sustainable Development (1990); National Environment Strategy;

Key Legislation: Hazardous Substances Act; Forest and Nature Conservation Act, 1995;

Key Institutions: National Environmental Commission;

1. INTRODUCTION

Industrial activities in Bhutan have grown tremendously. The number of industries has gone up from 742 in 1990, to 4,394 in 1997.The small scale sector has grown 17 times during the same period. Mineral-based industries have grown faster in the last 20 years. The contribution of industrial sector to the GDP has gone up from 0.01% in 1982 to 3.2% in 1992. Cement industry. At present 4 cement plants are operating in Bhutan. Cement production from these plants is more than 300,000 metric tones annually. Out of these plants, three are small with installed capacities of 30-150 tonne per day (tpd), while the remaining plant has an installed capacity of about 800 tpd. Major pollutants namely particulate matter, fugitive emissions and gaseous pollutants are emitted from the operations of cement plants. Most of the dust is generated within the region of the kiln where calcinations is done. Chemical industry. In Bhutan there are four chemical industries. These chemical industries produce calcium carbide, ferro silica, plaster of paris, rosin and turpentine and activated carbon. As a result, ambient and work zone emissions are the major problems in these facilities. The principal pollutants are dust and particulate emissions. Various other gaseous emissions such as carbon monoxide, carbon dioxide, and sulphur dioxide also emanate from the chemical industry.

3. INDUSTRIAL WASTES

Mining industry Bhutan is rich in minerals. The major minerals mined are limestone, gypsum, coal, quartzite and dolomite. Most of these minerals are mined for domestic consumption. The major problems due to these mining industries are management of overburden and drilling waste, reclamation and runoff from mined areas, which cause soil erosion and air pollution (TERI and Shriram Institute for Industrial Research 1999). Domestic activities Domestic activities Domestic activities Domestic activities Domestic activities In Bhutan, for bukharis, more than 10,184.22cubic feet, i.e. 42 truckloads of firewood are burnt each day during the winter months in the Thimphu valley. On an average each household burns about 2.614 cubic feet of firewood every day. Thimphu's annual consumption of firewood is approximately 916560 cubic feet. The burning of firewood causes high levels of pollution during winter mornings (NEC 1999b). Several other activities also contribute to air pollution. They are: Heating of bitumen along road construction sites; the fire is lit in an open space with a saucer pan to heat the bitumen. The process is inefficient, as heat is lost from all sides and Dust from unpaved roads; particulate levels rise when vehicles ply on dusty roads and Kitchen garden waste burning during the dry season is another practice that contributes to air pollution in the rural areas and Solar radiation from unpainted corrugated galvanized iron (CGI) sheets used for roofing affects the natural mixing of air at high altitudes.

In a recent study conducted by the NEC (National Environmental Commission), emission levels were found to be high in the vehicles of Thimphu. A total of 507 petrol-vehicles and 558 diesel vehicles was tested in this study. 60% of the petrol and 96% of the diesel engine vehicles did not meet the Indian emission standards. Similarly 57% of petrol and 95% diesel vehicles in Thimphu did not meet British emission standards. SEA initiated for monitoring air pollution. Activities were also carried out on health-

risk assessment of chemicals, and strengthening capacity for environmental monitoring. A consultant assisted the Regional Office in the preparation of a questionnaire on hazardous waste management. This would facilitate the assessment of the hazardous waste situation at the country level, and for the preparation of hazardous waste country profiles through national consultants. WHO continued to accord high priority to the promotion of chemical safety.

The chemical safety profiles prepared for Bangladesh, Indonesia, Maldives, Nepal, Sri Lanka and Thailand enabled the Regional Office to assess the existing situation and identify problems and issues in the management of chemical safety programmes. Following the adoption of a framework of action for strengthening national chemical safety programmes in countries of the Region, action has been initiated to address some of the priority issues. These include strengthening of capacity in the areas of chemical risk assessment and management, information system and database development, poison prevention and management, and chemical Emergency preparedness. A Regional Consultation on Poison Control was held in the Regional Office in December 1998 which resulted in the development of action plans on: (1) Pesticide poisoning database,(2) Poisoning prevention and treatment, (3) Strengthening analytical toxicological facilities, and (4) Multicentric study of organo-phosphorus pesticide poisoning. In Indonesia, training was carried out on poison center management, establishment of a chemical safety database, and introduction of toxico vigilance. The Hazardous Substances Act was reviewed while the development and testing of an environment health management information system was Promotion of chemical safety

4. LEGISLATION AND POLICIES

The following policies, administrative and legal framework relating to the environment exist in Bhutan are

Resolutions
1. Paro resolution on environment and sustainable development (1990)
2. Resolutions of the National Assembly relating to the environment (various years)

Hazardous Substances Act; Forest and Nature Conservation Act, 1995;

Bhutan has two fundamental sources of law: His Majesty the King and the National Assembly. Both sources act in mutually reinforcement way. The King sits in the National Assembly and thus contributes directly to laws it issues. In order to pass an act, law, etc., the National Assembly calls for a point to be submitted from the relevant agencies. However, before being submitted to the National Assembly a prior approval from the cabinet is necessary.

INDIA

Key Issues: Hazardous Waste Management; Air Pollution; Water Pollution; Soil Contamination; Safety and Health; Emergency Plans, Public Liability and Compensation; Enforcement and Compliance; Education and Awareness; Social Audit of Industry;

Policy Framework: National Forest Policy, 1988; Policy Statement on the Abatement of Pollution, 1992; National Conservation Strategy and Policy Statement on the Environment and Development, National Environmental Action Plan, 1993

Key Legislation: Environment Protection Act, 1986 and rules there under Water (Prevention and Control of Pollution) Act, 1974; Effluent Standards; The Constitution (Seventy-Fourth Amendment) Act, 1992; Chemicals Management and Handling Rules, Hazardous Waste Management and Handling Rules, Plastic Waste Management and Handling Rules, Solid Waste Management; Manual on Municipal Solid Waste Management; Bio-Medical Waste Management and Handling Rules, 1999

Key Institutions: Ministry of Urban Development and Poverty Alleviation; Central Public Health and Environment Engineering Organization; National Environmental Engineering Research Institute; Urban Local bodies; Ministry of Environment and Forest; Central Pollution Control board (CPCB); State Pollution Control Board; State Departments of Environment; State Departments of urban development; Ministry of Industries; Ministry of Mines; Ministry of Power etc.;
Ministry of Health; Ministry of Urban Development and Poverty Alleviation; Ministry of Agriculture

1. INTRODUCTION

Urban India, as per the 1991 census constitutes about 26% of the country's population. Unregulated growth of urban areas, particularly over the last two decades, without infrastructural services and proper collection, transportation, treatment and disposal of solid wastes, has led to increased pollution and health hazard. Indian urban municipal solid waste is a heterogeneous mixture of paper plastic, cloth metal, glass, organic matter etc. generated from households, commercial establishments and markets. Sample surveys have been conducted to quantify the generation of urban solid wastes in the country particularly in larger cities. It has been found that per capita increase in the quantity of waste generated is directly proportional to the growth in population.

2. COMPOSITION OF WASTES

Reliable estimates of the quantity of solid wastes generated in various towns are not easily available. A study on Delivery and Financing of Urban Services (1989) by Operations Research Group indicates average per capita solid waste generated is about 350-400 gms. However, based on the trade and commercial activities in the towns, the per capita waste quantity may be more as in the case of Bombay, where it is between 400-425 gms. Again, within a city, per capita waste generation could also be different from area to area. Per capita waste generated within the New Delhi Municipal Committee area is between 800-1000 gms/day whereas waste generated in the Municipal Corporation of Delhi area is about 300 gms only. As per TERI projections upto 2047, per capita generation of municipal solid wastes will increase from an average 490 gm per day in 1997 to 945 gm per day in 2047.

3. COLLECTION, STORAGE AND TRANSPORT

Storage at the source of waste generation is the first essential step towards appropriate waste management. In old residential areas, storage wastes is a serious problem as builders and contractors and the people at large deposit the construction wastes just outside their houses/shops/streets along major roads obstructing the traffic.

In most cities and towns, the existing fleet of vehicles for transporting wastes from their storage to disposal site is not enough to cope with the pressures. In many areas, waste handling is done manually. The present system of collection and transportation of wastes is a potential health hazard for the workers as all type of wastes including hospital infectious wastes, etc., are disposed of in the common bins or on the streets.

Several States have comprehensive Municipal Acts which deal with environmental pollution caused by municipal solid wastes. Besides these, civic authorities in some states are governed by local authorities. Due to weak financial health of the local bodies, most of the state governments have been extending financial assistance both for capital assets and maintenance varying from 10 to 30 % to these bodies.

Presently, in small and medium towns, waste management is under a separate department headed by the Health Officer/Sanitary Inspector Often, the tasks of food sample testing, sanitation, street cleaning and immunisation are entrusted to the same department infra-structural facilities like transport vehicles are limited .

Various Central governmental agencies like the Ministry of Urban Affairs and Employment, the Ministry of Environment and Forests (MoEF) , the Central Pollution Control board (CPCB), and the Ministry of Non Conventional Energy Sources (MNCES), have taken several steps in terms of providing financial incentives, issuing regulatory guidelines etc. to create a suitable environment for the complete rejuvenation of the waste management system of the country.

4. MEDICAL WASTES

Though wastes from hospitals and nursing homes are required to be collected and treated separately, in most cities and towns such wastes continue to form a part of municipal solid waste. The safe disposal of such waste has become a matter of serious concern in India. In 1997 there were about 14,250 hospitals and 34,900 dispensaries with over 98 lakh hospital beds in India. According to preliminary estimates, average bio-medical waste generation per day per bed in urban areas alone is 1-1.5kg. Though some of the larger hospitals have incinerators, a substantial portion of the medical wastes is disposed of along with domestic wastes.

Ministry of Environment and Forests has recently notified Bio-medical Wastes (Handling and Management) Rules 1998 to regulate the disposal of bio-medical wastes, including human anatomical wastes, blood and body fluids, medicines and glassware, soiled, liquid and biotechnology wastes, and animals wastes. All persons handling such waste will be required to obtain permission from the appropriate authorities. Segregation of bio-medical wastes at source has been made mandatory. These rules make the generator of bio-medical waste liable to segregate, pack, store transport, treat and dispose the bio medical wastes in an environmentally sound manner.

An Action Plan drawn up by MoEF for management of biomedical wastes envisages:-

Implementation of guidelines for treatment and disposal of biomedical wastes.
Setting up of common facility for treatment, disposal and incineration of bio-medical wastes in metropolitian towns by 31.12.2000.

5. INDUSTRIAL SOLID WASTES

Out of about 120 million tonnes of solid waste generated in India, 65% is constituted of calcareous and siliceous by-products having potential for their utilisation towards building materials. While blast

furnace slag could be used as an admixture to ordinary portland cement, other products such as flyash, could be utilized in manufacture of bricks and concrete.

In India, the flyash generation per annum has increased from two million tonnes (1947) to more than 60 million tonnes (1995-96). It has been estimated that by 2000 AD, 100 million tonnes of ash will be generated by coal-based thermal power plants. The disposal of flyash in wet form not only requires huge area but also causes environmental problems related to air and water pollution. MoEF has issued a Notification to encourage gainful utilisation of fly ash

6. PLASTICS WASTES

The demand for plastics in India is expected to cross 4 million tonnes by year 2001-2. It is expected that corresponding increase in waste generation would vary between 1 to 2 million tonnes every year. The National Plastics Wastes Management Task constituted Force formulated by MoEF will bring out a strategy and action programme for management of plastics wastes in the country.

Ministry of Environment and forests has brought out a notification for banning recycled plastics carrybags for storing and packaging foodstuffs. CPCB has conducted „Life Cycle Study of Plastic Wastes in Major Cities" to examine the status of waste plastic generation and its after-use applications. The study has recommended the following :-

a) Collection and reprocessing of the used plastics for recycled products should be well organised and buy-back system should be encouraged. There is also a need for registration of such activities.
b) Protection of health of workers engaged in ragpicking should be emphasised.
c) Reprocessing/recycling should be done in designated places with environmentally sound technologies.
d) Uncollected/non-recyclable plastic should be treated/disposed safely (e.g. by incineration but excluding PVC waste).
e) Recycled products should be codified based on its quality for specific uses.

Research work on biodegradable plastics is presently being carried out in India at the Indian Institute of Chemical Technology, Hyderabad.

Action Plan drawn-up by Ministry of Environment and Forests for management of plastics wastes envisages the following;

- Banning use of recycled plastics carry bags for unpacked food items.
- Participation of industry for collection and transportation of used bags for recycling
- Preparation of status report on Plastics wastes management specially with reference to Delhi.
- Notification brought out by various States/UTs on plastics littering to be examined.
- Coordination with other concerned departments to place restriction on the use of plastics carry bags.
- Coordination with other concerned department to phase out plastics carry bag/cups/plates in services offered by Railways, Ports Departmental canteens, Hotels, Forests departments.
- Setting up of Solid wastes Management and Waste Water Treatment Cell in the Ministry of Environment and Forests,
- Supreme Court Directions under various Public Interest Litigation to be followed up.
- Examination of issues of banning import of plastic scrap through various Ports to be examined.
- Finalisation of setting up of Indian Centre for Plastics in Environment(ICPE).

- Industry to provide logistic support for collection/recycling of PET bottles and other hard plastic containers.
- Organising a viable Network of manufacturers for organised collection, storage and recycling of plastics wastes.
- Research and development on biodegradable plastics.
- Promoting awareness on minimization and reuse of plastics and dustbin culture.
- Providing fire safety equipment around dump sites.

7. URBAN SOLID WASTES

The Asim-Burman Committee appointed by the Supreme Court has drawn up a very comprehensive Action Plan to take care of various aspects of municipal solid wastes. The Action Plan takes care of almost all the steps right from the generation of municipal wastes, it"s collection, transport, segregation, utilisation to final disposal. The Action Plan is to be discussed in four workshops to be held by early 1999 and then it would be given a final shape for implementation all over the country.

The priority areas which emerge for immediate action are stated

- Intensive public awareness campaigns (with the involvement of NGOs etc.)
- Provisions of infrastructure facilities for segregation of wastes and recycling.
- Resource recovery from wastes
- Private initiatives in the collection, transportation and disposal of waste
- Strengthening of institutional and regulatory mechanisms of the municipal bodies.
- Monitoring collection, transportation and disposal practices adopted by Municipal Corporations, Municipalities.
- Public participation in waste segregation at door step; and collection tie-up with local authorities in metropolitan cities.
- Initiation of Demonstration Project on Urban Solid Wastes in 1-2 States by 31-3-99.
- Minimal National Requirements on Solid Wastes to be notified by CPCB
- Chemicals occupy an important place in the effort to meet the social and economic goals of the community. However, many chemicals are toxic, highly reactive, explosive or flammable, or have a combination of these characteristics and represent a potential risk to human, animal and plant life and the environment in general. Extreme care is necessary while handling such chemicals at all stages of manufacture, processing, transportation or use.

8. HAZARDOUS WASTES

Another important aspect relates to the handling of hazardous substances in industry and transportation, and the dangers posed by chemical accidents to human life and the environment. The Ministry is conscious that questions of safety and health pertain to a wide gamut of authorities, as do most other environmental issues, to illustrate vehicular pollution. The Bhopal gas incident had brought the country alive to the dangers posed by the handling of hazardous substances. The problem is compounded because large numbers of unregulated industries handling hazardous chemicals exist in heavily populated areas. The Ministry of Environment and Forests is looking at this area with a view to consolidating and enhancing the effectiveness of rules and regulations.

With rapid growth of population and industrialisation during the last two decades, there has been a tremendous increase in the generation of domestic, urban as well as industrial wastes. Though a major part of the wastes generated are of non-hazardous type, substantial quantities of hazardous wastes are also generated. In spite of the several steps taken for management of wastes generated by various sources, only a small proportion of solid wastes are properly utilised and disposed of, with the result that

some of these wastes cause environmental degradation and health risks in one way or another. The Hazardous Wastes (Management and Handling) Rules (HW Rules) were notified by the Ministry of Environment and Forests in July, 1989 under the Environment (Protection) Act, 1986. These Rules provide for regulating the generation, collection, storage, transport, treatment, disposal and import of hazardous wastes. 18 categories of hazardous wastes (to which the Rules apply) have been identified and listed in the Schedule annexed to these Rules. One of the important stipulations made under these Rules is that the import of hazardous wastes from any other country to India is not permitted for dumping and disposal. However, import of such wastes is allowed for processing or reuse as raw material, after examination of the merits of each case by the competent authorities.

Under Rule 11 of the Hazardous Wastes Rules, 1989, the exporting country or the exporter is required to communicate details about the proposed transboundary movement of hazardous wastes, to the Central Government. The importer is also required to provide details regarding the wastes to the concerned State Pollution Control Boards. After examining the details provided by the importer/exporter, suitable instructions are issued by the concerned authorities and the Port Authorities are also advised accordingly.

India is a party to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Ministry of Environment and Forests has been designated as the Competent Authority. The Convention seeks to promote the reduction in the generation of waste and calls for the international cooperation in development of cleaner technologies. 4 7 categories of wastes (other than nuclear wastes) have been included in the Convention.

9. THE BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL WAS SIGNED IN 1992.

The 3rd meeting of the Conference of the Parties to the Basel Convention held in September 1995 adopted the decision to amend Article 4(a) of the Convention to ban all transboundary movement of hazardous wastes from EC & OECD countries to non-OECD countries for final disposal (i.e. for dumping) with immediate effect and to phase out such movements of wastes destined for recycling and recovery by December 31, 1997. This ban would only be applicable to those wastes that are characterized as hazardous under the Convention. The task of hazard characterization and evolution of lists for Basel wastes and non-Basel wastes has been entrusted to the Technical Working Group of the Basel Convention.

Developing countries have become major recipients of hazardous wastes generated in the industrially advanced countries. Due to the stringent legislations and regulations and the prohibitive costs of treatment and disposal of such wastes in the developed countries, producers of such wastes and their agents find it cheaper to ship hazardous wastes to developing countries. Ministry of Environment and Forests have been receiving communications seeking permission to import hazardous wastes. These include metal containing wastes (ferrous and non-ferrous), waste oil, oil sludge, etc. These are processed in accordance with the requirements under the Hazardous Wastes (Management and Handling) Rules, 1989 and the Basel Convention. A Committee has been constituted for the same.

The wastes from other countries are exported in large quantities and are received in bulk shipments. Such shipments enter through our ports and the Ports and Customs Authorities have a major role in checking and granting permission for entry of these shipments. Such wastes can only be allowed if these are being imported for processing, reuse and recovery and to be used as raw materials in our industry in accordance with the Hazardous Wastes Rules, 1989. The hazardous wastes are included in the restricted lists of imports requiring a licence, which is granted subject to the recommendation under the HW Rules. Intimations are required to be given by the exporter/importer in respect of the proposed transboundary movement of the hazardous wastes. Under the Hazardous Wastes Rules, 1989 complete information on the exporter, importer, source of generation, type of waste and its constituents, method of disposal, safety data sheet etc., are required to be furnished by both the exporter as well as importer in Form 6 of these Rules. According to the Basel Convention, the exporter should seek a prior consent in writing from the importing country's Competent Authority (Ministry of Environment and Forests) before the commencement of the shipment. A movement document should accompany the consignment.

Due to indiscriminate exports and exports from non-signatories to the Basel Convention, huge quantities of hazardous wastes may reach Indian ports. In order to arrest this phenomena, waste category No. 1, cyanide waste and waste category No. 4, mercury and arsenic bearing wastes, as per the Hazardous Wastes Rules, 1989 have been prohibited for exports and imports from December 26, 1996.

The legal instruments for management of hazardous wastes are the Hazardous Waste (Management &Handling) Rules 1989, as amended in 2000, the Biomedical Waste (Management & Handling) Rules 1998 and the Batteries (Management & Handling) Rules, 2001. Major responsibility for implementing these Rules is with the State Pollution Control Boards (SPCBs) / Pollution Control Committees (PCCs) and to some extent with the state Departments of Environment. The status of implementation of the HW Rules was monitored during the year. A questionnaire was circulated to all SPCBs/PCCs to determine the extent of implementation of the Biomedical Waste Rules. Responses received are being studied. As recommended by the steering committee on Biomedical wastes comprehensive guidelines are being prepared to facilitate effective implementation of the Biomedical waste Rules. A comprehensive set of rules entitled "Batteries (Management & Handling) Rules, 2001" has been notified by the Ministry in may, 2001. These rules have been notified to regulate the collection, channelisation and recycling as well as import of used lead acid batteries in the country. These rules stipulate that used lead acid batteries can be auctioned/sold only to recyclers registered with the Ministry on the basis of their possessing environmentally sound facilities for recycling/recovery.

As per the Hazardous Wastes (M&H) Rules, 1989 and 2000, all hazardous wastes are required to be treated and disposed off in the manner prescribed. In the absence of common disposal facilities in the country, permission has been granted to the hazardous waste generating units in the small scale sector, for storing their wastes temporarily in a secure, lined pit/facility within their premises. As a demonstration project, the Ministry of Environment & Forests has supported the setting up of a common Transport, Storage & Disposal Facility (TSDF) at Trans Thane Creak (TTC), Maharashtra. The facility is expected to be ready shortly. A common TSDF in Rangareddy District of Andhra Pradesh is being set up under private sector initiative with financial assistance from Australia and the State Government of Andhra Pradesh. Phase-I of the facility has been commissioned. The Ministry will provide financial support for Phase-II of this facility.

The scheme for "Registration of Recyclers/ Reprocessors of Wastes as Actual Users having Environmentally Sound Management facilities" initiated in 1999, was continued during the year and five meetings of the Registration Committee were held. A total of 232 proposals were considered in these meetings. Registration was granted to 119 units, applications of 44 units were rejected and 69 cases deferred. As on date, 192 units have been registered with the Ministry, out of which 70 are used/waste oil reprocessors, 50 are lead scrap processing units while the remaining are non-ferrous metal waste processing units. The list of registered recyclers/reprocessors is posted of the web-site of the Ministry and is updated regularly. Rigorous monitoring of the registered units has been initiated during the year to ensure that all the conditions included in the Registration Letter are complied with by the units. The Regional Offices of the Ministry have been entrusted with the monitoring work.

The Regional Centre of the Basel Convention for SAARC countries has started preliminary operations during the year. The Centre is being supported under the Canada-India Institutional Strengthening Project. A meeting of experts on hazardous waste management from India, Nepal, Sri Lanka, Bangladesh and Maldives was held in New Delhi during October, 2001 to finalise Needs Assessment of these countries to plan activities of this Centre during the next five years.

10. INTERNATIONAL CONVENTIONS/PROTOCOLS

Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal

India is a signatory to the Basel Convention which requires countries to ensure that hazardous wastes and hazardous recyclable materials are managed in an environmentally sound manner.

During the year, the Ministry participated in the 18th & 19th sessions of the Technical Working Group (TWG) and the 3rd and 4th sessions of the Legal Working Group (LWG) of the Basel Convention. The TWG is preparing technical guidelines for environmentally sound management of ship-breaking. India is actively participating in this effort along with Norway and The Netherlands.

Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals & Pesticides in International Trade

The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals & Pesticides in International Trade was adopted at the Conference of Plenipotentiaries at Rotterdam in 1998. Steps have been taken to obtain the approval of competent authority to sign and ratify the Convention.

Stockholm Convention on Persistent Organic Pollutants (POPs)

India has adopted the Stockholm Convention on POPs on 23rd May, 2001. The Convention seeks to eliminate production, use, import and export of 12 POPs wherever techno-economically feasible and, in the interim period, restrict the production and use of these chemicals. Steps have been taken to obtain approval of competent authority to sign the Convention.

Regulation of Ozone Depleting Substances

India‟s per capita consumption of ozone depleting substances such as CFC, Halon is at present less than 3 gram and did not cross 20 gms between 1995-97 as against 300 gms permitted under the protocol. India is self sufficient in production of chlorofluoro carbons (CFCs). India commonly produces and uses seven of the 20 substances controlled under the Montreal Protocol, (London 1990) these are CFC-11, CFC-12, CFC-113, Halon 1211, Halon 1301, CCl4, methyl chloroform. These ozone depleting substances are used in refrigeration and air conditioning, fire fighting, electronics, foams and aerosol industries. A detailed India Country Programme for phaseout of Ozone Depleting Substances (ODS) was prepared in 1993 to ensure the phaseout of ODS according to the national industrial development strategy, without undue burden to the consumers and the industry; and for accessing the Protocol‟s Financial Mechanism in accordance with the requirements stipulated in the Report of the Second Meeting of the Parties to the Montreal Protocol in London (June 1990).
The main objectives of the Country Programme are :-

Minimize economic dislocation - The process should not lead to closure of units, loss of productive capacity, or major capital expenditure for modifying facilities (such as equipment for production, transport and storage) which could become obsolete. In determining economic feasibility, energy efficiency and machine characterstics have been considered.
Maximize indigenous production - Transfer of technology and local production of substitutes and equipment has been encouraged.
Preference to one time replacement - This has been preferred unless there isanother more cost-effective alternative; and for which information will be required on the availability and assessment of substitutes.

Decentralised management - Development of arrangement to facilitate feedback for smooth implementation; including awareness building, training and consumer protection. A survey has been conducted for efficient implementation of ODS phaseout particularly in the small scale and informal sector.
Development of standards and certification system – New standards (including those for safety) are needed for production and distribution operations
Minimize obsolescence – Existing technology would be kept running as long as possible by recycling and using drop-in substitutes while new technologies are phased in as they become available. This will minimize the cost of obsolescence.

Institutional Framework to Implement the Montreal Protocol in India

The Government of India has entrusted work relating to ozone layer protection and implementation of the Montreal Protocol to the Ministry of Environment and Forests (MOEF) and it is the coordinating agency I India for all matter relating to the Montreal Protocol. The MOEF has set up Ozone Cell as national Unit to look after and to render necessary services to implement the Protocol and its Ozone Depleting Substances (ODS) phaseout programme in India. The MOEF has established a Steering Committee which is supported by three Standing Committees and responsible for the implementation of the Montreal Protocol provisions, review of various policies and implement option, project approval project monitoring etc. as shown in Figure 1.

Role of Ministry of Environment and Forests

Ministry of Environment and Forests is the designated National Authority for the implementation of the Protocol and the Country Programme. This includes, notification of related regulations, issues relating to International Cooperation, scrutiny of data relating to production, import, export and consumption and reporting to the Montreal Protocol Secretariat. The Ministry will also coordinate with various other ministries responsible for implementation. Ozone Cell functions as Secretariat for all these Committees.

11. REGULATORY FRAMEWORK

Public health and sanitation are state subjects. Collection and disposal of wastes in the urban areas is entrusted to the local municipal body. Municipal laws lay down detailed inventory of obligatory and discretionary duties. Due to the direct bearing of sanitation on the health of the people, it has been listed as obligatory duty and therefore, the municipal authorities are required to take adequate measures for collection and disposal of municipal wastes.

Several States have comprehensive Municipal Acts, which deal with environmental pollution caused, by municipal solid wastes. Some of the Municipal Acts relating to solid waste management are the Uttar Pradesh Municipal Corporation Act, 1959 (Sections 114, 115, 385 & 440); the Calcutta Municipal Corporation Act, 1980; the Karnataka Municipal Corporation Act 1976 (Sections 58, 255, 256, 258 & 261); and the Bombay Municipal Corporation Act, 1988. Besides these, local civic authorities in states like Punjab, Bihar, Tamil Nadu and West Bengal are governed by statutes passed in 1911, 1922, 1920 and 1932 respectively which deal with collection and carting away of wastes. However, developments taking place in modern urban living conditions do not get reflected in these laws.

Improvement in Existing Regulations

In respect of Municipal solid waste management, not only the existing laws are not being enforced but also the existing provisions governing the corporations and municipalities are not adequate. Some of the provisions that have been incorporated in the Municipal solid Waste (handling and Management) Rules, 2000 among existing laws are as follows:

(i) Duty of occupiers of the premises for the storage of solid wastes at source of generation: It should be incumbent on the occupiers of all premises to keep receptacles of a size adequate for the storage of all types of solid wastes including food wastes, dust, ashes, refuse, rubbish etc. generated at the said premises.

(ii) Duty of occupier to segregate recyclable non-bio-degradable wastes at source: It should be incumbent on the occupier of any premises to segregate the recyclable waste generated at the said premises and keep them in a separate receptacle.

(iii) Duty of Societies/Associations/Management to provide community bins : It should be incumbent on all the Co-operative Societies/Associations/Management of the residential/commercial complexes, institutional buildings, markets, etc. to provide community bin/bins of the appropriate size not exceeding 100 litre capacity for the temporary storage of wastes stored at the premises including households, shops, establishments, offices etc. in their

personal domestic, trade, institutional bin etc. for its primary collection by the municipal authorities.

(iv) Receptacles to be kept in good conditions : Such receptacles should at all times be kept in good condition and shall be provided in such number and places as may be considered adequate and appropriate to contain the wastes produced by the households/shops/ establishments supposed to be served by the community bin.

(v) Duty of occupiers to deposit solid wastes in the community bins: It should be incumbent on the occupiers of all the premises for whom community bins have been provided to cause all domestic waste, trade waste, institutional waste, dust, ashes, refuse, rubbish etc. to be deposited from their respective premises in the community bins.

(vi) Duty of Local Body to provide Community Waste Storage Facility in the city: It should be incumbent on all the Municipal Corporations/Class I municipalities in the State to make adequate provision for bulk Community Waste Storage Facilities (temporary waste storage depots) in the city and maintain them hygienically.

(vii) Duty of occupier of households/shops/establishment to handover the recyclable material/non-bio-degradable waste to the waste pickers/waste purchasers/recyclers etc.: It should be incumbent on the households/shops/establishments to hand over the recyclable waste/Non-bio-degradable waste to the rag-pickers/waste purchaser/recyclers as may be convenient. Such waste shall not be disposed of along with the organic waste or mixed with other municipal waste.

(ix) Duty of ULBs to collect waste from community bins and to deposit it at Community Waste Storage Facility : It should be incumbent for ULBs to remove all the solid wastes deposited in community bins on a daily basis and deposit it at the Bulk Community Waste Storage sites identified in the city.

(x) Duty of all ULBs to clean all the public streets and open public spaces, slums etc.: It should be incumbent on all ULBs to arrange for cleaning of all the public streets, open public spaces and slums on all the days of the year including Sundays and public holidays, subject however to adherence to the provisions of the Labour Laws governing the employees of ULBs.

(xi) Prohibition against littering the street and deposit of solid wastes: No person should litter public streets or public places or throw away litter on any public street, public place, land belonging to the local body or any unoccupied land or on the bank of water-course any solid wastes except in the receptacles provided for the purpose.

(xii) Prohibition against deposition of building rubbish : No person should deposit any building rubbish in or along any street, public place or land except in conformity with the conditions of prior permission from the municipal corporation/municipality.

(xiii) Prohibition against flow of filthy matters on public places etc.: No owner or occupier of any building or land, should allow any filthy matter to flow, soak or be thrown therefrom, anything so as to be or become a nuisance to any person or injurious to health.

(xiv) Punishment for littering on streets and depositing or throwing any solid waste in contravention of the provision of law : Whosoever litters the street/public places or deposits or throws or causes or permits to be deposited or thrown any solid waste or construction debris at any place in contravention of the provision of law shall be punished with fine as may be prescribed under the rules framed by the State Govt. from time to time by the officer authorised by the Municipal Commissioner not below the rank of sanitary inspector. The amount of fine imposed shall be recoverable as arrears of property taxes.

The Environment (Protection) Act, 1986 emphasises the need for laying down procedures and safeguards for handling hazardous substances and preventing accidents. Four sets of Rules have also been notified under the Environment (Protection) Act, 1986:

Ozone Depleting Substances (ODS), Regulation and Control Rules, 2000:

The rules provide the legal basis for India to meet its obligations under the Montreal Protocol, although the country has already implemented various measures to phase out ozone depleting substances. The rules prohibit the manufacture of chlorofluorocarbons (CFCs) from January 1, 2003 and the use of halons

after January 1, next year. Specified therapeutic uses are exempted from the ban. The use of some ozone depleting substances, such as carbon tetrachloride and methyl chloroform, is allowed till January 1, 2010. Methyl bromide can be used until 2015. Similarly, the use of HCFCs, a substitute for CFCs, is permitted up to 2040. All producers, importers, exporters, stockists and sellers of ozone depleting substances are required to be registered with the government. Organisations funded through the Montreal Protocol for projects to switch to non-ODS processes must inform the government of project completion dates. The rules also ban trading in ODS with countries that are not signatories to the Protocol. The notification was issued under the *Environment (Protection) Act, 198*6. Breaches of the rules can result in a jail sentence.

Manufacture Storage and Import of Hazardous Chemicals Rules, 1989 (as amended in 1994 and 2000, notified vide Gazette, 1996.

This set of rules provide a statutory back-up for setting up of a Crises Group in districts and states which have Major Accident Hazard Installations (MAH) and providing information to the public. The rules define the major accident hazard installations, which include industrial activity, transport and isolated storages at a site handling hazardous chemicals in quantities specified. As per the rules, the Government of India is to constitute a Central Crises Group or the management of chemical accidents and set up an alert system within30 days of the notification. The Chief Secretaries of all the State are to constitute Standing State Crisis Group to plan and response to chemical accidents in the State and notify the same in gazette within 45 days. The District Collector shall not only constitute a District Cries Group (DCG) but also constitute Local Crises Group (LCGs) for every industrial pocket in the district within 60 days. The Central Crises Group (CCG) shall be the apex body in the country to deal with and provide expert guidance for planning and handling of major chemicals accidents in the country. The CCG shall continuously monitor the post-accident situation and suggest measures for prevention of reoccurrence of such accidents.

Ozone Depleting Substances (regulation and Control) Rules 2000:

In accordance with the National Strategy for ODS phaseout the Ministry of Environment and Forests, Government of **India**, has notified Rules, covering various aspects of production, sale, consumption, export and import of ODS. These Rules prohibit the use of CFCs in manufacturing various products beyond 1.1.2003 except in metered dose inhaler and for other medical purposes. Similarly, use of halons is prohibited after 1.1.2001 except for serving and essential use. Other ODS such as carbon tetrachloride and methyl chloroform and CFC for metered dose inhalers can be used upto 1.1.2010. Further the use of methyl bromide has been allowed upto 1.1.2015. Since, HCFCs are used as interim substitute to replace CFC, these are allowed to be used upto 1.1.2040. The Rules also provide for compulsory registration of ODS products, manufacturers of ODS based product, importers, exporters, stockiest and sellers and the same provision is applicable to manufacturers, importers and exporters of compressors. They are also required to maintain records and file periodic reports for monitoring production and use of ODS. Enterprises which have received financial assistance from Multilateral Fund for switchover to non-ODS technology have to register the date of completion of their project and declare that the equipment used for ODS has been destroyed. Creation of new capacity or expansion of capacity of manufacturing facilities of ODS and ODS based equipment has been prohibited. Purchasers of ODS for manufacturing products containing ODS, are required to declare the purpose for which ODS is purchased. Authority has been specified to issue license for all imports and exports of ODS and products containing ODS.

Batteries (Management and Handling) Rules, 2001:

The Rules make it mandatory for consumers to return used batteries and make manufacturers/ assemblers/ reconditioners/importer responsible for collection of batteries and ensuring their onward transport to recyclers who are registered with Ministry of Environment and Forests based inter-alia on their possessing environmentally sound technology for processing lead acid batteries. As a result, backyard smelting of lead acid batteries with attendant lead emissions to the atmosphere, discharge of

acid into open ground sewers and loss of lead due to poor recovery (30-40%) would come down substantially. Manufacturers etc are required to set up collection centers for collection of used batteries.

Hazardous Chemicals (Classification, Packaging and Labelling) Rules, 2002

The Indian government has notified the country‟s first-ever comprehensive regulatory requirements on the safe transport of hazardous chemicals. The proposed rules will require suppliers of hazardous chemicals to despatch their goods packaged in such a manner that they do not cause accidents or harm. The rules place hazardous chemicals in three categories – extremely toxic, highly toxic and toxic. The rules, to be known as the Hazardous Chemicals (Classification, Packaging and Labelling) Rules, 2002 set out labelling and packaging requirements for the transport of chemicals. Each consignment must be labelled with the name of the substance, the amount being transported, potential dangers, precautions required, and the identity of the manufacturer, consignor and consignee. The rules also require that the consignment carry the name and phone number of at least one chemical expert who can be contacted in an emergency

The government of India has issued legislation for safe handling and storage of hazardous substances by transporters and industries. The Hazardous substances (Classification, Packaging, and Labeling) Rules 2002, based on the United Nations model regulations for transport of dangerous goods, is intended to address the issues of classification, packaging, and labeling of hazardous substances including wastes. The labeling of hazardous substances would follow the prescribed format giving information in a risk phrase and safety phrase in addition to the name and address of the manufacturer, importer, wholesaler, chemical name, and class name.

Implementation of Bio-medical Wastes (Management and Handling) Rules, 1998

Complete and safe disposal of bio-medical wastes is considered necessary in view of mushrooming growth of hospitals and nursing homes in and around our metropolitan areas. According to preliminary estimates, average bio-medical waste generation per day per bed in urban areas in the country is 1-1.5kg. An estimated 30 and 40 tonnes of medical wastes is generated every day. Though some of the larger hospitals have incinerators, a substantial portion of the medical wastes is disposed of along with domestic wastes.

MoEF has recently notified Bio-medical Wastes (Management and Handling) Rules 1998 to regulate the disposal of bio-medical wastes, including human anatomical wastes, blood and body fluids, medicines and glassware, soiled, liquid and biotechnology wastes, and animals wastes. The authorisation has been made mandatory to be obtained by all occupiers generating bio-medical wastes. The agency responsible for implementation of these rules is prescribed authority to be constituted by the concerned State Government/UT. Scientific guidelines for various methods of disposal of hospital wastes like incineration, autoclaving and microwave techniques have been brought out by the Central Pollution Control Board. However, situation at the ground level about implementation of the Rules and actual disposal of biomedical wastes is dismal. So far, only 13 States/UTs have set up authorities . Greater coordination within the State agencies on one hand and with Central and State/UT Govts. lis necessary for proper management of bio-medical wastes.

The Hazardous substances (Classification, Packaging, and Labeling) Rules 2002

The Indian government has the country‟s first-ever comprehensive regulatory requirements on the safe transport of hazardous chemicals. The proposed rules will require suppliers of hazardous chemicals to despatch their goods packaged in such a manner that they do not cause accidents or harm. The rules place hazardous chemicals in three categories – extremely toxic, highly toxic and toxic. The draft rules, to be known as the Hazardous Chemicals (Classification, Packaging and Labelling) Rules, 2001 set out labelling and packaging requirements for the transport of chemicals. Each consignment must be labelled with the name of the substance, the amount being transported, potential dangers, precautions required, and the identity of the manufacturer, consignor and consignee. The rules also require that the

consignment carry the name and phone number of at least one chemical expert who can be contacted in an emergency

The government of India has issued legislation for safe handling and storage of hazardous substances by transporters and industries. The Hazardous substances (Classification, Packaging, and Labeling) Rules 2002, based on the United Nations model regulations for transport of dangerous goods, is intended to address the issues of classification, packaging, and labeling of hazardous substances including wastes. The labeling of hazardous substances would follow the prescribed format giving information in a risk phrase and safety phrase in addition to the name and address of the manufacturer, importer, wholesaler, chemical name, and class name.

MALDIVES

Key Issues: Hazardous Waste Management; Air Pollution; Water Pollution; Soil Contamination; Safety and Health; Emergency Plans, Public Liability and Compensation; Enforcement and Compliance; Education and Awareness; Social Audit of Industry;

Policy Framework: National Environment Action Plan I & II

Key Legislation: National Environment Action Plan; Environment Protection and Preservation Act, 1993;

Key Institutions: Ministry of Home Affairs, Housing and Environment; Ministry of Planning and Environment; National Environment Council; Ministry of Atolls Administration; Maldives Water and Sanitation Authority

1. INTRODUCTION

A major pressure on the environment arises from the wastes and pollutants produced as a by-product of domestic and industrial activities. Solid waste disposal is now one of the most critical environmental issues in the Maldives. The amount and the rate of solid waste generated vary throughout the country and there is a significant difference between the amount of waste generated in Malé and that of in the atolls. The amount of solid waste generated in Malé has been increasing at an alarming rate over the past 10 years. Solid waste generated almost doubled within the period 1990 to 1995 and in the next five years (1995 to 2000) the amount of waste generated increased by eight fold On average 2.48 kg of waste are generated per capita per day in Malé while in the atolls this value is around 0.66 kg of waste per capita per day. Average waste generation in the resorts stands at 7.2 kg per guest per day. The rapidly developing construction industry is contributing significantly to the composition of the waste.

The large quantity of waste generated coupled with limited land area and technology makes the disposal of waste a challenge for the country. Until 1991, solid waste generated in Malé was used for land reclamation in Malé. Presently, solid waste generated in Malé is collected and taken to a transfer station. From the transfer station, the waste is transported to Thilafushi, a municipal landfill, located 5 km away from Malé. The Thilafushi landfill site has now become a landfill for the central region of the country. In addition to waste from Malé, it now receives waste from islands in Malé atoll, the resorts and the Malé International Airport. Solid wastes generated in the atolls are disposed using various methods. Organic wastes are composted at home backyards in most of the islands.

Non-biodegradable waste such as plastics is dumped near the beach in many islands and buried in a few islands. Burning of combustible waste at designated areas in the islands is also widely practiced in many islands. Current waste disposal practices adversely affect the environment through habitat destruction and pollution. Often, wetland areas such as swamps and mangroves are considered as "useless" areas and therefore dumping of solid waste in such areas is acceptable practice and reclamation of such areas to increase land space often takes place. Dumping of solid waste near beaches also has adverse effects on the reefs and lagoons of the islands.

2. HAZARDOUS WASTES

The amount of hazardous waste generated in the Maldives is very small. In 1998, it was estimated that 0.4 ton of hazardous waste was generated daily in Malé. Though figures for hazardous waste generated for the atolls have not been estimated, it is believed that the generation of hazardous waste would be very small. Hazardous waste mainly includes clinical wastes and waste oil from electric generators and vehicles. At present, hazardous waste generated in Malé are transported to Thilafushi. Like many small

coastal communities of the world, Maldivians also traditionally used the "bush or the beach" for human excreta disposal. A designated area in the household backyard for shallow burial of faeces (handas buri or gifili) and defecation along the beach (athirimathi) have been common practice in the past. These practices, especially the defecation in the gifili, are known to damage the environment through contamination of groundwater aquifers which were directly used (especially during dry period) for potable purposes.

3. MUNICIPAL WASTE

One of the main concerns surrounding such sewage or excreta disposal practices in the past was the morbidity and mortality from diarrhoea, which still continues to be so. With the construction of an water tanks both in Malé and the atolls, and the introduction of a comprehensive sewerage scheme in Malé and intensive health education on the use of oral dehydration, the situation has improved tremendously. Deaths from diarrhoea have dropped considerably, although the morbidity situation has not improved significantly. Serious epidemics of diarrhoea occurred in 1978 (Cholera) and in 1982 (Shigella) claiming several lives. The cholera epidemic affected 50% of the islands with more than 15000 cases reported and 200 deaths. Between 1992 and 1993, there has been a reduction in the reported cases of diarrhoea in the country as a whole. Although almost universal access to sanitation has been achieved in Malé and a comprehensive sewerage system is in place, there are critical design and longterm maintenance concerns that has contributed to rapid faecal contamination of Malé groundwater aquifer. Malé Water and Sewerage Company is working to rectify these problems and bring the system to an acceptable level of performance.

Pollutants reaching the water resources, especially groundwater aquifers come from point sources and non-point sources. Point sources that mainly include sewage disposal and discharges from sub-industrial activities have contributed to contamination of groundwater aquifers in Malé and other industrial or populated islands. A study carried out by MWSA in Malé showed that petro-chemical pollution of the groundwater aquifer is quite prominent in many areas of Malé. This pressure is due to vehicle washing garages and engine repair and maintenance workshops scattered all over Malé. The oil spillages in Malé had contaminated the ground water to the point where tests conducted by MWSA showed the water at the area unfit for any use (MWSA, 1995). The scale and significance of water pollution problems caused by the power stations and oil storage at other islands has yet not been assessed so far. However, spillage had been observed in many oil handling areas (such as in powerhouses) in other islands too.

The agricultural sector in the Maldives does not use a significant amount of chemical fertilisers and pesticides. Thus groundwater and seawater contamination from agricultural run-off is at present not a problem. However, in the last few years there has been a marked increase in the amount of fertilisers and pesticides used although it is not significant. Issues facing coastal waters are mainly related to disposal of untreated sewage and wastewater effluent. Of the seven islands provided with central small bore sewerage systems, only three islands have secondary treatment facility (i.e. septic tanks). The rest disposes raw sewage into the coasts making coastal waters unsuitable for bathing or general use. In Malé, the capital, sewage is disposed untreated into the nearshore waters via nine outfalls at six locations. The pollution load from these sewer outfalls probably exceeds the dilution capacity of the receiving waters. The Malé sewers not only carry sewage but also different chemicals and potentially harmful substances.

4. MAJOR POLICY AND LEGISLATION

Environmentally unsound practices in solid waste and sewage disposal pose the most serious threat from tourism to the delicately balanced coral reef ecosystem of the Maldives. Though solid waste is a cause of environmental concern, at current levels it is more of an aesthetic problem. In the past, waste and garbage which could not be burned was dumped into the sea. This practice is now prohibited by law and waste incinerators and crushers have to be used in all resorts. Sewage effluent is discharged into the sea by the resorts. However, the discharges from resorts are very small and the evidence on reef degradation from sewage discharges is inconclusive. Some of the resorts are now turning to the latest technology in sewage treatment using ultra violet radiation to produce virtually pure water.

The Maldives has developed a very suitable form of tourism, appropriate for the small island environment. The present form of tourism development has not generated any serious environmental impacts. This has been accomplished through appropriate policies, legislation and plans and instituted mechanisms to apply strict standards and regulations. However, the increasing number and magnitude of coastal modifications on the islands, including reclamation, harbour dredging and beach replenishment are serious environmental issues that need to be addressed in the tourism sector. The management of solid wastes is identified as a key environmental issue in the Second National Environment Action Plan. In 1998, a study on The Solid Waste Management for Malé City in the Republic of Maldives was carried out with the assistance of Japan International Co-operation Agency (JICA), to assess the solid waste disposal problems in inhabited islands
and resorts.

The Ministry of Home Affairs, Housing and Environment is currently in the process of developing a national waste management strategy for the country. An interagency technical committee was formed in April 2000 to advice the Ministry on the national waste management strategy. Under the South Regional Development Project, and with the guidance of the technical committee, work is underway to develop a solid waste disposal site in Hithadhoo. A similar site is being developed under the Northern Regional Development Project in Kulhudhufushi. These waste disposal sites are expected to become operational in 2002. Barging of solid waste collected at the transfer station from Malé to Thilafushi has proved practical and efficient. The experience gained from this operation is planned to be utilised in all the inhabited islands of Malé Atoll in 2002. Plans are underway to barge the solid waste collected from the inhabited islands in Malé atoll to the Thilafushi landfill. When this project is
implemented, the problem of solid waste disposal in Malé Atoll would be significantly improved.

Maldives is party to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The Environment Protection and Preservation Act of the Maldives (Law 4/93) provides a statutory framework enabling the control and regulation of the transboundary movement of hazardous waste controlled under the Basel Convention
in the Maldives.

The Environment Act envisages that Management of waste is a issue that is being given top priority by the Government. Management of waste is the mandate of the Ministry of Construction and Public Works. Waste from Male where more than 25% of the population reside, waste is taken to a nearby island which is being expanded by land reclamation from sorted waste. Islands nearby Male also use this island to dispose their waste. In other islands they have their own waste disposal practices and regulations. The Government has identified waste management as a top priority. Currently, with the help of the Japanese Government, a project is being prepared to address the issues of waste management Male‟ and studies are being undertaken as to how waste can be managed in other islands.

NEPAL

Key Issues: Hazardous Waste Management; Air Pollution; Water Pollution; Soil Contamination; Safety and Health; Emergency Plans, Public Liability and Compensation; Enforcement and Compliance; Education and Awareness; Social Audit of Industry;

Policy Framework: Nepal Environment Policy and National action Plan, 1993 updated in 1998

Key Legislation: Solid-waste (Management and Resource Mobilization) Act, 1987; Environment Protection Act, 1997;

Key Institutions: Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Population and Environment; Ministry of Local Development;

1. INTRODUCTION

Solid waste is primarily an urban problem in Nepal, with localized solid waste pollution in some rural areas along the main trekking routes and semi-urban and densely populated village dwellings. The industrial Pollution Inventory in Nepal has estimated 21,883 tons of solid generation from industry annually. Generally, industrial wastes are either recycled or disposed of with domestic wastes. The treatment and neutralization of hazardous and toxic industrial waste at the source, and autoclaving of pathogenic elements in hazardous hospital waste is not in general practice except for some hospital like Tribhuvan University Teaching Hospital; and this category of waste is generally dumped along with general waste. It is reported that private hospital produces about 191 kg of hospital waste per day. Generation of wastes in the health institutions is approximately 5.71 kg/patient/day, and out of which nearly 30 percent is hazardous by nature. Due to lack of separate provision for managing such wastes, they are mixed with municipal refuses.

2. HAZARDOUS WASTE GENERATION

A wide range of hazardous waste is being generated by many industries in Nepal. The amount of hazardous waste generation is not very substantial at present. However, due to inadequate facilities and clear mandate for the safe disposal, hazardous waste management has become a growing problem in the country. Industries producing dry batteries, solvent and metal based paints, film processing industries, electroplating (mostly small cottage industries) etc. are operating in the country and producing hazardous waste. These industries are not separately categorized under the hazardous waste producing industries. They are included in the group of highly polluting industries. The waste produced by these industries is either directly disposed in surface water or discharged on land. Hospitals, health clinic, pharmaceutical establishments, research and pathological laboratories are also other major source of hazardous wastes (liquid and solids) in the country. Rule 15 of the Environmental Regulation forbid to emit any hazardous waste above the standards set for such waste. Clear regulation or code of practice to dispose such hazardous waste, facilities and infrastructures is lacking.

The Solid-waste (Management and Resource Mobilization) Act, 1987 has made provision for the establishment of a solid waste mobilisation centre. The function and duties of the Centre is to prevent the hazardous solid waste by classifying them and to provide training relating to the management of solid waste and environment cleanliness.

Accumulation date expired organochlorine pesticides are another source of hazardous waste. At present over 50 tons of such hazardous pesticides are waiting to be disposed safely. As the country has no mining of coal, and other minerals and the smelting establishment for metals, the problem of hazardous waste disposal from these sources does not exist.

3. WASTE MINIMISATION/WASTE TREATMENT AND DISPOSAL

Some industries are using good pollution control measures. These plants include plastic, polyethylene and PVC, paints, and flour milling industries. The control measures and practices observed in use at these industries include exhaust fans, bag filters, ventilators, precipitators and recycling of both wastewater and scrap materials. However, majority of industries is without any pollution control measures. Recently, the government under the assistance of UNDP/UNIDO has established wastewater treatment facilities for tanning industries operating at Birgunj.

4. POLICY AND LEGISLATION

The Constitution of the Kingdom of Nepal (1990) mentions environmental protection under the directive principles and policies of the State. Paragraph 4 of Article 26 of the Constitution states "The State shall give priority to the protection of the environment of the country and also prevent damage due to physical and industrial developmental activities by making the people conscious of the environmental cleanliness, and also make special arrangements for the protection of rare animal species, the forests and the vegetation of the country". Before the Environmental Protection Act, 2053 (EPA 2053) was promulgated in 1996, several legislation covered the environmental problems and even overlapped in its each responsibility. Then, these umbrella legislation were integrated into Environmental Protection Act which provides a comprehensive and coherent legal framework of dealing with the complex environmental issues.

PAKISTAN

Key Issues: Hazardous Waste Management; Air Pollution; Water Pollution; Soil Contamination; Safety and Health; Emergency Plans, Public Liability and Compensation; Enforcement and Compliance; Education and Awareness; Social Audit of Industry;

Policy Framework: National Conservation Strategy, 1993; Provincial Conservation Strategy, 1996;

Legislation: The Factories Act, 1934; Punjab Local Government Ordinance. 1979; The Pakistan Environmental Protection Act, 1997; The Pakistan Environmental Protection Ordinance, 1983

Key Institutions: Metropolitan Corporations, Municipal Corporations and Municipal Committees; Ministry of Environment

1. INTRODUCTION

Solid waste is a growing problem in urban and industrial areas of solid wastes as system for collection and disposals are weak. The generation of solid waste is a direct consequence of life. It is all wastes arising from human and animal activities that are normally solid, semi-solid, liquid in containers and those are discharged as useless or unwarranted.

In a country like Pakistan, the generation of MSWs is estimated to be between 0.6-0.8 kilogram per day per capita. In Pakistan, virtually there does not exist any appropriate waste management system. Fairly around 40% of the generated wastes remains either at collection points,, or in streets, where they emit a host of pollutants into the air, thus making it so often unacceptable for breathing. Besides spoiling general sanitation, they work as good breeding grounds for various carriers of diseases like mosquitoes and flies. The roadside and on dump burning of the MSWs generates furan and dioxin which on inhaling produce diseases even worse then cancer. The leachates from MSWs penetrate ground to pollute sub-soil water. There is, therefore, a mandatory demand to put in place appropriate Management Systems for MSWs.

2. CURRENT STATE OF SOLID WASTE MANAGEMENT IN PAKISTAN

Waste collection is perhaps the most critical component of every SWM strategy as it provides protection for local inhabitants from environmental nuisance and harm. The present system in Pakistan varies from purely manual system involving sweepers and animal drawn transport to more sophisticated system using mechanized vehicles for transportation. In all cities scavengers plays an important role by removing items like metals, glass, polyethylene bags, paper and similar items which can be sold in the market. Municipal bodies lack resources to remove the entire solid waste and practically half the solid waste is not removed resulting in poor sanitary conditions especially in low-income areas.

Waste collection differs amongst various sectors of each city. Affluent areas have remove efficient arrangements compared to poorer section where the systems for removal of solid waste are extremely unsatisfactory. The rapid urbanization has also accentuated the problem straining limited public sector resources. Even these resources are not being fully utilized due to poor management, inefficient use of manpower, and poor maintenance of old transpiration and equipment.

Local municipal bodies have been unable to cope with the complex challenges of urban sprawl. The growth of urban population has been around 4-10 percent per annum putting enormous pressure on existing civic services. Rapid growth of katchi abadis (slum areas) and lack of water borne sewerage in

major parts of various cities has made the problems more complex. Due to ineffective development planning, large cities are confronting a number of complex urban problems.

It is estimated the urban Pakistan generates about 48,000 tons of solid waste daily or about 17.5 million tons per annum. Proper SWM can lead to increased revenues for the municipal bodies and the standard of sanitation can be considerably improved indirectly leading to better health, higher productivity rate and lowering of expenditure on heath sector. This can be done by involving private sector in certain fields of SWM. Presently only a part of solid waste is collected, transported and dumped. The means are inefficient and in most cases inadequate to cope with the present day challenges i.e. bulk and composition of municipal waste.

3. PRESENT SYSTEM OF SOLID WASTE MANAGEMENT IN PAKISTAN

In all the urban centres of Pakistan including eight selected cities, their respective urban local councils i.e. Metropolitan Corporations, Municipal Corporations and Municipal Committees are responsible for management of solid waste generated in areas within their jurisdiction. These areas may be residential, commercial, or industrial with some exceptions of large industrial and medical establishments and posh residential areas which are independently managing the solid waste within their premises. The existing services for the management of solid waste include the following:

(a) Municipal Collection and Street Cleaning Service

The solid waste is collected from streets and roads side dustbins and open heaps, which result from household wastes, street/road sweeping and garbage from drains cleaning. For this purpose, a considerable number of sweepers and sanitary workers have been employed by the respective municipalities. These workers are provided with traditional cleaning tools i.e. brooms, baskets, shovels, spades, scarifiers, pickaxes and wheel barrows. An eight hours workday is followed for six days of work

(b) Waste Collection and Transportation Service

The waste is collected from the communal storage points i.e. dustbins, masonry or open filth depots which are located on street and road sides and corners. Mostly these storage points are randomly distributed depending on the space availability. In most of the cases peoples themselves start throwing the litter any where they find some space. As such the storage of waste for collection purpose is the most crucial aspect of existing Solid Waste Management, which is polluting the environment on many fronts.

Waste transportation is being carried out through Donkey Carts, Bullock Carts, Suzuki Pickups, Tractor Trolleys, Trucks and Dumpers. Out of these modes of transport, Tractor Trolleys and Trucks are most common. Whereas loading and unloading of waste is done manually except the metropolitan cities of Islamabad, Karachi and Faisalabad where mechanical loaders and dumpers are used for the same purpose but to a limited extent.

Further, a considerable number of vehicles available with municipalities remain out of use being defective. The in-use vehicles are also oftenly used inefficiently meeting less than half of collection and transportation requirements.

(c) Waste Disposal Service

The disposal of waste is the end of process of existing Municipal Solid Waste Management, which is carried out, in the most haphazard fashion without considering its negative environmental effects. In small intermediate cities, the waste is being mostly disposed off into open and low-lying patches of land within municipal boundaries even within built-up areas. However, in some cases the municipalities have managed land either on ownership basis or on lease for waste disposal but even then all the waste does not reach there owing to various reasons.

The waste is largely unloaded manually on the disposal site. No formal separation of recyclables is carried out except by the scavengers. Even hazardous toxic waste is mixed with the ordinary municipal waste. Further the disposed waste is not compacted to any degree. No soil cover or other type of mitigating measure is being taken over there, to counter act the adverse environmental impacts.

4. HOSPITAL WASTE MANAGEMENT

A variety of wastes, highly toxic in nature, are produced by hospitals, dispensaries, clinics, pharmacies, clinical laboratories and health care units. These wastes are categorized into solid waste, chemical waste, infectious wastes and radioactive wastes. Around 10-15% of all these wastes is considered infectious, associated to which are the two most common and dangerous diseases - Hepatitis B and Acquired Immuno-Deficiency Syndrome (AIDS).

In Pakistan, around 250,000 tonnes of hazardous medical waste is the annual production from all sorts of health care facilities. These wastes are usually dumped, either within or just in the so-called unmanaged bins. They remain all these collection points, normally for a few days and thus on putrefaction emit highly toxic and obnoxious gaseous emissions into the environment around eventually making breathing difficult. They remain scattered over sizeable areas, hence, spoil general sanitation. Vectors of various diseases, including also flies and mosquitoes, breed on them. Cats and dogs so often visit these heaps in search of food and thus, through their contaminated legs, paws and other body parts spread contamination in other residential areas, wherever they go. Even amputated human organs are being disposed on these garbage heaps.

5. INDUSTRIAL WASTE

Liquid waste

The industrial liquid wastes and effluents contain organic and inorganic salts, pathogenic organism, toxic materials, metal scrapes, acids, alkalies, heavy metals and many other pollutants. Pakistan is facing the serious dilemma of industrial pollution the waste and effluents are being dumped in the water courses untreated. 50 metals have been detected in the effluents and these include mercury cadmium, chromium and lead which are extremely harmful.

Sewage/Sanitation

The quality of safe water mostly used by urban population is polluted in Pakistan except near the head works in the mountains. The surface water is harmful for human use unless it is treated or boiled. It is the major reason that people prefer to the ground water. The sanitary sewerage system for carrying away domestic waste water are limited to certain parts of the major cities, whereas majority of the population rely on septic tanks, soak pits discharges via open drain or directly on land or water ways. It is worth mentioning here that only Karachi and Islamabad use sewerage treatment plants, whereas, all other sewerage system in Pakistan are discharging raw and un-treated water. They are all directly linked untreated with the nearest watercourse.

Radioactive waste:

A wide variety of radioisotopes are being used extensively in hospitals/nuclear medical centres for diagnostic and therapeutic purposes. As a result, radioactive waste is produced which should be managed and disposed of with particular care in order to protect the mankind, the biosphere and the environment from the detrimental effects of nuclear radiation.

Pakistan Atomic Energy Commission prepared a document entitled “Guidelines on the Handling of Radioactive Waste in Hospitals/Nuclear Medical Centres” and forwarded it to the Hospitals aiming to provide guidelines on the control and safe management of radioactive waste produced in

hospitals/nuclear medical centres. The purpose is to minimize the radiation exposure to both workers and general public.

6. INSTITUTIONAL STRUCTURE:

The institution responsible for the subject are Ministry of Environment, Local Government and Rural Development and Health at the federal level and provincial Health Departments, Municipal Administrations etc at the provincial/town levels.

7. ENACTMENTS/ LEGISLATION

Following are the some enactments met for Solid Waste, effluents and its management.

1. The Factories Act, 1934

Section 14 **Disposal of wastes and effluents:**

(1) Effective arrangements shall be made in every factory for the disposal of wastes and effluents due to the manufacturing process carried on therein.
(2) The Provincial Government may make rules prescribing the arrangements to be made under sub-section (1) or requiring that the arrangements made in accordance with that sub-section shall be subject to the approval of such authority as may be prescribed.

2. The Punjab Local Government Ordinance. 1979

Section 51 **Functions of the Zila Council:**

A Zila Council may and if Government so directs shall undertake all or any of the following functions:

(F) Drainage:
.....

(xxx) provisions and maintenance of adequate system of public drains and regulation of the disposal of industrial wastes.

Section 54 **Removal, collection & disposal of refuse:**

(1) An urban local council shall make adequate arrangements for the removal of refuse from all public roads and streets, public latrines, urinals, drains and all buildings and lands vested in the urban local council and for the collection and proper disposal of such refuse.
(2) The occupiers of all other buildings and lands within the area of an urban local council shall be responsible for the removal of refuse from such buildings and land subject to the general control and supervision of the urban local council.
(3) An urban local council shall cause public dustbins or other suitable receptacles to be provided at suitable places and in proper and convenient situations in streets or other public places and where such dustbins or receptacles are provided, the urban local council may, by public notice, require that all refuse accumulating in any premises or land shall be deposited by the owner or occupier of such premises or land in such dustbins or receptacles.
(4) All refuse removed and collected by the staff of an urban local council or under their control and supervision and all refuse deposited in the dustbins and other receptacles provided by the urban local council shall be the property of the urban local council.

Section 60 **Drainage:**

(1) An urban local council shall provide an adequate system of public drains in its local area and all such drains shall be constructed, maintained, kept cleared and emptied with due regard to the health and convenience of the public.

(3) All private drains shall be subject to control, regulation and inspection by the urban local council.

(4) Subject to the provisions of any other law for the time being in force an urban local council may by notice direct a commercial or industrial concern to provide for the disposal of its waste or effluent in the manner specified and failure on the part of the owner, tenant or occupier thereof to comply with such directions shall be an offence under the Ordinance.

(5) An urban local council may, by notice, require the owner of any building, land or an industrial concern within its local area

(a) to construct such drains within the building or land or the street adjoining such building or land and to take such other measures for treatment and disposal of effluent as may be specified in the notice;
(b) to remove, alter or improve any such drains; and
(c) to take such other steps for the effective drainage of the building or land as may be so specified.

(6) In case of failure of the owner to comply with the requirements of notice under sub-section (5), the urban local council may itself cause to carry out such requirements and the cost so incurred shall be deemed to be a tax levied on the owner of the building or land, as the case may be, under the Ordinance.

Section 61 **Drainage and sewerage schemes for commercial and industrial area:**

(1) An urban local council may through a notice require the owners, tenants and occupiers of commercial and industrial concerns in any area or areas within its local area to have at their own cost prepared a scheme for the adequate and safe drainage and disposal of their wastes and effluent of the quality permitted under the rules or the bye-laws and submit it to the urban local council within the time specified in the notice:

Provided that the time limit may be extended by the urban local council for a maximum period of three months at the request of the owners, tenants or occupiers of the commercial and the industrial units concerned

Section 67 **Disposal of Carcasses:**

Whenever an animal in the charge of a person dies, otherwise than by being slaughtered for sale or consumption or for some other religious purpose such person shall either

(a) convey the carcasses within twenty-four hours to a place, if any, fixed by the urban local council for the disposal of the dead bodies of animals or to a place beyond the limits of local area, not being a place within one mile of such limits; or
(b) give notice of the death to the urban local council whereupon the urban local council shall cause the carcass to be disposed of and charge such fees from the person concerned as the bye-laws may provide.

3. The Pakistan Environmental Protection Ordinance, 1983

Section *9* **Agency to assist Local Councils etc., in disposal of wastes:**

This is in spite of the fact that several legislation existed since long which addressed the environmental issue either directly or indirectly. Although in 1979/80, promulgation of Local Government Ordinances in the four provinces of Pakistan established institutions and empowered them to prepare and implement schemes for prevention of pollution in air, water and land, and for this purpose they can collect taxes from the citizens. However, since creation of Pakistan, the first major step regarding legislation towards the subject of environment as a take off of the country, was the promulgation of Pakistan Environmental Protection Ordinance (PEPO), 1983. The thrust of this legislation is on motivation and awareness. It seeks to ensure that environmental considerations and concerns are incorporated into national development plans and policies. This ordinance among other things, require EIA of all major development projects, gave statutory cover for the establishment of Pakistan Environmental Protection Council (PEPC), Pakistan Environmental Protection Agency (Pak-EPA) and provincial EPAs, and made provision for the formulation of national guidelines for pollution control. As a result, the National Environmental Quality Standards (NEQS) came into existence. These standards (NEQS) were approved by the PEPC and relate to municipal and industrial liquid effluents, industrial gaseous emissions and motor vehicles exhaust and noise, and came into force for new industrial units on 1-7-1994 and for existing industrial units on 1-7-1996. The PEPO, 1983 was supplemented with the development of National Conservation Strategy which emerged out of 4 years participatory - process - oriented approach of extensive consultations with various interest groups, general public and technical experts. The Cabinet of Pakistan Government adopted the NCS with its 14 core areas in 1992. The PEPO, 1983 was considered being narrow in scope, having some deficiencies, as it did not address many issues critical to the preservation of environment such as in providing guidelines for the protection and conservation of species, habitats and bio-diversity, conservation of renewable and none-renewable resources. The PEPO, 1983 was replaced with the promulgation of a more comprehensive PEPO, 1997, which later enacted as an Act of Parliament of Pakistan and enforced with the name of Pakistan Environmental Protection Act, 1997.

Prohibition on import of hazardous waste:

This is a blanket prohibition (contained in section 13) on the importation of hazardous waste into Pakistan, its territorial waters, the exclusive economic zone or Pakistan's historic waters (as specified pursuant to section 7 of the Territorial Waters and Maritime Zones Act 1976)

Handling of hazardous substances:

Section 14 prohibits the generation, collection, transportation, treatment, disposal, storage or handling of hazardous waste except under a license issued by the EPA or in accordance with the provisions of, any domestic law or relevant international convention (in particular. The Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, Basel, 1989).

SRI LANKA

Key Issues: Hazardous Waste Management; Air Pollution; Water Pollution; Soil Contamination; Safety and Health; Emergency Plans, Public Liability and Compensation; Enforcement and Compliance; Education and Awareness; Social Audit of Industry;

Policy Framework: National Conservation Strategy, 1988; National Environmental Action Plan, 1994 updated in 1998

Key Legislation: Second Republican Constitution, 1978; National Environment Act (No 47 of 1980); National Environmental (Protection and Quality) Regulation No.1 of 1990; management of hazardous wastes, 1996; Control of Pesticides Act, No.33 of 1980; Cosmetics, Devices and Drugs Act. No.27 of 1980; Atomic Energy Authority Act No.19 of1969; Marine Pollution Prevention Act No.59 of 1981; Explosives Act No. 21 of 1956 & No.33 of 1969; Laws Nos. 36 of 1976 & 14 of 1978; Food Act No.26 of 1980; Fertilizers Act No.21 of 1961; Consumer Protection Act Nos. 1 of 1979 & 37 of 1990; Poisons, Opium Act -Dangerous Drugs Ordinance, Petroleum Ordinance, No.6 of 1887; Motor Traffic Act No. 14 of 1951; Motor traffic (Amendment) Act No.21 of 1981; Control of Pesticides Act, No.33 of 1980; Malathion Control Act, No.22 of 1985;
Key Institutions: Central Environmental Authority (1981); Ministry of Environment and Natural Resources; Department and Mahaweli Authority; Sri Lanka Standards Institute

1. INTRODUCTION

Waste can be classified as solid waste, liquid waste which includes Hazardous and non Hazardous waste. Waste Management is a major environmental problem in Sri Lanka. Hazardous waste has become an important environmental and health issue and concern in Sri Lanka as in many countries including the developing nations. There is ample evident that the improper disposal of hazardous waste can cause serious damages to health and environment.

According to a study undertaken by the Ministry of Policy Planning it has been availed that nearly 40,000 Mt. of hazardous waste is produced in Sri Lanka per annum. However, this doesn't include waste generated from hospitals, WRM has estimated the total waste from hospitals is approx. 6600 tons per annuam, although the hazardous waste be only a fraction, if carefully handled and segregated sonic.

Solid waste is described as non liquid waste material arising from domestic, trade, commercial, industrial and agricultural activities as well as waste arising from public sectors, soiled waste comprises of various different materials such as food waste and packaging in the form of paper, metals, plastic or glass, etc.

Solid waste is a growing problem in Sri Lanka aggravated in the absence of a proper management system. Development and implementation of National Strategy for solid waste management is essential to reduce environmental, social and economic problems associated with the present disposal practice.

Recent analysis of date pertinent to solid waste reveals that the real problem associated with solid waste, at present lies to a great extent with present haphazard disposal practices more than with the rate of generation. However, rate of generation of solid waste is also increasing with the increase of population technological developmel1t and the changes of life styles of the people.

2. NATIONAL WASTE MANAGEMENT STRATEGY

The national waste management strategy should be involved with waste avoidance, reduction, reuse, and recycling and final disposal in an environmentally sound manner. Generation of waste in the process of production and consumption is inevitable. However, the national policies are aligned at reduction of waste by encouraging producers and consumers through education and awareness creation as the present rate of waste generation can be reduced to a considerable extent by good house keeping practices.

Excessive packaging causes rapid increase of the generation of solid waste.Generation of such waste can be reduced to a considerable extent by reducing the demand for such packaging systems by consumers by considering their own disposal problems at source and the problems associated with the final disposal. Consumers should also be encouraged to use biodegradable packaging materials as much as possible. Manufacturers should be encouraged to reduce unnecessary packaging to facilitate environmental friendly disposal systems which in turn will reduce their production costs.

Solid waste generation in urban centers presently remains at a very high level due to unsuitable transportation, handling and storage of fruits and other vegetables and other perishables. A considerable amount of these perishables become waste at market places due to unsuitable handling of these items and current packaging systems. Post harvesting marketing chain should be developed with appropriate technology to avoid/minimize the generation of such waste.

The strategy should also look into the possibility of reducing the generation of plastic waste mainly in the packaging sector. Plastics are non biodegradable and remain in the environment indefinitely as wastes. Haphazard disposal of polyethylene and plastic waste has become serious environmental and health problem at present in Sri Lanka. In the absence of well-established plastic waste recycling facilities, these problems will be increased in the future and therefore use of plastics should be discouraged as much as possible in favour- of paper, glass, cloth and some other biodegradable material.

Plastic offers a unique advantage in packaging of certain products and it will virtually be impossible to eliminate its use. In such circumstances, use of degradable plastics should be encouraged in place of non degradable plastics. Degradable plastics are currently more expensive than non degradable plastics and therefore unable to compete. However, if life cycle costs are used in the comparison, an appropriate incentive regime can be developed.

Priority should be given to produce long-life products and that multi-use packing is used instead of throw-away packaging. Waste avoidance also happens when waste substances do not enter the main collection and disposal process when the households contributes to avoid waste buy composting organic waste buy themselves. Manufacturers can also waste by creating closed life-cycle processes such as reusing of residual material in the production process.

Re-use of waste

Reuse of waste helps waste reduction. A product becomes a waste, when it is not used any longer. Therefore, consumers should be encouraged to reuse the products for some other purposes when such products are not fitted into its original intended use, if it is possible to do so in an environmentally sound manner without disposing it at once.

Recycling of waste

Recycling of waste also help to reduce and reuse the amount of waste at a considerable extent making final disposal manageable. Sustainable waste collection systems should be established in order to making final disposal manageable. Sustainable waste collection systems should be established in order to make recycling economically viable.

Recycling of organic waste by composting

Analysis of data in Sri Lanka reveals that, most of the solid wasted contain biodegradable waste and suitable for composting. The high moisture content of the waste in Sri Lanka makes as much as possible will be an option which should be given serious attention of Local Authorities. In lieu of the high prices of the chemical fertilizer and also the health problems associated with overuse of chemical fertilizer aiming at increasing the harvest, the farmers should be encouraged to use compost produced by organic waste as a soil conditioner. However, it should be noted that the quality of the compost will depend mostly on the degree of contamination and type of the organic waste. Plants and animals have a tendency to bio magnify heavy metals in their respective systems, which is a significant risk to food chain crops. Therefore, Sri Lanaka have heavy metal standards of compost. Segregation of waste at source plays an important role in obtaining a better quality of compost.

In order to increase the market for composting, arrangements shall be made through the proper authorities to encourage agricultural sector to use compost as a soil conditioner.

Recycling of glass waste

At present, Ceylon Glass Company (CGC) use 40% of cuet (waste glass)in its process of production. The Company has facilities to go up to 60% if waste glass is available. Use of broken glass helps CGC to reduce the production cost as it requires lower temperature in its production process when waste glass is used. This will in turn increase the life time of equipment as well. The amount of raw materials required or glass production also will be reduced which facilitate saving of natural resources.

Recycling of waste paper

At present technology exists for the use of waste paper in Sri Lanka, in the process of paper production Equipments are available in the world market to use various types (grades) of paper wastes for this purpose. The policies should be developed to encourage use of waste paper in the process of paper production.

Sanitary land filling

A sanitary landfill site is a site designed for the final disposal of waste in an environmentally sound manner. There is a clear distinction between open dumping which is a common disposal practice at present in Sri Lanka and a sanitary landfill site. Sanitary landfill site is designed to minimize the adverse effects associated with solid waste disposal. The design includes containments of lechate and gas, daily cover for the working surface, runoff and run on diversions, which would result in decreasing the potential of surface and ground water pollution. A sanitary landfill site is also aesthetically more acceptable. At present solid waste disposal sites are often located in low -lying areas creating a tendency of surface and ground water pollution. Therefore, potential sites which could be identified as solid waste disposal sites shall be identified on country wide basis and the necessary clearances should be obtained after going through Initial Environmental Examination (lEE) or Environmental Impact Assessment (EIA) studies as required by law to prevent ground, water and air pollution. The present haphazard practices of dumping of waste should be prohibited and either sanitary land filling or engineered controlled land fillings based on the guidelines provided by the Central Environmental Authority should be encouraged.

Incineration

Incineration can be defined as a controlled combustion process for burning solid, liquid and gaseous combustible wastes to gases and residue containing non-combustible material. During combustion, moisture is vaporized and oxidized. Carbon Dioxide, water vapour, ash and non-combustibles are the end -products. Incineration without adequate contrail system leads to release gases which may cause air pollution in its process. In case of Municipal waste, incineration is not economically viable in Sri Lanka at present due to high moisture content and low calorific value of the waste.

However, in case of clinical waste, disposal by incineration in an environmental sound manner has become a strategy considering the hazardous nature of the waste and the difficulties in establishing land fill sites especially for the disposal of such waste. It is also noted that land fill facilities are however needed for the disposal of residues arising out incineration. Therefore, more emphasis should be made managing clinical wastes, training and capacity building and waste minimization. Sri Lanka as a developing country so not have a capacity to either monitor or regulate air emissions (such as dioxins and furons) through out the country which would result in incineration. Segregation will facilitate to follow low cost approaches for the disposal of clinical waste. Disinfection or neutralization techniques can be used for most of the clinical waste which facilitate to use low cost disposal technologies.

Energy Recovery

After removal of the recyclable commonents, there may be a considerable amount of garbage left behind which could be utilized for the generation of electrical and thermal energy. The utilization of combustible materials for energy recovery would be better option prior to land filling if economically feasible. Special attention should be paid to control; air pollution when incineration is used as strategy for waste disposal. Since our waste is largely organic, and everything that is organic is not compostable in a reasonable period of time, large volumes of organic waste will continue to be deposited in landfills. A large sanitary landfill has the potential for landfill gas recovery as a source of energy. A large sanitary landfill has the potential for landfill gas recovery from landfill gas, incentives should be given to develop infrastructure facilities for landfill gas recovery to control air emissions.

Bio Gas Production

Highly organic waste has a potential to produce bio gas as a source of energy while producing compost after digestion in anaerobic condition. Therefore, utilization of bio gas technology for the disposal of highly organic waste can also be considered as a strategy for the disposal of highly organic waste.

Sorting of waste at source

Sorting of waste at source is an important activity which should be encouraged through education and awareness programs. Sorting of waste at source makes recycling economically viable to a considerable extent. Infrastructure facilities should be established to motivate sorting of waste at source which in turn would facilitate establishment of formal and informal waste collection systems. This will also help to create job opportunities in the country .Policies should be developed to enhance the market for recycled by products.
Sri Lanka was known for centuries as a land proud and protective of its flourishing Natural Riches. This traditional respect of Sri Lankans towards the preservation of the environment was distinctively depicted in the Second Republican Constitution (1978) which carried the following clauses for safeguarding the environment:

1. The *State shall protect, preserve and improve the environment for the benefit of the community (Article* 27.14)

2. The *Exercise and enjoyment of rights and ,freedom is inseparable ,from the performance of duties and obligations, and accordingly it is the duty of every person in Sri Lanka ...to protect nature and conserve its riches (Article 28.f}*

This pledge was formally institutionalized with the National Environment Act (No 47 of 1980)), which was the foundation for the setting up of the Central Environmental Authority (1981) as the premier state agency responsible for the formulation and implementation of policies and strategies for the protection and management of the environment in Sri Lanka.

After recognizing that the CEA lacked regulatory powers to act on environmental pollution, the NEA was amended in 1988 empowering the CEA to regulate emissions and effluent discharges.

It is the mandate of the Ministry of Forestry and Environment to provide leadership for formulating National Environmental Policies and to review them.

3. LEGISLATION AND REGULATIONS

Provisions of the Local Government Law

Legal framework required for solid waste management is adequately provided under Local Government Acts, and the Local Authorities are responsible for the collection and disposal of solid waste in the country. The section 129,130 and 131 of the Municipal Council Ordinance: and sections 93 and 94 of the Pradeshiya Sabha Act. have clearly and adequately provided for the management and disposal of solid waste in the respective areas.

The provisions relating to Solid Waste Management in Pradeshiya Sabbas Act., Urban Council Ordinance and Municipal Council Ordinance are as follows:

(a) All street refuse, house refuse, night-soil, or other similar matter collected by Local Authorities under the provisions of this part shall be the property of the Council, and the Council shall have full power to sell or dispose of all such matter .

(b) Every Pradeshiya Sabbha, Urban Council and Municipal Council shall from time to time provid place convenient for the proper disposal of all street refuse, house refuse, night-soil and similar mater revived in accordance with the provisions of the law, and for keeping all vehicles, animals, implements, and other things required for that the purpose and shall take all such measures and precautions as may be necessary to ensure that no such refuse, night-night soil, or similar matter removed in accordance with the provisions of the law is disposed of in such a way as to cause a nuisance.

Provisions under National Environmental Act (NEA)

Under Section 12 of NEA, the Central Environmental Authority may with the concurrence of the Minister from time to time, give to any local authority in writing such directions whether special or general to do or cause to be done any act or thing which the Authority dimes necessary for safeguarding and protecting the environment within the local limits of such authority.

Every local authority to which a direction has been given under subsection (I) shall comply with such direction.

The regulations concerning hazardous wastes have been published in Gazette Extraordinary No. 924/13 of May 23, 1996. This came as an amendment to the National Environmental (Protection and Quality)

Regulation No.1 of 1990, published in Gazette Extraordinary No. 595/16 of February 2, 1990. However, these regulations have hardly been enforced.

In the proposed Environmental Bill, Schedule one of Part II lists out 19 constituents and 9 waste streams indication what should be considered hazardous waste. Procedure for obtaining licence is also set out in this Bill.

Import and Export Act No.1 of 1969 has introduced a 'Special Import Licence' (SIL) scheme relating to Security, legislation, Environment and Public morals, those who intend to import any item under SIL require to apply to the Controller for a licence. The Controller would then impose various conditions as appropriate (eg. Obtaining a certificate from Registrar of Pesticides) before exercising his/her discretion in favour of the importer.

The schedule B of Customs Ordinance enumerates a table of prohibitions and restrictions for import and export. Sections 12(1),43 and 44 of the Ordinance describe the laws with respect to import and export of goods in schedule B and the power to amend the schedule by the addition thereto or by the omission therefrom and regulate the conditions to import or export.

In the past, hazardous waste has not received much attention of the policy planners. However, Sri Lanka ratified the Basel Convention on the control of Trans-boundary Movement of Hazardous Wastes and their disposal with effect from August 28, 1992. Since then, significant attention has been drawn towards the movement of hazardous waste from outside sources to Sri Lanka. The Ministry of Forestry and Environment serves as the focal point for the Convention. In the proposed National Environmental Protection Act, provisions have been made for the Ministry to give effect to the principles under Basal Convention:

(a) Guidelines on safety measures to be adopted during generation, collection, transportation, storage, recovery, recycling and disposal of wastes;
(b) Guidelines for the establishment of waste disposal sites; and
(c) Operation regarding recycling and recovery of waste.

A program for disposal of clinical waste in some selected hospital in the Colombo
Region is presently underway. The Ministry of Health intends to prepare an Action Plan island-wide for the management of clinical of waste.

The Western Provincial Council has made arrangements to establish a Waste Management Authority and a draft Act is being developed for this purpose. The Ministry of Provincial Councils and Local Government also plans to establish a Waste Management Authority at National Level.

Some fiscal incentives are being given to industries under certain conditions to use advanced technology in order to minimize and control pollution i.e. cleaner production.

Though National Legislation concerning the management of hazardous wastes have been in force since June 1, 1996, by a regulation published in Gazette extraordinary Now these regulations have hardly been enforced. Having mere legislation is not sufficient without including the support services.

4. OTHER RELEVANT LEGISLATION

1) Industrial Product Act No.18 of 1949 amended by Act No.53 of 956 & 69 of 1961.
2) Factories Ordinance

3) Industrial Disputes Act No 43 of 1950 amendment by Act No.25 of 1956 No.14 of1957, No 62 of 1957, No 04 of 1962, No.27 of 1966, No 39 of 1968, No.53 of 1973
4) Industrial Promotion Act No.46 of 1990.
5) Pesticide Act No.33 of 1980
6) Automic Energy Authority Act No.19 of 1969
7) Marine Pollution Prevention Act No 59 of 1981
8) Food Act No 26 of 1980
9) Fertilizers Act No 21 of 1961
10) Regulation of Fertilizer Act No 68 of 1988
11) .Radioactive Minerals Act No 46 of 1968
12) Consumer Protection Act No 46 of 1968
13) Poisons, Opium and Dangerous Drugs (Amendment) Act No 13 of 1984
14) Petroleum Ordinance No 6 of1987 Local Authority, Petroleum Products (Regulation and Control of supplies) Act No.34 of 1979
15) Motor Traffic Act No 14 of 1951 Amended by Motor traffic Act No 21 of 1981.

5. LEGISLATION, INSTITUTIONAL ARRANGEMENT FOR HAZARDOUS WASTE MANAGEMENT

On the eve of a fresh millennium Sri Lanka aims to strive towards economic development through rapid industrialization. As such, it is inevitable that these industries will generate hazardous waste, which would essentially require responsible handling. The potential difficulties that may have to be faced in the near future regarding hazardous waste could be enormous.

According to a study undertaken by the Ministry of Policy and Planning, it has been revealed that nearly 40,000 MT of hazardous waste is produced in Sri Lanka per annum. However, this does not include waste generated from hospitals. ERM has estimated the total waste generated from hospitals to be 6600 tons per annum, although the hazardous component would be only a fraction, if carefully handled and segregated at source.

The proposed new National Environmental Act defines hazardous waste as 'those materials, substances and waste which have toxic, corrosive, radioactive, chemically reactive, flammable or explosive characteristics and which are listed by the Agency by Gazette notification from time to time.

National Legislation concerning the management of hazardous wastes have been in force since June 1, 1996. However, these regulations have hardly been enforced. The Government of Sri Lanka published the regulations concerning hazardous wastes in the Gazette Extraordinary No. 924/13 of May 23, 1996. This came as an amendment to the National Environmental (Protection and Quality) Regulation No.1 of 1990, published in Gazette Extraordinary No. 595/16 of February 2, 1990.

In the new amendment, EPL regulations have been re-designated. New part two deals with hazardous waste management. This sets out requirements to obtain a licence from the CEA and specifies the procedures for obtaining such licences and conditions attached to them. Schedule one of part two lists out 19 constituents and 9 waste streams indicating what should be considered hazardous waste.

Apart from the aforementioned regulations, there are other controls of certain hazardous waste components, from different angles and standpoints. For instance, the following acts have certain relevant provisions for hazardous material

Import and Export Act No.1 of 1969

This Act has introduced a 'Special Import Licence' (SIL) scheme relating to Security, Health, Environment and Public Morals. Those who intend to import any item under SIL require to apply to the Controller for a licence. The Controller would then impose various conditions as appropriate (eg. Obtaining a certificate from Registrar of Pesticides) before exercising his/her discretion in favour of the importer .

Customs Ordinance (Chapter 235) -The schedule B of Customs Ordinance enumerates a table of prohibitions and restrictions for import and export. Sections 12(1),43 and 44 of the ordinance describe the laws with respect to import and export of goods in schedule B and the power to amend the schedule by the addition thereto or by the omission therefrom and regulate the conditions to import or export.

Other acts that may govern the movement of hazardous waste include, Control of Pesticides Act, No.33 of 1980; Cosmetics, Devices and Drugs Act. No.27 of 1980; Atomic Energy Authority Act No.19 of1969; Marine Pollution Prevention Act No.59 of 1981; Explosives Act No. 21 of1956 & No.33 of1969; Laws Nos. 36 of1976 & 14 of 1978; Food Act No.26 of 1980; Fertilizers Act No.21 of 1961; Consumer Protection Act Nos. 1 of 1979 & 37 of 1990; Poisons, Opium Act -Dangerous Drugs Ordinance, Petroleum Ordinance, No.6 of 1887; Motor Traffic Act No. 14 of1951; and the Motor traffic (Amendment) Act No.21 of 1981.

Principal Implementing Bodies with regard to Hazardous Waste Management

- Central Environmental Authority
- Ministry of Forestry and Environment
- Local Authorities

6. RELATED CONVENTIONS

Basal Convention on the Control of Trans-boundary Movement of hazardous waste and their disposal.

In the past, hazardous waste has not received much attention of the policy planners. However, Sri Lanka ratified the Basel Convention on the control of Trans-boundary Movement of Hazardous wastes and their disposal with effect from August 28, 1992. Since then, significant attention has been drawn towards the movement of hazardous waste from outside sources to Sri Lanka. The Ministry of Forestry and Environment serve as the focal point for the convention. In the new NEA, provisions have been made for the Ministry to give effect to the principles under Basal Convention.

The Government of Sri Lanka has made a policy decision to locate high polluting industries wherever possible within industrial estates provided with effluent disposal facilities. The National Environment Action Plan prepared by the Ministry of Forestry and Environment lists out relevant issues and recommendations for the Industry Sector.

Guidelines for the implementation of hazardous waste management regulation have been prepared by the CEA, under the guidance of the Ministry of Forestry and Environment. These include:

(a) Guidelines on safety measures to be adopted during generation, collection, transportation, storage, recovery, recycling and disposal of wastes;
(b) Guidelines for the establishment of waste disposal sites; and
(c) Operation regarding recycling and recovery of waste.

A pre-feasibility study on the management of hazardous waste has been completed with the financial assistance of the World Bank. Hazardous Waste Disposal Facilities will be established based on the study.

A program for disposal of clinical waste in some selected hospitals in the Colombo Region is presently underway. The Ministry of Health intends to prepare an Action Plan island-wide for the management of clinical waste. The Western Provincial Council has made arrangements to establish a Waste Management Authority and a draft Act is being developed for this purpose. The Ministry of Provincial Councils and Local Government also plans to establish a Waste Management Authority at National

Level. Some fiscal incentives are being given to industries under certain conditions to use advanced technology in order to minimize and control pollution.

Adequacy of existing policy directives, legislation and institutional arrangement for Hazardous Waste Management

Though National Legislation concerning the management of hazardous wastes have been in force since June 1, 1996, these regulations have hardly been enforced. Having mere legislation is not sufficient without including the support services.

The absence of proper disposal facilities and lack of sound disposal practices by the generators have led to a myriad of problems in the country .Ignorance about the nature and significance of hazardous wastes is a major constraint. Therefore, awareness among generators and users is essential in order to minimize hazards. The industrialists should understand that the improvement of efficiency will not only minimize waste, but will also result in more profits and increased economic viability.

The local authorities should pay increased attention to hazardous waste disposal practices. For instance, clinical waste though collected separately, is often mixed with other waste when disposed. Awareness on the part of generators and collectors of what wastes are hazardous is a major problem.

Another major constraint is that the land fill sites offered usually take non-toxic, non- hazardous, organic and biodegradable solid waste. There is serious deficiency in providing suitable disposal sites for hazardous waste.

The services provided by universities and research organizations such as Industrial Technology Institute towards the control of industrial pollution are significantly low. Though a considerable number of instruments are available in various laboratories for testing and analyzing hazardous waste, they are not being utilized properly due to various reasons.

Suggestions for strengthening the legal and institutional regime to make Hazardous Waste Management more effective

- Legislation, implementation and enforcement, facilities, infrastructure and support services should essentially be in place for the effective management of hazardous waste.
- The existing legislation should be amended and a separate authority should be appointed specifically for hazardous waste management.
- Hazardous waste disposal facilities along with treatment facilities should be provided in suitable sites.
- The generators and users of hazardous waste should be educated about the nature and " significance of hazardous waste.
- Industrialists should be encouraged to adopt the available waste management principles such as Total Environment Quality Management and ISO 14000 standards, through Clean Technology Options, Waste management Principles etc.
- Industrialists, along with local authorities should work more closely together, towards safe disposal of hazardous wastes

Control of Pesticides

The rapid growth of world‟s population has resulted in the expansion of agricultural land, so as to meet the ever-increasing demand for food products, the world over. One of the major challenges in these intensified agricultural activities and practices is the elimination of harmful pests and pathogens. In view of this, the large-scale use of pesticides has become an unavoidable fact in both the developed and developing world.

What are broadly referred to as pesticides consist of a wide range of chemicals including insecticides, fungicides, rodenticides, plant growth regulators and supplementary agents.

Although some pesticides are extracted from natural materials, a large array of synthesized chemicals have come into wide use during the recent past, which have in turn become major pollutants of inland and marine waters and agricultural soils leading to serious environmental and health hazards. Pesticides are predominantly toxic chemicals. The misuse of such agrochemicals, especially in excess, has made the environment extremely vulnerable particularly in the developing countries such as Sri Lanka. Therefore, the government regulatory agencies have drawn increased attention towards the import, storage and use of pesticides.

Existing Policy Directives, Legislation, Institutional Arrangement For Pesticide Control

Sri Lanka as well as many other countries often have more than one organization looking into pesticide control from different angles and viewpoints.

The responsibilities of different institutions in Sri Lanka are listed below.

Ministries in charge of Agriculture, Lands and Fisheries:

- Testing new pesticides for effectiveness and safety
- Regulating the safe use of agricultural chemicals - Registering new pesticides
- Monitoring the safe use of agricultural chemicals

Section 4.01 The Central Environmental Authority

Regulation of pesticide residues in the environment

- Establishment of the particle residue limits of pesticides in crops
- Establishment of the analytical method for pesticides in crops and environmental samples
- Monitoring of pesticide and pollutants in crops and environmental samples

Section 4.01 The Ministry of Social Welfare

- Safety evaluation of the toxicities of pesticides and pollutants
- Establishment of the tolerances and the maximum residue limits of pesticides in crops
- Establishment of the analytical method for pesticides in crops and environmental samples
- Monitoring of pesticides and pollutants in crops and environmental samples

A number of laws have been enacted to control the formulation and use of pesticides in order to prevent potential hazards. The magnitude of harmful effects of pesticides is often immeasurable.

a) Control of Pesticides Act, No.33 of 1980
b) Malathion Control Act, No.22 of 1985
c) Coconut Research Ordinance
d) Rubber Research Ordinance
e) Customs Ordinance

Section 4.01 Control of Pesticides Act, No.33 of 1980

This act is defined as *'an act to provide for the licensing of pesticides, to regulate import, packing, labeling, storage, formulation, transport, sale and use of thereof,' for the appointment of a licensing authority for pesticides; for the establishment of a pesticide formulary committee and for matters connected therewith or incidental thereto,*

Accordingly the licensing authority for pesticides is the Registrar of Pesticides who is responsible to the Director of Agriculture.

The Pesticide Formulary Committee consists of the Director of Agriculture, Registrar of Pesticides and less than 8 persons experienced in the use and control of pesticides as appointed by the Minister.

Malathion Control Act, No.22 of 1985 contains provisions to prohibit the possession, transport, sale and use of Malathion except those persons duly authorized by the Director General of Health. According to the act, the State is the sole authority for import of Malathion. However, guidelines should be set for import, preparation and storage of Malathion.

Coconut Research Ordinance (Cap 440), last amended in 1984, established the Coconut Research Board for the purpose of establishing and maintaining a Coconut Research Institute and for furthering scientific research in respect of coconut and problems concerning the industry, particularly the prevention and cure of pests and diseases. However, the manner in which the research should be carried out is not specified in the ordinance. This should be given adequate attention to ensure that such activities do not harm the environment.

The same applies to the Rubber Research Ordinance, which established the Rubber Research Institute.

Customs Ordinance

The pesticides that are being used for agricultural purposes in Sri Lanka are mostly imported, either in the formulated form or as active ingredient form. The provisions under the Customs Ordinance enable the Director General of Customs to appoint warehouses for goods. However, there should be guidelines for the selection of warehouses depending on the chemical properties of the substance concerned. Forfeited goods that could pollute or adversely affect the environment when exposed should have safety measures for disposal.
Although there are no specific legislation under the name of Toxic Chemicals, they have automatically been included in the regulations relating to Hazardous Waste and Pesticides. Therefore, the same legal arrangements apply to toxic chemicals.

Adequacies of existing Policy Directives, Legislation, Institutional arrangement for Pesticide Control

Inadequacies of provisions pertaining to spillage of pesticide formulations, disposal of pesticide waste, unsafe disposal of empty pesticide containers and storage of pesticide in bulk have been identified in the Pesticide Control Act.

Guidelines for the selection of site for manufacturing and storage have to be formulated especially to prevent accidental pollution of the environment. The selected site should be away from residential areas and located at specified distances, away from water sources, taking into mind the height above sea level, rate of seepage etc. The exposure of empty pesticide drums to atmosphere and weather is a huge threat to human life. Use of pesticides in places close to streams and other inland water bodies should be regulated, and the CEA and other environmental authorities should be given the responsibility to monitor whether any given area is free of pesticide residues. With regard to the Rubber Research

Ordinance and the Coconut Research Ordinance, the manner in which the research should be carried out is not specified. This should be given adequate attention to ensure that such activities do not harm the environment.

In the Customs Ordinance there should be guidelines for the selection of warehouses depending on the chemical properties of the substance concerned. Forfeited goods that could pollute or adversely affect the environment when exposed should have safety measures for disposal.

7. EMERGING ISSUES AND TRENDS INCLUDING POSSIBLE AREAS OF FURTHER REGULATIONS

The absence of proper disposal practices by the generators have led to a myriad of problems in the country. Ignorance about the nature and significance of hazardous wastes is a major constraint. Therefore, awareness among generators and users is essential in order to minimize hazards. The industrialists should understand that the improvement of efficiency will not only minimize waste, but will also result in more profits and increased economic viability. The local authorities should pay increased attention to hazardous waste disposal practices. For instance, clinical waste though collected separately, is often mixed with other waste when disposed. Awareness on the part of generators and collectors what wastes are Hazardous is a major problem.

Another major constraint is that the land fill sites offered usually take non-toxic, non-hazardous, organic and biodegradable solid waste. There is serious deficiency in providing suitable disposal sites for hazardous waste. The services provided by universities and research organizations such as Industrial Technology Institute towards the control of industrial pollution is significantly low. Though a considerable number of instruments are available in various laboratories for testing and analysing hazardous waste, they are not being utilized properly various reasons.

Private Sector Participation

Private sector partnership in solid waste management is an essential component to be encouraged. The existing recycling industries should be encouraged to participate more in the development of infrastructure facilities in collection and transportation of waste. Recycling of glass, metal, paper etc. needs to be encouraged with a viable small and medium scale industrial promotion strategy with adequate protection. Establishment of recycling plants at provincial/regional level can be promoted through such an attractive financial and technical support package. Such an environment would be a precondition for any meaningful participation of private sector in waste collection and disposal.

Private sector participation on composting of organic waste also shall be encouraged by providing more infrastructure facilities in collection and transportation of waste. A proper market also should be established by encouraging farmers to use compost as a soil conditioner. Policies should be developed to encourage private sector involvement in recycling of waste considering waste as are resource.

Community Participation

Cooperation and participation of the community in solid waste management is essential in implementing any solid waste management strategy. Solid waste is generated by each and every individual. On the other hand the public displays strong emotions on the environmental and of mismanagement of solid waste. In general, the public looks at solid waste management as a function of Local Authorities without considering the important role that can be played by them to ensure solid waste management in an environmentally sound manner which in turn reduces their health costs. Reduce, reuse and recycling of waste can not be performed without active participation of the community. As indicated earlier, sorting of waste at source plays an important role to get private

sector partnership in solid waste management especially in the recycling industry .Therefore, community participation should be encouraged through education and awareness creation as much as possible. Community involvement in the decision making process in developing solid waste management strategies should be encouraged at its inception to make the implementation of any solid waste management program a success. Positive cooperation of the community in solid waste management will help the community itself to live in a healthy environment which is the most important factor in our life.

Role of the Government

The government shall take the initiative to provide infrastructure facilities to establish proper waste collection and transportation system of solid waste to reduce haphazard disposal practices and to ensure disposal of waste in an environmentally sound manner. This will facilitate recycling industry to make their production processes economically viable. A system of user fees should be introduced to cover the operations in an appropriate manner. In the absence of private sector partnerships at the initial stage in solid waste management due to inadequate infrastructure facilities, the Government has to provide initial investment to establish soil waste management practices in the counter The Government can thereafter gradually reduce the cost of investment to a certain thresh hold limit while encouraging private sector involvement in solid waste management, in sustainable manner. National policies should be developed to the implementation of the National Solid Waste Management Strategy. It is important that suitable regulatory controls are also evolved in order to implement these policies properly.

Need for multisectoral partnerships and interactions in solid waste management

Solid waste management should not be a responsibility of the Local Authorities alone. It is the responsibility and obligation of all sectors including the Government, general public, private sector, and community groups at various stages. The facilities and the incentives available for the industrial development should also be given to the Local Authorities in developing and implementing solid waste management strategies. The cooperation of all sectors in solid waste management strategies. The cooperation of all sectors in solid waste management shall be obtained by promoting all concern through education and awareness creation island wide.

Suggestions for strengthening the legal and institutional regime to make Hazardous Waste Management more effective are :

- Legislation, implementation and enforcement, facilities, infrastructure and support services should essentially be in place -for the effective management of hazardous waste.

- The existing legislation should be amended and a separate authority should be appointed specifically for hazardous waste management.

- Hazardous waste disposal facilities along with treatment facilities should be provided at suitable sites

- The generators and users of hazardous waste should be educated about the nature and significance of hazardous waste.

- Industrialists should be encouraged to adopt the available waste management principles such as Total Environment Quality Management and ISO 14000 standards, through Clean Technology Options, Waste management Principles etc.

- Industrialists, along with local authorities should work more closely together, towards safe disposal of hazardous wastes.

CONCLUSION

Chemicals are widely used in everyday life. Thousands of chemicals are used in industry and food production. Currently, more than 110,000 types of chemicals are commercially available. Each year, more than 1,000 new chemicals are added to the list. Industrial expansion has greatly increased the use of chemicals and consequently the production of chemical wastes containing toxic and hazardous substances. The generation, storage, handling, transportation, treatment and disposal of hazardous industrial wastes must therefore be strictly monitored. The improper use of toxic chemicals for industrial, agricultural and other purposes, and the indiscriminate disposal of hazardous wastes can endanger public health. Effective regulation and carefully monitoring control measures are therefore, vital to ensure proper handling and safe use of toxic chemicals.

In the South Asian region in particular, the hazardous wastes released by industrial plants have been responsible for a large number of assaults on water, air and land. The pollution of inland and coastal waters by hazardous industrial wastes is widespread in the region.

All the action programme areas are dependent for their successful implementation on intensive international work and improved coordination of current international activities, as well as on the identification and application of technical, scientific, educational and financial means. To varying degrees, the action programme areas involve hazard assessment, risk assessment, risk acceptability and risk management.

Effective control of the generation, storage, treatment, recycling and reuse, transport, recovery and disposal of hazardous wastes is of paramount importance for proper health, environmental protection and natural resource management, and sustainable development. This requires the active cooperation and participation of the international community, Governments and industry. Prevention of the generation of hazardous wastes and the rehabilitation of contaminated sites are the key elements, and both require knowledge, experienced people, facilities, financial resources and technical and scientific capacities. The following action programme areas are important: (a) promoting prevention and minimization of hazardous waste; (b) promoting and strengthening institutional capacities in hazardous waste management; (c) promoting and strengthening international cooperation in the management of transboundary movements of hazardous wastes; and (d) preventing illegal international traffic in hazardous wastes.

Industrialization of South Asian region has led to the generation of Chemicals and Wastes and their management and handling in the environmentally sound manner. The risk due to chemicals and wastes has forced the countries in the region to formulate laws relation to handling and their management without posing risk to the human health and the environment. India has formulated several sectoral laws on the chemical, hazardous waste, solid waste etc. Other countries, which have formulated such legislation, are Sri Lanka, Pakistan, Nepal, and Bangladesh. These countries have also become parties to the relevant conventions relating to the chemicals and waste.

REFERENCES

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Baker, S. L. and B. K. Gyawali, 1994.Promoting proper pesticide use in Nepal, Kathmandu", in policy analysis in agriculture and related resource management.
3. Centre for Science and Environment, State of Indian Environment: Citizen‟s fifth report 1999.
4. Central Pollution Control Board: Annual Report 1999-2000.
5. Central Pollution Control Board: Pollution control acts, rules regulations, rules and notifications issued thereunder, 1998.

6. Central Pollution Control Board CPCB (2000a) „Polluting industries". Parivesh newsletter 2000.
7. Country Profile on Environment –Nepal, 1997, JICA.
8. 7. Dahal, L., 1995. "A study on pesticide pollution in Nepal", National Conservation Strategy Implementation Project. National Planning Commission in collaboration the World Conservation Union.
9. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
10. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, Islamabad.
11. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
12. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
13. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
14. Human Development Report 1999, UNDP.
15. JICA Annual Report, 1999, JICA.
16. M. P. Mathur, 'Solid Waste Management Practices in India: Problems and Prospects', Urban India (New Delhi), vol. xtv, no. 1 (January-June 1994.
17. Ministry of Environment and Forests, Policy Statement for Abatement of Pollution, New Delhi, 26 February 1992.
18. Ministry of Environment and Forests: Industrial Waste Management, 1990
19. MoEF (1997) White paper on pollution in Delhi with an action plan. New Delhi: Ministry of Environment and Forests.
20. Ministry of Agriculture/Winrock International Central Bureau Statistics, 1994a. A Compendium on the Environmental Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
21. National Planning Commission (1992). The Eight Plan. His Majesty"s Government of Nepal, Singh Durbar, Kathmandu, Nepal.
22. O. P. Dwivedi, `India: Pollution Control Policy and Programs', International Review of Administrative Sciences, Vol. 43, No. 2 (1977).
23. O. P. Dwivedi and Brij Kishore, 'Protecting the Environment from Pollution: A Review of India's Legal and Institutional Mechanisms', Asian Survey, Vol. 22, No. 9, 1982.
24. Planning Commission, Eighth Five Year Plan, 1992-97, New Delhi, 1992.
25. Report of the Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (New Delhi: Department of Science and Technology, 15 September 1980.
26. The Environment (Protection) Act, 1986 (New Delhi: Publications Division, 1986).
27. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
28. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report), JICA Nepal Office, Kathmandu, Nepal.
29. The World Fact Book 1999, CIA.
30. UNDP/GEF,1999, Country Programme Strategy: Nepal, Kathmandu, Nepal.
31. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal.
32. World Bank, September 1998, World Development Report, Knowledge for Development 1998/99.
33. World Development Indicators, 1999, The World Bank.
34. World Development Report, 1999, The World Bank.

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER IX

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: FORESTRY

BANGLADESH

Key Issues: Forest Depletion; Forest Management; Wildlife Management; Livelihood of Local Peoples; Re-generation of Forests; Eco-development; Enforcement and Compliance; Peoples Participation; Environment Education;

Policy Framework: National Environment Policy (1992); National Environment Management Action Plan, 1992; Agriculture Policy (1999); country‟s Ninth Five Year Plan, 1997-2002;

Key Legislation: National Forest Policy, 1894; The Forest Act (Act No. XVII) of 1927; The National Forest Policy of Pakistan, 1955; The National Forest Policy of Bangladesh, 1979; The National Forest Policy of Bangladesh, 1994; The Bangladesh Wildlife (Preservation) Amendment order 1973; The Brick Burning (Control) Act 1989; The East Bengal Protection and Conservation of Fish Act, 1950 ; The Protection and Conservation of Fish (Amendment) Ordinance, 1982; The Protection and Conservation of Fish Rules, 1985;

Key Institutions: Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; Forest Research Institute, Bangladesh; Forest Industries Development Corporation; Institute of Forestry and Environmental Sciences;

1. INTRODUCTION

Bangladesh is rich in tropical forests. The total forest area is 2.46 million ha which is 16.85% of the landmass of the country. Out of which 1.46 million ha forests are managed by Forest Department. The remaining 0.73 million ha termed as Unclosed State Forest (USF) controlled under Land Ministry and 0.27 million ha are village (Homestead).

2. SUSTAINABLE USE OF FORESTS

The forests of Bangladesh nave been managed with a view to sustainable production of forest resources. The sustainable management concept was started at the beginning of the better management in Bangladesh. Several means were adopted from time to time for sustainability. For sustainable use and better management the forests are divided into circles Divisions, Ranges and Beats. In each Division forests are managed under a working plan (Forest management plan) with a definite period i.e. from 10-20 years. There are several silvicultural system practiced according to the nature of forests for sustainability.

The Government managed of hill forests began in the 1870 s under a system of selection felling and natural regeneration. Subsequently, in the 1930's a system of clear felling followed by artificial regeneration or plantation appeared, while a system of selection-cum-improvement filling continued. The prescriptions for plantations included a specification to establish a Natural Regeneration Plot (NRP) of six to ten meters width around every 40 ha plantations. During Second World War, these

forests were heavily exploited and increased exploitation continued to meet the rising demands of forest products.

In the plain land sal forests the silviculturaI prescriptions included clear felling with regeneration mostly from coppice, simple coppice and coppice with standards on a rotation of about 20 years and afforestation of blanks operated under a taungya system from 1925. None of these practices sustained the forests and they continued to deplete in size and stocking. In the beginning of 1980's these forests were started to manage with participatory concept by establishing agro-forestry and woodlot plantations for sustainable use of forests these attempts have been giving better result.

The Sundarbans mangrove forests have been effectively managed since 1923 for sustainable use by adopting selection system with an exploitable girth limit for the main species and a felling cycle of 40 years subsequently, the plans reduced the felling cycle to 20 years.

By 1894 the National Forest Policy was promulgated and this provided the foundation for all future Acts and Rules which to this day are used to underpin the administration of the Sundarbans. The principal policy directives and legislation which affects integrated forest management of Sundarbans are:

The Forest Act (Act No. XVII) of 1927
The National Forest Policy of Pakistan, 1955
The National Forest Policy of Bangladesh, 1979 The
National Forest Policy of Bangladesh, 1994
The Bangladesh Wildlife (Preservation) Amendment order 1973
The Brick Burning (Control) Act 1989
The East Bengal Protection and Conservation of Fish Act, 1950
The Protection and Conservation of Fish (Amendment) Ordinance, 1982
The Protection and Conservation of Fish Rules, 1985
.

3. FOREST CONSERVATION

Hill Forests

Forest Conservation in Bangladesh started about 130 years ago in the hill forests with the declaration of 5670 square miles Government Forest in the Chittagong Hill Tracts under section 2, Act VII of 1865 published in Calcutta Gazette in 1st February 1871. Second step of hill forests conservation was to declare forestlands as reserved forests. Sitaparhar of Rangamati district (Chittagong Hill tract) was the first to be declared a reserve forest in 1975. Subsequently for conservation of Forests many forests were declared as reserved forests. 12644 sq. kilometer of forests were declared ad reserved forests up to 1987 in Bangladesh and the process of reserving is going on. Several attempts were taken for conservation of forests and forests and forest resources in Bangladesh, important of which is Forest Reservation, raising of plantations etc. These are described bellow.

Mangrove Forests

Tidal forests of Bangladesh includes the Sundarbans , Chakoria Sundarbans and mangrove plantations. The Sundarbans is the primary component of coastal zone in the Bay of Bengal of Bangladesh. The British Government assumed the proprietary right of the Sundarbans forests under Regulation III of 1828. First conservation started with the declaration of forest areas in Bagerhat and Khulna districts in 1875 and Satkhira district in 1876 under Act. VII of 1855. In 1879 the forests, so reserved, were declared again as reserved forests under the forest Act of 1878 Chakoria Sundarbans were declared reserved forest in 1903. For mangrove plantation in the coastal zones of Bay of Bengal about 12,30,000 acre of newly accreted char lands were declared reserved forests under section 4 of the forest Act, 1927 in 1977.

Plain Land Sal Forest

Plain Land Sal Forests were managed privately by the feudal Land Lord or Zamindars before 1925. conservation of these forests started with the creation of Dhaka-Mymensingh Forest Division in 1925 and many of the Plain Land sal forests like Bhawel ghar, Atia forests were handed over to the forest Department for scientific management. The Forest Department managed these forests by declaring them as reserved forests. Though some forests were handed over to the Forest Department but most of these were nationalized in 1950 under the State Acquisition and Tenancy Act. These forests are no under process of reservation under the Forest Act 192 7.

Plantations as a means of conserving Natural Forests for conservation of natural forests plantation started in the hills forests of Bangladesh in 1872. Plantations are raised in clear cutting areas, bare lands, scrublands and other degraded forest lands.

Legally the Plain Land Sal Forests were two types vested forests belonging to private owners and Acquired forests. Privately owned forests acquired by Government under State Acquisition and Tenancy Act of 1950. Later on these forests were declared Reserved Forest under section 4, Forest Act, 1927. Out of which some forests were declared as Reserved Forests under Section 20 of Forest Act, 1927.

The most of the Plain Land Sal Forests form slightly elevated tracts with a maximum height of 60' from the surrounding plains. The flat ridges are running north to south forming an irregular mass of high lands with gentle slopes. These high lands are locally known as "Chala lands". These Chala lands are intercepted by numerous depressions in the form of long and narrow valleys and are locally known as "Baid lands". On the other hand some forests are irregular mass of broken hills along the foot hills of Garo Hills. The hills are of irregular heights with a maximum over 500' from the plain level. These forests are very seldom contiguous and are generally intermixed with cultivation and habitations of local tribal people who are mostly Garos, Koch, Mandais and Hajongs. The ridges are running north to south and the flat valleys suggest a gentle southward slope. The mean annual temperature is 77°F with maximum 100.5°F and minimum 39°F. There is no occurrence of frost. The annual rainfall varies from 50" to 100".

The entire forest tract was under the management of Zaminders who did not manage the forest scientifically. The promulgamation of the Bengal Private Forest Act 1945, was the first step to bring these private woodland under the Government for scientific management. The Zaminder got the scent and started felling trees ruthlessly to earn maximum money before the forests are taken over by Government. The partition of British India in 1947 has accelerated the tempo o felling due to migration of Hindu Zaminders to India. As a result the forest was depleted beyond description.

The first clear felling was made during 1953-54 in suitable beat before initiation of any regular working scheme and the area was regenerated artificially mainly with Sal. Experiment was also carried out to find out the suitability of the area for growing Tendu and bamboo. Result of such experiments is reported to be encouraging. Large-scale afforestation program was taken up under Development Schemes both with Sal and Tendu. Later on afforestation of area with Tendu was abandoned and Tendu plantation so created was burnt as per instruction from Government as anti-smuggling measure.

Village Forests

Village Forests of Bangladesh is very important storehouse of forest produce specially for timber, fuelwood, and bamboo which may fulfill rural house hold demand throughout the country. Village forests include trees growing mostly on homestead land around dwelling houses in the villages, farms, marginal lands and wastelands. The tree cover in village forests constitute 0.27 million ha and are likely to increase in area as population grow and natural forest continues disappear. At least 149 species of natives and exotics trees have been identified in the Village forests.

Logging

Timber is collected from the forests by coupe marking method. At first, the coupe area is layed and demarcated. Then the standing trees are marked species wise-and standing volume of timber and firewood etc calculated. After coupe marking timber and firewood are disposed of in two ways -

(i) By departmental collection and then sale by auction, sealed tender or permits.
(ii) By auction or by seal tender, rate fixed by competition under conditions contained in sale notices approved of by the conservator.

Logging operation is done in two ways such as -
(i) Manual or traditional logging
(ii) Mechanical logging.

In Bangaldesh traditional logging is most common where axes and saws are generally used. Bangladesh Forest Industries Development Corporation (BFIDC) uses mechanical logging method for collection of timber besides manual logging.

The trees are felled and logged. The logs are measured, marked mid recorded on the spot by local forest staff. The timbers are then loaded in trucks or boats in accessible areas or are shoulder borne to the nearest road or river and loaded in trucks or boats and headed for deports or markets. Year wise outurn of timber and fuewlwood from the national forest are given below:

Year	Timber (cu m)	Firewood (cu m)
1984 – 85	493.42	888.31
1985 – 86	560.71	989.81
1986 – 87	361.48	670.11
1987 – 88	398.52	739.46 --

Source: Statistical yearbook of Bangladesh, 1991.

In Bangladesh all kinds of felling of trees from natural forests have been stopped up to the year 2000 in order to preserve biodiversity of the country under G.O. No. Sha - 2/MOEF-192/90/580 dated 11.9.90. This ban is still in force.

Forest Land Conversion

Bangladesh is a densely populated country in the world. The per capita forest is 0.02 ha which is very low and not sufficient. Once upon a time about 40% area of the country was covered with Forests. But due to population increase many forestlands were converted into homesteads and agricultural lands.

The world largest Sundarban mangrove forests were double their present size (6017 sq.) in the century. Zaminders on the northern boundaries were allowed to reclaim as much of the forests bordering on their land as they could. The British Government assumes the proprietary right to the forests in the Sunaarbans under regulation III. Large leased were granted to capitalists including Europeans for clearing of forests into agriculture land for cultivation under this regulation. This large-scale destruction of forest continued for more than four decades when the Government realized the adverse effects of conversion of forests and bundling up of land. Leasing for conversion of forestland into agriculture in

the Sundarbans was stopped in 1875. The Sundarbans is now free from encroachment, habitation and agriculture.

Before 1925 the owner of the plain land Sal forests were the local Zaminders or feudal land lords. So, many forestlands were coveted into agriculture, homesteads, and markets, school lands. These forest areas were not reserves or put under forest management except few for long periods since nationalized in 1950s. Now-a-days many plain land Sal forests are encroached illegally and converted into agriculture, homestead and commercial purposes. The forest Department tries to recover the encroached lands. Participatory agroforestry and woodlot plantations were raised by recovering the forest areas.

In the hill forests illicit jhumming or shitting cultivation is a great problem for forest management. Although shifting cultivation has been prohibited in the forests reserves for over 90 years, the effect of jhumming is still evident. Apart from destruction of vegetation and its effect on forest regeneration, jhumming exposes the ground to erosion with the resultant loss of soil and the silting up of the navigable rivers. Vast area of unclassed state Forestland is subjected to shifting cultivation and encroachment with the formation of large hydaral lake at Kaptai and the subsequent displacement of the tribal population from the rich-fertile reverine land in the recent past the problem of encroachment inside the reserve forest has started taking alarming turn. In some places tribal villages have been established right inside the reserve forests. This matter is now with the administrative authorities and the eviction of the unauthorized encroachers in now under process. Many forest villages were established by the Forest Department within the reserve or protected forests in Chittagong and Cox's Bazar hill forests for getting labour for raising plantations. As a result many forest lands were converted into homestead and agriculture land. The new recruitment of Forest villager has been stopped since independence.

In the natural areas of Bangladesh many village forests areas have been converted into homestead and agriculture lands. On the other hand many agricultural lands are converted into homesteads covered by trees.

Non Timber forest products

Non timber forest products means all produce including all goods of biological origins as well as services derived from forest or land under similar use and excluding wood in *all* its form.

The increase in emphases on non-timber forest products has accelerated in recent years firstly because of high social and commercial values and secondly because the immediate consequence of the growth *in interest in* these products has been the increase in demands placed upon the Forest Department for day to day management. Due to population pressure and over exploitation non-timber forest products in Bangladesh.

Forest Fires

Hill forests Fires are of infrequent occurrence and usually of small extent in the high forests of Chittagong and Cox'x Bazar and are not very serious problem. But in young plantains fire is a serious problem and plantations should be protected by cutting clear fire lines.

The natural forests of Chittagong Hill Tracts are principally evergreen and do not suffer much from fire. However, ground fires sometimes spread into the edges of reserve from jhumming in adjacent Unclassed State Forests and destroy regeneration. Fire is also a hazard in the pure bamboo stands when the bamboo has flowered and died. Fire is a constant danger to the plantations, which are much more in flammable than kamafuli paper Mills for extraction of bamboo and by the Forest Department Corporation for extraction of timber large labour force live in the forest camps. Their presence in the forest specially in drier months have been found to be one of the major couses of fire occurrence in the forests.

Fires are frequent in the forests of sylhet especially during December to March. Sometimes these fires continue to burn for days togather causing heavy damage to the tree growth and bamboos. These fires normally originate from the adjoing private forest and Unclassed State Forests. Extinguishing of these fires are extremely difficult due to the hilly nature of the area.

The following methods are generally adopted to control fire in the hill forest.

1) By fire lines: Every year, fire lines are cut and kept clean.

2) By fire watching arrangement: Every year during dry season special firewatcher is engaged to watch and protect fire.

There are two fire protection rules in the hill forests. These are-
1) The Sylhet Forests (protection from Fire) Rules, 1954.
2) The Chittagong and Chittagong Hill Tract. Reserved forests Fire Protection Rules, 1954

4. POLICY AND LEGISLATION

Forest Policy as a means of conservation. The first forest policy was produced in 1894 vide circular No 22.F. dated 19th October 1894. According to the policy to constitute and preserve forests, tile rights and privileges of the users of the forest area have to be restricted and regulated. The uses of forestlands are for preservation of physical and climatic conditions. Then the Forest Policy, 1894 was reoriented in 1955 and 1962.

The National Forest Policy of Bangladesh was first formulated in 1979. The National Forest Policy of 1979 was revised and a new National Forest Policy 1994 was adopted in the light of demand of the time and overall prevailing conditions in the Forestry Sector. The Forest Policy, 1994 gave emphasis on forest conservation and scientific management of the forests for economic development and maintenance of ecological balance in the country. The Forest Policy proposes to increase the forest cover of Bangladesh from the current level of 1 percent to 20 percent by the year 2015; 10 percent reserved forest to be brought under protected areas; and provide protection for natural forest areas while encouraging investment in afforestation and agroforesty.

National conservation strategy was, initiated in 1986 upon the realization that sustainable development depends on conservation and management of natural resources and their supporting ecosystem.

Legislation for Forest Conservation:

For conservation and protection of forests and forest resources several forest acts were introduced from time to time which are as 1follows:-

Years .	**Short Title**	***Remarks***
1865	The Act 1865	Repealed
1878	The Indian Forest Act 1878	Do
1890	The Forest Act 1890	Do
1891	The Amending Act 1891	Do
1901	The Indian Forest (Amendment) Act 1901	Do
1911	The Indian Forest (Amendment) Act 1911	Do
1914	The Repealing and Amendment) Act 1914	Do
1918	The Indian Forest (Amendment) Act 1918	Do
1920	The Eroluliam Act 1920	Do
192 7	The Indian Forest Act 1927	Modified
1949	The Forest (Amendment) Act 1990	Do

For wildlife conservation and protection the following acts were introduced.

Year	Short Title	Extent
1879	The Elephant Preservation Act 1879	The whole
1912	The Wild Birds and Animals Protection Act 1912	
	Do	

The Forest Act 1927 and the. Bangladesh Wildlife (Preservation) (Amendment) Act 1974 are two acts to provide legal protection of wild flora and fauna respectively. There are also the Private Forest Ordinance. 1959 and the Atia Forest (Protection) ordinance, 1982. The Brick Burning (Control) Act 1989 came into force to ban firewood from brick burning. The Brick Burning (Control) Act 1989 was amended in 1992 and Brick Burning (Control) (Amendment) Ordinance came into force in 1992 as a strict measure of conservation of forest resources. Forest Transit Rules, framed under the provision of the Forest Act 1927 are in force to control movement of forest produces from both public and private forest lands. Protection against loss and damage of forest resources is handled through effective patrol with arms in the forest by applying Act 1927. For effective patrol and strong communication recently Forest Department introduced wireless and Waki-Taki system.

For conservation of forest, forest resources, wildlife, environment and to maintain ecological balance Forest Department has been maintaining national parks, game reserves, wildlife sanctuaries, bird sanctuaries and world heritage.

Main Provisions of these Rules are as follow-

Sylhet Fire Protection Rules

1) These rules come into and, remain in force during the period from the first day of November in one year to the first day of June in the next year.
2) A person intending to clear by fire any standing forest o6 grassland near a Government forests shall follow the following directions namely-
   i) he shall give at least one weeks notice to the nearest Forest officer of his intention to do so;
   ii) he shall clear a belt of land at least 20 feet wide nearest to the government forest.
   iii) he shall not choose a day or time for such burning when high wind is blowing.
   iv) he shall light the fire in a direction contrary to the prevailing wind.

3) A person desirous of burning, on land adjoining a Government forest, wood, grass or weeds, or other out materials, shall collect the materials into heaps, and bum it separately in such a way that the fire may not endanger the Government Forest.
4) A person collecting inflammable forest produce, such as grass, bamboos etc., on land adjoining a Government forest, and a holder of a permit to collect such material from a Government forest, shall stack the material so collected in and open space, as far removed as possible from such forest.
5) Persons traveling on roads passing through or along the boundary of a Government forest shall not camp at any place other than a ground cleared and set apart for the purpose of camping by the Forest Officer, who shall publish every year a list of such grounds in the vicinity of a Government forest. Person so camping shall light fires they may require for cooking or other purposes in such a way as not to endanger the Government forest or the building or property on the camping grounds and shall extinguish all such fires before leaving the camping ground.
6) No person shall carry burning wood, firebrands, torches, smoldering material or naked flame in any form, through or along a Government forest.

National Parks and Sanctuaries/ Protected Areas and wetlands:

The Protected Areas of Bangladesh include National Park, Wildlife Sanctuary and Game Reserve. Madhopur National Park is the first National Park as well as protected area of Bangladesh, which was established in 1962.

The government has so far declared seven Wildlife Sanctuary, four National Park and one Game Reserve in the forest areas through notification in the official gazette. In addition there are two wildlife sanctuary in the forest areas and these two protected areas have not yet been notified under the above Wildlife Order. Thus, at present, there are 14 Protected Areas in the forests of Bangladesh.

5. RECREATION AND TOURISM

The Sundarbans is famous for recreation and tourism in Bangladesh, particularly for its special vegetation, location, configuration, environment and nature, wildlife, fishing etc.

Winter season is more suitable and preferable for tourism. One can visit the Sundarbans by launches, trawlers, speedboats etc. There is no mud, metallic or air road in the Sundarbans except water path. There are some organizations in Dhaka, Khulna and Mongla who conduct package tourage in the Sundarbans.

Non allowable activities during visit

1. Carrying of Guns, Hunting, Shooting, felling, removal of trees are not allowed.
2. If Gun is found action will be taken according to the Bangladesh Wildlife (Preservation) (Amendment) Act 1974.

A desire to establish tourism in Bangladesh has been demonstrated for many years, featuring a first master plan for the period 1965 to 1985 and a second strategic Master plan is 1985 for the ten year to 1995. Following the latter, a National Tourism Policy was formulated in 1992. Bangladesh is a founder member of The World Tourism Organization (WTO) established in 1975: The National Tourism Policy, 1992 proposed that, because of its unique and diverse attractions of international renown, the Sundarbans reserve Forest should be developed as the springboard for the tourism industry for the country as a whole.

Ecotourism is very much suitable and preferable in the Sundarbans. Wildlife viewing is one of the several attractions.

BHUTAN

Key Issues: Key Issues: Forest Depletion; Forest Management; Wildlife Management; Livelihood of Local Peoples; Re-generation of Forests; Eco-development; Environment Education; Enforcement and Compliance

Policy Framework: Paro Resolution on Environment and Sustainable Development (1990); National Environment Strategy; National Forest Policy, 1974

Key Legislation: Forest Act 1969, Forest and Nature Conservation Act 1995, Mines and Management Act 1995 and the Environmental Assessment Act 2000 Paro Resolution on Environment and Sustainable Development (1990); National Forest Act (1969); Land Law (1979); Pastureland Law (1979); Inheritance law (1979); Livestock Law (1979); Wildlife Act (1985); Plant and Quarantine Act and regulations (1988); Mining Act (1995);

Key Institutions: National Environment Committee; National Environment Commission; Ministry of Rural Development; Ministry of Rural Development

1. INTRODUCTION

Bhutan has devoted over 26% of the total land area to extensive protected areas systems reflecting the strong biodiversity conservation policy and the ethic of the people. The extensive protected area system in Bhutan stretches from the sub-tropics in the south, temperate in the central interior, to the alpine zone in the north. This protected area system serves as a unique system of in-situ conservation of biodiversity.

Several plant species listed under schedule I of Bhutan‟s Forest and Nature Conservation Act, 1995 are also from the alpine and sub-alpine regions and have very specific micro-habitat requirements. For instance, the threatened species P*odophyllum hexandrum* (Himalayan May Apple) grows only among Berberis-Juniperis shrubberies in rocky areas, and frequent fires and systematic removal of shrubs from such areas may cause the local extinction of this species. Another e.g is *Circaeaster agrestis*, a rare plant that grows only under rock shelters and caverns.

Recognizing these factors, the Royal Government of Bhutan has established a system of national parks, wildlife sanctuaries and nature reserves and has a policy of maintaining forest cover of more than 60% of the total land area. Presently, Bhutan has more than 70% of the total land cover under forest cover and more than 26 percentage of the land cover under existing protected areas system.

In the past five years, however, there has been a major shift in forest policies. The present forest policy stipulates that revenue generation is only secondary to conservation and protection. The Forest and Nature Act of Bhutan, 1995 also stipulates that all forest harvesting or logging operations should be strictly based on approved management plans and sound ecological considerations to ensure sustainability.

Experiences from other countries with similar topographical relief and economic conditions have demonstrated how difficult it is to exploit mountain forests in a genuinely sustainable manner. In spite of good intentions, deforestation and severe degradation were often the end results. As a consequence of both internal and external experiences, it became increasingly apparent that the indirect benefits of forests far outweighed the direct cash revenues from the sale of timber. According to the new government policy, Bhutan's forests are to serve the following prioritized needs:

- watershed maintenance and general protection against erosion;

- maintaining a stable climate and Bhutan's rich biodiversity;
- use by rural farmers for grazing, firewood collection, fodder, timber for construction, and non-timber products;
- supplying raw materials for the growing wood-based industrial sector; and
- export (only if sustainability permits).

2. DIRECT AND UNDERLYING CAUSES OF THREATS

- Bhutan‟s 3.1 percent per annum rate of population increase puts ever increasing pressure on the country‟s fragile environment and natural resource base. Overgrazing by domestic livestock, both in range and pasture areas where it leads to attrition or loss of species, reduction of productivity, and erosion; and in forest areas where it leads to loss of reproduction of forest species and to changes in vegetation composition.
- This is exacerbated by the increasing population and its reliance on wood for fuel. It occurs wherever there is human habitation but it is especially notable around population centers including permanent military posts. The total demand for wood and wood products in terms of volume is dominated by fuelwood demand. The total consumption of fuelwood is estimated at 1,318,700 cum of which the household consumption is about 89%. The consumption is estimated to grow up to 2,146,200 cum by the end of 2012-13. The use of other fuels is rather small, only about 3% of the total fuelwood consumption.
- Shifting Cultivation
- Forest Fires, which are mostly if not entirely caused by humans.
  Overexploitation of plants and animals, especially through collection (e.g., of medicinal plants), poaching, and heavy use (e.g., of tree species for roofing shingles)
- Inadequate Resource Management, which in turn is caused by inadequacies in policy, legal and institutional arrangements, information and staffing.
- Inadequate Implementation of Policy and Legislation, and inadequate legal system which promotes unsustainable exploitation of biodiversity resources.
- Limited Institutional Systems that promote unsustainable exploitation particularly because of fragmentation of responsibilities involving biodiversity, inadequate coordination between the government units involved, and inadequate authority to achieve biodiversity conservation.
- Inadequate Data and Information on Biodiversity and its use, and inefficient use of the information that does exist.
- Threats from outside national borders, which primarily involve transborder poaching of medicinal plants, and poaching of larger mammals, especially along the southern border.

With its beautiful and largely unspoiled Himalayan setting, its rich flora and fauna, and its vibrant Buddhist culture, Bhutan has become an increasingly popular destination for Western tourists. Besides being an easy generator of hard currency revenue, tourism also provides impetus for the development of important service sector activities such as hotels, restaurants, transportation, and communications services that can also be used by the Bhutanese. Tourism has also helped to promote indigenous cottage industries and handicrafts, and an expanding network of shopkeepers in Thimphu and other frequently visited locations.

Preserving the pristine nature of Bhutan's higher elevations is paramount to maintaining the steady flow of the tourists. Because of the highly fragile nature of mountain ecosystems, damage done takes much longer to undo. Maintaining the integrity of these systems thus requires additional measures of diligence and prevention. If the alpine meadows, streams, and forests that Western tourists are willing to pay substantially more to see are to be preserved, a wide variety of actions will need to be taken to ensure that human impacts are kept well below maximum levels of acceptability.

Among the more pressing environmental problems currently being encountered are:

- the destruction of vegetation through the cutting of slow-growing trees for firewood;

- the erosion of delicate vegetation;
- the creation of "garbage trails" through the indiscriminate disposal of non-biodegradable waste; and

- The alteration of essentially sustainable farming and cropping patterns to unsustainable but highly profitable ones to meet the needs of affluent tourists.

To reduce these adverse impacts, the Ministry of Trade and Industry has drawn up 15 comprehensive guidelines for environmentally friendly tourism.

But there are also socio-economic problems being generated as well and these are less open to solution. Through their lack of awareness of traditional culture and customs, tourists can contribute to the erosion of traditional Bhutanese values and can impose unnecessary pressures on local people, especially in remote areas. Though local people are benefiting from tourism, it has also heightened materialism and eroded traditional community standards. In lieu of extending traditional Bhutanese hospitality at minimal (if any) charge, many villagers now charge rates, which other Bhutanese cannot afford to pay. For example, remote village lodges with few modern facilities often charge as much as an average hotel in Thimphu. In a correlated development, barter economies have been transformed into monetary ones.

Though the impacts and activities themselves stretch across a number of economic and social sectors, their management clearly falls upon the tourism sector in so far as it is responsible for coordinating tourism in the country. A number of the guidelines that submitted by the Ministry of Trade and Industry address the various form of "cultural pollution" currently being experienced. In general, they focus on imposing standards of etiquette, dress, and deportment and limiting tourism activities to select and hence minimal areas of the country. As the tourists themselves cannot be expected to have a proper Bhutanese respect for local tradition, culture, and religion, their guides must be trained in how to influence, regulate, and correct improper behavior.

The Tourism Authority of Bhutan (TAB) is responsible for training and certifying guides. The training involves teaching them about local culture and history and inculcating respect and appreciation for local standards of dress and etiquette.

The forest wealth

The interaction of topography, climate and human use has resulted in the development of a complex pattern of vegetation and habitat types all over Bhutan. The forests of Bhutan can be divided into three eco-floristic zones based on altitudes. Each zone contains a distinct set of eco-zones as follows:

- Alpine zone including areas above 4,000 m of altitude where there is no forest cover;

- Temperate zone which lies between 2,000 m and 4,000 m of altitude containing the major temperate conifer and broadleaf forests; and

- Sub-tropical zone which lies between 150 m to 2,000 m of altitude containing the tropical and subtropical vegetation.

3. CONSERVATION POLICY AND LEGISLATION

Bhutan has retained much of the natural vegetation, intact for several centuries, and is justifiably proud of the efforts made to protect its forests. Forest regeneration remains a top priority for the future too. H.M. the King Jigme Singye Wangchuck has stated that: “Throughout the centuries, the Bhutanese have treasured their natural environment and have looked upon it as the source of all life. This traditional revenue for nature has delivered us into the twentieth century with our environment still richly intact. We wish to continue living in harmony with nature and to pass on this rich heritage to our future

generations". The preservation of the country‟s rich biological diversity can be attributed to two factors, the enlightened leadership and the strong conservation ethic of the Bhutanese people. Conservation is a central tenet of Buddhism that believes in preserving nature.

The importance of protecting nature in all its manifestations has permeated Bhutanese consciousness and has become integral to the Bhutanese way of life. Therefore, preservation of the environment, as well as of sacred and cultural heritage sites is an important and integral part of Bhutanese value system. Through its forest policies, Bhutan is committed to maintaining a minimum of 60% of the land area under forest cover. The Royal Government has always aimed at policies for conservation and the sustainable utilization of natural resources. Beginning from the mid 1960s until now, 26.23% of the area of the country has been declared as protected area. The protected areas consist of four national parks, four wildlife sanctuaries and one strict nature reserve. More than 70% of the protected areas have good forest cover. Management of the protected areas has been entrusted to the Nature Conservation Division under the Department of Forestry Services. The Royal Government of Bhutan created the Forestry Services Division (now Department of Forestry Services) in 1952. The Forest Act of 1969 (now superceded by the Forest and Nature Conservation Act 1995) declared all forestland as Government Reserved Forest whereby the forest department took responsibility of the stewardship of forest resources. Since then, incidences of forest fires, over utilisation of forest products and encroachment of forestland have been controlled to a large extent. More importantly, the National Forest Policy promulgated by His Majesty soon after his enthronement in 1974 encompassed a farsighted vision. Contrary to forest policies in other countries, Bhutan‟s National Forest Policy states that the sale of timber is only of secondary importance. The policy clearly states that for a mountainous country with a fragile ecosystem and an expanding agricultural economy, forestry operations should accord the highest priority to indirect benefits and the conservation role. Successful pursuit of this vision has delivered us to the present state where the environment of the country is an envy of the conservation world.

All forestry operations were nationalized in 1979 with the main objective of protecting the forests from over felling. Also in 1979, a Social Forestry Programme was launched as per the Royal Decree of His Majesty, with the main aim of promoting people‟s participation in the management of forest resources and to reduce pressure on the conventional forest. There are four main goals set to direct the forest policy to ensure that the forest resources are used according to sustainable principles, contributing to social justice and equity. Further, the policy aims to ensure conservation of the environment, and only thereafter aim at deriving economic benefits from the forest as rationally managed resource. The four guiding principles of the forest policy are as follows:

- Protection of the land, its forest, soil, water resources and biodiversity against degradation, such as loss of soil fertility, soil erosion, landslides, floods and other ecological devastation and the improvement of all the degraded forest land areas, through proper management systems and practices
- Contribution to the production of food, water, energy and other commodities by effectively coordinating the interaction between forestry and farming systems
- Meeting the long-term needs of Bhutanese people for wood and other forest products by placing all country‟s production forest resources under sustainable management
- Contribution to the growth of national and local economies, including exploitation of export opportunities, through fully developed forest based industries, and to contribute to balanced human resources development, through training and creation of employment opportunities.

The Bhutan Logging Corporation (now Forestry Development Corporation) was established in 1984. The Forestry Development Corporation executes forestry operations (harvesting and plantations) in the forest management units as per prescriptions of the management plan. The Forest and Nature Conservation Act 1995 clearly states that no Government Reserved Forest will be worked/operated unless there is an approved Forest Management Plan. Timber harvesting, to meet local demand is done from designated forest management units which have approved forest management plan. As of July 1999, 14 management units and three working schemes covering an area of 143 966 hectares had approved management plans,

where forestry operations are going on. Another 11 forest management units covering an area of 141 642 hectares have been inventoried and management plans are under preparation. Tseri (shifting cultivation) which has negative impacts on the environment and forest resources still continues in many parts of Eastern Bhutan. Of the total area of cultivation, nearly 30% is under tseri or other forms of shifting cultivation. The Royal Government is committed to phasing out this unsustainable form of farming. As there is no evidence of an equal area suitable for permanent cultivation, the phasing out of shifting cultivation is a major challenge, which is being addressed throughout the 8th Five-Year Plan. Under the Third Forestry Development Project of the World Bank, Department of Forestry Services is promoting plantations and rehabilitation of abandoned Tseri land in six eastern districts. Due to increase in demand/pressure for forest products, afforestation/ reforestation programmes of barren or degraded forestland and clear-felled areas have been initiated recently to improve the sustainable capacity of forestland. By the end of 1997, the Department of Forestry Services had achieved about 17,123.37 hectares of plantation. Eventually, Bhutan will want to move from being a passive conserver of genetic resources to an active partner in their commercial utilization and international promotion. The hope is to someday develop the technical and legal capacity to undertake the sophisticated genetic research and international negotiations involved in germ plasm development and gene patenting. In addition to its current small scale commercial activities in medicinal herbs and decorative flora, Bhutan would like to develop its own pharmaceutical industry so that it can take proper advantage of its own immense biological storehouse.

A revision of the Forest Act is under consideration by the Government. This revision will ensure consistency and reflect linkages between the draft Forest Policy, draft Forest Act, and draft Social Forestry Rules.

Bhutan was a participatory country in the Gender Analysis and Forestry Training of Trainers Programme of 1992-93, and two staff members of the Ministry of Agriculture participated. A focal point on gender issues was established in the Ministry of Agriculture and the training of planning staff in obtaining better information for planning is envisioned.

With support from the FAO, a workshop on Strengthening Re-afforestation Programmes in Asia (STRAP), a workshop was held on 12-14 December 1995 to finalise a national re-afforestation strategy, in which involvement of the private sector, including industry and communities, was recommended as one of the strategies to solve the problems of limited financial and human resources, and the cost effectiveness of re-afforestation.

The Bhutan Forest Act of 1969 was replaced by the approved Forest and Nature Conservation Act of 1995 during the 73rd session of the National Assembly. A review has been commissioned to redress the rapidly emerging policy issues associated with land distribution, tenure and controls. Given the dramatic increase in orchards and plantation crops, with subsequent encroachment onto restricted forest lands and the displacement of poorer farmers onto marginal lands, the Land Act has been revised to include orchards as well as wetlands, dry lands, and shifting cultivation sites within the 25 acre ceiling.

INDIA

Key Issues: Key Issues: Forest Depletion; Forest Management; Wildlife Management; Livelihood of Local Peoples; Re-generation of Forests; Eco-development; Environment Education; Public Participation; Enforcement and Compliance;

Policy Framework: National Forest Policy, 1988; National Conservation Strategy,1992; National Environment Action Plan,1993; National Strategy for the Protection and Conservation of Biodiversity;

Key Legislation: The Indian Forest Act, 1972; The Wildlife (Protection) Act, 1972; The Forest (Conversation) Act, 1980; The Environment (Protection) Act, 1986;

Key Institutions: Ministry of Environment and Forests**;** State Department of Environment; Botanical Survey of India; Zoological Survey of India; Ministry of Agriculture, Wildlife Institute of India

1. INTRODUCTION

Indiscriminate and massive diversion of forest land for non-forests purposes was going on since independence and as a result, approximately 43 lakhs hectares of forestland has been diverted during the period 1950 to 1980 without any regards to environmental consideration. In order to enforce greater control on preservation of forests, the constitution was amended in 1977 to bring „forest" on the concurrent list from the state list. In 1978, the Central Government issued guidelines to all States, suggesting that all proposals involving diversion of forestland above 10 hectares should be referred to the Central Government for prior concurrence. The State Government paid scant regard to these and the diversion of forestland continued unabated. Ultimately in 1980, the Forest (Conservation) Act was enacted with a view to conserve the forest and for the purpose incidental and ancillary thereto. As a result rate of diversion has come down to less than 25,000 ha per year in post 1980 period from 1.5 lac ha. per year during 1950 to 1980 period.

Every State Government before diverting forest for non-forest purpose requires prior approval of Central Government under the Act. Non-forest purposes are defined as breaking up or clearing of any forests land for cultivation of tea, coffee, rubber, palm, oil-breaking, horticultural crops or medicinal plants and any purpose other than re-afforestation. However, as per guidelines, no approval is required for cultivation of fruit bearing/oil bearing/medicinal plants if they are indigenous and part of overall afforestation programme. Clear felling of natural forest for re-afforestation also requires approval of Central Government under this Act. Assigning of forest land in way of lease or otherwise to private person or to any authority/corporation/agency/organization not managed or controlled by Government also require prior approval of Central Government. The Act also provides for constitution of a Forest Advisory Committee for advising Central Government on the proposal received for prior approval from various State Governments. Act is only regulatory in nature and not prohibitory.

Every State Government seeking prior approval of the Central Government is required to send a formal proposal in a prescribed format. In case of forest area involved is only up to 5 hectares in extent, the proposal are submitted directly to the Regional Chief Conservator of forest (Central), who are competent to finally decide all such proposal (except for mining and regulation of enforcement). Proposal involving 5-20 ha. of forest land are also submitted to the concerned Regional Office, where these are processed in consultation with State Advisory Group comprising of members from various Departments of the State (i.e. Forest, revenue, finance concerned user Department). Such proposal after processing is sent to the Ministry for final decision. All proposal involving more than 20 ha of forestland are submitted directly to the Ministry at Delhi. These are processed and placed before Advisory Committee for its recommendations. After obtaining the recommendation of advisory Committee, the ministry takes a final

decision on the proposal. To ensure speedy disposal of proposal, specific time limits have been laid down in the guidelines.

2. PROCEDURE OF ACCORDING APPROVAL UNDER THE ACT

Approval under the Forest (Conservation) Act, 1980 is given in two stages. In the first stag, the State Government is informed that the proposal has been agreed in principle but the State Government/user agency are required to transfer the funds as well as equivalent non-forest land to the forest department for compensatory afforestation. On receipt of a compliance report in respect of above condition from the State Government, formal approval is accorded by the Central Government.

3. IMPORTANT CONDITIONS OF CLEARANCE

One of the important conditions stipulated by the Central Government while approving a proposal is rising of compensatory afforestation. Normally compensatory afforestation is stipulated over equivalent non-forest land. However, in the event of non-availability of non-forest land, it can be raised over twice the degraded forestland on submission of a certificate of the Chief Secretary in this regard. In respect of all Central Sector projects and certain small development projects, compensatory afforestation can be raised over twice the degraded forests land without insisting on certification of the Chief Secretary. In respect of all medium and major irrigation projects, in addition to compensatory afforestation, a condition of catchments area treatment is stipulated. . In mining cases, compensatory afforestation is not insisted on broken-up area or under ground mining area. In the opencast mining cases, compensatory afforestation is required to be done in lieu of unbroken area and also reclamation of entire lease area. For all cases involving violation of Forest (Conservation) Act, 1980, penal compensatory afforestation over degraded forestland (normally twice in extent) is stipulated.

4. NATIONAL FOREST POLICY, 1988

In 1927 the British passed the Indian Forestry Act and took complete control of all forests apart from those in areas that were under the jurisdiction of the princely states. From then onwards the management of forests became the responsibility of the government. After independence, the Govt. of India continued this responsibility and passed the Forest Act along with a Policy in 1952. At the time of the policy"s inception, 22 per cent of India was forested and one of the goals of the policy was to increase this to 33 percent. But the rapid decline in the forest area continued. As a result the Forest (Conservation) Act was passed in 1980 to counter the rapid destruction of the forests. According to the Forest (Conservation) Act, the prior approval of the Central Government is required for any change of use of forestland by any one, including government agencies. The definition of non-forest purposes included development projects, transportation projects and cash crops such as tea, coffee, spices, rubber, medicinal plants and horticultural plants. Liability on public official is also provided for in the Act.

According to a report by the forest survey in 1987, 1.5 million hectors of forests were still being lost each year and 12,000 million tones of soil was being lost to erosion each year. Consequently, in 1988 a revised policy came into existence. The revised policy defines nine basic objectives of forest management.

- Maintenance of environmental stability through preservation and, there necessary, restoration of the ecological balance that has been adversely disturbed by serious depletion of the forest of the country;
- Conserving the natural heritage of the country by preserving the remaining natural forests with the vast variety of flora and fauna, which represent the remarkable biological diversity and genetic resources of the country;
- Checking soil erosion and denudation in the catchment are of rivers, lakes, reservoirs in the interest of soil and water conservation, for mitigating floods and draughts and for the retardation of siltation of reservoirs;

- Checking on extension of sand dunes in the desert areas of Rajasthan and along the coastal tracts;
- Increasing substantially the forest/tree cover in the country, through massive afforestation and social forestry programmes, especially on all denounced, degraded and unproductive lands;
- Meeting the requirements of fuelwood, fodder, minor forest produce and small timber of the rural and tribal populations;
- Increasing the productivity of forest to meet essential national needs;
- Encouraging efficient utilization of forest produce and maximizing substitution of wood;
- Creating a massive people"s movement with involvement of women, for achieving these objectives and to minimise pressure on existing forests.

The objectives clearly indicate a regulatory direction in the management of forest. The National Forest Policy, 1988, is under revision by the Ministry of Environment and forests.

5. THE INDIAN FOREST ACT, 1927

The law regarding the administration of forests in India was codified for the first time in 1865 when the Indian Forest Act, 1865 was placed on the Statute book. This Act was replicated by Indian Forest Act, 1878 and was amended by the Indian Forest Amendment Acts of 1890, 1901, 1918 and 1919. The Indian Forest Act, 1927 was intended to consolidate the law relating to forests in India. It repealed the then existing enactments on the subject and has been amended from time to time.

Since the respective State Government administers the forests, the States is implementing the Act. In fact under this Act all the powers are vested in the State Government and there is no mention of Central Government for the purpose of any authority except for levy of duty. The Indian Forests Act, therefore, has been amended and adopted by different States and given different names for example the Kerala Forest Act, 1961, the Mysore Forest Act, 1963, the Orissa Forest Act, 1972, the Rajasthan Forest Act, 1953 etc.

The Indian Forest Act has defined the word forests and its categories, forest produce, timber, tree etc. The Act provide for constitution into a reserve forest, its procedure and legal status. Similarly for village forests and protected forests. Various activities are prohibited in the reserved forest and protected forests under this Act and procedure and penalties for contravening these activities have been mentioned under the Act.

The Act also provides powers and penalties for regulating transit of forest produce and duty on timber and minor forest produce, collection of drift and stranded timber, trespass by cattle etc. The Forest Officers under this Act are empowered for search and seizure of property and implements and tools and vehicles involved in any forests offence. The Forest Officer is also empowered to arrest any person involved in any action violating the Indian Forest Act and with powers to compound certain offences and release them on bond.

The Act, in essence provides for protection of the Government forests and its produce from being encroached upon and illicit removal of any forest produce from the forests. Apart from the legislation for general protection of forests, a number of States have enacted laws for forestry related activities. Some of these are for nationalization of trade in minor forest produce. Some others are meant for regulating of trees in private lands, regulation of saw mills, felling, extraction and processing of sandal wood, regulation of sale depots etc.

An amendment to the Indian Forest Act, 1927 became necessary essentially, firstly to consolidate various acts/amendments and secondly for the purpose of incorporating important aspects of the latest forest

policy. Therefore, this Act is being amended with a view to make the provisions of the Act more effective and in consonance with the National Forest Policy of 1988.

The objective of this Act is to check indiscriminate dereservation and diversion of forest land for non forests purposes. The state Governments are required to submit formal proposals for formal declaration of reserved forests as dereserved, and for diversion of forests land for non forest purposes to the ministry of Environment and Forests for approval. The Act provides for constitution of an Advisory Committee by the Central Government. The Act has been amended in 1988 to incorporate stricter penal provisions. The State Governments and Union Territories are required to submit their proposals relating to forestlands and their diversion for non-forest purposes to the Ministry of Environment and Forests. The Advisory Committee set up under the Act takes up the proposals involving diversion of more than 10 hectares of forest lands. The Ministry has also framed guidelines to ensure expeditious clearance of diversion proposals submitted by the State Government and Project Authorities.

NEPAL

Key Issues: Key Issues: Forest Depletion; Forest Management; Wildlife Management; Livelihood of Local Peoples; Re-generation of Forests; Eco-development; Environment Education; Enforcement and Compliance; Public Participation;

Policy Framework: National Environment Policy and Action Plan 1993 updated in 1998

Key Legislation: Environmental Protection Act, 1997; Environment Protection Regulations (EPR, 1997) and its 1st Amendment 1998; National Environmental Impact Assessment Guidelines; Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982);

Key Institutions: Ministry of Land Reform and Reform of land tenure, land management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, regulation and management of the of water resources, irrigation works, electricity, flood control;

1. INTRODUCTION

The horizontal and vertical topographic dissimilarities have endowed Nepal with unique climatic diversity thus providing habitat for different animal and plant species. The vegetation zones of Nepal can be divided into four climatic regions. The Terai, and inner Terrai as deciduous vegetation. The main species are sal (Shorea robusta), khair (Acacia Catechu), simal (Salmaria malacarica), and sisoo (Dalbergia Sisoo).

2. FOREST CONSERVATION

Following the political change in 1950, successive governments introduced several legislative measures for a faired distribution of nation‟s natural resources, better managing forests and controlling deforestation. These measures were:

- The Private Forest Nationalization Act, 1957.
- The Forest Act, 1961. This was mainly concerned with forest administration and defined the duties of Forest Department (FD), forest offences and prescribed penalties.
- The Forest Preservation (Special Arrangement) Act, 1967. Forest Preservation Special Courts were established. The Act and the Forest Preservation Special Courts were important efforts in forest conservation and assisted the Forest Department (FD) in its policing functions.

- The Birta Abolition Act, 1959, the Land Reform Act, 1964 and the Pasture Nationalization Act, 1974. These further reinforced legislation regarding government ownership over most forest/forest land, and limited individual forests and pastures holding.

However, these measures which concentrated on law enforcement method proved to be coercive in nature and were designed to dislocate the local people from the forest. People‟s distrust in the government motives grew and alienated them from the forest. Deforestation further accelerated.

There are many policy gaps been noted in the forest conservation through the community forestry. Most noted one are:

- *Involvement of women and the poor*: Although it is in the policy, present legislation has not fixed any quota for the representation of women and the poor section of the community in FUG committee.
- *Authority to penalise non*-FUG offender: Present legislation does not clearly specify the authority of FUG to prosecute if some one outside FUG commit forest offence in CF.
- *Size of household in FUGs offender*: It will not be practically possible to handle large number of households in FUGs‟ this is a special problem in Terai where the forests are claimed by thousands of households. Existing legislation does not specify the maximum number of households in the FUGs.
- *Standard pattern of Operational Plan*: Existing legislation does not prescribe standard pattern of operational plans. In the absence of a standard pattern, Operational Plans differ greatly in terms of content, quality and quantity. Some Operational Plans do not posses the required information necessary to implement the plan such as benefit sharing mechanism among the users.
- *Dissolution of FUGs*: Due to various reasons, if FUGs decide not to continue with CF program, the present legislation does not have any provision for dissolution of FUGs.

Nepal‟s total forest area is 5.46 million hectares or 37 % of the country‟s total area. Of this total area, 62 % is eligible for transfer as community forests (Forestry Master plan, 1988). Some 0.5 million hectares of forest areas in the country have already been transferred and are being managed as community forests by 0.586 million households organized in 5,350 forest user groups (FUG).

Nepal‟s community forestry initiatives so far have, however, concentrated in the hills region of the country. Far fewer examples, of successful replication of community forestry activities are to be seen in the Terai Region of the country. Implementation of the community forestry programme has lagged behind much in the Terai. The reasons remain unexplored and unidentified. Thus, to promote the development of community participatory forestry in the Terai Region of the country, it is important to identify and understand the constraints encountered in the development efforts so far as well as the reasons for the successful examples in community participatory forestry development, wherever they exist, in the Terai.

Sustainable Use of Forest

Nepal is a developing country where most of the population are subsistence farmers and live in the rural areas. As the rural livelihood depends on agriculture, which in turn is closely linked with forests and other natural resources, the development of forests is highly associated with the development of rural livelihood. Therefore the concept of Community Forestry (CF) is not only related to conserving forest ecosystem and meeting the basic needs of forest products of the community but also closely related to the well being of the people. The challenge is to create opportunities so that all benefits from forest use-tangible and intangible-can be optimized, while conserving the integrity of the forest ecosystem**.**

Mining

Several laws and regulations govern mining.

- *Mineral (Amendments and Unification) Rules 2018 (1961)*
- *Gas-Oil Thekka (contract/Lease) Rules, 2015 (1958).*
- *Nepal Petroleum Act 2040 (1983) and*
- *Mines and Minerals Act 2042 (1985)*

The above mentioned rules prescribe conditions to be observed by the licenses. For example, the Mineral Rules allows trees to be cleared for mineral exploration, provided the prescribed fee is paid to the relevant government authority. Similarly *Petroleum Mining* is specifically dealt with by *the Nepal Petroleum Act 2040 (1983) (NPA).* This Act requires that any activities in relation to mining should be done without causing damage to forest and other natural resources and any pollution to the environment. The Department of Mines and Geology (DMG) is responsible for administering all mining activities. In case where mineral deposits are located within a forest area, the Department of Forestry has exclusive jurisdiction. Such independent lines of authority are non conducive to having an integrated approach to conservation issues.

National Parks/protected Areas and Wetlands

Every country has some kind of nation-wide land use planning, even if it only exists in its land use policy statement or guidelines. In the forestry sector, there is a tendency to separate forestlands from other land uses by zoning , which provides one practical framework. Forest lands are classified into broad functional categories, such as protected, production forest, national parks, wildlife sanctuaries, and so on. In Nepal, the conservation of ecologically valuable areas and their indigenous wildlife is provided for by the *National Parks and Wildlife Conservation Act (1973)* (NPWCA) which is administered by the Department of National Parks and Wildlife Conservation (DNPWC) with in the Ministry of Forest and Soil conservation.

A necessary amendment in the National Parks and Wildlife conservation Act 2029 has been made in 1973 considering the growing need of the society. Buffer zone Regulation has been made in (1992) has also been approved and gazetted. About 0.731 million ha of land is covered by natural and manmade wetlands located in different geographical region of the country. These wetlands are very rich in aquatic life, and water dependent birds and animals. The habitats of aquatic life are protected by the *Aquatic Animals Protection Act 1961.* The section 3 of the AAPA renders punishable any party introducing poisonous, noxious or explosive materials into a water source or destroying any dam, bridge or water system with the intent of catching or killing aquatic life. Whilst a few wetlands of international significance (e.g. Rara, Shey Phoksundo, Tilicho etc.) are located within the existing regime of national parks, there are no specific legal mechanism for the scientific identification, protection and management of wetlands in general, so that wetlands outside the national park system remain unprotected.

3. LEGISLATION

The decline in forestry resources has been aggravated by the failure of the government to provide for workable system of forestry management. In the past government has proposed many legislative measures for the forestry sector, but the role of the indigenous management systems in forestry management was never recognized. Some of the major legislative measures taken are:

- Private Forest (Nationalisation)Act, 1956
- Forest Act, 1961
- Forest Protection (Special Arrangements) Act, 1967
- Fore3st Products (Sales and Distribution)Rule, 1970
- Panchyat Forest Rule, 1978
- Panchyat Protected Forest Rules, 1978
- Leasehold Forest Rules, 1978
- Private Forest Rules, 1984

Past effort at forest management were heavily centralised and overly bureaucratic where involvement of local people perceived as threat to forest and efforts were made to keep the villagers out. Similarly narrow approach was taken with regard to conservation, where emphasis was on maintaining and planting trees. So main emphasis was to keep villagers out increase the stock. However this concept changed with the introduction of *Master Plan for the Forestry Sector (MPFS).* This was endorsed by HMG in 1989. The proposed a comprehensive strategy for forestry management in Nepal. The approach focused on establishing procedures to enable a hand over of forests to user groups and the private sector, based on partnership between the MFCS and local forest user that encourage management of all aspects of forests- not just trees, but shrubs, grasses, and other forest base resources.

The Forest Act of 1993 fostered the process of hand over of national forests to community management user groups and other private enterprises. HMG"s current policy is to promote community forestry in the Hills, where forest form an integral part of farming system and are often of high environmental value in terms of stabilizing soils and protecting watersheds. However, due to large potential of the forest sector in Terai region, leasehold management concept is in progress, but there are concern as the responsibilities of potential leasehold concessionaires has not yet matured.

4. NATIONAL PARKS AND WILDLIFE

The National conservation Strategy for Nepal 1987 (NCS) and Nepal Environment Policy and Action Plan 1993 (NEPAP) are long term policy guidelines concerning wildlife conservation and management in Nepal. On the basis of these Acts and Regulations are framed to achieve stated objectives. The Master Plan for Forestry Sector (MPFS) and National Periodic Five-Year Plans of HMGN Planning Commission are long and short term plans respectively to develop and formulate programs for wildlife conservation and management.

The National Park and Wildlife Conservation (NPWC) Act 1973 is the main Act related to conservation of wildlife and protected areas in Nepal. It provides basis for establishment and administration of protected areas and the conservation of wild animals, birds and reptiles and their respective habitats.

The Act stipulates/indicates two objective of the protected areas. Primary: Protection of sites or landscapes of scientific, geological, aesthetic importance together with associated flora and fauna. Secondary: Development of such areas for tourism.

The Section 2,3,4,5 and 6 deals with the different management aspect of Parks and Wildlife. The NPWC Act 1973 has been amended four times addressing the changing needs for wildlife conservation and management in Nepal. The Act is administered by the Department of National Parks and Wildlife Conservation (DNPWCA). The NPWCA describes five categories of protected areas, namely national parks, wildlife reserves, controlled nature reserves, hunting reserves and conservation area. A strict nature reserve is an area of unusual ecological significance set aside for the purpose of scientific studies. National Parks and controlled nature reserves are to be managed as far as possible without human interventions.

The NPWCA also allows for the protection of parks and reserves by soldiers of the Royal Nepalese Army. A research and management division within the DNPWC coordinates wildlife research and the assembled data is used to formulate management plans for each protected areas. The management of each declared area is enforced by set of administrative rules. The *National Parks and Wildlife Conservation Rules (1974)* prescribes various regulations as to the use of all protected areas. More site-specific administrative rules are the *Royal Chitwan National Park Rule (1974), Himalayan National Parks Rule (1979)* and the *Wildlife Reserve Rules (1977).*

Public participation in conservation programmes has been facilitated by the enactment of the *King Mahendra Trust for Nature Conservation Act, 1982*, which established the Trust (KMTNC) as a statutory body to promote nature conservation in Nepal.

The duties of the KMNTC include:

- To conserve, promote and manage wildlife and other natural heritage,
- To make necessary arrangements for the development of national parks and reserves; and
- To undertake scientific research into wildlife and other natural resources.

PAKISTAN

Key Issues: Key Issues: Forest Depletion; Forest Management; Wildlife Management; Livelihood of Local Peoples; Re-generation of Forests; Eco-development; Environment Education; Enforcement Compliance; Public Participation;

Policy Framework: National Conservation Strategy; Five year Plans;

Key Legislation: Environmental Protection Ordinance (PEPO), 1983;Pakistan Environment Protection Act, 1997

Key Institutions: Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs; Environmental Tribunals

1. INTRODUCTION

The trees are the friends of humanity. These are the tongue-less creatures but do teach the human beings how to lead a cultured life on the Earth. There is a common saying "No Culture without Agriculture". The trees have always followed the principle of "Live and let Live" and took after interest of others selflessly. The trees bear the vagaries of severe climates and weather for the benefit of the life. They are the symbol of extreme sacrifice.

Forests, like many natural resources, are improved through use if certain basic principles are allowed. Mature trees with slow growth, should be harvested and replaced with younger rapidly growing trees, to maintain a high level of forest productivity. Over-mature trees also become susceptible to disease and insect attacks, which further reduces forest productivity. Since the variety of life is maximized in old forests, however, there is a case for preservation of representative communities.

2. DEFORESTATION

Besides supplying timber and other products, forests have a major role in maintaining vital ecological processes. At the global scale, they serve as sinks for CO2, ameliorating climate change, and help ensure a continuous supply of clean water. Watershed forests are particularly important because they help conserve soil cover and protect downstream areas from excessive flooding. Through reducing the silt load of rivers, watershed forests help prevent clogging of reservoirs, irrigation systems, and harbour facilities.

Unfortunately, in developing countries, forests are being widely devastated. New estimates of tropical deforestation announced in 1990 indicate that every year some 20 million hectares are lost; over the next 15 years, this implies an area the size of India will be denuded In Africa, estimates a decode ago indicated only one hectare was being replanted for every 29 hectares cut down.

3. ENACTMENTS

Following are the main enactments and their relevant sections on Forest are described below:

1. The Punjab Forest (Sale of Timber) Act, 1913

Section 3 **Power to make rules regulating sale of timbers and the establishment of sale depots:**

The Provincial Government may, by notification in official Gazette, make rules to regulate the sale of timber, the establishment of sale depots for such timber.

Such rules may among other matters;

(a) prescribe the classes of timber to which the rules shall apply;
(b) define what shall be deemed to be a sale depot;
(c) provide for the establishment, registration, regulation and inspection of sale depots, and the levy of fees for registration, prescribe the period for which registration shall hold good and the conditions under which timber may be brought to, stored at and removed from, sale depots; and prohibit the sale of timber at or the establishment or maintenance of unregistered sale depots;
(d) regulate the use of sale depot marks and the registration of such marks; prescribe the time for which registration shall hold good; and provide for the levy of fees for registration.
(e) prescribe the registers to be maintained at sale depots and provide for the production of such registers before and for their examination by any forest or police officer authorized in this behalf by the Divisional Forest Officer, or by the District Superintendent of Police, respectively; or by the District Superintendent of Police, respectively;
(f) prescribe as penalties for the infringement of any rule made under the section imprisonment which may extend to six months or fine which may extend to Rs. 590 or both. Double penalties may be inflicted where the offence is committed after sunset and before sun-rise, or after preparation for resistance to lawful authority or if the offender has been previously convicted of a like offence.

(Rules regarding the registration of Timber Depots under Section 3 have been made by Notification No 1436 dated 12 January 1923, amended by Notification No 14696 dated 11 May 1927. Rules describing the tracts to which the Act shall apply have also been made by Notification No 17415 Forest dated 14 June 1923 amended by Notification 14697-Forests dated 11 May 1927)

2. The Forests Act, 1927

Section 3 **Power to reserve forests:**

The Provincial Government may constitute any forest-land or waste-land which is the property of Government, or over which the Government has proprietary rights, or to the whole or any part of the forest-produce of which the Government is entitled, a reserved forest in the manner hereinafter provided.

Section 26 **Acts prohibited in such forests:**

(1) Any person who:

(a) makes any fresh clearing prohibited by section 5, or

(b) sets fire to a reserved forest, or, in contravention of any rules made by the Provincial Government in this behalf, kindles any fire, or leaves any fire burning, in such manner as to endanger such a forest; or who, in a reserved forest-
(c) kindles, keeps or carries any fire except at such seasons as the Forest-Officer may notify in this behalf;
(d) Trespasses or pastures cattle, or permits cattle to trespass;
(e) causes any damage by negligence in felling any tree or cutting or dragging any timber;

(f) fells, girdles, lops, saws or burns any tree or strips off the bark or leaves from, or otherwise damages, the same;
(g) quarries stone, burns lime or charcoal, or collects, subjects to any manufacturing process, or removes, any forest-produce;
(h) clears or breaks up any land for cultivation or any other purpose;
(i) in contravention of any rules made in this behalf by the Provincial Government hunts, shoots, fishes, poisons water or sets traps or snares; or
(j) in any area in which the Elephants' Preservation Act, 1879, is not in force, kills or catches elephants in contravention of any rules so made:

shall be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both, in addition to such compensation for damage done to the forest as the convicting Court may direct to be paid.

.....

(3) Whenever fire is caused willfully or by gross negligence in a reserved forest, the Provincial Government may (notwithstanding that any penalty has been inflicted under this section) direct that in such forest or any portion thereof the exercise of all rights of pasture or to forest-produce shall be suspended for such period as it thinks fit.

Section 32 **Power to make rules for protected forests:**

The Provincial Government may make rules to regulate the following matters, namely:

(a) the cutting, sawing, conversion and removal of trees and timber, and the collection, manufacture and removal of forest-produce, from protected forests;
(b) the granting of licenses to the inhabitants of towns and villages in the vicinity of protected forests to take trees, timber or other forest-produce for their own use, and the production and return of such licenses by such persons;
(c) the granting of licences to persons felling or removing trees or timber or other forest-produce from such forests for the purposes of trade, and the production and return of such licences by such persons;

.....

(a) the examination of forest-produce passing out of such forests;
(b) the clearing and breaking up of land for cultivation or other purposes in such forests;

.....

(i) the cutting of grass and pasturing of cattle in such forests;

(j) hunting, shooting, fishing, poisoning water and setting traps or snares in such forests, and the killing or catching of elephants in such forests in areas in which the Elephants' Preservation Act, 1879, is not in force;
(k) the protection and management of any portion of a forest closed under section 30; and

Section 33 Penalties for acts in contravention of notification under section 30 or of rules under section 32:

(1) Any person who commits any of the following offences, namely:

(a) fells, girdles, lops, taps or burns any tree reserved under section 30, or strips off the bark or leaves from, or otherwise damages, any such tree;
(b) contrary to any prohibition under section 30, quarries any stone, or burns any lime or charcoal, or collects, subjects to any manufacturing process, or removes any forest-produce;
(c) contrary to any prohibition under section 30, breaks up or clears for cultivation or any other purpose any land in any protected forest;

(d) sets fire to such forest, or kindles a fire without taking all reasonable precautions to prevent its spreading to any tree reserved under section 30, whether standing, fallen or felled, or to any closed portion of such forest;
(e) leaves burning any fire kindled by him in the vicinity of any such tree or closed portion;
(f) fells any tree or drags any timber so as to damage any tree reserved as aforesaid;
(g) permits cattle to damage any such tree;
(h) infringes any rule made under section 32;
shall be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees or with both.

(2) Whenever fire is caused willfully or gross negligence in a protected forest, the Provincial Government may, notwithstanding that any penalty has been inflicted under this section, direct that in such forest or any portion thereof the exercise of any right of pasture or to forest-produce shall be suspended for such period as it thinks fit

Section 35 **Protection of forests for special purposes:**

The Provincial Government may, by notification in the official Gazette, regulate or prohibit in any forest or wasteland.

(a) the breaking up or clearing of land for cultivation;
(b) the pasturing of cattle; or
(c) the firing or the clearing of the vegetation:

when such regulation or prohibition appears necessary for any of the following purposes:

(i) for protection against storms, winds, rolling stones, floods and avalanches;
(ii) for the preservation of the soil on the ridges and slopes and in the valleys of hilly tracts, the prevention of land-slips or of the formation of ravines and torrents, or the protection of land against erosion, or the deposit thereon of sand, stones in gravel;
(iii) for the maintenance of a water-supply in springs, rivers and tanks;
(iv) for the protection of roads, bridges, railways and other lines of communication;
(v) for the preservation of the public health.

(2) The Provincial Government may, for any such purpose, construct at its own expense, in or upon any forest or wasteland, such work as it thinks fit.

(3) No notification shall be made under subsection (1) nor shall any work be begun under sub-section (2), until after the issue of a notice to the owner of such forest or land calling on him to show cause, within a reasonable period to be specified in such notice, why such notification should not be made or work constructed, as the case may be, and until his objections, if any, and any evidence he may produce in support of the same, have been heard by an officer duly appointed in that behalf and have been considered by the Provincial Government.

Section 52 **Seizure of property liable to confiscation:**

When there is reason to believe that a forest-offence has been committed in respect of any forest-produce, such produce, together with all tools, boats, carts or cattle used in committing any such offence, may be seized by any Forest-officer or Police-officer.

Provided that, when the forest-produce with respect to which such offence is believed to have been committed is the property of Government, and the offender is unknown, it shall be sufficient if the offender makes, as soon as may be, a report of the circumstances to his official superior.

Section 63 **Penalty for counterfeiting or defacing marks on trees and timber and for altering boundary marks:**

Whoever, with intent to cause damage or injury to the public or to any person, or to cause wrongful gain as defined in the Pakistan Penal Code -

(a) knowingly counterfeits upon any timber or standing tree a mark used by Forest officers to indicate that such timber or tree is the property of the government or of some person, or that it may lawfully be cut or removed by some person; or
(b) alters, defaces or obliterates any such mark placed on a tree or on timber by or under the authority of a Forest-officer; or
(c) alters, moves, destroys or defaces any boundary-mark of any forest or wasteland to which the provisions of this Act are applied, shall be punishable with imprisonment for a term which may extend to two years, or with fine or with both.

Sect ion 70 **Cattle Trespass Act, 1871 to apply:**

Cattle trespassing in a reserved forest or in any portion of a protected forest which has been lawfully closed to grazing shall be deemed to be cattle doing damage to public plantation within the meaning of section 11 of the Cattle Trespass Act, 1871, and may be seized and impounded as such by any Forest officer or Police-officer.

Section 80 Management of forests the joint property of government and other persons:

(1) If the Government and any person be jointly interested in any forest or waste-land, or in the whole or any part of the produce thereof, the Provincial Government may either:

(a) undertake the management of such forest, waste-land or produce, accounting to such person for his interest in the same; or
(b) issue such regulations for the management of the forest, waste-land or produce by the person so jointly interested as it deems necessary for the management thereof and the interests of all parties thereto.

3. The West Pakistan Firewood and Charcoal (Restriction) Act, 1964

Section 3 **Definitions:**

In this Act, unless the context otherwise requires, the following expressions shall have the meanings hereby respectively assigned to them, that is to say:-

(a) factory means any premises including the precincts thereof where any process is being carried on with the aid of power;
(b) firewood includes any kind of wood used for burning a fire, but does not include shrubs, loppings of trees not exceeding six inches in girth, or the stumps of trees;
(e) Power means electrical energy and any other form of energy, which is mechanically transmitted and is not generated by human or animal agency.

Sect ion 3 Restrictions on burning firewood and charcoal

It shall be unlawful to burn firewood or charcoal in any factory, brick-kiln, lime-kiln, or such other fire places or class of fire places as may be specified by Government by notification:

Provided that the prohibition contained in this section shall not apply to :

(i) any fire place for burning of earthenwares;

(ii) any brick kiln or lime-kiln worked for the preparation of bricks or lime for the personal use of the proprietor of such kiln;

(iii) the use of firewood for any domestic purposes:

Provided further that Government may, in any area, permit the burning of firewood or any kind of firewood or charcoal in any class of factories, brick-kilns or lime-kilns subject to such conditions as may be prescribed.

Section 4 **Penalty:**

Any person who contravenes the provisions of section 3 or such of the rules made under this Act, as may be specified, shall be liable to simple imprisonment for a term which may extend to thirty days or with fin up to five hundred rupees or with both.

4. Plantation and Maintenance of Trees Act, 1974

Section 2 **Definitions:**

In this Act, unless the context otherwise requires, the following expressions shall have the meanings hereby respectively assigned to them that is to say -

.....

(c) land means land which is not occupied the site of any building in a town or village and is occupied or has been le for agricultural purposes or for purposes subservient to agriculture or for pasture, and includes the sites of buildings and other structures on such land;

Section 3 **Plantation of trees:**

(1) There shall be planted and maintained three trees per acre by the occupier thereof in such manner as may be prescribed.

(2) In case the occupier fails to comply with the requirements of sub-section (the required number of trees shall be caused to be planted in his land by the Department without any let or hindrance by him. The occupier shall be responsible for the maintenance of the trees so planted.

EXPLANATION: For the purpose of this section:

(i) trees already planted and maintained in orchards or otherwise or trees that may be planted and maintained in orchards shall be taken into account; and

(ii) trees required to be planted and maintained may be planted and maintained in compact block or otherwise in his holding.

Section 4 **Penalty:**

(1) Any person who contravenes the provisions of section 3 shall be liable to pay the penalty, not exceeding rupee one per tree, after giving an opportunity to the person concerned of being heard, by an officer authorized in this behalf by the Government.

(2) The fine imposed under this section shall be recoverable as arrears of land revenue.

5. The Cutting of Trees (Prohibition) Act, 1975

Section 3 **Cutting etc, of trees prohibited:**

Notwithstanding anything contained in any other law for the time being in force, no person shall, without the prior written approval of the local formation commander or an officer authorised by him in this behalf, cut, fell or damage or cause to be cut, felled or damaged any tree growing within the five miles belt along the external frontiers of Pakistan.

section 4 **Penalty:**

Whoever contravenes the provisions of this Act or the rules made thereunder shall be punishable with imprisonment for a term which may extend to three years, or with fine, or with both.

6. The NWFP Management of Protected Forests Rules, 1975
[made under the Forests Act, 1927]

Rule 3 **Grant of trees:**

No trees shall be felled or removed from the forests to which these rules are applicable except with the permission in writing of the Conservator of Forests, Malakand, or the Divisional Forest Officers having jurisdictions in the forests.

Rule 4 Free grant of trees for domestic needs may made to the owners or right-holders and to other local inhabitants entitled to this privilege subject to silvicultural availability of trees and upto the limit given in the sanctioned working plans, except in the case of Swat and Kalam. Limit in the case of Swat and Kalam shall be such as is given in the Schedule appended to these rules.

Rule 9 The trees will be granted in the diameter range of 24 - 30. The Standing Deodar tree shall not be granted for domestic use, except in Kalam, Upper Indus-Kohistan, Dir, Kohistan and Chitral. Windfallen trees will be granted and counted against the quota. Trees will be marked strictly according to the silvicultural availability. No trees shall be marked within 300 feet of the outer boundaries of the forests.

Rule 10 Trees will be marked by the Range Officer himself or through Block Officer within the months from the receipt of the orders. The Range Officer will be responsible for the correctness of the marking whether he does himself or through the Block Officer. The trees will be cut within two months of the date of marking and will be utilized for purposes stated and for no other within six months from the date of cutting.

Rule 13 Neither the person to whom trees have been granted for construction of a house in any year nor a member of his family shall be entitled to the grant in the following year unless proved to the satisfaction of the Divisional Forest Officer concerned that the timber is required for the construction of a separate house.

Rule 15 Every person to whom the trees have been granted under these rules shall plant five trees in a place or places designated by the Forest Officer during the plantation season and look after them for such time as may be directed by the forests authorities.

Rule 20 **Punishment:**

Any breach of these rules shall be punishable with imprisonment or with fine or with both as provided in section 33 of the Forest Act, 1927.

7. The Punjab Local Government Ordinance, 1979

Section 51 **Functions of the Zila Council**

A Zila Council may and if Government so directs shall undertake all or any of the following functions:

(A) Public Works

.....

(i) plantation and preservation of trees and road sides, public ways, public places and public buildings;

8. The NWFP (Conservation and Exploitation of Certain Forests in Hazara Division) Ordinance, 1980

Section 3 Prohibition of private extraction of timber, etc:

(1) For the purposes of conservation and better exploitation of forests, there shall be no extraction of timber and other forest produce in the specified areas, except by Government or by a corporation or an agency set up or authorised by government in this behalf.

(2) Notwithstanding anything to the contrary contained in any law for the time being in force, or any decree, order or judgment of any Court or other authority.

.....

(b) all timber and other forest produce produced in and extracted from the specified areas and transported from, through or to any place within Hazara Division shall, whether extracted before or after the commencement of this Ordinance, be liable to duty at the rate notified by Government under sections 28 and 29 of the Hazara Forest Act, 1936 (NWFP Act VI of 1937), by Notification No. SOFT(FAD)V-105/70/HFA 1936), dated the 24th December 1979, or at such other rates as may, hereinafter, be notified by Government under the said Act.

9. The Agricultural Pesticides Ordinance, 1971

Section 4 **Pesticides to be registered:**

No person shall import, manufacture, formulate, sell, offer for sale, hold in stock for sale or in any manner advertise any brand of pesticide which has not been registered in the manner hereinafter provided.

SRI LANKA

Key Issues: Key Issues: Forest Depletion; Forest Management; Wildlife Management; Livelihood of Local Peoples; Re-generation of Forests; Eco-development; Environment Education; Enforcement and Compliance;

Policy Framework: National Conservation Strategy, 1988; National Environmental Action Plan, 1994;

Key Legislation: National Environment Act, 1980; National Environment (Amendment) Act, 1988; Control of Pesticide Act, 1980; Coast Conservation Act, 1981; Coast Conservation (Amendment) Act, 1988;Marine Pollution Prevention Act, 1981; Fisheries and aquatic resources Act, 1996; Forestry Ordinance, the Flora & Fauna Act, the Fisheries Act

Key Institutions: Ministry of Environment and Natural Resources; Central Environmental Authority; Department and Mahaweli Authority; Department of Wildlife Conservation; Coastal Conservation Department; National Environmental Steering Committee, Metrological Department; Ministry of Agriculture, Lands and Forestry; Natural Resources, Energy and Science Authority; Ministry of Fisheries and Aquatic Resources;

1. INTODUCTION

Forest is a complex of many resources such as physical (land), biological (flora and fauna), environmental (water, soil, wildlife, other bio-diversity and mitigation of atmospheric pollution etc.) and economic (provision of forest products for timber, fuel wood, medicines etc). Forestry sector is an important sector in Sri Lanka since it provides timber for wood industry, fuel wood for household and employment, and also plays an important role in preserving biodiversity and soil and water conservation *etc.* In Sri Lanka, forestry sector contribution to the GNP was 2% in 1998. However, this is much less than the real contribution due to the fact that national income and product accounts concentrate only on market-oriented activities and do not even include them properly because of lack of statistics.

Deforestation has accelerated sharply with the increasing population over the last few decades upto early 90s. The rate of deforestation was 42,00 ha/yr. during the period of 1956-1981. Forest cover in 1994 was approximately 21-22% of the total land area while it was around 70% in 1900. However, statistics show that since 1994 the total forest cover has being unchanged. Statistics also show an overall reduction in deforestation during the period of 1994 to 1998 even though there was a three-fold increase of deforestation from 1995 to1996.

The forestry sector and related issues are complex. It has simultaneously to conserve biodiversity, protect watersheds, provide land for landless, and provide a multitude of forestry products to the increasing population. The forestry and land use administration has done a lot to manage the land and forests under its control. Protected areas have been established, laws and regulations controlling the harvesting and transport of wood have been introduced to stop illegal logging, forest plantations have been created, and national tree plantation campaigns have been carried out. However, despite these positive developments, the forest cover continued to reduce over the years. On the other hand increasing population increases the demand for land, timber fuelwood etc. which will unarguably increase the pressure on forestry lands. Hence, the capacity of the forest to provide various amenities has been reduced, in many cases irreversibly. Because of the scope and complexity of the problem, the time needed for changing people's values and perceptions, and the special long-term nature of the forestry, it is apparent that all the problems cannot be solved quickly. Thus, it is apparent that to keep the remaining natural forests intact while supplying the increasing demand for forest product a long-

term planning is needed. Thus, the Forestry Sector Master Plan (FSMP) which is based on the National Forestry Policy was formulated with the long-term objectives to conserve the forests, increase the productivity of forests, enhance the contribution of forestry to the welfare of rural population and to strengthen the national economy. This should be the foundation of forestry legislation and for developing supportive institutions. Scope and complexity of the problem, the time needed for changing people's values and perceptions, and the special long-term nature of the forestry, it is apparent that all the problems cannot be solved quickly. Thus, it is apparent that to keep the remaining natural forests intact while supplying the increasing demand for forest product a long-term planning is needed. Thus, the Forestry Sector Master Plan (FSMP) which is based on the National Forestry Policy was formulated with the long-term objectives to conserve the forests, increase the productivity of forests, enhance the contribution of forestry to the welfare of rural population and to strengthen the national economy. This should be the foundation of forestry legislation and for developing supportive institutions.

2. ISSUES

The expanding population increases the demand for round wood, firewood, land for agriculture and livelihood increasing the pressure on the forest resources. Thus, major issues in the sector are related to industry of sawnwood and other forest products, fuel wood, land for agriculture and livelihood and biodiversity.

Wood industry

Fairly rapid economic growth during the period of 1980s and early 1990s coupled with population increase has resulted in an increasing demand for sawnwood *etc.* It was predicted that in the 1990s industrial roundwood would become scarce unless sustainable wood production and utilization were increased. However, no such increase has been brought about. Thus the biggest challenge faced by the wood-based industry is the predictable shortage of wood. It has been predicted that the availability of sustainable wood resources will limit the production possibilities of the domestic sawmilling and plywood industries. Consequently employment opportunities are lost for thousands of people. People are to pay increasingly high prices for wood-based forest products and the increasing price will increase the illegal logging making destruction to the remaining forests.

Fuel wood

Fuel wood is crucial for rural people who do not have access to other energy sources. Fuel wood is also the major energy source for many industries. The energy consumption has grown annually and the energy sector is dominated by fuel wood. The share of bio- energy, which is mainly fuel wood in total energy consumption in 1992, was about 66%. The Main issues are the increasing local imbalances between sustainable energy supply and demand, inefficient utilization of fuelwood and other biofuels, lack of alternative energy sources and slow adoption of those new energy sources and unsupportive institutional environment for responding to energy and fuelwood scarcity.

Land for agriculture and livelihood

Deforestation is closely linked with the population growth. Increasing population increases the demand for various forest products and land for livelihood and agriculture. Increase in population also increases the number of landless people that again increases the pressure on forestlands. Practically, all the land available is already in use, which leaves natural forests as the main source of new lands. Thus the challenge is to provide forest products and lands while keeping the natural forests intact.

Biodiversity

Sri Lanka is one of the smallest but biologically most diverse countries in Asia. Its varied topography and tropical conditions have given rise to extremely high level of biodiversity where much of it is endemic. At the same time, Sri Lanka has one of the densest human populations in Asia. Thus, much of its original forest has been cleared and the cover has decreased from 84% in 1881 to 22% in 1994. The impact on biodiversity however will not be known, but threats to the future survival of species will become greater as their habitats diminish. Thus the fundamental issues are about how to prevent the present loss of biodiversity in terms of both natural forest ecosystem and their constituent species and populations. Constraints to resolve the issues are gaps in knowledge about biodiversity to plan properly for its conservation and management, and insufficient utilization of already available information, unbalanced representation of biodiversity in the protected area network, inefficient management and conservation of many protected areas, resulting in further persistent losses in biodiversity and lost opportunities to benefit from its sustainable use and insufficient institutional and legislative provisions for biodiversity conservation and protected area management.

Soil and water conservation

Forests play an important role in the conservation of soil and water resources. Natural forest vegetation protects the soil from erosion, increase the infiltration and reduce the runoff, stabilize groundwater levels and stream flows and contribute heavily to recycling of rainfall water. Conservation of soil and water is in uttermost important since the economy is heavily dependent on agriculture. Thus, the main issues related to soil and water conservation are deforestation, land degradation and productivity decline, distortion in stream flow and loss of water and sedimentation of water bodies.

The long-term nature of the forestry sector requires a long-term comprehensive planning to face the emerging issues. Thus, a long-term policy formulation is required.

3. FOREST POLICIES

There had been policy statements, made from time to time, directing the forestry agencies. However, until the FSMP was established in 1986 there had been no widely accepted, comprehensive. forestry policy that could be supported by appropriate legislation and strategies. This section firstly discusses the past policies followed by the National Forestry Policy.

Past policies

In 1929, a first step towards and explicit forestry policy was taken. The objectives of the policy were to provide self -sufficiency in constructing timber and firewood and export of timber and forest products and conserve water supplies, prevent soil erosion and coordination of forestry operation to protect indigenous flora and fauna.

Some steps were taken to achieve these objectives. The process of mapping forest reserves was begun in 1931 and the concept of management by working plans was introduced into practical forest management. The statements were further clarified in 1938 with the decision the all forest areas above 5000 feet were to be regarded as the protective resources.

Comprehensive policy objectives introduced in 1953

The policy objectives that are still valid for the most parts are:

(i) to maintain, conserve and create forests for the preservation and amelioration of the environment, soil and water resources, and for the protection of the local fauna and flora when required for aesthetic, scientific, historical and socio-economic reasons;

(ii) to ensure and increase, as far as possible, the supplies of small wood for agricultural requirements and fuel wood for domestic consumption;

(iii) to maintain as far as possible, a sustained yield of timber and other forest produce for general housing, industrial, communication and defense requirements of the country; and

(iv) to work the forest to the highest possible economic advantage consistent with foregoing objectives.

Following the above policy objectives, a large number of development activities covering conservation, industrial plantation establishment, establishment of plantations to protect the environment, forest administration legislation, research and education were carried out by the Forest Department (FD) during the period of 1950-1970.

People's involvement emphasized in 1980

Until early 1980s, forestry was considered to be the responsibility of the state. Then the importance of the involvement of the public was recognized and in 1980 the following policy objective was introduced in addition to the objectives made in 1953.

"To involve rural communities in the development of private woodlots and forestry farms through a program of social forestry. "

The implementation of the development of the Community Forestry Project during 1982 -1990, reflected this change in the government policy. However, people's involvement in forestry development was not institutionalized.

Draft policy of 1991

The draft policy was established in 1991 by the FD based on the principles of conservation as set out in the World Conservation Strategy of 1980 prepared by International Union for Conservation of Nature and Natural Resources (IUCN). The National Forestry Policy approved in 1995 had its foundation in this draft policy of 1991.

National Forestry Policy

Review of past development trends in relation to policy objectives indicates that the sectoral performance has been unsatisfactory. The major indicators of unsatisfactory performance are the reduced biodiversity and depleted sources of wood and other products due to deforestation, reduced overall contribution of forestry to the national economy and limited involvement of the rural population in forestry development. The major reasons for unsatisfactory performances in brief are:

(i) the lack of comprehensive national forestry policy;
(ii) inability to adequately address the root causes of problems;
(iii) the absence of the necessary will to implement the various policy statements;
(iv) the non-use of necessary policy instruments such as incentive schemes, credit lines and taxation;
(v) lack of general land use policy and coordinated planning in the natural resources sector;,
(vi) outdated data base;
(vii). unclear mandate of the government agencies and vague accountability for policy implementation; and
(viii) the recognition of state as the sole manger for the sector .

The above justifies the necessity of a comprehensive bio-physical, environmental, socio-political, and economic projection of the forestry sector's optimal development, intended to guide decision making at national, regional and local levels. Thus FSMP was developed based on a new National Forestry Policy to attain the optimal development of the resources. The major objectives of the policy were to

(i) conserve forests for prosperity, with particular regard to biodiversity, soils, water, and historical, cultural, religious and aesthetic values,
(ii) increase the tree cover and productivity of the forests to meet the needs of present and future generations for forest products and services and
(iii). enhance the contribution of forestry to the welfare of the rural population, and strengthen the national economy, with special attention paid to equity in economic development.

With the above objectives, policies have been developed on management of state forest resources, management of private forest and tree resources, wood and non-wood forest products, industries and marketing, institutional support for forestry development, inter- sectoral linkages and international forest-related conventions.

There should be a legislation to facilitate the implementation of the policies and with the policy reform, legislation also should be changed accordingly. The next section discusses the legislation in the forestry sector, its evolution, deficiencies and reforms that would support the National Forestry Policy.

4. LEGISLATION AND REGULATIONS

Until the FSMA was established laws have been formulated over the years to meet various situations and needs of the time. Most of the time they were based on rationales that were relevant to the past but have partly lost their significance and justification in the present environment. The FSMP realized the deficiencies suggested the reforms that could comprehend the long-term forestry policy objectives.

Evolution of the Legislation

Timber Ordinance No.1822

The British introduced the first legislation, the Timber Ordinance No.2 of 1822. This prohibited the cutting of timber on crown lands and jack trees in private lands without a license.

Wastelands Ordinance of 1840

This was amended in 1979. The impact of the ordinance was to disentitle common property resource holders such as villages and families of their land and many *chena* holders.

Forest Ordinance No. 10 of 1885

This provided the declaration of reserved forests, but emphasis was on controlling the felling and transport of timber. Under this two uninhabited forests were declared as sanctuaries for the protection of wildlife, namely Yala and Wilpattu.

Forest OrdinanceNo.16of1907

This is the cornerstone of the present law relating to forests and plant protection. Since its enactment, the Ordinance has been amended many times, but its original scheme and structure have remained unchanged.

5. OTHER LAWS AFFECTING FORESTRY

Land legislation

Three statutes, namely the Land Development Ordinance (LDO) of 1935, the Crown Land Ordinance (CLO), No.8 of 1947, and the Land Settlement Ordinance (LSO) of 1931 have implications for the allocation and management of the forest lands. The greatest impact comes from the allocation of land for settlement and development; the decision are often made under the LDO or LSO. Land allocation decisions made without reference to the status of the forest state often erode ecosystems irreversibly and it is apparent that the forest estate has been fragmented by them.

Fauna and Flora Protection Ordinance

The Ordinance, No.2 of 1937, and subsequent amendments, most recently in 1993, make provisions for the protection of wildlife and flora in national reserves. The authority responsible for enforcing this law is the Department of Wildlife Conservation (DWLC).

Soil Conservation Act

Founded in 1951, the Act was amended twice in 1953 and 1981. This made provision for the conservation of soil resources, the prevention or mitigation of soil erosion, and the protection of lands by floods and drought. The Act is administered by the ministry responsible for agriculture.

National Heritage and Wilderness Areas Act

This Act was passed in 1988. The Act aims at the protection of state lands having unique ecosystems, genetic resources, or outstanding natural features. The FD administers the Act.

The institutional structure of the sector and the relevant agencies should be arranged in such a way that it could facilitate the implementation of policies and the legislation.

7.6 Institutional Structure

The overview of the present institutional structure, deficiencies and the proposed new structure by the FSMP are discussed in this section.

Present Institutional Structure (Ministry of Agriculture, Lands and Forestry)

The Minister, who is the political appointee, heads the ministry. The main responsibility of the Secretary is to advice the Minister on policy formulation and implementation. Under the Secretary or Additional Secretary, there are several divisions, departments and agencies relevant to forestry.

(i) Planning Division

Responsible for ensuring that the plans produced in the ministry are in line with the national ministerial policies.

(ii) Forestry Planning Unit

Responsible for coordinating and implementing long-term sectoral planing and for coordinating and monitoring the implementation of sectoral development plans and the use of funds.

(iii Forestry and Environment Division

Responsible for the regulatory activities, coordination all regulatory matters related to forestry and matters concerning the environment and conservation, and for reviewing legislation and regulations as well as drafting new regulations.

(iv) Land Use Policy Planning Division, Surveyor General Department, Land Commissioner's Department and land Reforms Commission

Responsible for land-use policy planning at national, provincial and district levels, land alienation and reforms, zoning and leasing.

Forest Department

The FD is responsible for managing the forest area under its jurisdiction, which includes production forests (both natural and Plantation forests) and protection areas. The main mission of the FD is the production of wood on state lands and protection of forests. Recently, environmental conservation has emerged as one of its central functions. In addition FD is also responsible for research and extension. The Conservator of forests heads the FD. Under him there are three Additional Conservators responsible for research, operations, and administration and personnel.

Operations

Operations at headquarters are grouped into six sections as silviculture, forest inventory and management, environmental management, extension and education, planning and monitoring and protection and legal enforcement. Most of the operations are carried out in the field through 18 Divisional Forest Officers (DFOs) in charge of 18 divisions, comprising of 68 ranges and 341 forest beats.

Forestry Research Division

This is responsible for caring out research, obtaining and reviewing national and international research reports and disseminating research findings. The FD library and the forestry information service also function under this.

Personnel, Administration and Finance

This is responsible for accounting, personnel records, supervision of financial activities of various projects and ensuring that all FD activities are in accordance with the government's administrative regulations.

Department of Wildlife Conservation (DWLC)

This department is under the Ministry of Public Administration, Local Government, Plantation Industries and Parliamentary Affairs. The main responsibility is the conservation of wildlife in the area under its jurisdiction. Under the Director and Additional Director there are five Deputy Directors for management, administration, field operations, research and training and promotions. Among these responsibilities the most important is field operations which is responsible for the enforcement of Fauna and Flora Ordinance, and for operation and management of National Parks, Strict Natural Reserves, Jungle Corridors and Sanctuaries.

State enterprises

There are two state enterprises as The State Timber Corporation (STC) and The National Paper Company (NPC).

(i) The State Timber Corporation

STC is a government corporation responsible for procurement and sale of logs mainly from the state-owned forests, and for the sale of logs and for production and sale of sawnwood and furniture. In addition STC is responsible also for importing timber, afore station and forest management and agricultural production.

(ii) The National Paper Company

NPC is also a government-owned limited liability company producing pulp and paper, The mills do not use wood as raw material, except in very small quantities.

Other ministries and government bodies related to forestry

This category consists of the Ministry of Transport, Highways, Environment and Women's Affairs and its Central Environmental Authority, Universities and the Wildlife Trust. Among them, Ministry is responsible for the development of environmental policy and legislation and for the enforcement of the legislation, including monitoring of environmental regulations and coordinating environmental impact assessments.

Non-state sector

Non-state sector of the forestry includes farmers and other small-scale tree growers, estates and forest industries. Farmers and small-scale tree growers playa key role in the forestry sector because they are the most important producers of timber and bio energy, as well as consumers of various forest products and services. Estates also play an important role in forestry sector. Rubber estates are a major source of timber and fuel wood. On the other hand tea industry is the major consumer of fuel wood. In addition tea estates have fuel wood and large areas for tree growing. Finally forest industries are important in the sector because small and medium-scale producers process most of the timber and private sawmillers and pit-sawyers are the main consumers of fuel wood.

Non-governmental and community based organizations

There are more than 200 NGOs deal with forestry either directly or indirectly. These NGOs represent valuable resource that should be tapped to develop forestry and conserve the environment.

CONCLUSION

Agrarian communities predominantly inhabit the South Asia. Therefore, forestry sector is an important sector in South Asia since it provides timber for wood industry, fuel wood for household, employment and also plays an important role in preserving biodiversity and soil and water conservation *etc.* Increasing population increases the demand for forest products and land that creates an immense pressure on the remaining natural forests.

Despite many attempts made by the forestry and land use administration to manage the forests in a sustainable manner the deforestation continued to occur at a significant rate. Deforestation has seriously diminished timber and fuel wood supply, made soil less productive and water supply more erratic. The forestry sector and issues related to it are complex and the long-term nature of the sector requires long-term planning. Thus, National Forestry Policy was formulated with the long-term objectives of conserving the forest, increasing the productivity, enhancing the contribution of forests to rural people and strengthening the economy. Accordingly suggestions were made for new legislation and the institutional structure that would facilitate the implementation of policies.

National legislation, policies and programmes in this region envisaged involvement of local communities living in and around forest areas in forest conservation and management. Subsequently, the Ministry of Environment and Forests addressed all States to frame appropriate policies for effecting Joint Forest Management, like in India, in degraded forest areas with the help of local communities, voluntary agencies and women. The village resource development strategies not only serve the national cause of protecting and developing the existing forest areas, but also address the dire need of improving the quality of life in these impoverished communities. The development of these villages will thus be

brought on par with revenue villages so that over all care of nurturing the ecosystem components may be attained. Similar strategies in villages situated around protected areas have been adopted through Eco-Development so that the biodiversity conservation approach may be streamlined and the pristine biotic representatives of this may be protected.

A common characteristic of the laws in the forestry sector and other related laws is that of ad-hoc nature. In other words, they have been formulated over the years to meet various situations and needs of the time, and are based on rationales, which were relevant to the past but have partly lost their significance and justification in the present environment. When the laws were enacted, priority was given to forest exploitation and revenue collection by the state, while conservation and people's participation have emerged as priority issues. Inefficient law enforcement is another central problem. As a result of the command and control nature of the legislation and the inefficiencies in enforcement, much of the forest officers' time is spent in the courts instead of managing the forest. In addition, the lack of corresponding legislation in other sectors, particularly agriculture, lack of inter-agency linkages, poor coordination of forestry and other forestry related legislation, lack of clear classification for forests and protected areas in the forest legislation and lack of transparency and participation are the other major deficiencies in the legislation.

REFERENCES:

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Centre for Science and Environment, State of Indian Environment: Citizen‟s fifth report 1999.
3. Country Profile on Environment –Nepal, 1997, JICA.
4. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
5. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division.
6. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
7. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
8. Government of Pakistan, lslamabad. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
9. Human Development Report 1999, UNDP.
10. JICA Annual Report, 1999, JICA.
11. JICA Nepal Office, Kathmandu, Nepal.
12. Ministry of Environment and Forests, Traditions, Concerns and Efforts in India,, national report prepared for the UNCED Conference in Rio de Jane,ro, June 1992, (Ahmedabad Centre for Environmental Education. 1992).
13. Ministry of Environment and Forests, Environmental Action Plan: India (New Delhi, 1993).
14. MoEF (1997) White paper on pollution in Delhi with an action plan. New Delhi: Ministry of Environment and Forests.
15. National Environmental Action Plan (1998-2001), 1998, Ministry of Forestry and Environment.
16. National Conservation Strategy and Policy Statement on Environment and Development (New Delhi, June 1992).
17. Planning Commission, Eighth Five Year Plan, 1992-1997 (New Delhi, 1992).
18. Planning Commission, Eighth Five Year Plan 1992-97, (New Delhi: Planning Commission, 1992-97).
19. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority Act, No.7 of 1979.

20. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority (Amendment) Act, No.7 of 1987.
21. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation (Amendment) Act, No.64 of 1988.
22. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation Act, No.57 of 1981.
23. Pachauri, R.K.; Sridharan, P.V. (1998) Looking Back to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
24. Singh Durbar, Kathmandu, Nepal, Central Bureau Statistics, 1994a. A Compendium on the Environmental.
25. Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
26. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
27. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report).
28. The State of the Environment, 1984-1985 (New Delhi: Centre for Science and Environment 1982.
29. The World Fact Book 1999, CIA.
30. UNDP/GEF,1999, Country Programme Strategy: Nepal, Kathmandu, Nepal National Planning Commission (1992). The Eight Plan. His Majesty‟s Government of Nepal,
31. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal.
32. World Bank, September 1998, World Development Report, Knowledge for Development 1998/99.
33. World Development Indicators, 1999, The World Bank.
34. World Development Report, 1999, The World Bank.

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER X

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: BIODIVERSITY

BANGLADESH

Key Issues: Loss of Biodiversity; Depletion of Forest; Poaching; Illegal tree Felling; Protection of endangered Species; Education and awareness; Capacity Building; Enforcement and Compliance; Ecosystem Development; Peoples Participation;

Policy Framework: Fourth and Fifth Five-Year Plan, 1990-2002; National Environment Policy, 1992; National Environment Management Action Plan, 1992;

Laws and Regulation: General Law for Conservation of Fauna and Flora Wildlife (Preservation) Act 1974; Conservation and Protection of Fisheries Act 1950 amended 1982; Laws and Regulation on the Conservation of Species; Laws and Regulation on Hunting; Laws and Regulation on Protected Area;

Institutions: Ministry of Environment and Forests;

1. INTRODUCTION

Bangladesh is a land of diverse biodiversity in the world. Soil and environment are very much favour of enriching biodiversity of the country. About 5000 flowering plant found in Bangladesh. The natural forests such as hill forests, Sundarbans mangrove forests and plain land Sal forests are the storehouse of biodiversity both for plants and animals. The plant community found in hill forests greatly differ form Sal forests and the Sundarbans mangrove forests and vice versa.

About 40 threatened plants have identified in Bangladesh. The reasons for extinction or rare or threatened plants species are: 1. Population pressure; 2. Forests converted into agriculture lands; 3. Over exploitation; and 4. Poor management.

The sundarbans mangrove ecosystem, the remaining largest areas of mangrove in the world supports an exceptional biodiversity. The Royal Bengal Tiger, Estuarine Crocodiles, Spotted Deer and are innumerable varieties of wildlife enrich the biodiversity of the Sundarbans . About 330 spp. of plants, 400 spp. of fishes, over 270 spp. of birds. 35spp. of reptiles and *42* spp. of mammals are recorded . Four large mammals became extinct from the Sundarbans since the beging of the century and now some species are rare, some are endangered and some are threatened. It is urgent need of biodeversity conservation in the Sundarbans. The name of the extinct mammals are Javan rhinoceros *(Rhinocerso sondaicus),* Wild buffalo *(Bubalus bubalis),* swamp deer *(Cervus duvauceli)* and hog deer *(Axis porcinus).*

There are 840 spp. of wildlife found in Bangladesh. Out of which 19 species are Amphibia, *124* are Reptiles, 578 are birds and 119 are mammals. 17 species wildlife have become extinct; 19 species are rare and 32 are endangered in Bangladesh.

There are several reasons for extinction, rare and endangered of wildlife such as:

- Depletion of habitat (due to population pressure and industrialization
- Shortage of food
- Hunting
- Environmental pollution.

For protection and conservation of Biodiversity the Sundarbans (1,39,000 ha) was declared the World Heritage Site in 1996. National parks, wildlife, Sanctuaries, Game Reserve and Botanical gardens have established in the different parts of Bangladesh.

Forest policy 1994 emphasizes the following for biodiversity conservation.

i) All state owned forests of natural origin and the plantation of Hills and Sal forests will be used for producing forest resources, keeping aside the areas earmarked for conserving soil and water resources and maintaining the biodiversity.

ii) Inaccessible areas as slopes of the hills, fragile watersheds, swamps, etc. will be identified and kept as protected areas.

iii) The priority protection areas are the habitats, which encompass representative samples of flora and fauna in the core area of National Parks, Wildlife Sanctuary and Game Reserve. Attempt will be taken to increase the amount of this protected area by 10 percent of the reserved forestland by the year 2015.

2. WILDLIFE PROTECTION

Bangladesh had a variety of wildlife but some of them are endangered and even have been extinct. Asian Elephant and Tiger are the typical wildlife and are also endangered. International Union for Conservation of Nature (IUCN) is promoting more than 10 projects for wildlife and habitats protection. There are many wetlands in the Ganges-Brahmaputra-Meghna river basin. 22 sites of typical wetland are identified. Among them, Sundarban wetlands located in the southwest coastal area is important and are assigned to be the Ramsar site. Species in the wetlands is quite rich. Protection of mangrove forest in Sandarban is promoted by IUCN. Species in the Wetlands (1994) Species Number of Species Water Fowl 125 Freshwater fish 260 Mangrove 17 Reeds 5 Aquatic food/medicinal plants.

3. WETLAND

There are many wetlands in the Ganges-Brahmaputra-Meghna river basin. 22 sites of typical wetland are identified. Among them, Sundarban wetlands located in the southwest coastal area is important and is assigned to be the Ramsar site. Species in the wetlands is quite rich as shown in the table below. Protection of mangrove forest in Sandarban is promoted by IUCN. Species in the Wetlands (1994) Species Number of Species Water Fowl 125 Freshwater fish 260 Mangrove 17 Reeds 5 Aquatic food/medicinal plants 30

4. LAWS AND REGULATION

Following laws and regulations are being applied in the protection and conservation of biodiversity in Bangladesh:

- General Law for Conservation of Fauna and Flora Wildlife (Preservation) Act 1974
- Conservation and Protection of Fisheries Act 1950 amended 1982
- Laws and Regulation on the Conservation of Species
- Laws and Regulation on Hunting

- Laws and Regulation on Protected Area

From the age-old norms and experiences, upto the country's constitution along with numbers of legislations, ordinances, and policies constitute the legal framework of the national forest management and biodiversity. The National Environmental Policy, 1992, Bangladesh National Conservation Strategy (BNCS), the Bangladesh Environment Conservation Management Action Plan (NEMAP), Forestry Master Plan, Wildlife (Preservation) Act, 1973, etc. new framing the local bodies of environmental management in the country. The other sectoral pollution also emphasize on environment and its conservation. Those are the Forest Act, 1927 Amendment Act, 1990 Flood Action Plan and Flood Management Strategy, Water Resources Planning Law, 1992. Brick Burning (Control) Act, 1990, Coast Guard Law, 1994 etc.

Bangladesh has completed the first phase of a national conservation strategy aimed at integrating conservation goals with national development objectives and overcoming identified obstacles to sustainable development. Some twenty sectors in the current Third Five-Year Plan are identified for critical analysis during a second phase, including the conservation of genetic resources, and wildlife management and protected areas. The Bangladesh Agricultural Research Council, Ministry of Agriculture is the lead agency for the implementation of Phase II, which began in October 1989.

There is no national wildlife conservation policy. The Bangladesh Wildlife (Preservation) Order, 1973, promulgated under Presidential Order No. 23 on 27 March 1973 and subsequently enacted and amended in two phases as the Bangladesh Wildlife (Preservation) (Amendment) Act, 1974, provides for the establishment of national parks, wildlife sanctuaries, game reserves and private game reserves (see Annex). Under Article 23, wildlife sanctuaries enjoy a greater degree of protection than national parks. For example, entry or residence, introduction of exotic or domestic species of animals and lighting of fires is prohibited in wildlife sanctuaries, but not national parks. No specific rules are detailed for game reserves. The Article makes provision, however, for the government to relax any of these prohibitions for scientific, aesthetic or other exceptional reasons, and to alter the boundaries of protected areas. Under Article 24, provision is made for the establishment of private game reserves upon application by the landowner. The owner of a private game reserve may exercise all the powers of an officer provided under the Act. Proposals are being drawn up to strengthen the existing legislation, largely through raising fines and terms of imprisonment for offences.

Conservation, use and exploitation of marine resources are provided for under the Territorial Water and Maritime Zones Act, 1974. According to provisions in this Act, conservation zones may be established to protect marine resources from indiscriminate exploitation, depletion or destruction. At present, there is no legal provision for the management of coastal zones.

The Forest Act, 1927, enables the government to declare any forest or wasteland to be reserved forest or protected forest. Activities are generally prohibited in reserved forests; certain activities, such as removal of forest produce, may be permitted under license in protected forests, while others, such as quarrying of stone and clearing for cultivation, may be prohibited. The rights of government to any land constituted as reserved forest may be assigned to village communities, with conditions for their management prescribed by government. Such forests are called village forests. Under the Forest (Amendment) Ordinance, 1989, penalties for offences committed within reserved and protected forests have been increased from a maximum of six months imprisonment and a fine of Tk 500 to five years imprisonment and a Tk 5,000 (US$ 1,700) fine. In accordance with the National Forest Policy, adopted in 1979, effective measures will be taken to conserve the natural environment and wildlife resources. The Policy does not, however, deal explicitly with the need to set aside special areas as protected forests, as distinct from productive forests, to preserve genetic diversity and maintain ecological processes within the context of sustainable development.

BHUTAN

Key Issues: Loss of Forest Cover, Biodiversity Management; Protection of endangered Species; Environment Education; Capacity Building; Enforcement and Compliance; Ecosystem Development; Peoples Participation

Policy Framework: Paro Resolution on Environment and Sustainable Development' 1990; National Environment Strategy;

Key Legislation: Bhutan's National Forest Policy; Forest and Nature Conservation Act 1995; The Forest Act of 1969

Key Institutions: Department of Forestry Services; Department of Forestry Services; Forestry Development Corporation

1. INTRODUCTION

Bhutan has very high levels of biological diversity at the ecosystem, species and genetic levels. Very few countries in the world match Bhutan's biological diversity and fewer still have taken such strong steps to conserve their biodiversity. Bhutan ranks in the top ten percent of countries with the highest species density (species richness per unit area) in the world, and it has the highest fraction of land in protected areas and the highest proportion of forest cover of any Asian country. The other countries in the region have taken less action to conserve their biodiversity and they face far greater threats to what they have left. Bhutan is one of a very few biologically diverse countries in the world which have the opportunity to maintain its biodiversity largely intact in the coming decades.

2. CONSERVATION OF BIODIVERSITY

Bhutan has great diversity of ecosystems partly because of its location at the juncture of the Palearctic realm of the temperate Euro-Asia and the Indo-Malayan realm of the Indian sub-continent, and partly due to the country's great geological relief and climatic heterogeneity. Valleys in the inner mountains receive less than 800 mm of precipitation, while rainfall in the lowlands is as high as 5,500 mm. The country includes a range of ecosystems from sub-tropical forests in the south at an elevation of 150 meters to mid-elevation temperate forests, to the northern alpine zone above 7,000 meters.

While there are few areas of the country, which have not experienced some human activities, most ecosystems remain substantially intact. According to the latest land use survey, conducted by the Land use planning section (LUPP), MOA, the total land area under forests was 29.045 km2 or 72.5 % of the country. Out of this total, 8.1% or 3, 258 sq. km have been classified as degraded forest or natural scrub forest. Coniferous forests constitute 26.5% broadleaf forests 34.3% and 0.2 % are under plantation.

Several plant species listed under schedule I of Bhutan's Forest and Nature Conservation Act, 1995 are also from the alpine and sub-alpine regions and have very specific micro-habitat requirements. For instance, the threatened species P*odophyllum hexandrum* (Himalayan May Apple) grows only among Berberis-Juniperis shrubberies in rocky areas, and frequent fires and systematic removal of shrubs from such areas may cause the local extinction of this species. Another e.g is *Circaeaster agrestis*, a rare plant that grows only under rock shelters and caverns.

Recognizing these factors, the Royal Government of Bhutan has established a system of national parks, wildlife sanctuaries and nature reserves and has a policy of maintaining forest cover of more than 60% of the total land area. Presently, Bhutan has more than 70% of the total land cover under forest cover and more than 26 percentage of the land cover under existing protected areas system.

In the past five years, however, there has been a major shift in forest policies. The present forest policy stipulates that revenue generation is only secondary to conservation and protection. The Forest and Nature Act of Bhutan, 1995 also stipulates that all forest harvesting or logging operations should be strictly based on approved management plans and sound ecological considerations to ensure sustainability.

Experiences from other countries with similar topographical relief and economic conditions have demonstrated how difficult it is to exploit mountain forests in a genuinely sustainable manner. In spite of good intentions, deforestation and severe degradation were often the end results. As a consequence of both internal and external experiences, it became increasingly apparent that the indirect benefits of forests far outweighed the direct cash revenues from the sale of timber. According to the new government policy, Bhutan's forests are to serve the following prioritized needs:

1 watershed maintenance and general protection against erosion;
2 maintaining a stable climate and Bhutan's rich biodiversity;
3 use by rural farmers for grazing, firewood collection, fodder, timber for construction, and non-timber products;
4 supplying raw materials for the growing wood-based industrial sector; and,
export (only if sustainability permits).

3. DIRECT AND UNDERLYING CAUSES OF THREATS

- Bhutan's 3.1 percent per annum rate of population increase puts ever increasing pressure on the country's fragile environment and natural resource base. Overgrazing by domestic livestock, both in range and pasture areas where it leads to attrition or loss of species, reduction of productivity, and erosion; and in forest areas where it leads to loss of reproduction of forest species and to changes in vegetation composition.
- This is exacerbated by the increasing population and its reliance on wood for fuel. It occurs wherever there is human habitation but it is especially notable around population centers including permanent military posts. The total demand for wood and wood products in terms of volume is dominated by fuelwood demand. The total consumption of fuelwood is estimated at 1,318,700 cum of which the household consumption is about 89%. The consumption is estimated to grow up to 2,146,200 cum by the end of 2012-13. The use of other fuels is rather small, only about 3% of the total fuelwood consumption.
- Shifting Cultivation
- Forest Fires, which are mostly if not entirely caused by humans.
- Over-exploitation of plants and animals, especially through collection (e.g., of medicinal plants), poaching, and heavy use (e.g., of tree species for roofing shingles).
- Inadequate Resource Management, which in turn is caused by inadequacies in policy, legal and institutional arrangements, information and staffing.
- Inadequate Implementation of Policy and Legislation, and inadequate legal system, which promotes unsustainable exploitation of biodiversity resources.
- Limited Institutional Systems that promote unsustainable exploitation particularly because of fragmentation of responsibilities involving biodiversity, inadequate coordination between the government units involved, and inadequate authority to achieve biodiversity conservation.
- Inadequate Data and Information on Biodiversity and its use, and inefficient use of the information that does exist.
- Threats from Outside National Borders, which primarily involve transborder poaching of medicinal plants, and poaching of larger mammals, especially along the southern border.

4. LEGISLATION AND POLICY

The Royal Government has established a system of national parks, wildlife sanctuaries and nature reserves for *in situ* conservation of biodiversity across more than 26% of the country's land area. Indeed, laws covering protected areas are often more stringent than ordinary forestry laws, although indigenous communities that have traditionally relied on forest resources for livelihood sometimes inhabit protected areas. Again, the Kingdom's strong conservation ethics have come at the cost of economic development and should be supplemented by compensation from international sources. The Forest and Nature Conservation Act 1995 establishes guidelines for the creation and management of all protected areas; this Act calls for strategies for biodiversity conservation to be built upon two main concepts:

- Conservation value lies in the cumulative effect of species diversity
- Natural resources must be used to meet the collective needs of the Bhutanese people

In late 2001 a new vision and strategy document was adopted to lead to more effective management of protected areas. It is intended to ensure an increasingly focused approach and also take into account emerging conservation issues in management of the areas. Although major problems include lack of adequate communication among stakeholders, human-wildlife conflicts, poaching, inadequate human and financial resources, and forest fires, opportunities have been outlined in strong political support, potential for ecotourism and research opportunities.

Bhutan has retained much of the natural vegetation, intact for several centuries, and is
justifiably proud of the efforts made to protect its forests. Forest regeneration remains a top priority for the future too. H.M. the King Jigme Singye Wangchuck has stated that: "Throughout the centuries, the Bhutanese have treasured their natural environment and have looked upon it as the source of all life. This traditional revenue for nature has delivered us into the twentieth century with our environment still richly intact. We wish to continue living in harmony with nature and to pass on this rich heritage to our future generations". The preservation of the country's rich biological diversity can be attributed to two factors, the enlightened leadership and the strong conservation ethic of the Bhutanese people. Conservation is a central tenet of Buddhism that believes in preserving nature.

The importance of protecting nature in all its manifestations has permeated Bhutanese consciousness and has become integral to the Bhutanese way of life. Therefore, preservation of the environment, as well as of sacred and cultural heritage sites is an important and integral part of Bhutanese value system. Through its forest policies, Bhutan is committed to maintaining a minimum of 60% of the land area under forest cover. The Royal Government has always aimed at policies for conservation and the sustainable utilization of natural resources. Beginning from the mid 1960s until now, 26.23% of the area of the country has been declared as protected area. The protected areas consist of four national parks, four wildlife sanctuaries and one strict nature reserve. More than 70% of the protected areas have good forest cover. Management of the protected areas has been entrusted to the Nature Conservation Division under the Department of Forestry Services. The Royal Government of Bhutan created the Forestry Services Division (now Department of Forestry Services) in 1952. The Forest Act of 1969 (now superceded by the Forest and Nature Conservation Act 1995) declared all forestland as Government Reserved Forest whereby the forest department took responsibility of the stewardship of forest resources. Since then, incidences of forest fires, over utilisation of forest products and encroachment of forestland have been controlled to a large extent. More importantly, the National Forest Policy promulgated by His Majesty soon after his enthronement in 1974 encompassed a farsighted vision. Contrary to forest policies in other countries, Bhutan's National Forest Policy states that the sale of timber is only of secondary importance. The policy clearly states that for a mountainous country with a fragile ecosystem and an expanding agricultural economy, forestry operations should accord the highest priority to indirect benefits and the conservation role. Successful pursuit of this vision has delivered us to the present state where the environment of the country is an envy of the conservation world.

All forestry operations were nationalized in 1979 with the main objective of protecting the forests from over felling. Also in 1979, a Social Forestry Programme was launched as per the Royal Decree of His Majesty, with the main aim of promoting people's participation in the management of forest resources

and to reduce pressure on the conventional forest. There are four main goals set to direct the forest policy to ensure that the forest resources are used according to sustainable principles, contributing to social justice and equity. Further, the policy aims to ensure conservation of the environment, and only thereafter aim at deriving economic benefits from the forest as rationally managed resource. The four guiding principles of the forest policy are as follows:

- Protection of the land, its forest, soil, water resources and biodiversity against degradation, such as loss of soil fertility, soil erosion, landslides, floods and other ecological devastation and the improvement of all the degraded forest land areas, through proper management systems and practices. Contribution to the production of food, water, energy and other commodities by effectively coordinating the interaction between forestry and farming systems
- Meeting the long-term needs of Bhutanese people for wood and other forest products by placing all country's production forest resources under sustainable management
- Contribution to the growth of national and local economies, including exploitation of export opportunities, through fully developed forest based industries, and to contribute to balanced human resources development, through training and creation of employment opportunities.

The Bhutan Logging Corporation (now Forestry Development Corporation) was established in 1984. The Forestry Development Corporation executes forestry operations (harvesting and plantations) in the forest management units as per prescriptions of the management plan. The Forest and Nature Conservation Act 1995 clearly states that no Government Reserved Forest will be worked/operated unless there is an approved Forest Management Plan. Timber harvesting, to meet local demand is done from designated forest management units which have approved forest management plan. As of July 1999, 14 management units and three working schemes covering an area of 143 966 hectares had approved management plans, where forestry operations are going on. Another 11 forest management units covering an area of 141 642 hectares have been inventoried and management plans are under preparation. Tseri (shifting cultivation), which has negative impacts on the environment and forest resources, still continues in many parts of Eastern Bhutan. Of the total area of cultivation, nearly 30% is under tseri or other forms of shifting cultivation. The Royal Government is committed to phasing out this unsustainable form of farming. As there is no evidence of an equal area suitable for permanent cultivation, the phasing out of shifting cultivation is a major challenge, which is being addressed throughout the 8th Five-Year Plan. Under the Third Forestry Development Project of the World Bank, Department of Forestry Services is promoting plantations and rehabilitation of abandoned Tseri land in six eastern districts. Due to increase in demand/pressure for forest products, afforestation / reforestation programmes of barren or degraded forestland and clear-felled areas have been initiated recently to improve the sustainable capacity of forestland. By the end of 1997, the Department of Forestry Services had achieved about 17,123.37 hectares of plantation. Eventually, Bhutan will want to move from being a passive conserver of genetic resources to an active partner in their commercial utilization and international promotion. The hope is to someday develop the technical and legal capacity to undertake the sophisticated genetic research and international negotiations involved in germ plasm development and gene patenting. In addition to its current small scale commercial activities in medicinal herbs and decorative flora, Bhutan would like to develop its own pharmaceutical industry so that it can take proper advantage of its own immense biological storehouse.

INDIA

Key Issues: Loss of Biodiversity; Depletion of Forest Cover; Protection of endangered Species; Environment Education; Capacity Building; Enforcement and Compliance; Ecosystem Development; Peoples Participation

Policy Framework: National Conservation Strategy1992; National Forest Policy, 1988; Biodiversity Protection and Conservation Strategy; National Wildlife Conservation Strategy, 2002

Key Legislation: Forest Conservation Act 1980/Wildlife Protection Act 1972(amendment 1991); Environment Action Plan 1993; Wildlife Action Plan1983; Agricultural and Processed Food Products Export Development Authority Act, 1985/1986; Agricultural Produce (Grading and Marking) Act, 1937; Cardamom Act, 1965; Coconut Development Board Act, 1979; Customs Act, 1962; Destructive Insects and Pests Act, 1914; Environment Protection Act: 1986; Fisheries Act, 1897; Forest Act, 1927; Forest (Conservation) Act, 1980; Import and Export (Control) Act, 1947); New seed Development Policy, 1988; Wildlife (Protection) Act, 1972 and Wildlife (Protection) Amendment Act, 1991; National Biodiversity Act, 2002

Key Institutions: Ministry of Environment and Forest; Botanical Survey of India, Calcutta; Zoological Survey of India, Calcutta; Forest Survey of India, Dehradun; Wildlife Institute of India, Dehradun; National Museum of Natural History, New Delhi; Indian Council of Agricultural Research (ICAR); National Bureau of Plant Genetic Resources, Delhi; National Bureau of Animal Genetic Resources, Karnal; National Bureau of Fish Genetic Resources, Allahabad; National Dairy research Institute, Karnal; Central Rice Research Institute, Calcutta; Department of Agriculture and Cooperation; M.S. Swaminathan Research Foundation, Chennai

1. INTRODUCTION

India is one of the 12 Mega biodiversity centers in the world, representing two of the major realms and three basic biomass of the world. The country is divided into 10 biogeographic region: Tran-Himalayan, Himalayan, Indian Desert, Semi Arid, Western Ghats Decean Peninsula, Gangetic Plans, North East India, Islands and Coasts. The diversity of the countries on biological resource is yet to be fully surveyed. Approximately 65 percent of the total geographical area has been surveyed so far. Based on this, over 47,000 species of plants and 81,000 species of animals have been recovered. This list is being constantly upgraded, specifically in respect of lower plant and invertebrate animals.

The adoption of international Convention on Biological Diversity (CBD) was an important and historic milestone at the United Nations Conference on Environment and Development in Rio in 1992. India became a party to the CBD entered into force in December, 1993. The convention recognises the importance of the biological diversity for evolution and for maintaining life support system and seeks to secure conservation and sustainable use of biological diversity for the benefit of present and future generation. The CBD has very wide scope with reference to the various legal issues concerning biological diversity.

2. FOREST PRINCIPLES

India's policies and programme in the realm of forestry, particularly the development during the last fifteen years have been largely in consonance with Non- Legally Binding Forest Principle adopted during the UNCED. India has actively participated in the deliberation of the Intergovernmental Panel on Forest (IPF), established by the commission on Sustainable Development (CSD).

Enactment of the Forest (Conservation) Act, 1980 was a landmark incident in the area of forest conservation by which it changed its approach and treated forest an environmental and social resources rather than as a revenue or commercial resource and imposed restriction on the preservation of forest or use of forest land for non- forest purpose. The strictest control have been placed on the diversion of forest land to other uses and in the rare cases when this is permitted for developmental purposes, compensatory deforestation is a prior requirement. India's National Forest policy of 1988 formulated four years before the Earth Summit embodies many of the highlighted which have been repeatedly emphasized in the Rio forest principle.

3. THE NATIONAL FOREST POLICY, 1988

The National Forest Policy, 1988 stress the importance of forests for maintaining environmental stability and ecological balance and for meeting the subsistence needs of the rural and tribal people for fuel wood, fodder and small timber. In National Forest Policy of 1988, the basic objectives were nearly the same as those of the 1894 and 1952 resolutions. It states that

"The principal aim of forest policy must be to ensure environmental stability and maintenance of ecology balance including atmospheric equilibrium which are vital for sustenance of all life forms, human, animal and plant. The derivation of direct economic benefit must be subordinated to this principle aim"

The basic objective embodied in the National Forest Policy are the following

- Maintenance of environmental stability through preservation and, where necessary, restoration of the ecological balance that has been adversely disturbed by serious depletion of the forests of the country.
- Conserving the natural heritage of the country by preserving the remaining natural forests with the vast variety of flora and fauna, which represent remarkable biological diversity and genetic resources of the country.
- Checking soil erosion and denudation in the catchments areas of rivers lakes, reservoirs in the interest of soil and water conservation, for mitigation floods and drought and for the retardation of siltation of reservoirs.
- Checking the extension of sand dunes in the desert areas of Rajasthan and along the coastal tracts.
- Increasing substantially the forest/tree cover in the country through massive afforestation and social forestry programme, especially on all denuded degraded and unproductive lands.
- Meeting the requirements of fuel-wood, fodder minor forest produce and small timber of the rural tribal population.
- Encouraging efficient utilization of forest produce and maximizing substitution of wood.
- Creating a massive people's movement with the involvement of women, for achieving these objectives and to minimize pressure on existing forests

4. ROLE OF INDIGENOUS AND TRIBAL PEOPLE

Forest Principle highlights that National Forest Policies should recognize and duly support the identity, culture and the rights of indigenous people, their communities and other communities and forest dwellers. It further states that "Appropriate conditions should be promoted for these group to enable them to have an economic stake in forests use, perform economic activities, and achieve and maintain cultural identity and social organization, as well as adequate levels of livelihood and well-being, through, *inter-alia*, those land tenure arrangements which serve as incentives for the sustainable management of forest".

As India is a signatory to the ILO Convention concerning Indigenous and Tribal people which has a similar provision which states "The right of ownership and possession of the people concerned over the lands which they traditionally occupy shall be recognized. In addition, measures shall be taken in

appropriate cases to safeguard the right of the people concerned to use land not exclusively occupied by them , but to which they have traditionally had access for their sustenance and traditional activities. Particular attention shall be paid to the situation of nomads people and shifting cultivators in this respect."

Much before the above two instrument were brought out, India's National Forest Policy (NFP) resolution contained similar provision, which state. "The holders of customary rights and concessions in forest area should be motivated to identify themselves with the protection and development of forests from which they derive benefit" and "the life of tribal land other living within and near forest revolves around forests. The right and concessions enjoyed by them should be fully protected. Their domestic requirement of fuelwood, fodder, minor forest produce and construction timber should be the first charge on forest produce"

5. ENVIRONMENT IMPACT ASSESSMENT

The forest Principle states that "National Policy should ensure that Environment Impact Assessment (EIA) should be carried out were action are likely to have significant adverse impacts on important forest resources, and where such actions are subject to a decision of a competent national authority." The Forest (Conservation) Act of 1980 initiated a process by which Indian Forest were treated as an environmental and social resource. The strictest control have been placed for development purposes, compensatory afforestation is a prior requirement. National Forest Policy of 1988 had similar provision for diversion for forest for non-forest purposes. It states "Diversion of forest land for any non-forest purpose should be subject to the most careful examination by specialist from the standpoint of social and environmental cost and benefits. Construction of dams and reservoirs, mining and industrial development and expansion of agriculture should be consistent with the needs for conservation of tees and forests. Projects which involve such diversion should at least provide in their investment budget, find for regeneration/compensatory afforestation".

Similar direction has been mentioned in the Notification on Environment Impact Assessment of Development Projects issued by the Ministry of environment and Forest, Government of India dated 27th January, 1994 (as amended on 4th May, 1994)

6. WILDLIFE CONSERVATION STRATEGY 2002

- Wildlife and forests shall be declared priority sector at the national level for which funds should be earmarked.
- Law enforcement agencies must ensure that those engaged in poaching, illicit trade in wildlife and wildlife products, destruction of their habitat, and such other illegal activities are given quick and deterrent punishment.
- We should fully tap the potential in wildlife tourism and at the same time take care that it does not have adverse impact in wildlife and protected areas. The revenue earned from increased tourism should be used entirely to augment available resources for conservation.
- Protecting interests of the poor and tribals living around protected areas should be handled with sensitivity and with maximum participation of the affected people. They should have access to the minor forest produce, in the forest outside of national parks and sanctuaries .Employment and means generation for these people is crucial for maintaining symbiosis between the forests, wildlife and the people. People should be encouraged to take up afforestation and conservation in new areas.
- While strengthening protective measures against traditional threats to wildlife, we should also respond to newer threats such as toxic chemicals and pesticides.
- There should be greater governmental as well as societal recognition and support for the many non-governmental organisations engaged in wildlife conservation. Mainstream media to better highlight their activities as also successes of governmental initiatives that have worked.

- Creatively produced Television Programmes on wildlife and ecology are widely appreciated by young and old as seen from the popularity of dedicated T.V. channels like , Discovery, National Geographic and Animal Planet. It is proposed that Prasar Bharati and our private channels alongwith with agencies like WWF for Nature should collaborate and increase original Indian content in different languages on our television.
- No diversion of forest land for non-forest purposes from critical and ecologically fragile wildlife habitat shall be allowed.
- Lands falling within 10 km. of the boundaries of National Parks and Sanctuaries should be notified as eco-fragile zones under section 3(v) of the Environment (Protection) Act and Rule 5 Sub-rule 5(viii) & (x) of the Environment (Protection) Rules.
- Removal of encroachments and illegal activities from within forest lands and Protected Areas.
- No commercial mono-culture to replace natural forests.
- The settlement of rights in National Parks and Sanctuaries should not be used to exclude or reduce the areas that are crucial and integral part of the wildlife habitat.
- More than 2000 vacant posts in the frontline staff of Protected Areas shall be filled immediately and provided basic infrastructure for efficient discharge of duties. Ban on recruitment of staff against vacant post should be lifted on lines with the Police Department. Innovative initiative such as redeployment of surplus employees in other departments, hiring local people on voluntary or honorarium basis, raising donations from business houses and other members of the public in return for a greater role for them in implementing programmes need to be explored.
- Every protected area should be managed by forest officers trained in wildlife management.
- Mitigation measures for human-animal conflict and mechanism for crop insurance as also expeditious disbursements of ex-gratia payments, should be instituted by States.
- Forest Commission should be set-up to look into restructuring, reform and strengthening the entire forest set up and affiliated institutions in the country.
- A working group shall be constituted to monitor implementation of Wildlife Action Plan.
- Most importantly let us all resolve that we should end the relative neglect of wildlife conservation in recent years. To begin with, Board should meet more often. Wildlife conservation is too important a task to be treated lightly or ritualistically.

7. NATIONAL STRATEGY

The Convention comments countries to develop national strategies, plan or programme for the conservation and sustainable use of biological diversity or adopt for this purpose existing strategies, plan programme. Government, prior to the Rio Earth Summit, has formulated a “National Conservation Strategy and policy statement on Environment and Development, 1992” The government with an aim to have a specific strategy, with the association of Indian Institute of Public Administration (IIPA), analysed the central Acts and highlighted significant gaps. There are about 24 central Acts on the use and extraction of certain natural resources. These legal do provide some regulatory mechanism for wild biological diversity but domesticated diversity is not adequately addressed Government has brought two legislation for giving effect to the obligation under international agreements.

1. Biological Diversity legislation,
2. Plant variety protection and Farmers Right legislation

These two legislation have operational linkage as required under Trade Regulated Intellectual Property Rights (TRIPS).

8. EXISTING LAWS ON BIODIVERSITY

The important central Acts bearing upon biological diversity with main features are as follows.

i) Agricultural and Processed Food Products Export Development Authority Act, 1985/1986

i) Promotion and regulation of export of agricultural products specified in schedules - includes medicinal plants.

ii) Agricultural Produce (Grading and Marking) Act, 1937

i) Fixing grade designation to indicate quality of any specified agricultural produce (3a,b)
ii) Prohibition or restriction on trade in working marked/graded produce (3g)
iii) Extension of such revisions to any other article (including non- agricultural articles) {6}

iii) Cardamom Act, 1965

Provisions as in Rubber Act (see below) ; includes seeds. Provision for prohibiting/ restricting export/import of cardamom {2.1} applicable to *Elettaria cardamom maton*, but extendable to any plant notified by Cardamom Board {3}.

iv) Coconut Development Board Act, 1979

As in Rubber Act, Tea act, Cardamom Act etc.

v) Customs Act, 1962

i) Regulation prohibition of import and export of specified articles (2.1)
ii) Regulation of import-export specifically for:
   a) The protection of human, animal or plant life or health {11(t)}
   b) The conservation of exhaustible natural resources {11(m)}
iii) Regulation of transportation and storage of notified items {11(j,k,l,)}.

vi) Destructive Insects and Pests Act, 1914

i) Prohibition or regulation of import of any "articles" which may cause infection to any plant {3(1)}
ii) Prohibition or regulation of movement, between states within India, of articles likely to cause infection t plant (4A)

vii) Environment Protection Act: 1986

i) General measures to protect environmental [3(i)]
ii) Restriction of industrial and other processes/ activities in specified areas {3(2)(v)}
iii) Prevention and control of hazardous substance, including their manufacture, use release, and movement {3(2)}

viii) Fisheries Act, 1897

i) Prohibiting on use of explosives for fishing (5)
ii) Prohibition on use of poisons for fishing (5)
iii) Regulation on fishing in private waters, with consent of owners/ right holders {2(2) & (3)}.
iv) Prohibition of all fishing in specified waters for maximum 2 years {6(4)}.

ix) Forest Act, 1927

i) Setting up and managing reserved forests (Chapter II)
ii) Setting up and managing village forests (Chapter III)
iii) Setting up and managing protected forests (Chapter IV)
iv) Protection up non-government forests and lands (Chapter V)
v) Control of movement of forest produce (Chapter VII)
vi) Control of grazing or trespass by cattle in forest land (Chapter IX)

x) Forest (Conservation) Act, 1980

i) Prohibiting or regulating non-forest use of forest lands (2)

xi) Import and Export (Control) Act, 1947)

i) Prohibition or restriction on imports and exports of specified items (3)
ii) Regulations on transportation of specified items (4e)

xii) Import and Expert (Control) Act, 1947

i) Establishment of an Authority for developing and controlling marine products {4,9(!)}
ii) Developing and regulating of-shore and deep-sea fishing standards for export; regulating exports {9(2a,c,f)}
iii) Prohibition/restriction on export and import of marine products{2091)}

xiii) Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1980

i) Regulation of fishing vessels (3)
ii) Permits only to be granted within definition of public interest, and for scientific research, experiment, etc{5(3),8}

xiv) National Dairy Development board Act, 1987
i) Establishment of a Board which promotes dairy development and other agriculture based industries (4,16(1a))
ii) Financing and facilitating animal husbandry, agriculture, high yielding cattle (including import of semen), import- export of milch animals and bulls and general enhancement of cattle wealth {16(1)}

xv) National Oilseeds and Vegetable oils Development Board, 1983

i) Special focus on providing farmers, especially small farmers, benefits from development of oilseeds industry {9(2)a}
ii) Assistance for production and development of breeder's seeds, foundation seeds, and certified seeds of high quality, and for imposed methods of cultivation.

xvi) New seed Development Policy, 1988

xvii) Prevention of Cruelty to Animals Act, 1960
i) Restriction on cruel treatment of animals, including use, transportation, and trade (chapter III and Rules under section 38)
ii) Restrictions on use of animals for purposes of experimentation and performances (chapter IV & V)

xviii) Rubber (Production and Marketing) Act 1947

i) Establishment of Indian Rubber Board, with function of developing/encouraging improved rubber cultivation and marketing, advising or import/export {B(1) &(2)}
ii) Restriction on right of rubber planters' lience required to plant or replant, where to plant, etc. (17).

xix) Seeds Act, 1966

i) Regulation on quality of seeds on notified food crops, cotton, and fodder, to be sold for agriculture purposes (5, 6)
ii) Restoration on export/import of notified seeds (12)
iii) Exemption to persons setting/delivering, on own premises selling/ delivering, on own premises, seeds grown by them (24)

xx) Spices Board Act, 1986

As in Rubber Act, etc., for cardamom; for other spices, restricted to export - import development and regulation.

xxi) Tea Act, 1953

Restriction on export of tea seeds(17). Applicable to one species, *Camelia sinensis*, presumably to all its varieties.

xxii) Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976

a) Establishment of sovereign rights over waters and seabed within the continental shelf and exclusive economic Zone (200 nautical miles from nearest appropriate point on Indian territory) {3(1), 5(1), 6(2) and 7(4)}.

b) Sovereign right to explore, exploit, conserve and manage resources of continental shelf and EEZ {6(3) and 7(40}.

c) Notification of any area within this zone for purposes for protection and resources and conservation of marine environment {6(5) and7(6)}.

xxiii. Tobacco Board Act, 1975

xxiv) Wildlife (Protection) Act, 1972 and Wildlife (Protection) Amendment Act, 1991

i) Restriction or prohibition on hunting of animals (Chapter III)

ii) Protection of specified plants (Chapter IIIA)

iii) Setting up and managing sanctuaries and national parks (Chapter IV)

iv) Setting up of zoo authority, control of zoos, and captive breeding (Chapter IVA)

v) Control of trade and commerce in wild animals, animal article and trophies (Chapter V & Chapter VA).

xxv) National Biodiversity Act, 20002:

The legislation provides for establishing National Biodiversity Authority, State Biodiversity Boards, Biodiversity Management Committees at the national, state and block /village level respectively to ensure that the objectives of the legislation are achieved. The basic concern is to protect biological resources of India against use by foreign individuals, institutions and companies without sharing the benefits arising out of such uses within the country as well as with the primary conservers. The legislation provides powers to the government to frame rules under the legislation on matters related to conservation of biodiversity and access to biological resources. It protects the right of traditional users and local people to the use of biological resources. It recognises agreements entered after a due process of examination as provided in the legislation.

Function of Authorities

1. National Authority

The National Authority shall grant approvals for conducting activities referred to in para 17, "Prohibition of certain activities without prior informed consent". It shall advice the Central Government on:

(i) matters relating to the conservation of biological diversity, sustainable use of its components and equitable sharing of benefits arising out of the utilization of biological resources;

(ii) the manner in which the National Biodiversity fund may be utilized;

(iii) the heritage sites to be notified and also the measures for the management of such heritage sites;

(iv) implementation of the legislation generally and such other functions as may be prescribed.

State Biodiversity Boards

The state boards shall advise as mentioned on national authority and will implement the guideline as framed by the National Authority for the benefit sharing between conservers of biological resources, creators and holders of knowledge and information relating to use of biological resources, creators and holders of knowledge and information relating to use of biological resources and users of such resources and knowledge when such use is made for commercial purposes within India. The state Boards will assist local bodies to set up biodiversity management committees in their respective blocks/villages.

Biodiversity Management Committees in local bodies.

The bodies in each village or block will try to promote the conservation, chronicling and sustainable use of the biodiversity wealth of the area such as conservation of community asset in relation to biodiversity, preservation of habitats, conservation of common property resources and on farm conservation of agro-biodiversity which includes diversity of domesticated crops, land races, folk varieties and cultivators of biological species, domesticated stocks/breeds of animals, strings of fish and microorganisms.

Indigenous People and Community Rights

The Rio Declaration states that

":Indigenous People and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices states should recognise and dully support their identity, culture and interest and enable their effective participation in the achievement of sustainable development". The basic aim of the para is provided in our constitution which states,
"It shall be the duty of every citizen of India to value, cherish and preserve the rich heritage of our composite culture"

This community right is also recognised in the provision of the Panchayats (Extension to Scheduled Areas) Act, 1996. It states that "a state legislation on the Panchayat that may be made, shall be in consonance with the customary law, social and religious practices and traditional management practices of community resources."

xxvi) ENVIRONMENT LEGISLATION AND STANDARDS

Rio Declaration provides that
"states shall enact effective environmental standard management objectives and priorities should reflect the environmental and developmental content to which they apply...."

The government is in a process to enact two effective environment legislation: Biodiversity and Plant Breeders Variety and Farmers Right Legislation in connection with Convention on Biological Diversity and Trade related Intellectual Property right (TRIPS) .

The government thought its gazette notification modified the Environment Protection second Amendment Rules to require any person engaging in an environmental audit respect for the financial year. The basic thrust of the scheme is to promote environmental accountability at point of source, the adoption of low waste technology and the minimization of raw material consumption. This provision was incorporated before the Rio instrument was held, which shows our approach and awareness.

xxvii) THE PLANT VARIETY PROTECTION AND FARMERS RIGHT LEGISLATION.

The Ministry of Agriculture has prepared a Plant Variety Protection and Farmers Right Legislation in April 1997 as required under Trade related Intellectual Property. In substance, it totally undermine to concept of farmers rights as it has evolved in the FAO Commission on plant Genetic Resources, the

International Undertaking on plant Genetic Resource, the Global Plan of Action and above all the convention on Biological Diversity. It should be centered on farmer's rights, which recognize that farmers are conservers, breeders and consumers of seed. The proposed legislation recognizes the farmer as a breeder but curtails the farmer's right to sell the seeds of protected variety.

Both the proposed legislation are inclined towards TNCs rather than the community. As both the legislation has still to be enacted, necessary incorporation can be made to protect the community right and provision for penal action for the infringement of the provisions.

MALDIVES

Key Issues: Protection and Conservation of Biodiversity; Protection of endangered Species; Environment Education; Capacity Building; Enforcement and Compliance; Ecosystem Development; Peoples Participation

Policy Framework: National Environment Action Plan

Key Legislation: Environment Protection and Conservation Act, 1997; National Biodiversity Conservation Strategy in 1997; Law on Uninhabited Islands (Law no: 20/98

Key Institutions: Ministry of Home Affairs, Housing and Environment

1. INTRODUCTION

Due to the lack of natural resources and wealth, biodiversity particularly marine biodiversity is the most significant and vital resource base for the country. The livelihood has traditionally been marine-based as well and marine resources still continue to be the main generator of food, earnings, employment, protection and shelter.

Coral miming in addition to having adverse impacts on the reefs itself, it affects the islands as well as biodiversity. Coral reefs offer strong coastal protection against ocean currents, waves and tides. Mining of corals have resulted in the destruction of this protection layer in some islands causing considerable amount of beach sand to wash away from the island into the sea. As the protection layer is destroyed, waves and tides directly enter into the island causing damage to the vegetation and intruding into the freshwater aquifer. The other associated impacts on the reefs include loss or migration of residential reef fish communities and other living organisms, loss of bait fish that are important for the local tuna fishery, and reduced coral percentage cover. Most importantly, these reefs may take several years to recover. Cement blocks are increasingly replacing the use of coral for housing. In addition, alternatives such as cement and sand bags are being utilized for construction of seawalls and harbour walls. However, the practice of using coral for buildings and for sea walls does continue to some extent.

2. BIODIVERSITY CONSERVATION

As population grew in crowded islands and when available land area was no longer sufficient to meet the demand for housing, reclamation of shallow reefs adjacent to the islands has been carried out. Land reclamation activities have negative implications such as destruction of shallow lagoons, sea grass and reef flat communities, and adverse effects on nearby coral reef communities through suspended sediments. Therefore, housing issues and congestion in the face of a growing population continues to deplete the natural resources such as stock of ground water, plants and coral reefs of the fragile ecosystem. Additionally, it has increased the variety and magnitude of pollution created by human settlements.

3. FISH RESOURCES

Although tuna has historically been the major fish resource and little use was made of reef fish resources, over the last decade or so, exploitation of reef resources in the Maldives has become an important component of the country's fisheries sector. Demand for marine products such as lobsters and reef fish increased locally with increase in demand for the tourist resorts. High demand in the international market for certain reef species has increased pressure on these reef resources. Reef resources that are exploited mainly for export include groupers, sea cucumber, sharks and ornamental varieties. A specific fishery for grouper started in the Maldives in 1992. The maximum sustainable yield for all grouper species is

estimated at 1800+700 tons. However, these are crude estimates to be used cautiously. Export figures show a declining trend in the quantity of groupers exported as well as total value of exports. Given the pressure on the grouper resources, it is highly likely that grouper resources are being over fished. Export figures for dried sea cucumber show a much lower bulk of exports in mid and late 1990's compared to the peak years during early 1990's, with correspondingly low value for exports. However, the total value increased considerably in 2000. The live ornamental species export trade (Aquarium Fish) exploits about 100 species of marine organisms, majority of which are reef fish. Of these, about 20 species contribute to more than 75% of the catch . The total quantities of ornamental species exported by the "Ornamental Fish" industry too have declined in recent years. Some species were being, locally over- exploited or exploited close to maximum sustainable levels in the area around Malé.

Some species exploited by the aquarium fish trade are known to be limited in distribution or rare or not yet described for the Maldives. The Clown Fish (Amphiprion nigripes) is quasi-endemic with the Maldives as its centre of abundance. The species is quite commonly exported from the Maldives and 8000 Maldives Clown Fish and 500 anemones were exported in 1994 alone. The angelfish Apolomichthys armitagei is known to be rare in the Maldives. Reef sharks as well as oceanic sharks are exploited mainly for the fins. Dried shark fins fetch good prices in the international market. It is suggested that reef sharks were being fished at moderate levels of fishing effort, which was probably sustainable at the time of study. However, an increase in fishing effort from that of 1993 levels would adversely affect stocks. The current status of reef shark stocks is unknown. Threat of over-exploitation is the biggest environmental problem posed by commercial exploitation of reef resources. The export quantities of most of the reef species have declined. Since stock status is not monitored regularly it is not known if stocks are over-exploited.

The first National Biodiversity Strategy and Action Plan (NBSAP) of the country has been adopted in 2001. It was undertaken with extensive stakeholder participation throughout the country, and the draft NBSAP was discussed and endorsed at a national level workshop in April 2001. The first country report on biological diversity will also be published in 2001. Recognising the importance of healthy coral reefs to the two major industries of the Maldives, tourism and fisheries and the need to address the problems resulting from increased reef resource usage, the Maldivian Government commenced promoting a policy of integrated reef resources management. The Ministry of Fisheries, Agriculture and Marine Resources with assistance from the Bay of Bengal Programme (BOBP) initiated the Integrated Reef Resources Management programme. Under this programme, a workshop was held in Malé in March 1996 with extensive stakeholder participation and national and international advisors, to "identify key issues and objectives for the IRRM process, and make recommendations for its implementations". The Fisheries Advisory Board endorsed the recommendations made at this workshop, in 1996. The Government has also initiated several measures for the protection of important habitats and threatened species. Since 1 October 1995, 25 marine areas have been declared protected. All forms of fishing except bait fishing with traditional methods have been banned in these areas. These are popular dive sites and 14 are popular for shark-watch diving. Turtles have also been protected since 24th June 1995. Other measures include banning export of important bait fish as aquarium fish; banning fishing from the house reefs of tourist resorts; and the protection of threatened marine resources such as sharks, sea turtles, giant clams, and black coral. There are 25 marine protected areas, under the aw on Protection and Preservation of the Environment. All fishing or collection of these animals in the Maldives is prohibited. Protected species include the bird White Tern Gygis alba monte in 1996 and 22 additional bird species protected in 1999 under the Environmental Protection and Preservation Act, of which some are important for the local tuna fishery and others are endemic to the Maldives at subspecies level. Taking into consideration the importance of sharks to the fisheries and tourism sectors, on 8 September 1998, the Government banned all forms of shark fisheries for a period of 10 years, within the 12 mile zone from the atoll rim.

Two islands, Hithaadhoo (North Huvadu Atoll) and Hurasdhoo (South Ari Atoll), have been declared as protected islands because of their unique avain population and geological formation, respectively. A tree planting programme was launched nationwide during the year 1996 with the aim of adding a million trees to the island ecosystems within 3 years. The President initiated the “Million Tree Programme” on 15 January 1996. The tree planting programme was a concerted effort to conserve, rehabilitate and manage

the environment. The Ministry of Fisheries and Agriculture was selected as the nodal agency for the implementation of the program under he guidance of the President's Office.

4. LEGISLATION

The Maldives Protected Area Systems (MPAS) project aims to assist the Government with establishment of a replicable and sustainable system for the protected area management. Legal measures for protection of timber resources were established through regulations under the Law on Uninhabited Islands (Law no: 20/98). Under this law timber from uninhabited islands can be logged only after getting written approval for the purpose from the Ministry of Fisheries and Agriculture, and in the presence of a representative from the atoll office and a representative of the lessee. In addition, every coconut palm that is logged has to be replaced with 2 coconut palms and every tree that is logged has to be replaced by a tree under the direction of the Ministry of Fisheries and Agriculture. The Marine Research Centre of the Ministry of Fisheries Agriculture and Marine Resources has undertaken three different coral reef monitoring programmes in collaboration with different institutions or agencies. Coral reef monitoring to assess the extent of coral bleaching has been carried out in collaboration with the Global Coral Reef Monitoring Network (GCRMN) since 1997 and Coral Reef Degradation in Indian Ocean (CORDIO) project, particularly initiated with the support from Swedish Government, to study the bleaching effects since 1998.

The overall objective of the Maldives/GCRMN project is to improve management and sustainable use of coral reefs and related ecosystems by providing information on the trends in biophysical status, social cultural and economic values of these ecosystems. Marine Research Centre (MRC) has also participated in the ReefCheck programme since 1997, a volunteer effort carried out world-wide by recreational divers and led by experienced marine scientists. In addition MRC has an ongoing program on identification and cataloguing of fish species in Maldivian waters.

5. CONVENTION ON BIOLOGICAL DIVERSITY

The Maldives was among the first countries to ratify the Convention on Biological Diversity. The Maldives signed the Biodiversity Convention on 12 June 1992 and ratified the convention on October 1992. Under GEF assistance the Maldives will be formulating its National Biodiversity Conservation Strategy in 1997.

Carol reefs of the Maldives are renowned for their aesthetic beauty and species diversity and the reefs support stocks of endangered species such as green and hawksbill turtles, giant clams and black coral. Recognizing the importance of protecting marine ecosystems in the Maldives and obligations under article 8 of the Convention of Biological Diversity, 15 sites have been designated by the Government as protected areas. Two islands, Hithaadhoo and Hurashdoo have been declared as protected areas because of their uniqueness. A project has been formulated to enhance the capacity to manage protected areas in the Maldives and funding has been committed by AUSAID.

An integrated reef resources management programme has been formulated by the Ministry of Fisheries and Agriculture. This programme is designed to assist in the sustainable exploitation of reef resources in the Maldives. Under this programme an agenda for sustainable reef resource development has been drawn in March 1996 through consultation with and participation of various resource users, community groups and government departments.

A million tree programme has been initiated in the Maldives from January 1996. Under this three-year nation-wide programme it was planned to plant one million additional trees in the Maldives. Currently the plan is to plant two million trees in the given time frame. Under this programme special emphasis will be given to restoration of threatened habitats and re-introduction of certain locally threatened species.

NEPAL

Key Issues: Loss of Biodiversity; Forest Degradation; Protection of endangered Species; Land Degradation; Environment Education; Capacity Building; Enforcement and Compliance; Ecosystem Development; Peoples Participation

Policy Framework: National Biodiversity Conservation Strategy in 1997;

Key Legislation: The Wildlife Conservation Act (1958), National; Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Laws and Regulation on the Conservation of Species Plant Protection Act, (1972); Laws and Regulation on Protected Area Wildlife Reserves Regulations (1977); National parks and Wildlife Conservation Act through the amendment of 1993; Patent, Design and Trademark Act, 1965; Industrial Enterprises Act 1992; Foreign Investment and Technology Transfer Act, 1992; Company Act 1997; Private Forest Nationalization Act, 1956; Lands Act, 1965; the Forest Protection Act, 1956; Ancient monuments Protection Act, 1956; Wild Life Protection Act, 1957; Aquatic Species Protection Act, 1961; Malaria Eradication Act, 1965; Contagious Diseases Act, 1965; Forest Protection (Special Arrangements)Act, 1967; King Mahendra Trust for Nature Conservation Act, 1982; Soil Conservation and Watershed Management Act, 1982; and Solid Waste Management and Resource Mobilization Act, 1986.

Key Institution: Ministry of Forestry and Soil Conservation, Department of National Park and Wildlife Conservation; Ministry of Population and Environment; Ministry of Agriculture; National Agriculture Research Council

1. INTRODUCTION

Compared to Nepal's size, which is about 0.1 percent of the total landmass of the world, and 0.3 percent of the Asia, it is endowed with rich Biological Diversity. The country's bio-geographic settings, and horizontal and vertical dissimilarities are the major determinant for the habitat of different flora and fauna in the country. The country's bio-geographic settings, and horizontal and vertical dissimilarities are the major determinant for the habitat of different flora and fauna in the country. **T**he country has about 54 percent of land surface under some sort of vegetation cover (forested area 37 %; shrub land and degraded forest 5 % grass land 12 % and grassland 12 %). Seventy-five vegetation types plant, over 1500 fungi species; and have been identified. Estimate on number of plant and animal species vary, but there are over 6,500 species of flowering, and over 300 species of lichen. About 370 species of flowering plants are considered endemic to Nepal and about 700 species are known to posses medicinal properties. Regarding faunal diversity there are about 175 mammal species, 836 bird's species, 147 species of reptiles and amphibians, 180 species of fish, 640 species of butterfly, and approximately 6,000 species of moth. Of these 26 mammals, nine birds, and three reptiles are either are endangered, vulnerable, or threatened.

2. BIODIVERSITY

With the aim of protecting representative, samples of natural eco-system, 14 protected areas of different categories; e.g. national parks, wildlife reserve, conservation area, and hunting reserve, covering more than 14 percent of the total area of the country have been set aside.

A total of 118 ecosystems have been identified in different physiographic zones in Nepal and these can be classified into five regions:

- *Terai and Siwalik ecosystem*: 23 ecosystems. The tropical hill sal forest is the most prominent Siwalik Ecosystem.

- *Mid hill Ecosystem*: Ecosystem range from 18 ha cedar forest to 81,200 ha of western Nepalese mountain oak.
- *Highland Ecosystem*: Upper sub-alpine rhododendron-birch and lower sub-alpine Abies-spectabilis are the most commonly occurring ecosystem.

Factors causing the loss of Biodiversity

Anthropogenic activities are the mean factor for loss of biodiversity both terrestrial and aquatic habitats. Species that survive such threats are likely to lose genetic variations as the member of individuals in a population is reduced and populations are increasingly isolated from one another. The creation of protected areas assures protection of certain species. Such protected areas, however, are usually surrounded by damaged habitat, making them habitat islands.

Loss and fragmentation of habitat

Loss and fragmentation of suitable natural habitat is the main threat to bio-diversity conservation in Nepal. Habitats' outside protected areas under continuous pressure from human activities, and they are being degraded and converted into agricultural lands. Natural habitats from eastern Terai, where the human density is high, are all but lost. Fragmentation and loss of habitat have restricted the distribution of some species such as tigers, elephants, rhinos and so on. In addition, the fragmentation of habitat results in greater edge among species, increasing predation as well as competition from exotic and pest-species, which gradually invade the interior of the habitats.

Habitat fragmentation and loss have also resulted into a dwindling population of Gangetic river dolphins in Nepal's' river system. Many national parks and reserves are too small and too isolated to maintain population of many species. Increasing grazing pasture from livestock has largely displaced wild herbivores during monsoon grazing periods in mountains. Red panda, have been adversely affected by grazing disturbance, similarly loss of suitable habitat for wild water buffalo has restricted the species within 175 km^2 of the Koshi Tappu wild life reserve.

Poaching and over harvesting

Poaching is another threat to biodiversity conservation in Nepal. Poaching of rare species such as the tiger, rhino. Bear, musk dear, snow leopard, gharial and others, is because of the value of their bones, skins and other derivatives. Its intention is the preservation of flora and fauna for the benefit of both humanity and the flora and fauna itself. Nepal has already taken certain policy and legal measures for the conservation of biodiversity.

3. NATIONAL COMMITMENT ON CONVENTION ON BIOLOGICAL DIVERSITY

The role and importance of all life forms for environmental management and for their possible use for socio-economic development of the country is understood by Nepal. Its sustainable use would be instrumental in improving the living standard of the people. Its multi-fold benefits prompted Nepal to be a Party to various legally binding international instruments such as Ramsar Convention, CITES, ITTO, Plant Protection Agreement, Conventions on Climatic Changes, Desertification and Biological Diversity. After this, conservation of biological diversity in Nepal is not only a national priority it is also a global commitment. However, there is a need for developing mechanisms for sustainable use of biological resources so that Nepal can be in a position to allocate adequate funding for biodiversity protection and be able to attain the goals of sustainable development.

Nepal signed the Convention on Biological diversity (CBD) during the Earth Summit in Rio de Janeiro on 12 June 1992, and ratified it in the December of 1993. Major focus of the Convention on the need for conservation of biological species, sustainable use of its components, and the fair and equitable sharing of the benefits as its objectives are the convincing elements to Nepal for its ratification. There are also other relevant provisions for strengthening species conservation, and various activities are to be

implemented to meet the international obligations, which in turn would contribute to conserve Nepal's biodiversity.

4. NATIONAL CONSERVATION STRATEGY

The National Conservation Strategy, prepared in 1987 in collaboration with IUCN has been in the implementation process since 1988. It contains substantial elements related to biodiversity.

5. THE BIODIVERSITY AND HERITAGE CONSERVATION PROGRAMME

It is part of the NCS Implementation Project carrying out various activities relating to a Biodiversity database and a register of cultural and natural heritage.

6. NEPAL ENVIRONMENTAL AND POLICY ACTION PLAN

The government in August 1993 endorsed it. It is part of the government's endeavors to incorporate environmental concern into the Kingdom's development process. To implement participatory bio-diversity conservation nation-wide, buffer zone management concept was introduced in National parks and Wildlife Conservation Act through the amendment of 1993. Later on Buffer Zone Management Rules was enacted in 1996.

7. GENETIC RESOURCE MANAGEMENT

Various organizations are currently involved in genetic resource management in Nepal. A number of governmental and non-governmental organizations are actively involved in this task. The government institutions are:

- **Ministry of Forest and Soil conservation**: Management and utilization of Nepal's Forest resources.
- **Ministry of Agriculture**: **formulate** and implements policies and programs for the conservation and utilization of plant resources.
- **Ministry of Population and Environment**: It is responsible for acting as a national node in implementing international conventions and agreements. There are different departments under each ministry to conservation and management of genetic species. A number of semi-government and private institutions are also involved in the conservation and utilization of plants products i.e. The Forest Products Development Board, for utilization and plantation activities. The Herb Production and Processing Company Ltd: operated herbal farms in different ecological regions. Nepal Agriculture Research Council: conduct research on domestic plant species. Beside government organizations there are corporate bodies, some NGO are also working in this area.

8. ACCESS TO BIODIVERSITY

The international community has long ago recognized the importance of Conservation of Biological Diversity as the life supporting necessity for the society. So it responded instantly to the call of the first two objectives of the International Convention on Biological Diversity (CBD) i.e. the conservation, and the sustainable use. However there has not been tangible effort to address the third objective of CBD i.e. Nepal's genetic resources have been accessible openly since the country opened its frontiers to foreigners in early fifties. Benefit sharing to the providers of genetic resources has not yet been realized as a priority issue even after the Earth Summit. Currently, there is a serious lack of legal provisions and administrative mechanism to address the issue of benefit sharing in spite of the fact that biological resources of the Nepal are harnessed continually for international market.

Nepal has kept an open and unrestricted policy to access her genetic resources except for those protected by the government regulation. Exploration and access on Nepal's biological species have been going on from early 19th century, and economic benefits of those explorations have never been shared with the

country of origin. However, the valuable scientific study reports are available to provide the basis for preparing national inventories of biological resources.

At the national level, the issue of access and benefit sharing is generally eclipsed by the need to grow more food; and it has encouraged the farmers and the government to go for high yielding varieties by replacing local genetic resources. Many traditional cultivars of rice like Tauli and Thapachinia are vanishing from general cultivation practice. So far legal tools for biodiversity conservation are directed towards protection, conservation and sustainable use of resources. National Biodiversity Action Plan, which is currently under a process of finalization, does not cover the issues related to the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

9. TRADITIONAL KNOWLEDGE AND PRACTICE

Accumulation of indigenous knowledge system in mountain culture is a human struggle to survival in harsh environments and remoteness. The verticality of mountains, constant struggle with gravitational forces, limited access to arable land and diversified biological resources with abundance to kinds but small in quantity contribute to the life and livelihood of people. Indigenous knowledge of remote people therefore turns out to be unique to their own cultural environment. Instinct to survive in constant struggle with nature over century has forced the people in Remote Mountain terrain to cultivate indigenous species that also has evolved to survive in such environmental conditions. For example certain species of paddy is cultivated at the world record of 2800 m altitude. Such examples are abundant in the farming system of Nepal to reemphasize the statement that "preserving genetic variety is pointless unless the farming system that produced it is also preserved, along with its climate and soil and the accumulated knowledge of its cultivation and use.

Traditional knowledge on local fauna and flora is abundant with rural people who constitute over 90 percent of Nepal's 21 million people. Villagers have developed safe methods to use wild plants even the toxic aroid tubers (Arisaema) by removing toxic substances (Calcium oxalate), *Acinitum ferox* turn into administrative drug after its detoxification using cow's urine. Only a very experienced individual who are highly respected in such community, carries out the detoxification process.

Knowledge on the behavior of birds and mammals is also widely used in farm management. Trans-Himalayan migration of Demoiselle Crane is used to plant seed of cucumber family (*Cucurbitaceae*), signing of cuckoo birds indicates the ripening of *Myrica* fruits, similarly croaking of frogs is perceived as the coming monsoon. Thus the essence of environmental indicators is captured in the indigenous knowledge system of culture that needs to be documented and wisdom inherent there in should be respected and rewarded.

The indigenous knowledge system in highlands of Nepal is slowly deteriorating, because cultural assets and traditional methods remained marginalized in the process of modern development planning and implementation. Study has shown the imbalance between population growth and limited natural resource base is already taking place. Similarly, modern hospital facilities and flow of modern medicine and pharmaceuticals have replaced traditional Tibetan medicine in the area.

10. INTELLECTUAL PROPERTY RIGHT

The intellectual property right in Nepal is covered by the Patent, Design and Trademark Act, 1965. This Act had undergone an amendment in 1987. In the year 1965, copyright Act was also enacted. These two Acts on intellectual properties are in force presently.

Other Acts related to intellectual property system in Nepal are the Foreign Investment and Technology Transfer Act, 1992, which deals with technology transfer and trademark licensing. The Industrial Enterprises Act 1992 deals with the production and marketing of products and the Company Act 1997, protects company names. These Acts have to be taken into consideration for the protection of intellectual properties.

The Patent, Design and Trade Act, 1965 provides for the definitions of terms; rights of the property holder, application, examination, registration and renewal procedures; tenure of protection; and actions against the violation. Trademarks and service marks registered in Nepal are protected by this Act.

Department of Industry (DOI) is responsible for the administration of industrial property as per the Patent, Design and Trademarks Act 1965. The DOI is national focal point for WIPO. In the field of Agriculture and plant species, Ministry of Agricultural in association with National Agriculture Research Council (NARC) is responsible for the protection of plant varieties.

11. LIVING MODIFIED ORGANISM (LMO)

In the quest to increase productivity many new techniques and exotic species are being introduced in the urban areas. However, there is no information in the field of Living Modified Organism/Genetically modified Organism (GMO), Article 15 of the Convention deals with access to genetic resources. The Parties to the convention are required to grant access on mutually agreed terms, subject to the provisions of Article 15. Access to genetic resources shall be subject to the prior informed consent of the party providing the sources. In this direction no policy has been formulated in Nepal.

12. LEGISLATION

The Constitution of the Kingdom of Nepal, 2047 Bikram Sambat (1990) proclaims:

"The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness, and the State shall also make arrangements for the special protection of rare wildlife, the forests and the vegetation" (Ministry of Law, Justice and Parliamentary Affairs, 1990a). Primarily, the Constitution has made it mandatory for the government to seek ratification by a two-thirds majority of Parliament of any treaty or agreement that involves sharing of the natural resources of Nepal and has significant, serious or long-term implications for the country (Ministry of Law, Justice and Parliamentary Affairs).

Consistent with the initiatives of that time and the then existing policy of government intervention, including actual management of important economic activities, a number of legislative instruments were introduced with environmental implications, including such legislative instruments as: the Private Forest Nationalization Act, 1956; the Lands Act, 1965; the Forest Protection Act, 1956; the Ancient monuments Protection Act, 1956; the Wild Life Protection Act, 1957; the Aquatic Species Protection Act, 1961; the Malaria Eradication Act, 1965; the Contagious Diseases Act, 1965; the Forest Protection (Special Arrangements)Act, 1967; the Plant Protection Act, 1972; the National Parks and Wildlife Conservation Act, 1973; the King Mahendra Trust for Nature Conservation Act, 1982; the Soil Conservation and Watershed Management Act, 1982; and the Solid Waste Management and Resource Mobilization Act, 1986. Those Acts are all examples of the initiatives taken to empower the government to either man age natural resources or to regulate them so that they become consistent with State policies. A full list of those instruments is presented in annex II to this chapter.

In September 1996, Parliament passed the Environment Protection Bill, 1996, the long-awaited umbrella legislation on the environment. Notwithstanding the lack, until recently, of specially designed and unified legal instruments to comprehensively address environmental and consumer protection issues, there are some 69 different Acts (annex II to this chapter) which directly or indirectly provide the basis for regulating and enforcing various environmental protection measures, and for safeguarding the interest of general consumers. Each of the Act is supplemented by corresponding regulations. While it would be too exhaustive to highlight the provisions of each of the legislative measure, some of the major provisions of the all-embracing type of umbrella legislation, that is, the Environment Protection Act (EPA), 1997.

The EPA empowers the authorities concerned to impose restrictions on all activities and equipment, which are found to have any significant adverse effect on the environment. It makes provision for appointing environment inspectors with the authority to inspect, examine and recommend measures for adoption by clients. It gives the government the authority to declare specific areas of amenity value, habitats of rare species, biotic diversity, and places of historic and cultural significance as environmentally protected areas. The EPA also has entrusted the agencies concerned with the preservation of national heritage sites, including those listed as world heritage sites. Another distinguishing feature of the EPA is the establishment of an environment protection fund to be mobilized for environmental protection, pollution control and heritage preservation.

13. CONVENTION ON THE INTERNATIONAL TRADE IN ENDANGERED SPECIES (CITES)

Nepal became a contracting party in this convention in 1975. This convention provided for the international coordination of trade and control of wild fauna and flora whose conservation status is unfavorable through the acceptance of obligations under international law. The objective of the treaty is to arrest, reduce or eliminate the international trade in those species whose numbers or conditions suggests further removal of individuals from its natural habitat and the activities that would be detrimental to the species survival.16 Prior to the convention, on the control of trade of wild fauna and flora, National Parks and Wild Life Conservation Act 1973 was enforced in Nepal. This provided a regulatory mechanism to conserve endangered species and their habitats indirectly restraining the trade of such species. Hunting of such animals are circumscribed. The Forest Act 1993 further emphasized the control and management mechanism of forest species and endangered fauna and flora. 3.4.4 The convention on biological diversity The objectives of the biodiversity convention was to conserve the flora and fauna useful to human being and for the Sustainability of ecosystem. It is also important for the maintenance of life supporting systems of the biosphere. The Nepalese parliament ratified the convention on 1993 and has taken policy and legal measures for the conservation of biodiversity in compliance with the convention. As has been explained earlier, the National Conservation Strategy Implementation Project run jointly by IUCN, The World Conservation Union and the National Planning Commission of Nepal and Department of National Parks and Wildlife Conservation are the leading agencies toward developing policies relating to the biodiversity conservations. As regards the legal instruments, Aquatic Animals Protection Act 1961, National Parks and Wildlife Conservation Act 1973, Water Resources Act 1992 and Forest Act 1993 are promulgated and enforced. There is sufficient legal ground for the conservation of aquatic and other forms of biological diversity both in ex-situ and in-situ. The Aquatic Animals Protection Act of 1961 provides legislative insulation for the habitats of aquatic life and provides punitive actions to the culprit involved in the poisoning of aquatic life, by using explosives into the water source of aquatic life origin. Similarly, the National Parks and Wildlife Conservation Act 1973 prohibits inter alia hunting, building houses and any structure, cultivation, grazing, watering domesticated animals and birds, mining and firing any site or sites within the protected area. The Forest Act 1993 has empowered department of forest and Department of National Parks, a lead agency for the conservation of biodiversity. The compliance for the enhancement of the environment by His Majesty's Government of Nepal in devising legal instruments is appreciable. The legal provisions to a large extent are enumerated from the needs. They are also evolved to attract funds for the conservation of resources.

PAKISTAN

Key Issues: Loss of Biodiversity; Forest Degradation; Protection of endangered Species; Land Degradation; Environment Education; Capacity Building; Enforcement and Compliance; Ecosystem Development; Peoples Participation

Policy Framework: National Conservation Strategy

Key Legislation: Wildlife Protection Ordinance (No. LVI) 1959; under Pakistan Environmental Protection Act, 1997; National Conservation Strategy, 1993; Pakistan Environmental Protection Ordinance of 1983; Pakistan's Forestry Sector Master Plan 1992.

Key Institutions:
Ministry of Environment, Local Government and Rural Development

1. INTRODUCTION

The diversity of mammal, bird, fish, reptile, amphibian, invertebrate and flora species in Pakistan, and especially in NWFP, is very rich. A brief description of some of those species is describing of mammals in Pakistan, listing 158 species in 10 out of 18 known orders. They include the brown bear, stoat, greater white-grey long-earned bat and ibex, leopard cat, goral, snow leopard, Altai weasel and the long-tailed marmot found in far north Chitral of Kohistan. The Himalayan moist and semi-moist temperate forests of NWFP have perhaps the richest mammalian communities of all the ecosystems of Pakistan, including the Kashmir grey langur, rhesus macaque, gray wolf, Kashmir red fox, Himalayan black bear, stone marten, yellow-throated marten, leopard, leopard cat, musk deer, gray goral, Royle's pika, Indian giant flying squirrel, small Kashmir flying squirrel and Indian crested porcupine.

The definition of Biological Diversity or Biodiversity under Pakistan Environmental Protection Act, 1997 has been taken from the Convention on Biological Diversity (CBD) 1992 which defined Biological Diversity or "biodiversity" as;

> "the availability among living organisms from all sources including *inter-alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems".

2. CONSERVATION OF BIODIVERSITY

The conservation of biodiversity is fundamental to achieving sustainable development. It provides flexibility and options for our current and future use of natural resources. Almost 70% of the population lives in rural areas, and a large part of this population depends directly or indirectly on natural resources. It also makes good environmental sense. The air we breathe, the water we drink and the soil that supports crop production are all products of the complex interactions that occur among various living organisms on earth. Conservation of biodiversity is crucial to the sustainability of sectors as diverse as energy, agriculture, forestry, fisheries, wildlife, industry, health, tourism, commerce, irrigation and power. Pakistan's development in the future will continue to depend on the foundation provided by living resources and conserving biodiversity will ensure this foundation is strong.

Loss of Natural Habitats

While the loss, fragmentation and degradation of natural habitats in the territory of Pakistan has been taking place for centuries, the last few decades have seen a particularly rapid acceleration in this process. This trend is most evident in the remaining upland forests, scrub forests and mangrove forests, arid and semi-arid rangelands (including sand dune deserts), inland wetlands, Indus Delta and coastal waters.

Forests

According to the Government of Pakistan 1992, Forestry Sector Master Plan, forests, scrubs and planted trees on farmlands cover 4.2 million ha or 4.8% of the country. However, if plantations are excluded, the total area of natural and modified coniferous, scrub, riverain and mangrove forests is less than 3.5 million ha (4% of the country). If scrub forests are excluded, the total area of 'tall-tree' forest falls to just 2.4 million ha (2.7%), of which four-fifths (2 million ha) have 'sparse' cover (patchy forests with <50% cover). More specifically, more than half of Pakistan's remaining mangrove forests, more than two-thirds of remaining riverain forests, and more than nine-tenths of remaining coniferous forests have less than 50% canopy cover. Good quality (>50% cover) 'tall tree' forest in Pakistan covers less than 400,000 ha (under one two-hundredth part of the country). These remaining forests, fragmented and degraded as they are, appear to be rapidly disappearing.

The mangrove forests of the Indus Delta show a similarly dramatic decline. In the last 20 years, mangrove cover has been halved from 2,600 square kilometres in the late 1970s to 1,300 square kilometres in the mid 1990s. Once the largest mangrove forests in arid areas of the world, this national heritage is now quickly disappearing.

It is now feared that Pakistan is having the world's second highest rate of deforestation. This destruction is leading to the wholesale disappearance of trees, shrubs, and ground flora together with the vertebrate and invertebrate fauna they normally support. The loss of forest habitat has had a severe impact on Pakistan’s biodiversity, and has serious implication for the nation’s other natural and agro-ecosystems.

Causes of Biodiversity Loss in Pakistan

The current losses of biodiversity have both direct and indirect (root) causes as well as the economic causes. The direct causes include activities resulting in the loss and degradation of habitats, over-exploitation of plant and animal species, agricultural intensification, pollution, invasion by introduced species and climate change. While the indirect or root causes includes the increasing demand for natural resources, population growth, low primary productivity etc. The economic causes relates market failure, intervention failure, week ownership high discount rates and globalization of the world economy.

Ecological Zones and Agro-ecosystems

Through no systematic attempt has been made, to date, to define the ecological zones of Pakistan, however, there is an initial classification of terrestrial ecosystems within 12 major vegetative zones. From the permanent snowfields and cold deserts of the mountainous north to the arid sub-tropical zones of Sindh and Balochistan; from the dry temperate coniferous forests of the inner Himalayas to the tropical deciduous forests of the Himalayan foothills, the steppe forests of the Suleiman Range and the thorn forests of the Indus plains; and from the swamps and riverine communities of the Indus and its tributaries to the mangrove forests of the Indus delta and Arabian Sea coast.

The coast of Pakistan forms the northern boundary of the Arabian Sea, where oceanographic influences dominate over those of the continent, the only major freshwater input comes from the Indus at the eastern extremity, which discharges some 200 km^3 of water and 450 million tonnes of suspended sediment annually. This creates the Indus Cone, a 2,500 m deep pile of loose sediment on the floor of the Arabian Sea which fans away from the mouth of the river as a vast, sub-aqueous delta. Coastal ecosystems include numerous deltas and estuaries with extensive inter-tidal mudflats and their associated wetlands

(the Indus Delta has an estimated 3,000 km^2 of delta marshes); sandy beaches; rocky shores; four species of mangroves; and sea grasses. There is lot of work remained un touch on sea grasses in Pakistan as it is not fully described as yet.

The 1992 Forestry Sector Master Plan identifies nine main agro-ecological zones. The agro-ecosystems have almost entirely replaced the original tropical thorn forests, swamps and riverain communities of the Indus plains. The irrigated plains of Pakistan constitute the largest irrigated system in the world. Through the conversion of natural habitats to agricultural use, a number of distinct agro-ecosystems have been created in Pakistan**.**

Conservation

By definition, a Wildlife Sanctuary offers greater protection than a National Park, while a Game Sanctuary affords no protection to habitat but merely regulates hunting. As a result, the value of Game Sanctuaries for long-term conservation of biodiversity is very limited. If only National Parks and Wildlife Sanctuaries are taken into account, then Pakistan lags behind many other Asian countries (including Nepal, Sri Lanka and Bhutan) in terms of the percentage of national land area which has been designated for conservation.

***In-Situ* Conservation**

The *Convention on Biological Diversity* recognizes *in-situ* conservation as the primary approach to biodiversity conservation (Article 8). Of particular importance is the balance to be struck between conservation measures within protected areas (PAs) and measures beyond PAs in the wider countryside.

It is generally recognized that activities which occur in areas adjacent to protected areas may be critical to the viability of the protected areas themselves. Adjacent communities ultimately control the protected area to the extent that if the local population is negatively affected by the protected area, then this area may be destined to fail. However, if that which local people have lost is replaced, where possible, and other forms of development compatible with the goals of the protected area are promoted in adjacent areas, then the protected area's long-term viability is likely to be enhanced.

The majority of Pakistan's protected areas were created in the 1970s, and paid insufficient attention to ecological criteria and the requirements of local communities. Today, many of the PAs are too small and isolated to be effective. Most ecological zones are not adequately represented within the protected area system. For example, there are no marine PAs, very few coastal PAs and no formal designation to protect the remaining juniper forests in Balochistan Province.

There is also considerable regional disparity in the distribution of PAs across Pakistan. For example, whilst over 16 % of Punjab is protected as one of three PA categories (National Park, Wildlife Sanctuary or Game Reserve), about 6% of NWFP and less than 6% of Balochistan is formally protected. This is unfortunate, since these are the regions where most of Pakistan's remaining biodiversity is concentrated.

***Ex-Situ* Conservation**

Ex-situ conservation facilities provide excellent opportunities for researchers to study plants, animals and micro-organisms in controlled conditions, and to improve collection, storage and regeneration techniques. *Ex-situ* facilities can also be used for germplasm evaluation, as centres for documentation and information systems, and for providing information on genetic resources on a commercial basis

The *Convention on Biological Diversity* specifically recommends that *ex-situ* measures be adopted to support *in-situ* conservation programmes. These measures have most extensively been applied to conserve cultivated and domesticated species, employing techniques such as seed banks, field gene banks, *in-vitro* storage, and captive breeding measures. Other groups in need of *ex-situ* conservation measures include: threatened species, wild relatives of cultivated plants and domesticated animals;

medicinal plants; plant crops of local and regional importance; ornamental plant species; tree species; and micro organisms. *Ex-situ* conservation is complementary to the rehabilitation and restoration of degraded ecosystems, and promoting the recovery of threatened species; the ultimate purpose of these *ex-situ* conservation measures is to re-introduce wild species into the wild.

Captive breeding of wild animals can be used to restore endangered species populations. It is important to increase populations as quickly as possible and reintroduce the animals back to their original habitat, to minimize genetic erosion. Plants can also be re-introduced to their natural areas of occurrence. Such re-introductions should, however, be carried out in such a way that other indigenous species are not harmed or adversely affected. Similarly, care must be taken while collecting material/animals for ex-situ conservation not to endanger other native species and genetic resources. The regulation and management of such transactions requires accurate information to determine the impact of collection on populations and ecosystems. The establishment of a National Microbial Culture Collection would be essential for the preservation and use of the rich microbial diversity present in Pakistan.

Ex-situ conservation should preferably be undertaken in the country from which the biological resources and genetic materials have originated. In Pakistan, institutions involved in *ex-situ* conservation of biodiversity include: the National Agricultural Research Center (NARC), the Plant Genetics Resource Institute, and the Animal Sciences Research Institute. Microbiological collections are held at the Nuclear Institute for Agriculture and Biology (NIAB), National Institute for Biotechnology and Genetic Engineering (NIBGE), the Ayub Agricultural Research Institue (MRI) and the Karachi and Islamabad Universities. There are also a number of botanical gardens, zoos, captive collections, wildlife parks and breeding centres as well as private collections of wildlife species. However, there is little coordination or integration among these institutions, particularly with respect to identifying conservation priorities in Pakistan. Many of these facilities also require significant strengthening, if they are to make an effective contribution to biodiversity conservation.

Access to Biodiversity

The CBD is the first international convention which acknowledges a state's sovereign rights over the genetic resources within its jurisdiction and the resulting authority to regulate and control access to these resources (Article 15). However, the degree and extent to which the state could exercise this right has to be determined by national law. Parties to the Convention are also required to: promote the fair and equitable sharing of benefits arising from the use of genetic resources and the development of biotechnologies (Articles 15 and 19); and to facilitate access to, and transfer of, technology, including biotechnology (Article 16).

Genetic resources have been developed and used since the dawn of civilization in Pakistan. Although the use of some traditional genetic materials has declined over time as new, high-yielding varieties have been introduced, there is still considerable potential for further development of native genetic resources. For example, there are hundreds of species of wild plants found in different parts of Pakistan which can be used for medicinal purposes. At present, their use is limited to local remedies and homeopathic medicines. Some genetic resources from Pakistan have been characterized and parented in developed countries. Access to these resources for use and research in the country of origin is essential.

There are several research institutions in Pakistan that focus on genetic resources and biotechnology, including the Genetic Research Institute at the Pakistan Agriculture Research Council (PARC), the Agriculture Biotechnology Institute at NARC, the Nuclear Institute for Agriculture and Biology in Faisalabad, and the National Institute for Biotechnology and Genetic Engineering (NIBGE), also in Faisalabad. However, these institutions operate in a policy vacuum in relation to the conservation and use of genetic resources. There is also limited scope for focusing on biological resources that are not of commercial value.

3. THE CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

The future of life on Earth captured worldwide attention at the Earth Summit in Rio de Janeiro in 1992 when 155 nation states and the European Union signed the *Convention on Biological Diversity* (CBD). This act signalled their intention to form a global alliance to protect habitats, species and genes, to shift to sustainable modes of resource use, and to make the necessary policy, economic and managerial adjustments to guarantee that the benefits to be gained from the use of components of biological diversity are equitably shared across local, regional and global societies. The CBD was signed by Pakistan in 1992 and ratified by the Cabinet in 1994.

Pakistan and other nations at Rio also adopted a comprehensive global work plan for sustainable development and global environmental protection well into the 21 st century. Named 'Agenda 21', the plan contains 40 chapters of non-binding recommendations spanning the full range of social, economic and environmental issues. One chapter is devoted to the conservation of biological diversity, and biodiversity-related activities are featured throughout other chapters.

Having agreed to conserve biodiversity, foster the sustainable use of forests, fisheries, agriculture and other resources, transfer related technologies, and share in financial investments, Pakistan faces the question: how can the nation determine what steps to take? Article 6 of the Convention calls for parties to:

> *develop national strategies, plans or programmes, or adapt existing plans, to address the provisions of the Convention; and to integrate biodiversity work into sectoral and cross-sectoral plans, programmes and policies.*

The preparation of conservation and development strategies and action plans is not new to Pakistan. Pakistan has a well established procedure for the preparation of Five Year Plans and Annual Development Plans. Pakistan has a *National Conservation Strategy* (GOP/JRCs Y2) adopted as national policy in 1993 and accepted by the World Bank as the *National Environmental Action Plan. A Sarhad Provincial Conservation Strategy* (GoNWFP 1996) has been completed and other regional strategies (Northern Areas, Balochistan) are in preparation. There are also a number of sectoral plans for biological resources such as the Government of Pakistan's Forestry Sector Master Plan 1992.

Pakistan has been involved in many aspects of biodiversity conservation including national park planning, endangered species protection and recovery, and plant and animal propagation and breeding. In some sectors, such as forestry, Pakistan has worked at larger scales to manage watersheds. However, experience with planning and implementing biodiversity-related measures has been limited. Pakistan has not yet approached biodiversity planning and implementation in the comprehensive, integrated manner required by the Convention.

Three processes used in sequence have been recommended for adoption in the Convention: country studies (biodiversity assessment), national strategies (developing goals and operational objectives), and action plans (identifying actions and implementation measures. All three are components of a larger and quite flexible process that can help countries build on existing institutions, programmes, investments and capabilities. This process is *cyclical.* It leads countries to periodically assess their capacity, identify an evolving set of priorities and actions for responding to new opportunities, and prepare different reports to government, society and the Convention on their findings and conclusions. The process is multi-sectoral, involving a wide range of government ministries, private resource-using industries, and civil groups. And finally, it is *adaptive.* It is revised and reformulated as new information arrives, and the results of previous activities and investments are continually assessed.

4. OTHER INTERNATIONAL BIODIVERSITY-RELATED CONVENTIONS TO WHICH PAKISTAN IS A PARTY

Pakistan is a Party to two international conventions dealing with species: the Convention on Conservation of Migratory Species of Wild Animals (adopted in Bonn, Germany in 1979 and to wl Pakistan has been a Party since 1987); and the Convention on International Trade in Endangered Species

of Wild Fauna and Flora (CITES) (signed in Washington in 1973, to which Pakistan has been Party since 1976). Pakistan is also a party to two area-based treaties: the Convention on Wetland of International importance especially as Waterfowl Habitat (signed in Ramsar, Iran in 1971, and which Pakistan has been a Party since 1978); the Convention concerning the Protection of the Cultural and Natural Heritage (signed at UNESCO, Paris in 1972). In addition to these treat Pakistan is a Party to the United Nations Convention on the Law of the Sea (signed at Montego in 1982), supports the UNESCO Man and Bioshpere (MAB) programme (initiated in Paris in 1968), has signed (but not yet ratified) the Convention for Combating Desertification.

Under the Bonn Convention**.** Pakistan's principal obligations are 'to protect certain endange species listed in Appendix I of the Convention and to endeavour to conclude agreements for protection of migratory species whose conservation status is unfavourable and of those whose conservation status would substantially benefit from the international cooperation deriving from agreement (such species are listed in Annex II).'

Under CITES, Pakistan's principal obligations are to restrict the import and export of listed species. Appendix l lists endangered species of flora and fauna in immediate danger of extinction. Appendix II lists species not in immediate danger of extinction, but which may become so if trade restrictions s not applied. Appendix III lists species for which cooperation between Parties is desirable for the protection.

The Ramsar Convention is primarily concerned with the conservation and management of wetlands included in the 'List of Wetlands of International Importance. Parties are also required to promote the 'wise use' of wetlands on their territory and to take measure for the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the list or not. A Wetland Fund was set up in 1990 to assist Parties to discharge their obligations under this Convention. A range of legislative measures is required to implement the Ramsar and the specific wetlands in particular, and for the division of jurisdiction among government agencies for the catchment-side management of wetlands. To date, Pakistan has designated 11 wetlands under the Ramsar Convention, and a further six sites have been identified for consideration

World Heritage Convention, Pakistan's principal obligations under this is to conserve and transmit further generations the natural and cultural heritage situated on its territory. The inclusion of a site on the World heritage List requires the approval of the World Heritage Committee. A special financial mechanism, the World Heritage Fund, has been established to assist Parties to discharge their obligation in respect of sites, with great success.

Although a number of Pakistan's cultural sites have been inscribed on the World Heritage List, none of Pakistan's natural sites have yet been included. However, an application in respect of the Central Karakorum National Park has been prepared and is being considered by UNESCO.

The only worldwide programme for the establishment and conservation of protected areas is the Biosphere Reserve network which was developed under UNESCO’s Biosphere Programme. As there are no treaties or legally binding obligations governing this network, designations of Biosphere Reserves are made on a purely voluntary basis.

To date, Pakistan has designated only one Biosphere Reserve (Lal Suhanra National Park), although a number of other areas (e.g., the Indus Delta) would appear to be particularly well suited to this management approach.

Under those provisions of the UN Convention on the Law of the Sea (UNCLOS) relating to Biodiversity, Pakistan's principal obligations relate to the conservation and exploitation of marine species, the establishment of marine protected areas, the prevention of marine pollution (which includes the introduction of alien or exotic species).

Pakistan has recently signed and ratified the UN Convention to Combat Desertification (UNCCD). Though this Convention does not directly address Biodiversity, it addresses the degradation of arid and semi-arid rangelands. There are potential synergies between UNCCD and CBD that need to be further explored.

5. DOMESTIC LEGISLATION

Legislative support is required for the implementation of many of the articles of the CBD. Although the term "biological diversity" is new and therefore does not find expression in much of the existing legislation, Pakistan has a wide range of laws relating to the conservation of the different components of biodiversity (forests, fisheries, wildlife etc). What is required is to review the relevant existing laws, to relate them to the CBD, and where necessary to amend them or to enact new laws.

The first piece of legislation targeting environmental conservation as a whole was the Pakistan Environmental Protection Ordinance of 1983. This has been replaced by the Pakistan Environmental Protection Act of 1997. The relevance of this Act to biodiversity conservation is primarily though the screening process (for proposed projects) which it introduces. In the implementation of the provisions of this Act in relation to biodiversity conservation it is important to ensure that IEEs and ElAs adequately address the relevant issues and that the EPA has the required skills to evaluate these reports in relation to the conservation of biodiversity in Pakistan.

The legislative framework for the conservation of wildlife consists of the various provincial Acts and Ordinances. These laws provide for the establishment of Provincial Wildlife Management Boards with the responsibility for the formulation of policy and the supervision of activities relating to the conservation and management of wildlife. In practice, boards have not been set up in some provinces, and even where they have been set up, they are largely ineffective.

With regard to the conservation of species, a serious weakness in the law is that it deals excessively with animal species and no provision is made for the protection of threatened and endangered plant species. The existing laws attempt to control the hunting of designated game animals, but most of these regulatory measures have proved difficult to enforce. Some rules have been framed under the existing laws to protect a few selected species (falcons, cranes); the need for introducing additional control measures for other key threatened species should be examined.

Under the existing wildlife law in Pakistan, there are three categories of Protected Areas: National Parks, Wildlife Sanctuaries, and Game Reserves. Current thinking on Protected Area management is that, to be effective, the communities living alongside the area should have a hand in management and should derive some benefits from the area. None of the existing categories of protected areas make allowance for participatory management by communities. A draft Model Wildlife Law empowering local communities to participate in joint wildlife management with governments has been prepared and is currently under review by provincial governments.

The Forest Acts and other related legislation of the provincial government deal primarily with the exploitation of the forests. In practice, there is no clear jurisdiction over the forests, and different government agencies use this resource for their purposes through the mandates provided by their own pieces of legislation. Conservation of forest biodiversity therefore goes by default.

In 1993, the Federal Government adopted the policy (through a long term Master Plan) to "recognize, safeguard and manage animal and plant diversity in forest areas under the conservation area and working plan systems". The Ecosystem and Biodiversity Action Programme formulated under the Master Plan includes schemes for the rehabilitation of mangrove forests of the Indus Delta, preservation and protection of the juniper and chilgoza pine forests in Balochistan, protection of all endemic and endangered species of flora and fauna and ecosystems through designated conservation areas and scientific management of these areas. The Plan also recommends updating provincial forest legislation to promote, amongst other things, the conservation of natural forest ecosystems and suggests a model taw

for this purpose It, therefore, assumes that the groundwork has been laid for an effective programme for the conservation of forest biodiversity outside the protected area system. It is now necessary to move into action, particularly at the provincial level.

Fisheries constitute an important component of Pakistan biodiversity. The Federal Government is responsible for marine fisheries beyond the provincial jurisdiction limits of 12 miles from the coast. Freshwater and estuarine fisheries come under provincial jurisdiction. The existing laws prohibit the capture of certain species of fish below a prescribed size and the use of poison or explosives, regulate fishing craft and fishing gear, and empower the government to designate any water body as a sanctuary. These measures, both in terms of coverage and enforcement, are inadequate for affording protection to Pakistan's aquatic biodiversity and failure to address the issues would eventually lead to a serious erosion of the resource base on which the fisheries industry rests.

Considerable potential for the conservation of biodiversity exists at the local government level. The functions delegated to local government coincide with many aspects of biodiversity conservation and these could promote a window of opportunity for the implementation of conservation measures at the local level.

SRI LANKA

Key Issues: Loss of Biodiversity; Protection of endangered Species; Forest Degradation; Land Degradation; Environment Education; Capacity Building; Enforcement and Compliance; Ecosystem Development; Peoples Participation

Policy Framework: National Conservation Strategy, 1988; National Environment Acton Plan;Forestry Sector Master Plan; National Coastal zone Management Plan, 2000

Key Legislation: Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970; Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 (Chap.567) and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970; Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970; Forest ordinance of 1907 and its Amendments up to 1979

Key Institutions: Central Environmental Authority, CEA; Department of Wildlife and Conservation; Department of Forests; Ministry of Agriculture, Lands and Forestry; Forest Department; State Timber Corporation; Ministry of land Mahaweli Authority of Sri Lanka; Land Use Policy Planning Unit of the Ministry of land Land Use Unit of the Irrigation Dept.; National Aquatic Resource Agency (NARA); National Mangrove Committee; National Committee for Land Degradation and Desertification in the Ministry of Environment and Natural Resources; Biodiversity Secretariat of the Ministry of Environment and Natural Resources; Water Resources Council; Water Resources Secretariat

1. INTRODUCTION

Due to its location and topography, Sri Lanka, is one of the smallest but biologically most diverse countries in Asia. Consequently, it is recognized as a biodiversity hotspot of global importance. Among the terrestrial ecosystems are forests varying from wet evergreen forests to dry thorn forests, grasslands, wetlands and freshwater bodies and a complex network of rivers. These together with the coastal and marine ecosystems such as sea grass beds, coral reefs, estuaries and lagoons, and associated mangrove swamps constitute the diverse and complex network of ecosystems in the country. In addition, there are numerous man-made ecosystems related to agriculture and irrigation, which have a direct bearing on the conservation, sustenance and survival of biological resources. Sri Lanka's high population density, high level of poverty, and wide spread dependence on subsistence agriculture are exerting considerable pressure on the biodiversity of the country. Extensive land degradation and deforestation and the unregulated exploitation of natural resources (e.g. Mining for coral lime, sand and gemstones) are some of Sri Lanka's most pressing problems. In response, the National Conservation Strategy, the National Environmental Action Plan, the Forestry Sector Master Plan, the National Coastal Zone Management Plan 2000 are some of the policy instruments that are addressing biodiversity conservation. There are also many Government Institutions whose responsibility is to translate these policy initiatives into action. However, despite the legal, policy and institutional support for its conservation, the country's biodiversity is continuing to diminish. The growth and movement of population, the opening of economic markets, and new trends in industrial development are expected to have a growing adverse impact on biodiversity unless some systematic and stringent corrective measures are taken. Sri Lanka ratified the Convention on Biodiversity in 1994 and as a response to article 6 of the Convention; the preparation of "Biodiversity Conservation in Sri Lanka. A Framework for Action" began in early 1996. This plan proposes is a course of action to ensure that the biological diversity within the country is conserved and used sustainably.

The term Biological Diversity or Biodiversity is new. However, in Sri Lanka, the basic concept of biodiversity and its conservation is as old as recorded history of the country dating back to over 2000 years.

2. BIOSPHERE RESERVES

Compared to other Asian nations, Sri Lanka has greater biodiversity in a limited area, thanks to its geographical and climatic diversity. However, the following factors have endangered this biodiversity. Since 1970, the Department of Forests has declared 40 new Biosphere Reserves as reserve forests and proposed reserve forests. The declaration of Biosphere Reserves aims to protect the endemic ecosystems against deforestation. Sinharaja Biosphere Reserve in the wet zone and Hurulu Biosphere Reserve in the dry zone are among the most valuable sources of biodiversity in the world. Recently, effect of human activities had led to the extinction of species and deterioration of ecosystems at an alarming pace. Among these, habitat changes caused by shifting cultivation, monocultures, fire, development and settlement projects, invasive species, , use of agrochemicals and environmental pollution and so on

3. POLICY AND LEGISLATION

Legislation related to conservation and sustainable use of Biological Diversity are also old as recorded history of the country. In the Buddhannehela pillar inscription of King Udaya III (935-938 AD) there is legal provision decreeing not to cut down trees in the jungle. (val vala dandu pat nokapanu is a.timber should not cut down in the forests.) .The King had the authority to enact legislation regarding the use of lands and forests on the assumption that all lands in the entire island belonged to the king. Generally an ancient village was separated from another by a strip of Jungle. This strip of jungle served as the hunting ground of the people. A description which confirms this view is found in the Kokebey rock inscription of King Bhatikabhaya (22BC -7 AD). Among the various grants donated for the vihara called Harayada in that inscription, there is the tax also which was levied in respect of the flash of wild animals in that jungle such as deer (Axis axis), peacocks (Pavocristatus), and black antelopes (Prionailurus viuerrinus). The Convention on Biological Diversity, which is the major international legal instrument for biodiversity, has been singed and ratified by Sri Lanka in 1992and 1994 respectively.

In Sri Lanka, the different laws in force today relating to environmental protection, many of which directly or indirectly relate to the conservation of species and ecosystems, add up to around 80. The most often cited ones are the Forest Ordinance, the Fauna and Flora Protection Ordinance, National Environmental Act, National Heritage Wilderness Area Act, Felling of Trees (Control) Act, Botanic Garden Ordinance, National Aquatic Resources Research and Development Act, Plant protection Ordinance, Animal Diseases Act, Fisheries Ordinance, Coastal Conservation Act and the custom Ordinance.

The Convention on Biological Diversity (CBD) is the major international legal instrument for the conservation of world's biodiversity .It has been ratified by over 165 countries as of March 1997. Sri Lanka ratified the Convention in March 1994. Beside the CBD there are other international conventions dealing with biodiversity, and notable among these are the Wetland Convention, the CITES Convention on trade in endangered species and the Convention on Migratory animals(Bonn Convention) .

The CBD has introduced many new areas of concern in international relations regarding the conservation of biological diversity. These include the transfer of genetic materials from one country to another, the use of traditional knowledge of one country for technological development in another, the equitable sharing of benefits derived from the use of genetic resources, and collaboration in research between developed and developing countries.

4. INSTITUTIONAL STRUCTURE

The biological resources of the country are administered by many state institutions- under the purview of the central government and the provincial administration. Natural forests come under the jurisdiction of several state agencies, chiefly the Forest Department and the Department of Wildlife Conservation. Other institutions that have a role in the conservation and management of biological resources are the Department of Coast Conservation, the National Aquatic Resources Research and Development Agency, the Zoological Gardens, the National Botanical Gardens, The research institutes under the Ministry of Plantation Industry(CRI, RRI, TRI and SRI), the National Science Foundation, Central Environmental Authority and the Mahaweli Authority .In addition, the provincial ministries of the environment should have a responsibility for biodiversity conservation at the regional level. There are several other government organizations whose activities involve the consumptive use of biological diversity. There are, notably, the Department of Agriculture, Fisheries and Ayurveda. The Forest Department falls into this category also, as timber and other forest products are harvested from the forests under its charge.

At the national policy level, the ministries in charge of the subjects of environment, agriculture, lands, forests, plantations, fisheries, livestock, indigenous medicine, science and technology and the provincial council have a vital role to play in the conservation and sustainable use of biodiversity

5. GENERAL LAW FOR CONSERVATION OF FAUNA AND FLORA

Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 (Chap.567) and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970

Laws and Regulation on the Conservation of Species:

Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 (Chap.567) and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970.

Laws and Regulation on Hunting: Ordinance to provide for the protection of Fauna and Flora of Sri Lanka 1937 (Chap.567) and its Amendments of 1942, 1944, 1945, 1949, 1964 and 1970.

Laws and Regulation on Protected Area: Forest ordinance of 1907 (Chap 283)and its Amendments up to 1979

State Land ordinances No.8 of 1947 and No. 9 of 1948

6. AREAS OF FURTHER REGULATIONS

Legislative and quasi-legislative measures, as appropriate, must be adopted in the context of the CBD to safeguard Sri Lanka's interests regarding the conservation and sustainable use of its biodiversity. Sovereign rights of the state over its biological diversity have to be recognized by law. Laws and regulations should be in acted to control access to the country's genetic resources and traditional knowledge and to ensure that there is equitable sharing of benefits form the use of resources action must be taken to incorporate" prior informed consent" and mutually agreed terms" in agreement covering the export of germplasm, the sharing of traditional knowledge, and the carrying out of joint research.

CONCLUSION OF CHAPTER

South Asia is home to spectacular natural beauty and biological wealth. It harbors approximately 15 percent of the known global flora and fauna. Unfortunately, the rich natural endowments, including the precious gene pool, are constantly under threat. On one end poachers and illegal traders exploit poor enforcement mechanisms. At the other end, inadequate environmental and social assistance of project like mining and dams cause enormous harm to environment and society. More recently, traditional knowledge and ownership rights of indigenous communities are also being threatened by global trade and patenting agreements. This is in spite of the ecological debt built up by industrialised economies over the years by systematically exploiting the natural endowments in developing regions.

The loss of sub-regional biodiversity adversely affects the people of South Asia and also the global community. The South Asian biodiversity may hold the cure for some widespread diseases like AIDS and cancer. The sub-region as a whole, needs to set up systems to manage this wealth judiciously. Some of the key priorities for action by the sub-region are outlined below:

- Assess, map and document the biodiversity wealth of the sub-region;
- Demarcate and protect fragile habitats at all costs;
- Revive traditional knowledge, especially among local communities, indigenous people and women, that promotes conservation practices and integrate conservation efforts in all sectors;
- Facilitate the manufacture of high value added products from the resource base by industry in the sub-region and curtail bio-piracy;
- Use the rich biodiversity and products manufactured in the sub-region as a bargaining tool in the international market; and
- Formulate sub-regional policies and programmes, like the South Asian Regional Seas Programme and Biodiversity Action Plans, to address issues of biodiversity conservation and international trade

The South Asia countries have been developing domestic legislation to fulfill their obligations under the Convention of Biological Diversity. India has legislated a National Biodiversity Act, 2002. Like wise other countries of the region are also in process of formulating legislation in the area.

REFERENCES:

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Centre for Science and Environment, State of Indian Environment: Citizen's fifth report 1999.
3. Country Profile on Environment –Nepal, 1997, JICA.
4. Central Bureau Statistics, 1994a. A Compendium on the Environmental Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
5. Dhungel, S.K. (1995). Aspects of Wild Life Conservation in Nepal, Past and Present.
6. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
7. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, lslamabad.
8. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
9. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
10. Gilmore, D.A. (1992). Not seeing the trees of the forest. A reappraisal of the deforestation crises in two hill District of Nepal.
11. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
12. Human Development Report 1999, UNDP.
13. IUCN and EUAD. 1991. National conservation strategy, IUCN and EUAD, Pakistan Fauna and Flora Protection Ordinance, 1937 No.2: to provide for the establishment of national reserves, including acts prohibited within reserves and protection of the Fauna and Flora of Ceylon both within and outside reserves. Amended by No.31 of 1942; Amended by No.12 of 1944; Amended by No. x of 1948; Amended by No.38 of 1949; Amended by No.44 of 1964; Amended by No.1 of 1970; Amended by No.49 of 1993.
14. JICA Annual Report, 1999, JICA.
15. King Mahendra Trust for Nature Conservation, undated. A New Approach in

Protected Area Management: a Decade of Conservation for Development (1986-1996). Kathmandu.
16. Ministry of Environment and Forests, Traditions, Concerns and Efforts in India,, national report prepared for the UNCED Conference in Rio de Jane,ro, June 1992, (Ahmedabad Centre for Environmental Education, 1992).
17. National Conservation Strategy and Policy Statement on Environment and Development (New Delhi: Ministry of Environment & Forests, June 1992.
18. National Planning Commission (1992). The Eight Plan. His Majesty's Government of Nepal, Singh Durbar, Kathmandu, Nepal.
19. National Planning Commission/ World Conservation Union, 1991a. A legislative and institutional framework for environmental management in Nepal, National Conservation Strategy Implementation Project.
20. National Planning Commission/World Conservation Union, 1991b. Sources of industrial pollution in Nepal: a national survey, National Conservation Strategy Implementation Project.
21. National Planning Commission/World Conservation Union, 1992. Developing a national system of environmental planning in Nepal, proceedings of a Workshop on the National Conservation Strategy Implementation Project, held in Kathmandu, 1992.
22. National Environmental Action Plan (1998-2001), 1998, Ministry of Forestry and Environment.
23. Planning Commission, Eighth Five Year Plan, 1992-1997.
24. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority Act, No.7 of 1979.
25. Parliament of the Democratic Socialist Republic of Sri Lanka, Sri Lanka Ports Authority (Amendment) Act, No.7 of 1987.
26. Pachauri, R.K.; Sridharan, P.V. (1998) Looking Back to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
27. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation (Amendment) Act, No.64 of 1988.
28. Parliament of the Democratic Socialist Republic of Sri Lanka, Coast Conservation Act, No.57 of 1981.
29. Rahman, S.A. and Akonda, A.W. (1987). Bangladesh national conservation strategy: wildlife and protected areas. Department of Forestry, Ministry of Agriculture and Forestry, Dhaka. Unpublished report.
30. Sarker, N.M. and Fazlul Huq, A.K.M. (1985) Protected areas of Bangladesh. In: Thorsell, J.W. (Ed.), Conserving Asia's natural heritage. IUCN, Gland, Switzerland.
31. Shresta, T.B. and Shakya, P.R. (1993). Human Impacts on Biodiversity in Nepal
32. The State of the Environment, 1984-1985 (New Delhi: Centre for Science and Environment
33. The Environment (Protection) Act, 1986 (New Delhi: Publications Division, 1986.
34. The World Fact Book 1999, CIA
35. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report), JICA Nepal Office, Kathmandu, Nepal.
36. T.B.S. Mahat, training and Manpower Development in Community forestry, 1997.
37. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
38. UNDP/GEF,1999, Country Programme Strategy: Nepal, Kathmandu, Nepal.
39. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal.
40. World Bank, September 1998, World Development Report, Knowledge for Development 1998/99.
41. World Development Indicators, 1999, The World Bank.
42. World Development Report, 1999, The World Bank.

SUBJECT RELATED JOURNALS FOR FURTHER REFERENCE:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER XI

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: WILDLIFE

BANGLADESH

Key Issues: Loss of Wildlife; Park Management; Forest Degradation**;** Illegal Poaching; Man-Animal Conflict; Livelihood for Local Peoples; Local Peoples' Dependency on Forests; Eco-development; Peoples Participation;

Policy Framework: The National Forest Policy, 1994; National Fish Policy, 1998;
The Bangladesh Environment Policy, 1995; Wetland Policy for Bangladesh; National Environment Action Plan, 1992; Country's Ninth Five Year Plan (1997-2002

Key Legislation: Environment Conservation Act 1997 Penal Code, 1860; Fish Conservation Act, 1950; Bangladesh Wildlife (Preservation) Act, 1973; Wildlife (Preservation) Order, 1974; The Bengal Rhinoceros Preservation Act, 1932; The Wild Birds and Animals Protection Act, 1912; The Elephant Preservation Act, 1997; The Forest Act, 1927; Environment Act, 1995; Fish Act, 1950; Crab Exports Rule, 1998; East Bengal Protection and Conservation of Fish Act, 1950; Bengal Cruelty to animals Act, 1920

Key Institutions: Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; Department of Forests; International Institutes of Environment; Forest Research Institute, Bangladesh; Forest Industries Development Corporation; Institute of Forestry and Environmental Sciences

1. POLICY

There is no separate wildlife policy. The National Forest Policy, 1994 contains policy principles of wildlife preservation.

2. INSTITUTIONAL STRUCTURE

The Chief Conservator of Forests (CCF) is the implementing and policy recommendation authority. The territorial Divisional Forest Officers (DFO) are responsible for protection of wildlife in their respective jurisdictions under the Wildlife Order. The DFOs are also responsible for implementation of development projects on wildlife conservation. Dhaka is the Headquarter of Forest Department and the DFOs' offices are in the district headquarters. The DFOs do enforce the wildlife laws and implement the development projects through the Range and Beat offices. Prior to the promulgation of the Bangladesh Wildlife (Preservation) Order, 1973 in 1973, the following Acts were in force in Bangladesh for preservation/conservation of wildlife: -

1. The Bengal Rhinoceros Preservation Act, 1932
2. The Wild Birds and Animals Protection Act, 1912
3. The Elephant Preservation Act, 1997

At the time of promulgation of Wildlife Order, the above Acts were repealed in whole. Wildlife conservation activities are of two kinds in the country. Firstly, to enforce wildlife legislation and rules made thereunder. Secondly, to develop programmes and projects. So far three development projects have been implemented in the country on wildlife preservation and conservation. These projects had

components on tiger, elephant, crocodile etc. threatened species. Yet we did not have separate projects on tiger or elephant in the country.

a) Lack of proper institution and trained manpower for preservation of wildlife;
b) Continued increase of local demand for wildlife (Poaching, Hunting, Killing and Trapping) and habitats of wildlife;
c) Lack of information for planning and management; and
d) Continued degradation of habitats.

3. LEGISLATION & REGULATION-EIA, PERMITTING AND LICENCING, STANDARDS ETC

The Wildlife Order is the exclusive legislation for preservation and conservation of wildlife in the country. It entered into force immediately after its promulgation in 1973. It is applicable to wild mammals, birds, reptiles and amphibias, and also for parts and derivatives of wildlife; and also on conservation and preservation of Wildlife Sanctuaries, National Parks and Game Reserves (Protected Areas). It has provisions for establishment of Protected Areas.

There is no provision for EIA. However, the Wildlife Order contains provisions for permitting and licensing for shooting and trapping, and also for trade on wildlife {Article 12 & 13). Article 47 of the Wildlife Order contains provisions for making rules.

There are three Schedules in the Wildlife Order: Species listed in Part 1 of the First Schedule can be hunted unless and otherwise prohibited by gazette notification under the provisions of the same order (Article 46); Second Schedule contains provisions for lawful possession of wildlife and parts and derivatives thereof; and species listed in the Third Schedule are protected.

Part 1 of the First Schedule has provision for declaration of rogue elephants, man-eating tigers, and also for population increase of wildlife which threatens public live and properties and thereafter allows them for killing or for trapping.

4. COMPLIANCE AND ENFORCEMENT INCLUDING MARKET BASED INSTRUMENT INCENTIVES

The compliance of the provisions and rules made under the Wildlife Order and enforcement of the same in the country are very difficult tasks due to lack of required trained and dedicated wildlife staff and also due to lack of awareness among people on the importance of conservation of wildlife.

Prevention and Settlement of Disputes

Provisions for prevention have been included in the Wildlife Order (Article 6 & 23), and Article 36 contains provisions for compound of offences departmentally by the authorized officers. The government may delegate powers to the subordinates through gazette notifications (Article 33 and 44).

Judiciary Interventions and Decided Court Cases

Wildlife offences are tried in the courts of Magistrates (Article 34). There are provisions for trying offences summarily by the District Magistrates (Article 35). There are also provisions for trying offences in the Mobile Courts (Article 30). Court cases are punishable with imprisonment and fines.

5. EMERGING ISSUES AND TRENDS INCLUDING POSSIBLE AREAS OF FURTHER REGULATIONS(EMERGING ISSUES)

1. Increase of catching/killing of wildlife for various purposes (the main two purpose for illegal trade and for domestic consumption due to poverty).
2. Degradation of habitats.
3. Legal provisions for preservation of wildlife habitats at short distance in all kinds of ecosystems including the rural areas throughout the country.

6. HABITATS

Forests, homestead jungles and wetlands especially haors, bils, boars, rivers and estuaries are the main habitats in Bangladesh. All big mammals are now only found in the forest area (except dolphins). The main forest area of Bangladesh are Sundarbans Mangrove forests, tropical forests of Chittagong Hill Tracts, Chitagong, Cox's Bazar and sylhet. At present Madhupur (*Shorea sp*) forests provide habitats for monkeys and langurs.

Issues

1. Loss of pristine characters of habitats (degradation).
2. Decrease of habitats including fragmentation.
3. Continued decrease of population size of wildlife.
4. Decrease (change) of species, diversity in habitats.

Policy

1. The National Forest Policy, 1994.
2. The Bangladesh Environment Policy, 1995
3. National Fish Policy, 1998.
4. A Wetland Policy for Bangladesh has been drafted.

The National Forest Policy, 1994 is followed for preservation and conservation as well as improvement of forest habitats including the plantations on the road, embankments and on other marginal lands.

Institutional Structure

Forest Department is responsible for management and it has network/infrastructure up to interior of the forest areas, and upto thana throughout the country.

LEGISLATIONS AND REGULATIONS

1. **The Banladesh Wildlife (Preservation) Order, 1973.** The Wildlife Order contains provisions (Article 23) for declaration of wildlife sanctuary, National Park and Game Reserve.

2. **The Forest Act. 1927** This Act has provisions for felling, and carrying of trees as well as grazing and trespassing of cattle and cultivation in and around notified and reserved forests.

3 **The Bangladesh Environment Conservation Act, 1995** This Act contains provisions for declaration of "Ecologically Critical Area" (ECA)

4. **The East Bengal State Acquisition and Tenancy Act, 1950** This Act contains provisions for management of government (Khas) land especially rivers, bils, baors, haors, lakes etc.

5. The East Bengal Protection and Conservation of Fish Act, 1950. This Act contains provisions for declaration of fish sanctuary in the rivers, bils, baors etc.for conservation of fishes.

Compliance and Enforcement

Compliance and Enforcement of legislations are considered low. This is due to lack of trained personnel's and staff.

Prevention and Settlement of Disputes

Entrance, residing, grazing of cattle etc., without prior permission, are prohibited in the Protected Areas (Wildlife Sanctuary, National Park. Game Reserve) under Article 23 of the Wildlife Order. Offences under the Wildlife Order could be compounded departmentally under Article 36.

Judiciary Intervention and decided Court Cases

Article 23 of the Wildlife Order has provisions for declaration of Protected Areas. The Forest Act, 1927 has provisions for declaration or Reserved Forest. There are provisions for judiciary interventions under the Land Acquisition Act.

Emerging Issues

1. Urbanization, industrialization, road construction etc.
2. Unscientific harvests of natural resources from wetlands and forests.

3 Introduction of exotic species. There must be strict regulations on these issues.

Impact of health

Some undesirable species (mosquito, rats, eucalyptus) are increasing in the habitats which may be harmful for the health of wildlife as well as human being.

7. POACHING

Wildlife hunting, trapping and killing without permission under the Wildlife Order are punishable offence {Article 26 (b)} .

In Article 6, prohibitive measures of wildlife hunting, shooting, killing etc. have been included.

Issues

1. Threat for the ungulates in the hill forests.
2. Commercial and organized poaching in the Sundarbans.
3. Increase of poaching (netting/trapping of waterfowls) for local business by the poor.

Policy

There is no policy for regulating poaching.

Institutional Structure

Forest Department has field offices in all forest areas. The Forest Offices have field staff upto the rank of Foresters (Beat Offices) and they are empowered to deal with poaching (Article 31). The Bangladesh Police has also offices all over the country. All Police Officers upto the rank of Sub-Inspector are

empowered to discharge functions under Article 16,17 ,18 and 31 (1) of the Wildlife Order. The above Articles of the Wildlife Order deal with the offences of killing, trapping or shooting or hunting of wildlife without permission.

Legislations and Regulations

Article 6, 16, 17 & 18 contain provisions in respect of poaching, and Article 31 deals with the power (delegation of authority) of arresting the offenders.

Compliance and Enforcement

Within the jurisdiction of forest areas, poaching is not significant. However, poaching of deer is quite often reported in Sundarbans. Shooting of birds without permission especially waterfowls during winter in the wetlands is reported common. Sometimes netting of waterfowls especially ducks and waders for selling in the towns and cities for commercial purposes are also happened. All of these are poaching and illegal Officials and staff of Forest Department, Bangladesh Police, Customs and Bangladesh Rifles are very much aware of the Wildlife Order. So, it is obvious that the Wildlife Order. It is under effective implementation.

Prevention and Settlement of Disputes

The Wildlife Order has specific provision (Article-37) for taking permission from the forest offices if any persons are in possession of arms with license issued under the Arms Act, 1876 and residing within 5 miles from the radius of a Wildlife Sanctuary, National Park or a Game Reserve. Under Article 36, any offences including poaching can be compounded departmentally (Compound Offence Report) if the offender agrees to do so. First Class Magistrate is empowered to try any offences under the Wildlife Order, and the District Magistrate or any Magistrate of the First Class is especially empowered to try any offences summarily (Article-35). There are provisions to try offences by setting up Mobile Court (Article-30). Article 33, contains provision to prevent commission of offence.

Emerging Issues

1. Poaching of wildlife for commercial purposes especially in Sundarbans, and poaching of wildlife in the forest of Chattagong, Cox's Bazar and Chittagong Hill Tracts and also in the tea gardens by high officials and by elites.

2 Increase of poaching (birds, hares and other small mammals by some of the ethnic groups) for domestic consumption and for livelihood by the poor.

3. There should have been legal provisions for "Safari" shooting and captive breeding of wildlife in the country for minimization of poaching.

8. PROTECTED AREAS

Wildlife Sanctuary, National Park, Game Reserve and Private Game Reserve defined respectively in Article 2(p), h), (c) and in Article 24 are called Protected Areas for wildlife conservation under the Wildlife Order. Provision for declaration and management of Protected Areas have been made in Article 23 and 24.

Issues

1. Separate Management Plans are not yet placed for implementation of Protected Areas.
2. Appropriate officials and staff for management of Protected Areas are not available.
3. Revenue budget for management of Protected Areas are not available.

4. Lack of commitment for management of Protected Areas as separate entity/unit.

Policy

There is, no separate policy for management or for creation of Protected Areas in Bangladesh.

Institutional Structure

Local Forest Officers are responsible for management of Protected Areas. They are Divisional Forest Officers, Range Forest Officers and Beat officers. In the Protected Areas of Sundarbans separate infrastructures have been installed. These infrastructures as well as Assistant Conservator of Forests and other field staff of the Protected Areas in Sundabrans are under the control of Sundarbans Environmental Forest Division. The DFO of this Division is exclusively responsible for management and protection of the Protected Areas in Sundarbans.

Legislation and Regulations

1. The Bangladesh Wildlife (Preservation) Order, 1973.
2. The Forest Act, 1973.

Compliance and Enforcement

Hunting and shooting of wildlife including collection of forest produces are well–controlled in the Protected Areas. Forestry activities are also not carried out in the Protected Areas. However, local communities and the poor are yet to realize the importance of Protected Areas.

Prevention and Settlement of Disputes

Article 23 of the Wildlife Order has provisions for prevention of offences. Article 36 has provision for compounding offences departmentally. However, there is no provision for settlement of disputes for eviction from Protected Areas and rehabilitation in other areas or to pay compensation to the affected people.

Judiciary interventions and Decided Court cases

Article 27 and 28 of the Wildlife has provisions in respect of judicial interventions.

Emerging Issues and Trends

Protected Areas have no separate entity from the adjacent areas or forests. Special and separate prescriptions for management and development of Protected Areas are still lacking.

9. NATIONAL PARK

National Park has been already discussed under Protected Areas. However, National Park has been defined in the Wildlife Order which means comparatively large areas of outstanding scenic and natural beauty with the primary object of protection and preservation of scenery flora and fauna in the natural state to which access for public recreation and education and research may be allowed (Article 2 (h)).

In Article 23(3), prohibitive measures of National Parks have been given. At present there are five National Parks in the Reserved Forests in Bangladesh.

Issues

1. Legal provisions are not considered for management and development of National Parks.

2. Policy and common approach for management of National Parks are absent.
3. Lack of appropriately trained manpower for management of National Parks.

Policy

There is no policy for creation of National Parks in the country. The Forest Policy, 1994 includes principles for National Parks or Protected Areas.

Institutional Structure

Forest officials and field staff are deployed for management of National Parks. But the officials and staff have no proper training as well as knowledge for management of National Parks and on Wildlife.

Legislation and regulations

Article 23 of the Wildlife Order contains the following measures for National Parks:-

i. Hunting, killing or capturing of any wild animal in a national park and within the radius of one mile outside its boundary;
ii. Firing any gun or doing any other act which may disturb any wild animal or doing any act which may interfere with the breeding places of any wild animal;
iii. Felling, tapping or burning or in any way damaging or destroying, taking, collecting or removing any plant or tree therefrom;
iv. Clearing or breaking up any land for cultivation, mining or for any other purpose;
v. Polluting water flowing in and through the national park;

Provided that government may for scientific purposes or for betterment of the national park or for aesthetic enjoyment of scenery or for any other exceptional reasons, relax all or any of the prohibitions specified above.

Article 23(4) contains provisions in respect of construction of access roads, rest houses and hotels and provision of amenities for public and these shall be so planned as may not impair the primary object of the establishment of a national park.

Compliance and Enforcement

National Parks are not yet virtually distinctive from adjacent forests. So compliance and enforcement of laws are as of Reserved Forests.

Prevention and Settlements of Disputes

Appropriate initiative is absent and so preventive activities are not considered necessary.

Cases Judiciary Interventions and Decided Court Cases

Same as Habitats and Poaching

Emerging Issues and Trends

i . Habitats are degrading very rapidly; and as a result, fauna and flora are declining.
ii. Lack of proper initiatives for management as per legal provisions.

10. ZOOLOGICAL PARKS

There is no legal provision in the Wildlife Order for establishment and management of Zoos or Zoological parks or Zoological Gardens. At present there are two zoos in the public sector under the management of Livestock Department, Ministry of Livestock and Fisheries Resources, and there are three zoos under joint management of the government and autonomous/ semi-government bodies. The two government zoos are situated at Dhaka city land at Rangpur. The other three zoos are situated at Cihittagong, Rajshahi and Comilla.

The main objective of establishment of zoo is to exhibit wildlife to the people especially the city dwellers. Forest Department has established three wildlife breeding centres each at Dula Hazara (Cox's Bazar Forest Division), Bhawal National Park (Dhaka Forest Division) and lone at Sundarbans. Forest Department has also an Wild Animal Corner at Madhupur National Park..

Issues

i Concept of ex-situ management of wildlife is not applied in the Zoos.
ii. Legal arrangement in zoo management is absent
iii Appropriate and dedicated personnels in the zoo management or in ex-situ management of wildlife is not included or is not available.

Policy

There is no written Policy for establishment or management of zoos in Bangladesh. All aspects of management of zoos/breeding centres are done by the respective departments. However, there is a National Zoo Advisory Board headed by the Minister in charge of the Ministry of Livestock and Fisheries Resources.

There is a provision in Article 4 of the Wildlife Order for constitution of a Wildlife Advisory Board. The Bangladesh Wildlife Advisory Board reconstituted in September. 1999 with 32 members headed by the Minister in Charge of Ministry of Environment and Forests.

Institutional Structure

Curator is the chief executive of the Dhaka Zoo. This position as well as other higher positions of this zoo are held by the personnel of the Livestock Cadre (Agriculture Cadre Livestock Sub -Cadre). The officers of this sub-cadre are usually graduates in Veterinary science There is no provision for Wildlife Biologists in the management of zoo in Bangladesh. The zoo at Rangpur is also headed by officers from Livestock Department. However, management of the zoos at Chillagong. Rajshahi and Comilla are managed jointly by the staff of Local government and Livestock officers. Livestock Department is not responsible for over all management of these three zoos.

Legislations and Regulations

Native wild animals for zoos are collected under the provisions of the Wildlife Order. Article 45 of the Wildlife Order has provisions for capture or trapping of wildlife from the nature for scientific and public interest. Under this Article wild animals for zoos and other agencies (Natural History Section of the National Museum) are allowed for collection from the nature through gazette notification by the Ministry of Environment and Forest

Prevention and Settlement of Disputes

Zoo Management Authorities maintain a liaison with Forest Department in respect of wild animal management in the zoo. Moreover, the Chief Conservator of Forests is a member of the Bangladesh

National Council for Dhaka Zoo management. Zoo authority has to inform Forest Department for transfer and selling of wildlife from the zoo to other agencies or to an individual.

Judicial Intervention and Decided Court Cases

This is not applicable for management of zoological Parks.

Emerging Issues and trends

i. Zoo authority has no arrangement for replacement of wild animals from and in the zoo with the Forest Department.
ii. Equipment and trained manpower are insufficient.
iii. Lack of modern concept of wildlife conservation in the zoo.
iv. Lack of policy.

11. SANCTUARIES

As per Article 2 (p) of the Wildlife Order, Wildlife Sanctuary means an area closed to hunting, shooting or trapping of wild animals and declared as such under Article 23 by the government as undisturbed breeding ground primarily for the protection of wildlife inclusive of all natural resources, such as vegetation, soil and water. At present, there are seven wildlife sanctuaries in the forest areas in the country.

Issues

i. Legal management of Wildlife sanctuary is absent.
ii. Wildlife sanctuaries are not distinctive from adjacent forests. There is no trained manpower for wildlife sanctuary vis-a-vis protected areas of the country.
iii. Poaching and illicit felling are still the main factors of the degradation of the wildlife sanctuaries.

Policy

There is no Policy for wildlife sanctuaries. Principles of wildlife conservation are included in Forest Policy, 1994. The Bangladesh Wildlife Advisory Board is the policy making authority for wildlife conservation and wildlife sanctuaries. However, the Wildlife Board is not very much functional.

Institutional Structure

Divisional Forest officer (DFOs) is the main official of Forest Department for management and also for preparation of proposal for establishment of wildlife sanctuary in his jurisdiction. He is assisted by Assistant Conservator of Forests. Range Forest Officers and Beat Officers. Conservator of Forests supervises the activities of DFOs and the Conservator of Forests is responsible to the Chief Conservator of Forests. Forest Department has field offices in the wildlife sanctuaries.

Legislations and Regulations

As per Article 23 (2) of the Wildlife Order, no person shall- .

i. enter or reside in any wildlife sanctuary; or
ii. cultivate any land in any wildlife sanctuary; or
iii. damage or destroy any vegetation in any wildlife sanctuary; or
iv. hunt, kill or capture any wild animal in any wildlife sanctuary; or
v. introduce any exotic species of animal into a wildlife sanctuary; or
vi. introduce any domestic animal or allow any domestic animal to stray into a wildlife sanctuary; or

vii. cause any fire in a wildlife sanctuary; or
viii. pollute water flowing in or through any wildlife sanctuary

Provided that government may for scientific purposes or for aesthetic enjoinment or betterment of scenery relax all or any of the prohibitions specified above.

Emerging Issues and Trends

1. Separate administration for wildlife sanctuaries are absent even after 20 years of establishment of wildlife sanctuaries.
2. Forests as well as other stakeholders do have little seriousness of compliance and enforcement of regulations.
3. Wildlife as well as habitats are declining and degrading.

Violation of the Article 23 shall be punished with imprisonment which may subject to minimum of six months extend to one year and also with a fine and the hunting license, gun, license under Arms Act 1978. Shooting permit or special permit issued to such person shall be cancelled and the firearms, vehicles, vessels water Everest, appliances or anything used in the commission of the offence including the wild animals, meat or trophy in his possession shall be confiscated (Article 26(1) (a)).

Compliance and Enforcement

Wildlife sanctuaries are situated in the Reserved Forests and so they (Wildlife Sanctuaries) are not distinct from the reserved forests. For this reason, compliance of legal measures by the local communities and enforcement of the legal prohibitions cannot be distinctly detected. However, hunting and shooting of wildlife in the wildlife sanctuaries are rare. Even then, in true sense enforcement of legal measures is low. This is due to lack of appropriate personnel's for wildlife management in Forest Department.

In Article 37 of the Wildlife Order, provisions have been made to register arms for which license have been issued under Arms Act, 1878 and residing within five miles from the boundary of the wildlife sanctuaries, national parks and game reserve.

Prevention and Settlement of Disputes

Preventive measures of wildlife sanctuaries are absent except display of signboards. However, the staff of wildlife sanctuaries regularly patrol within the wildlife sanctuaries. In Article 17 of the Wildlife Order, there are provisions for local government employees and members including the purchasers of forest produce who shall be bound, in the absence of reasonable excuse to give to officer information in respect of unauthorized or illegal activities against the offender.

Detection of disputes in and around wildlife sanctuaries is low. In respect of land, the disputes are tried in the court.

12. CIRCUS (BANNING/REHABILITATIONS)

There is no provision under the Wildlife Order for wildlife to be kept by circuses. The circuses have licenses issued by the District Administration (Deputy Commissioner). In the past, the district authorities while issuing permit for circuses, approved possession of wildlife. Probably for this reason, no circus party declared their wild animals to the respective Divisional Forest Officer on the fixed date (31st January, 1974) as per Article 9(1) of the Wildlife Order. However, later on, some circuses applied for registration of their wild animals under the Wildlife Order.

Issues

I. No data available on wildlife is kept in the circuses.
2. No Circuses have taken permission for wildlife under the Wildlife Order
3. There is no rule under the Wildlife Order for wildlife of the Circuses.

Policy

There is no policy for circuses for use of wildlife by circuses.

Institutional Structure

The Chief Conservator of Forests, Bangladesh is the Chief Wildlife Warden (Part-II of the First Schedule). Networks of Forest Department spread in all forest areas of the country including all civil districts.

Legislation and Regulations

Article 9 and 10 of the Wildlife Order contain legal provisions in respect of control, custody or possession of wildlife. There are no rules or regulations under the Wildlife Order for possession of wildlife by the circuses.

Prevention and Settlement of Disputes

There is no provision in the Wildlife Order for use of wildlife by the circuses. The circuses are permitted licensed by the district authorities (Deputy Commissioners) and the permits include all belongings of the circuses. As per provision of the Wildlife Order, Deputy Commissioners have no legal authority to issue licenses for wildlife for circuses. The possession of wildlife by circuses with the licenses of Deputy Commissioner is illegal.

Judiciary International and Decided Court Cases

Article 28 describes that nothing contained in the order shall be deemed to prevent any person from being prosecuted under any other law for any act of commission or commission which constitutes an offence under this Wildlife Order or from being liable under any other law to any higher punishment than that provided by this Wildlife Order.

Emerging Issues and Trends

Circuses are not now common in the country. Also, circuses have knowledge on the Wildlife Order.

13. TRADE IN ANIMAL PARTS

Trade in wildlife under the Wildlife Order is legally dealt under Article 12,13,14 and 15, and trade for commercial purposes on the wildlife of the third schedule is not allowed. CITES regulations are more important than domestic legislation in respect of trade in animal parts.

Issues

i. Demand of wildlife as well as animal parts is increasing.
ii. Appropriate institutions are lacking for control and enforcement of legal provisions of trade in Animal (Wild) parts.
iii. Lack of data on wildlife for which there is no scope to carry out trade on wildlife on sustainable basis.

Policy

There is no policy for trade on wild animal as well as their parts and derivatives. Preparation of a wildlife conservation and export-policy is in progress.

Institutional Structure

Chief Conservator of Forests is the implementing authority of trade on wildlife. There are networks of forest offices under the control of the Chief Conservator of Forests. However, the forest officials and staff of Forest Department have no training as well as knowledge on wildlife.

Legislation and Regulations

As per Article 12 of the Wildlife Order, no person shall import wildlife or its parts and derivatives:-

i. except through a customs port of entry;
ii. unless lawful export permit of the country of export is submitted to the customs officer: and
iii. unless an Import permit is issued by the country of import under this Wildlife Order.

As per Article 13 of the Wildlife Order, no person shall export or attempt to export any wild animal or wild animal parts and derivatives:-

i. Except through customs of port of exit
ii Unless the exporter produces to the customs officer an Export Permit issued by the government under the Wildlife Order.

In Article 14, provisions for wild animals and wild animal parts and derivatives in transit through Bangladesh have been given. The provisions are as follows:-

i. Any wild animal or wild animal parts derivatives in transit through Bangladesh shall be accompanied by the necessary transit customs documents;
ii. shall be entered through a custom port of entry; and
iii. shall not be unloaded from the ship or motor vehicle or any carrier on which it is being carried, or in the case of air transport, shall not leave the precincts of the airport at which it is landed or transshipped without being checked nor shall, except in the case of customs warehouse remain in such precincts for more than 48 hours.

In Article 15 provisions of dealers' permit for trade on wild animals and wild animals parts and derivatives have been incorporated. As per this Article nobody shall carry businesses on wildlife or in their parts and derivatives without dealers' permit issued by the government under the Wildlife Order.

Compliance and Enforcement

Trade on wild animals or wild animals parts and derivatives without permission of the government is punishable offence under Article 26(a) of the Wildlife Order. Actually trade on wild animals and their parts and derivatives are not regular in Bangladesh. Since promulgation of the Wildlife Order in 1973, commercial trade on wild animals and wild animal parts and derivatives have been carried on very limited items. Forest officials as well as field staff and the customs and the police etc. law enforcing agencies are empowered to deal with the illegal activities on wild animals and wild animal parts and derivatives under the provisions of the Wildlife Order.

Prevention and Settlement of Disputes

As per Article 33 of the Wildlife Order, every officer shall be competent to take lawful means to prevent the commission of an offence.

Judiciary Intervention and Decided Court Cases

The same as of poaching.

Emerging Issues and Trends

I. Increase of killing of Tiger, Deer and Crocodile in Sundarbans is known to be due to illegal trade on their parts (Skins & bones).
2. Elephants are known to kill in the forests of Cox's Bazaar for its parts.
3. Snake charmers have important role to regulate or sustainable use of venom of snakes.
4. Demand for wildlife (Turtles, Bears, Scaly Anteater etc.) has impact on declination of wild populations.

14. BREEDING IN CAPTIVITY OF ENDANGERED SPECIES

For restocking and rehabilitation of wildlife in the natural habitats, breeding of wildlife in captivity is necessary. Aiming to this Forest Department has installed two centres for wildlife breeding. The wildlife species in the breeding centres include mainly reptiles such as crocodiles, turtles and deer species. In some zoos, there are programmes for breeding of wildlife. There is no provision in the Wildlife Order for captive breeding of wildlife.

Issues

1. Wildlife breeding especially which has commercial importance is recognized by traders country.
2. Policy, regulations, commitments, dedication are absent for captive breeding in the country.
3. Knowledgeable persons do not show interest in the breeding programme of wildlife.

Policy

There is no policy for breeding of wildlife in captivity.

Instructional Structure

Ministry of Environment and Forest is the main authority to take decision on captive breeding of wildlife. Forest Department is the implementing Agency.

Legislation & Regulations

There is no regulation for breeding in captivity of wildlife in the private sector. However, it is allowable under the Wildlife Order.

Emerging Issues and trend

Breeding of wildlife for rehabilitation and also for trade is supported by all concerned authorities.

15. EXPERIMENTS ON ANIMAL (RESTRICTIVE)

Article 45 of the Wildlife Order has provisions for capture of wildlife from the nature for scientific purposes or for public interest.

Issues

There is no issue on the subject.

Policy

There is no policy as per wildlife conservation and preservation is concerned.

Institutional Structure

The Ministry of Environment and Forest, and Forest Department are responsible for wildlife conservation in the country.

Legislation and Regulation

There is no separate legislation. There is no regulation under the Wildlife Order.

Prevention of Settlement of Disputes

Forest officers and staff upto the rank of Foresters are empowered under the Wildlife Order to take lawful measures.

Emerging Issues and Trend

No issue has yet been reported or known.

16. AQUATIC WILDLIFE/INCLUDING MARINE MAMMALS

As per definition of wildlife under the Wildlife Order dolphins and whales are purely aquatic wildlife. Besides, most species of reptiles and amphibians are to depend on water for completion of their life cycles. These species are crocodiles, turtles, frogs etc. In Bangladesh most of the repetition species are under tremendous pressure due to their habitat loss. Population status of dolphins (except Range River Dolphin) are not known. The Ganga River Dolphin (*Platanistn gangetica*) is found in the big rivers of the country. However, it gets confined in the deep water regions of the rivers during dry season. The whales are reported to be vagrant in the coast of Bangladesh.

Issues

1. Conservation initiatives for preservation and conservation of aquatic/marine wildlife are lacking.
2. Freshwater reptiles are very rapidly decreasing.
3. Breeding in captivity of freshwater turtles is essential.
4. Facilitation of nesting of sea turtles is needed.

Policy

There is no policy for aquatic/marine wildlife.

Instructional Structure

Ministry of Environment and Forest, and Forest Department are responsible for conservation of aquatic wildlife including marine mammals.

Legislation and Regulations

Catching and trapping of wildlife including dolphins, whales, turtles etc are prohibited under the Wildlife Order (Article-5 and 6).

Compliance and Enforcement

Enforcement is very difficult due to lack of institutional infrastructure and networks. People are aware of the legal restrictions of trapping and collecting wildlife. However, they cannot, but to go for catching of wildlife in the nature.

Emerging Issues

1. Wildlife and their habitats are declining degrading very rapidly.
2. People are interested in the commercial aspect of wildlife.
3. Ecological condition is very unfavorable for reproduction and increase of wildlife population.

17. WETLANDS

As per definitions of wetlands bils, haors, rivers, and the estuaries etc. including the Sundarbans are called wetlands in Bangladesh. These areas remain under water almost throughout the year except haors which goes under water for five months in the monsoon. Most of the flood plains of the country and lakes, ponds including shrimp farms are also called wetlands. Thus, about 50% of the total area of the country is wetlands.

1. Economic activities in the wetlands are not sustainable with the resources as well as ecological functions.
2. Required data for planning and management of wetlands are not available.
3. There is no inventory of wetlands in the country.
4. People are not aware of importance of wetlands.
5. There is no proper enforcement of laws in the wetlands.

Policy and Institutional Structure

A wetland Policy is available in draft for this has not yet been approved by the government. However, Forest Policy, Environment Policy, Fishery Policy, Water Policy have included programmes in or for wetlands. Ministry of Environment and Forest through Forest Department and Ministry of Land through the Deputy Commissioners (D. C), are responsible for management of wetlands in Bangladesh. Directorate of Fisheries of the Ministry of Livestock and Fisheries Resources have also conservation and management activities in bills, rivers, lakes etc. Department of Environment of the Ministry of Environment and Forest can declare "Ecologically Critical Area" (ECA) in the wetlands if it (wetlands) deems so under the Environment Act, 1995.

Legislation and Regulations

The following Acts and Rules are effective in the wetlands of Bangladesh:

1. The Forest Act, 1927
2. Bangladesh Wildlife (Preservation) Order, 1973.(The Parliament passed it into Act in 1973 and also amended in 1974 as Bangladesh wildlife (Preservation) (Amendment) Act, 1974).
3. Environment Act, 1995
4. Fish Act, 1950.
5. Forest Policy, 1995
6. Environment Policy, 1992
7. EIA Rules (Department of Environment)
8. The Crab Exports Rule ,1998.

Compliance and Enforcement

Execution of laws and legislations can not be efficiently enforced in the wetlands, the main reason is that he wetlands are situated in the remote areas. Socio-economic condition of the country is also an important factor for enforcement of laws particular on wildlife and fishes.

Prevention and Settlement of Disputes

Prevention of illegal activities are difficult in the wetlands, because they are the remotest areas.

Judicial interventions and Decided Court Cases

The disputes are tried and settled in the courts.

Emerging Issues

1. Siltation of wetlands.
2. Water pollution
3. Lack of initiatives for intensive and scientific management.

Impact on health

1. Community disease such as diarrhea, cholera, skin disease etc.
2. There are fish diseases probably due to water pollution.

18. CRUELTY TO ANIMALS

There is a society for prevention of cruelty to animals in Bangladesh. Its functions are carried out under the assistance/control of the Ministry of Livestock and Fisheries. The Minister for Fisheries and Livestock is the Chairperson of the Executive Committee of the Society. The President of the People's Republic of Bangladesh is the head of the Society under section 3 for the Prevention of Cruelty to Animals Ordinance 1962 (E.P. Ordinance XV of 1962).

Issues

1. People are ignorant of the cruelty activities to the animals.
2. Initiatives for prevention of cruelty to animals are absent.
3. Proper publicity on prevention of cruelty to animals is absent.

Policy

There is no policy for prevention of cruelty to animals.

Institutional Structure

There was a rudimentary field staff for prevention of cruelty to animals under the Bangladesh Society for Prevention of Cruelty. The staff included:

Inspector -1
Sub-Inspector- 3
Constable–5.

At present the staff is no longer in the services due to lack of salary.

Legislation and Regulations

The Bengal Cruelty to Animals Act, 1920.

BHUTAN

Key Issues: Loss of Wildlife; Park Management; Forest Degradation**;** Illegal Poaching; Man-Animal Conflict; Livelihood for Local Peoples; Ecodevelopment; Peoples Participation Local Peoples' dependency on Forests;

Policy Framework: Paro Resolution on Environment and Sustainable Development (1990); National Environment Strategy

Key Legislation: Forest Act 1969, Forest and Nature Conservation Act 1995, Mines and Management Act 1995 and the Environmental Assessment Act 2000 National Environmental Strategy**;** National Forest Act (1969); Land Law (1979); Pastureland Law (1979); Inheritance law (1979); Livestock Law (1979); Wildlife Act (1985); Plant and Quarantine Act and regulations (1988); Mining Act (1995);

Key Institutions: National Environment Committee; National Environment Commission; Ministry of Rural Development; Ministry of Rural Development

1. INTRODUCTION

Alpine habitats are particularly important from their aesthetic, hydrological, and biological view points. Low productivity and increasing pressure from livestock in these areas warrant immediate action in terms of controlled grazing and habitat monitoring.

Alpine scrub form important habitat for blue sheep during winter. The moist alpine scrub and adjacent meadows along major river valleys are used during summer. The birds characteristic to alpine scrub include red billed chough, fire tailed sun-bird, black red start, rose finches, red headed bullfinch, white winged grosbeak, and Juniper finch, although most of them are summer visitors.

Sub-alpine forests are used by a variety of mammals and birds such as Himalayan musk deer, serow, takin, blood pheasants, tragopans, and monal. Some of the rarer bird species characteristics to sub-alpine birchrhododendron forests include golden bush robin, gold crowned black finch and fire-tailed myzomis.

Pine forests are close to human habitation and prone to disturbances from frequent fires, fuelwood and grass collection, wildlife abundance is low compared to other habitats. Nevertheless, several rare species, including pheasants, partridges, and mammals such as goral, Himalayan yellow throated marten are known to occupy these habitats.

Temperate broad leaf forests covers a wide altitudinal range and support a large number of mammal and avian species. The old growth forests, with a variety of fruit-bearing trees and bamboo brakes, provides habitat for Himalayan black bear, red panda, squirrels, sambar, wild pig, barking deer, tiger, common leopard, and kaleej pheasant. This zone is also rich in oak species, most of which are highly preferred by local people for firewood and agricultural implements.

Riverine vegetation not only checks bank erosion but also provides critical habitat for several animal species. The alpine willow and *Hippophae - Myricaria* scrub, for example, serves as habitat for lynx and takin, and the lower riparian acts as dispersal corridors for tigers. Thus, the riverine forest habitat is of high conservation significance because; a) it acts as a habitat corridor for several species of wildlife, and b) it protects the river banks from erosion.

Wildlife preservation, specific programs – tiger elephant projects, habitat, poaching, protected areas, national parks, zoological parks, sanctuaries, circus, trade in animal parts, breeding in captivity of

endangered species, experiments on animal, aquatic wildlife, wetlands, cruelty to animals. Overall, preservation of this rich biodiversity can be attributed to enlightened leadership and the strong conservation ethic of the Bhutanese. Conservation is a central tenet of Buddhism, and the importance of protecting nature, as noted in Section I, has permeated Bhutanese consciousness. Thus, preservation of the environment is an integral part of the Bhutanese value system.

The diverse Bhutanese flora have affinities to Southeast Asia, China/Japan, Tibet, the Euro-Siberian region and the Arctic/alpine areas of Europe and Asia, as well as, to a limited extent, the flora of India and Sri Lanka. Of the 5,446 species of vascular plants, as many as 750 are endemic to the Eastern Himalayas and 50 or more are endemic to Bhutan itself. The flora includes more than 50 species of rhododendron and numerous species of economic value. More than 300 species of medicinal plants are found that are used in traditional herbal medicine. The Bhutanese flora is considered of great scientific value not only because of its biodiversity but also because of its relatively good state of preservation.

Although Bhutan's avifauna are still poorly known, around 770 species have been recorded, including at least 12 globally threatened species. Aquatic habitats also are important but require significant further study. With regard to crop species, the diversity also surpasses anything one would expect considering Bhutan's size. Through a long process of natural and human selection, a wide array of crops and of varieties within crop species exists, sometimes hidden in remote areas. Many of the native crops, as well as those that have been introduced into Bhutan long ago, possess significant genetic diversity and are ecologically well-adapted to the specific requirements of the local environment.

2. NATIONAL PARKS AND WILDLIFE SANCTUARIES

The Royal Government has established a system of national parks, wildlife sanctuaries and nature reserves for *in situ* conservation of biodiversity across more than 26% of the country's land area. Indeed, laws covering protected areas are often more stringent than ordinary forestry laws, although indigenous communities that have traditionally relied on forest resources for livelihood sometimes inhabit protected areas. Again, the Kingdom's strong conservation ethics have come at the cost of economic development and should be supplemented by compensation from international sources. The Forest and Nature Conservation Act 1995 establishes guidelines for the creation and management of all protected areas; this Act calls for strategies for biodiversity conservation to be built upon two main concepts:

- Conservation value lies in the cumulative effect of species diversity
- Natural resources must be used to meet the collective needs of the Bhutanese people

In late 2001 a new vision and strategy document was adopted to lead to more effective management of protected areas. It is intended to ensure an increasingly focused approach and also take into account emerging conservation issues in management of the areas. Although major problems include lack of adequate communication among stakeholders, human-wildlife conflicts, poaching, inadequate human and financial resources, and forest fires, opportunities have been outlined in strong political support, potential for ecotourism and research opportunities.

3. LEGISLATION

Whilst stringent **legislation** and regulatory provisions are in place to protect wild fauna and flora, poaching continues due to a dearth of trained staff, lack of information and awareness amongst the general population and inadequate equipment for surveillance. In order to address these problems, the Forestry Services Division launched the anti-poaching programme in 1995 with the financial support from WWF.

Specifically, the programme aims to:

- Increase the efficacy of implementation of **legislation** on **wildlife** protection by enhancing coordination among various law enforcement agencies and by

involving local communities;

- Establish and support anti-poaching squads in vulnerable areas by providing them adequate training and equipment;

- Educate and raise the awareness of the general public on the implications and issues of poaching to enlist their support for **wildlife** protection.

INDIA

Key Issues: Loss of Wildlife; Park Management; Forest Degradation; Illegal Poaching; Man-Animal Conflict; Livelihood for Local Peoples; Local Peoples' dependency on Forests;

Policy Framework: National Conservation Strategy, 1992; National Conservation Action Plan' 1993; Forest Policy, 1988; National Strategy for Protection and Conservation of Biodiversity; National Wildlife Action Plan, 2002; National Forest Policy of 1952; National Policy for Wildlife Conservation in 1970;

Key Legislation: The Environment (Protection) Act, 1986; National Wildlife Action Plan (NWAP),1983; Wildlife (Protection) Act of 1972

Key Institutions: Indian Board for wildlife; Wildlife Institute of India; Project Tiger; Project Elephant;

1. INTRODUCTION

The National Forest Policy of 1952 for the first time emphasized the need for protecting wildlife and setting up national parks and sanctuaries in the country. This also coincided with the formation of the Indian Board for wildlife (IBWL) in 1952 to advise the Government on various aspects of wildlife and nature conservation. Wildlife Advisory Boards complement this at the State level, which are statutory bodies. The IBWL articulated a National Policy for Wildlife Conservation in 1970, which led to major initiatives being taken in the 70s and 80s. The report covered various aspects like the need for a national legislation, minimum proportion of protected areas (PAs), management guidelines, training and research, etc.

2. PROBLEMS AND CONSTRAINTS

Wildlife conservation is not merely conservation of large mammals and birds but is basically the conservation of biological diversity as a whole. With an upsurge in international demand for various wildlife products, it is not surprising that commercial poaching and ingenious smuggling methods have come into play. A burgeoning human and livestock population exert ever increasing pressures on forest and wildlife areas and resources, leading to habitat degradation and depletion of species. Closer interface between wildlife and people has given rise to various conflicts, which result in loss of life and property of local people. This has further alienated them and has underscored the need for integrated management of entire ecosystem, instead of confining the efforts to isolated PAs.

Natural areas continue to be modified and converted due to exigencies of development. Perhaps, the greatest pressure has been on the forest areas outside the PA system. Habitats have been degraded, forest contiguity lost and migratory corridors disrupted. The tiger population has steadily declined since 1989, with greater losses occurring outside the tiger reserves and PA network. Although the rhino population has increased, the number of populations has declined to only a few last strongholds. Poaching of tuskers and habitat fragmentation is severely affecting the genetics and population dynamics of the elephant. Increasing disturbance to the marine and coastal environments threatens the survival of species like the sea turtles. Drainage and degradation of wetlands has affected the population of migratory and resident waterfowl like the Siberian and Sarus Cranes.

The deteriorating financial condition of many States has also adversely affected effective and timely execution of wildlife and PA conservation projects. States find it difficult to allocate adequate resources in their budgets for this purpose. Funds provided by the Government of India are also not released to the field implementing agencies in time and are at times diverted for other uses. This coupled with the

general ban on creation and filling up of posts in most States has proved to be a handicap in sustaining conservation efforts in the long run.

3. CORRECTIVE MEASURES TAKEN

The National Wildlife Action Plan (NWAP) was launched in 1983, which continues to guide wildlife conservation programmes and projects to this day. It identified the following 10 major objectives:

- Establishment of a representative network of protected areas.
- Management of protected areas and habitat restoration.
- Wildlife protection in multiple use areas.
- Rehabilitation of endangered and threatened species.
- Captive breeding programmes.
- Wildlife education and interpretation.
- Research and monitoring.
- Domestic legislation and international conventions.
- National conservation strategy.
- Collaboration with voluntary bodies.

Priority projects are outlined under each, and responsibility assigned to achieve the objective within certain time frames.

4. WILDLIFE CONSERVATION

The National Forest Policy of 1952 for the first time emphasised the need for protecting wildlife and setting up national parks and sanctuaries in the country. This also coincided with the formation of the Indian Board for Wildlife (IBWL) in 1952 to advise the Government on various aspects of wildlife and nature conservation. Wildlife Advisory Boards complement this at the State level, which are statutory bodies. The IBWL articulated a National Policy for Wildlife Conservation in 1970, which led to major initiatives being taken in the 70s and 80s. The report covered various aspects like the need for a national legislation, minimum proportion of Protected Areas (PAs), management guidelines, training and research, etc.

5. WILDLIFE RESEARCH AND TRAINING

The Wildlife Institute of India (WII) was established in 1982 at Dehra Dun to provide training, education, and research and consultancy services in wildlife and biodiversity conservation. The institute offers diploma and certificate courses in wildlife management; a two year M.Sc. programme in wildlife science, and several specialised courses and workshops in subjects such as eco-development planning, preparation of management plans, wildlife health, law enforcement etc.

6. PROTECTED AREAS AND IN SITU CONSERVATION

Establishment of a network of Protected Areas (PA) is the single most important step for the conservation of biodiversity of any country or region. There are now 504 Sanctuaries and 89 national parks covering 4.89% of the country's geographic area. These deal with areas including all major ecosystems found in our country.

Major field conservation projects were launched like the Project Tiger in 1973 for conservation of tiger, followed by a Crocodile Rehabilitation Project in 1975 and Project Elephant in 1991-92. Starting with 9 tiger reserves covering 16,339 sq. km., Project Tiger now covers 23 tiger reserves covering 33,126 sq. km. Similarly, the Crocodile Rehabilitation Project has been significant success stories. Today, from a low of 1827 tigers in 1969, their population has reached a high of 4334 in 1989. Project Tiger was hailed internationally as one of the most successful field conservation projects. All the 3 species of crocodiles were brought back practically from the brink of extinction and restored to their natural habitats through a

massive captive breeding and rearing effort. The population of the Asiatic Lion increased from a low of 177 in 1968 to 304 in 1995. A Project Turtle is also being launched for conservation of various components of the marine ecosystem.

The proposed establishment of the second home for the Asiatic Lion in Palpur Kuno in Madhya Pradesh is a noteworthy venture in safeguarding the last remnant world population of the animal, presently at Gir National Park. This needs careful monitoring and supervision because of its conservation significance.

7. ECO-DEVELOPMENT

Preservation of wildlife is not possible to the exclusion of local people and therefore a strategy for involving them in wildlife conservation was adopted in 1983 on the recommendation of the IBWL through introduction of a special project for eco-development in and around National Parks and Sanctuaries. This strategy recognises human demands on forests and assists in creating alternative sources of livelihood and appropriate changes in lifestyles to reduce the pressure on forests.

8. EX-SITU CONSERVATION

Currently in India, there are about 275 zoos, deer parks, safari parks, aquaria etc. keeping animals. It was found that the management of these institutions was not explicitly conservation oriented and they were not guided by any definite and uniform policy of management. Therefore, the Central Zoo Authority was created for streamlining the Ex-situ conservation of mega-fauna found in the Wild.

9. PROTECTION AGAINST ILLICIT TRADE

The Ministry has set up a Directorate with four regional centres namely in Delhi, Mumbai, Calcutta and Chennai to check the illegal trade in Wild animals and Wildlife products. These four Regional Deputy Directors act as the Management Authorities under the Convention for International Trade in Endangered Species (CITES).

10. IMPROVEMENTS IN PA NETWORK

The recommendations of the Biogeography Report of the Wildlife Institute of India (WII) on planning the PA network will be speedily implemented. The major identified gaps will be brought under the PA network to cover all representative samples of our natural heritage. At the same time, efforts will be made to establish habitat linkages between major PAs through forest corridors, wherever it is still possible. Simultaneously, some of the existing PAs may have to be reviewed. The latter exercise shall be carried out at the national level by a high-level task force. The task force shall also review and rationalise PA boundaries wherever the potential exists of resolving interface conflicts through this process.

i) Change in methods of funding for wildlife conservation

The Central Government's role in effectively pursuing various plans and programmes for wildlife and PA conservation with the States will have to be greatly strengthened. A radical restructuring of the funding procedures and mechanisms in required so that centrally sponsored scheme funds could flow directly to PA managers and other major wildlife project implementers.

ii) Rationalising staffing and infrastructure

The existing ban on creation of posts and purchase of vehicles, which is in force in the Government of India and most of the States, will have to be liberalised in respect of crucial wildlife areas. Ideally, a minimum of 6 FGs are required for every 10 sq. km. of PA for round the clock patrolling, as against 1 or even less at present. The field staff will also have to be provided with the necessary equipment and wherewithal for effective functioning. Consequently, the resources to implement this plan will also have to be generated by the Central and State Governments.

iii) Developmental activities in rural areas near PAs

Finding creative and innovative solutions to the human-wildlife interface conflicts around PAs continues to be a major thrust area. The utility of the eco-development strategy in dealing with such problems is well established and will be extended to many more PAs in the coming years. One agency which has to carry out the task of conservation of biodiversity, already in place and suitably skilled, are the forest departments of various states of the country. For the conservation efforts to be focussed and channelled effectively, it will be necessary that the efforts of all the agencies involved in some way or other in biodiversity conservation are ultimately made synergistic through the agency of forest department.

11. LEGISLATION

The Wildlife (Protection) Act of 1972 provided a uniform legislative framework in the country for declaration of National Parks and Sanctuaries, protection of species, regulation of hunting and trade, and prosecution of offenders Except for the State of Jammu and Kashmir, where similar legislation known as the J&K Wildlife (Protection) Act 1978 is applicable. Whereas the Wildlife (Protection) Act, 1972 has been suitably amended during 1982, 1986 and 1991 including the Schedules, similar amendments are required in the J*K Wildlife (Protection) Act, 1978. In 1991, this Act was amended to address the current scenario more effectively. One particularly important feature of the amendment was to enhance the conservation status of the Protected Areas (PAs), especially the Sanctuaries.

Wildlife Protection Act, 1972

The Wildlife Protection act,1972 was passed on the request from the states. The Act provides for the protection of wild animals and birds and for matters connected therewith and incidental thereto. It is a comprehensive legislation relating to the forests management that consolidates pre-existing laws. The act makes it possible to constitute a wildlife Board with powers of regulations in every state. The Centre and State Government has been conferred powers for the purpose of protecting, propagating or developing wildlife and its environment. The regulation extends to setting or transferring wild animals or dealing in wild animals, animal Articles and trophies. The Act *inter-alia* envisages the appointment of a Director Wild Life preservation by the Central Government and the Chief Wild Life Warden By the State Governments, and the constitution of a Wild Life Advisory Board. The Act also provides for the notification for sanctuaries, National Parks Game reserved and closed area by the state governments.

International Conventions

India is a signatory to several major international conventions, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The other international conventions of which India is a member include the Convention on Migratory Species (CMS); International Whaling Convention (IWC) and the World Heritage Convention (WHC). In addition, India entered into a bilateral treaty with Russia in 1984 for the protection of migratory birds. A Memorandum of Understanding (MoU) was also entered into during 1995 with ten countries for taking conservation measures for the endangered Siberian Crane. India has also taken the lead in the formation of the Global Tiger Forum and currently hosts its interim Secretariat. An Indo-China Protocol on tiger conservation and a MoU on trans-boundary bio-diversity conservation with Nepal were also concluded. India has ratified the Convention on Biological Diversity. Wildlife Import and Export policy regulations have also been introduced.

12. LEGISLATIVE CHANGES

The Wildlife Act is proposed to be amended to include two additional PA categories, ―Community Reserves" and ―Conservation Reserves". The community reserves will enable community and private lands to be brought under voluntary wildlife protection status. Conservation reserves will be PAs of a

lesser status than Sanctuary and would not impose major restrictions on resource usage. Their creation is suggested primarily to safeguard corridor and buffer forests. Other changes are also envisaged to make the Act more effective.

It is proposed that in largely forested districts, the forest officers be given the responsibility of co-ordinating implementation of the rural development and social welfare programmes to harmonise conservation and developmental efforts. In order to channelise funds from central government to the protected areas, autonomous bodies be created. The protected area management in charge will be the Chief Executive Office of PADA in context of PAs.

NEPAL

Key Issues: Loss of Wildlife; Park Management; Forest Degradation**;** Illegal Poaching; Man-Animal Conflict; Livelihood for Local Peoples; Local Peoples' dependency on Forests; Ecodevelopment; Peoples Participation

Policy Framework: Nepal Environment Policy and Action Plan II, 1993 updated in 1998

Key Legislation: Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982);

Key Institutions: Ministry of Agriculture and Cooperative, Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Defense Surveillance of national parks and wildlife reserves, Disaster Rescue; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Land Reform and Reform of land tenure, land management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation;

1. WILDLIFE PRESERVATION

A number of species –specific conservation programmes have been implemented by HMG in collaboration with various international agencies including project to conserve gharial, Royal Bengal tiger and Musk Deer. The Gharial conservation Project run in cooperation with Frankfurt Zoological society began in 1978. It is based at Kasara, the headquarters of royal Chitwan National Park.

The Tiger Ecology Project ran from 1973 to 1981. It was supported by Smithsonian Institute (USA) and the World Wide Fund for Nature (WWF). A number of studies on tiger behaviour and ecology were completed by Nepalese and American researchers. As a follow-up to the Tiger Ecology Project, a Long Term Tiger Monitoring Project was initiated in 1980 and continues today in association with the Smithsonian Institute. HMG has recently initiated a Musk Deer Project.

Habitat

Loss and fragmentation of suitable natural habitat is the main threat to bio-diversity conservation in Nepal. Habitats' outside protected areas under continuous pressure from human activities, and they are being degraded and converted into agricultural lands. Natural habitats from eastern Terai, where the human density is high, are all but lost.

Fragmentation and loss of habitat have restricted the distribution of some species such as tigers, elephants, rhinos and so on. In addition, the fragmentation of habitat results in greater edge among species, increasing predation as well as competition from exotic and pest-species, which gradually invade the interior of the habitats.

One real situation of fragmentation and loss of habitat, which resulted in depletion of biodiversity, is worth mentioning here. The portion of the East-West highway passing through the Bardia National Park has resulted in many accidents and added to the edge in the interior of the Park. Habitat fragmentation has restricted the migration and mobility of many species and has increased the incidence of wildlife damage to human life and property. Such people-wildlife conflicts have frequently given a negative impression of wildlife conservation; e.g. elephant damage in Nepal during migration from India to Nepal.

Habitat fragmentation and loss have also resulted into a dwindling population of Gangetic river dolphins in Nepal's' river system. Many national parks and reserves are too small and too isolated to maintain population of many species. Increasing grazing pasture from livestock has largely displaced wild herbivores during monsoon grazing periods in mountains. Red panda, have been adversely affected by grazing disturbance, similarly loss of suitable habitat for wild water buffalo has restricted the species within 175 km^2 of the Koshi Tappu wild life reserve.

Poaching

The poaching of wild animals has always remained a serious problem in all protected areas. The rise in price of rhino horn and tiger bones in the world market is one of the reasons for poaching of these species in Terai National Parks. In Himalayan or mid-mountain area it is mostly for musk pods of a musk deer or for fur of a snow leopard or civet cat. Poaching alone killed 10 rhinoceros in 1992, and 4 were killed in 1993, tigers killed same year in 1993 four young rhinoceros.

The records of poaching show that the poachers have developed and used different methods of poaching. Among the commonly used methods are pitfall digging, towchain, poisoning and firearms. Pitfall is found to be most widely used method followed by towchain to trap the animal.

Most poachers are from local communities. Depending on animal the group size of poachers varies from two to five or six. Poachers use poison in food items. The poaching records show that the prime target of the poachers and the great one horned rhino or musk dear for its pod.

Poaching has always remained a serious problem in all protected areas. It has always been a threat to endangered wildlife species like the tiger and the rhinoceros. Besides, the lure of monetary gains, the hunting traditions of some ethnic groups living in and around parks/reserves and their subsistence economy have affected the animal population in the protected areas.

With the financial and other support of WWF Nepal Program, Anti Poaching Unit (APU) had been formed in December, 1992, and actively protecting the wildlife in and around the protected areas.

2. PROTECTED AREAS

In order to conserve the biodiversity in Nepal, wild life conservation plan was introduced in early 1970s. The purpose was to conserve biodiversity through the designation of protected areas. Such a strategy has provided effective protection and long term conservation of threatened species in-situ. Over the last two decades an extensive network of natural parks and protected areas has been developed, covering more than 23,000 km^2, equivalent to almost 14 percent of Nepal's total land area.

National Parks

There are eleven national parks of various sizes ranging from 106 sq., km (Rara) to 3555 sq. km. (Shy Phoksundo). The Parks are distributed from sub-tropical to Central Himalayan region as dwelling ground of flora and fauna belonging to tropical to alpine climatic condition. The Royal Chitwan National Park is the oldest park established in 1973 and designated as a World Heritage Site in 1984. This Park is famous for prehistoric one horned Rhino and Majestic Royal Bengal Tigers.

The Rara National Park is the smallest Park of Nepal situated in Northwest mountain region containing country's biggest Lake Rara (10.8 km) at an elevation of 2990 m.

The Shey-Phosksundo is situated in the mountain-region of Western Nepal and it is the largest national park in the country. The park provides prime habitat for snow leopard and blue sheep. The Langtang National Park is situated in the Central Himalayan region. It represents best example s of graded climate conditions in the Central Himalaya. The Royal Bardia National Park is situated in the mid-Far Western Terai region. The Park provides an excellent habitat for endangered animals like the rhinoceros, Bengal tiger, wild elephant black buck etc. Endangered birds include the Bengal florican, lesser florican and Sarus crane.

The Khapatad National Park established in 1984 is located in midmountain region of Far-Western Nepal at about 3000 m elevation. The Park covers the unique mid-mountain ecosystem of Western Nepal. The Sagarmatha national Park is located in the north-east of Kathmandu. The Park includes the highest peak in the world Mt. Sagarmatha (Everest). The mountains of Sagarmatha national Park are geologically young and broken up by deep gorge and glacial valleys. The Park is populated by approximately 3,000 of the famed Sherpa people.

The Makalu-Barun National Park is the only protected area in Nepal with a Strict Nature Reserve. The park has some of the richest and most unique pockets of plants and animals in Nepal; elsewhere it is lost to the spread of human settlements. Amongst other, the wildlife includes endangered red panda.

Zoological Parks

The King Mahendra Trust for Nature Conservation (KMTNC), established in 1982 as an autonomous, non-profit and non-governmental organization in accordance with the King Mahendra Trust for Nature Conservation Act, 1982. It has successfully launched over 60 projects in the field of nature and biodiversity conservation, and sustainable rural development. The Trust is also involved in *Ex-situ* conservation of biological species. HMG entrusted the management of a Central Zoo – only one zoo in Nepal, and the Trust has prepared and implemented a management plan for improvement.

The Central Zoo contains total of about 505 wildlife. There are 230 mammals of 31 species, 240 birds of 53 species, and 35 reptiles of 16 species. Of them, there are 67 mammals, 14 birds and 10 reptiles, which are considered as vulnerable in their wild habitats.

The zoo has been promoted as an education center of excellence for *ex situ* conservation of endangered wildlife, and has planned to increase their population, without changing the genetic constituents.

3. TRADE IN ANIMAL PARTS

Nepal is a state member of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and has been very active in CITES implementation since its inception in 1975. Department National Parks and Wildlife Conservation is the management authority for CITES within the country. It provides the certification for the wildlife to be exported in conformity with the CITES Appendices. There are 40 species included in the CITES appendices, 22 species are listed under IUCN's threatened species category.

Rhino horns, tiger bones, and musk pods are the major items smuggled out of Nepal, though it is hard to get the exact figures.

4. BREEDING IN CAPTIVITY OF ENDANGERED SPECIES

In exact term, the concept of breeding of endangered species in captivity has not practically started in Nepal. Such activity not only require large financial support, it demands a through knowledge of habit and habitat of species and of course breeding details. In many cases, in –situ preservation of many rare

species is not a viable option in the face of increasing anthropogenic disturbances. Such rare species may decline drastically and become extent in the wild for reasons such as genetic drift and inbreeding, demographic and environmental variation, habitat quality, competition from introduced species, disease, or over exploitations. Currently, number of species as black buck (Antelope cervicapra) are preserved outside the Bardia protected area. Similarly gharial (*Gavialis gangeticus)* crocodile is being raised artificially in the Royal Chitwan National Park.

Central Zoo is examples of ex-situ conservation of genetic materials but these effort are hampered by the lack of human, financial and technical resources.

5. AQUATIC WILDLIFE

Nepal's wetland system is rich in aquatic biodiversity. About 0.731 million ha of land is covered by wetland of different size and characteristics. It is the habitat of over 180 species of fishes and water dependent birds and other mammals. Gharial Gohi an endangered species of wetland is listed under IUCN's threatened species. While the Ganges River dolphin (*Platanista gangetica)* are regarded vulnerable species of wetland.

6. WETLANDS

In Nepal, about 0.731 million ha of land is covered by wetlands (*including water bodies)* of different size and characteristics. Wetlands are most fragile and productive ecosystems ranging from Trans-Himalayan region to artificial wetlands formed by irrigation canals, reservoirs and sewage ponds.

In Nepal, the wetlands are providing habitats for over 180 species of fishes and water dependant birds, and other animals. Amongst the birds population 90 species are migrants, 66 species are residential and remaining 34 birds are uncommon and rare resident species. Out of 370 species of mammals, birds, reptiles, fish and higher vertebrates, which are dependent on wetland habitats, about 100 species are threatened. Gangatic river dolphins are regarded valuables.

7. LEGISLATION

In 1993, Nepal passed the Fourth Amendment to the National Parks and Wildlife Conservation Act (hereinafter the Buffer Zone Management Act or BETA or Act) to enable His Majesty's Government (HMG), acting through the Department of National Parks and Wildlife Conservation (DNPWC), to address natural resource problems occurring on lands adjacent to national park boundaries. The Act gives HMG authority to designate buffer zones on lands adjacent to national parks or reserves. The DNPWC, as the representative of HMG, cannot take ownership of private lands in the buffer zone areas, but it can assume responsibility for public lands administered by the Department of Forestry (DOF) or other governmental agencies. The Chief Warden (or warden) is responsible for managing forest resources in designated buffer zone areas, but the law encourages him to form User Group Committees (UGCs) to promote local involvement in forest management. m e law, however, does not specify the UGC's rights and duties, leaving that to be done through regulations or otherwise. In addition, the Act provides that 30 to 50 percent of the funds (30/SO funds) generated from park revenues (e.g., entrance fees, hotel royalties, etc.) may be expended for local community development. In sum, the language and structure of the Act is designed to promote coordination between park authorities and local villages to protect the parks through responsible management of buffer zone forest resources and to ensure sustainable forest resources for local consumption.

PAKISTAN

Key Issues: Loss of Wildlife; Park Management; Forest Degradation**;** Illegal Poaching; Man-Animal Conflict; Livelihood for Local Peoples; Local Peoples' dependency on Forests;

Policy Framework: National Conservation Strategy**;**

Key Legislation: Pakistan Environmental Protection Act, 1997;Sindh Wildlife Protection Ordinance, 1972; Sindh Wildlife Protection Rules, 1972; NWFP Wildlife (Protection, Preservation, Conservation & Management) Act, 1975; NWFP Wildlife (Protection, Preservation, Conservation & Management) Rules, 1977; Punjab Wildlife (Protection, Preservation, Conservation & Management) Act, 1974; Balochistan Wildlife Protection Act, 1974; Islamabad Wildlife (Protection, Preservation, Conservation & Management) Ordinance, 1979

Key Institutions: Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs; Environmental Tribunals

1. INTRODUCTION

It is known as the freely flourishing living animals, birds, insects, aquatic and marine life and plants and trees. These are the bounties of nature and make the earth beautiful and attractive to live. In nutshell, all variety of flora and fauna, which grows in natural habitat, is called as wildlife. Upto now, around 1.5 millions species of different size and weights ranging from microscopic organism to huge dinosaurs and whale animals are known. Their behavior differs according to the nature and ecology. They may be herbivores, carnivores & scavengers and decompose. The wildlife is interdependent and reciprocates on each other.

2. WILDLIFE AND THEIR ECOSYSTEMS

Pakistan is well endowed with biological resources, though many of the country's ecosystems are degraded and its rare wildlife species threatened with extinction. It can take literally thousands of years to achieve ecologically rich communities of, for instance, native woodland plants, animals, and invertebrates—all capable of sustaining local populations with food, fuel, timber, medicine, and so on in perpetuity. In sharp contrast, it only takes a matter of minutes or days for these biological assets to be destroyed as part of a so-called development programme. Whilst the importance of protection may be appreciated, all too often the practical realities are not understood.

The current legislation in support of ecosystem protection and wildlife conservation needs to be strictly enforced and supported by appropriate penalties. This recommendation is based on expert opinion, concerning the considerable scope for reducing conflicts with poachers and unscrupulous persons. Enforcement would be improved by getting rid of laws dealing with problems that could be solved more appropriately in other ways, by involving persons likely to be affected by the law in the process of law making, by making the law realistic, by increasing conservation education and enlisting public support to encourage a sense of civic pride in the country's natural heritage, and by improving administrative and judicial capabilities.

3. SUSTAINABLE UTILIZATION OF WILDLIFE RESOURCES

The harvesting and cropping of wildlife populations is beneficial in a number of ways, provided it does not exceed sustainable yield levels. The benefits include the collective welfare of wild animals themselves. In nature, wildlife stocks are kept in balance by a complex web of predator-prey

relationships. When numbers increase beyond the carrying capacity of the habitat, the balance is maintained by the predators.

There have been numerous examples of isolated, often island-based, wildlife stocks that had no natural predators. Their numbers passed the limit of the carrying capacity of the habitat, with the consequence of universal malnutrition, dwarfism, and disease. Predators have a tendency to cull the stock and to remove the weakest specimens who are easiest to kill. When this does not happen, survival depends on improving the efficiency of feed conversion or on adopting aggressive behavior towards other members of the species in the competition for limited food supplies. In such circumstances, the natural balance tends to be upset.

Humans, it must be noted, are wildlife's greatest predator. This does not mean that they are the best or the most beneficial, only that they are capable of harvesting greater numbers, over a shorter period of time, than other species. When they do, the management principle that should be applied is that priority should be given to killing the weakest, the slowest, and the oldest members of the wildlife community. The weakest and slowest tend to be the easiest prey to stalk. If females and their young are protected, the species will be perpetuated. Moreover, the genetic stock should, if anything, be improved.

It is safe to harvest old animals, since they have probably already reproduced and their genetic material will remain in the herd. They also have the advantage from the hunter's viewpoint of being amongst the most prized specimens, with, for example, large trophy antlers and a high weight or large size. If a herd is cropped according to these principles, a solid breeding stock should be maintained. Furthermore, if a herd is not allowed to exceed the carrying capacity of the habitat, then biological diversity can be maintained.

4. SUSTAINABLE DEVELOPMENT AND SUSTAINABLE HARVESTING

An interesting example of lock of predation is available in Pakistan. For religious reasons, the wild boar is not part of the diet of Muslims. This has meant that there is little or no hunting pressure on wild boors. Moreover, since their natural predators, such as the tiger, have been hunted to extinction, the wild boar has increased in numbers to the point where it is a pest.

A certain number of wild boars are an essential element in the ecological balance, for hunting and eating snakes, for example. But in excessive numbers they destroy crops, present a danger to humans, and tend to over harvest snakes. And with the shortage of snakes as predators, rats tend to multiply. Rats are a major factor in post-harvest grain losses, accounting for losses of between 5 and 30% of total production.

5. PROTECTED PLACES AND WILDLIFE

Ecosystems and wildlife habitats are protected in national parks, wildlife sanctuaries, and game reserves. These areas were formally designated following identification by the Conservator of Wildlife on the basis of expert advice. Subsequently, detailed plans for the protection, management, and development of some of the areas have been prepared. Implementation of some plans has already been started, but the process of protecting biological resources is by no means complete. Stricter management and control measures are needed to save the natural capital within the existing network. The resources allocated to the protected areas have also fallen far short of the amounts required. Communities of people actually still live in some protected areas. This has led to the recommendation in some cases that the boundaries should be revised, to reduce their size, which would obviate the unpopular and extremely expensive relocation of the communities.

Clearly, it is not enough just to fence off an area as a reserve. Positive management is usually required if biological diversity is to be maintained. Furthermore, the location, size, shape, and composition of the protected areas are also important. Unless they are above a particular minimum size and sufficiently close to similar feeding and breeding sites, they will ultimately fail. Thus the protection and conservation of both habitats and wildlife call for careful planning and management.

For benefits such as these to materialize, special provisions must be made to enlist the interest and co-operation of local residents. They should be given preference in providing services in protected places, for which they often need training and capital. First, they need skills in all the occupations required by the visitor industry: guides, cooks, drivers, housekeepers, vehicle and boiler mechanics, electricians, waiters, and sales staff. This list is only a partial one and emphasizes manual jobs; in practice a wide range of skills and pay packets is involved.

Unless local residents are involved and prosper from the opportunities of the visitor industry, there can be severe dislocation. An influx of visitors and tourists with different cultural backgrounds can be disturbing. Without benefits to compensate for the disturbance, the visitors will be resented over time by the locals, rather than being regarded as an opportunity. This applies particularly in situations in which outsiders both provide the facilities and fill the service jobs.

6. MAIN ENACTMENT ON WILDLIFE

Following are the main enactments and their relevant/attractive sections on Wildlife.

1. The Sindh Wildlife Protection Ordinance, 1972

Section 2 **Definitions**:

In this Ordinance, unless the context otherwise requires, the following expressions shall have the meanings hereby respectively assigned to them, that is to say:
.....

(a) dealer, when used in relation to wild animals, trophies or meat, shall mean any person who in the course of trade or business carried on by him whether on his own behalf or on behalf of any other person:
(i) sells, purchases or barters any wild animal, its meat or trophy;
(ii) cuts, carves, polishes, preserves, cleans, mounts or otherwise prepares any such animal, trophy meat or manufactures any article therefrom;
(d) game animal means a wild animal specified in the First Schedule;
(j) protected animal means a wild animal specified in the Second Schedule;
(l) trophy means any dead animal or any horn, antler, tooth, tusk, bone, claw, hoof, shin, hair, feather, egg-shell or other durable part of a game animal or protected animal whether or not included in a manufactured or processed article;
(m)wild animal means a wild bird or animal specified in the First or Second Schedule;

(n) wild-life includes organic resources, animals, birds, reptiles vegetation, soil and water;

Section 7 **Restrictions on hunting:**

No person shall:

(i) hunt any protected animal;
(ii) hunt any game animal except under a permit and in accordance with the provisions of this Ordinance or the rules;
(iii) hunt any wild animal by means of set-gun, drop spear, dead fall, gun trap, explosive projectile, bomb, grenade, baited hook, net, snare or any other trap, an automatic weapon, or a weapon of a calibre used by the Pakistan Army or Police Force or by means of a

projectile containing any drug or chemical substance having the property of an anaesthetising, paralysing, stupefying or rendering incapable an animal whether partly or totally;

(iv) hunt any game animal, other than birds or hares, with a shot-gun or with non-magnum rifle of .22 calibre or less;

(v) use, or have in his possession any net, snare, bhagwa, poison or like injurious substance for the purpose of hunting a game animal;

(vi) use vehicle of any type to pursue any game animal, or to drive or stampede game animals for any purpose whatsoever;

(vii) shoot any game animal from any conveyance or from within 200 yards of the conveyance;

(viii) hunt with the help of decoys or call birds;

(ix) construct or use, for the purpose of hunting any wild animal, any pitfall, game pit, trench or similar excavation, any fence or enclosure, or bhagwa or any other similar contrivance:

Provided that it shall not be an offence to use:

(a) **a** motor vehicle or aircraft to drive any wild animal away from an aerodrome or airstrip when such action is necessary to ensure the safety of aircraft using that aerodrome;

(b) any one or more of the aforesaid prohibited methods if the officer authorised in this behalf grants, at his discretion, a licence with permission to employ such methods;

(x) hunt after sunset and before sunrise;

(xi) hunt by hiding near a water hole or salt licks.

Section 8 **Prohibition to employ hawks and dogs without special licence:**

No person shall use hawks for hawking or dogs for coursing the game animals except under a special licence issued under this Ordinance.

Section 10 **Certificate of lawful possession:**

(1) No person shall be in possession of any wild animal dead or alive, trophy or meat of a protected animal or the horns of Goral, Ibex, Sindh Wild Goat, Markhor or Urial, or Skin of Beech or Stone Marten, Jungle Cats and Desert Cats unless he be in possession of a Certificate of Lawful Possession granted in respect thereof by the officer authorised in this behalf:

Provided that any person importing any wild animal, trophy or meat of a wild animal in accordance with this Ordinance, or acquiring such animal, trophy or meat in accordance with the terms of permit issued under this Ordinance, shall obtain such certificate by applying to the authorised officer within thirty days from the date of importing or acquiring the animal, trophy or meat.

(2) The officer authorised in this behalf may mark or register, the animal, trophy or meat in respect of which a Certificate of Lawful Possession is issued, in the prescribed manner or he may seize, pending the taking of legal action under this Ordinance, any such animal, trophy or meat which in his opinion has not been legally imported or acquired.

(3) No person shall counterfeit, change or in any way interfere with any marks or registration put on any animal, trophy or meat for which a Certificate of Lawful Possession has been issued, or alter or in any way change a Certificate of Lawful Possession.

Section 11 **Restriction on transfer of animals, trophies or meat:**

No person shall transfer by gift, sale or otherwise to any other person any animal, trophy or meat of a kind specified in subsection (1) of section 10 unless he be in possession of a Certificate of Lawful Possession in respect thereof, and such certificate is endorsed with details of the transaction and given to the transferee at the time of the transfer.

(2) No person shall receive by gift, purchase or otherwise any animal, trophy or meat of a kind specified in subsection (1) of section 10 unless he receives at the same time valid Certificate of Lawful Possession in respect thereof.

Section 12 Restriction on import and export of animals, trophies or meat:

(1) No person shall import, or attempt to import into Sindh any wild animal of an endemic or exotic species, or any trophy or meat of a kind specified in subsection (1) of section 10 except under an import permit granted under this Ordinance and if such import be from outside Pakistan except through a customs post of entry and subject to any law relating to control on imports for the time being in force.

(2) No person shall export, or attempt to export any animal, trophy or meat specified in subsection (1) of section 10 except under an export permit granted under this Ordinance, and if such export be to any country outside Pakistan except through a customs post of exit and subject to any law relating to control on exports for the time being in force.

(3) Nothing in this section shall apply to any animal, trophy or meat in transit through Sindh, if such animal, trophy or meat:

(i) is accompanied by necessary transit customs documents;
(ii) is entered through a customs port of entry or is scheduled to a customs post of exit;
(iii) is not unloaded from the ship or motor vehicle on which it is being carried or, in the case of rail or air transport, it does not leave the precincts of the railway station or airport at which it is landed or trans-shipped or does not remain there for more than forty-eight hours.

Section 13 **Restriction on dealing in animals, trophies or meat:**

(1) No person shall as a profession, trade or business, buy, sell or otherwise deal in wild animals, trophies or meat thereof, or process or manufacture goods or articles from such trophies or meat, unless he be in possession of a valid licence to do so, hereinafter called a dealer's licence issued by the officer authorised in this behalf.

(2) The officer authorised in this behalf may on payment of such fees as may be prescribed, grant a dealer's licence to any person, which shall entitle that person to deal in any wild animal, trophy or meat thereof, or any class of wild animals, trophies or meat specified in such licence.

(3) For the purpose of assessment of fees, dealers may be divided into different classes and a different fee may be prescribed for each class.

(4) The holder of a dealer's licence shall maintain such register or record of his dealings in such manner as may be prescribed, and shall produce them for inspection at any reasonable time when called upon to do so.

Section 14 **Wild life sanctuary:**

(1) Government may, by notification in the official Gazette, declare any area to be a wildlife sanctuary and may demarcate it in such manner as may be prescribed.
(2) The wild-life sanctuary shall be set aside as undisturbed breeding ground for the protection of wild-life and access thereto for public shall, except in accordance with the rules, be prohibited and no

exploitation of forest therein shall be allowed except for reducing fire hazards, epidemic or insect attacks or other natural calamities.

(3) No person shall:

(i) enter or reside,
(ii) cultivate any land,
(iii) damage or destroy any vegetation,
(iv) hunt, kill or capture any wild animal or fire any gun or other firearm within three miles of the boundaries, or
(v) introduce any exotic species of animal or plant,
(vi) introduce any domestic animal or allow it to stay,
(vii) cause any fire, or
(viii) pollute water, in a wild-life sanctuary:

Provided that Government may for scientific purposes or for aesthetic enjoyment or betterment of scenery authorise the doing of the aforementioned acts.

Section 15 **National Park:**

(1) With a view to the protection and preservation of scenery, flora and fauna in the natural state, Government may, by notification in the official Gazette, declare any area of outstanding scenic merit and natural interest to be a national park and, may demarcate it in such manner as may be prescribed.

(2) A national park shall be accessible to public for recreation, education and research.

(3) Provision for access roads to and construction of rest houses, hostels and other buildings in the national park along with amenities for public may be so made and the forest therein shall be so managed and forest produce obtained as not to impair the object of the establishment of the national park**.**

(4) The following acts shall be prohibited in a national park:

(i) hunting, shooting, trapping, killing or capturing of any wild animal in a national park or within three miles radius of its boundary:
(ii) firing any gun or doing any other act which may disturb any animal or bird or doing any act which interferes with the breeding Places:
(iii) felling, tapping, burning or in any way damaging or destroying, taking, collecting or removing any plant or tree therefrom;
(iv) clearing or breaking up any land for cultivation, mining or for any other purpose;
(v) polluting water flowing in and through the national park:

Provided that Government may for scientific purpose or betterment of the national park, authorize the doing of the above-mentioned prohibited acts.

Section 16 **Game Reserves:**

Government may declare any area to be a Game Reserve where hunting and shooting of wild animals shall not be allowed, except under a special permit, which may specify the maximum number of animals or birds that may be killed or captured and the area and duration for which such permits shall be valid.

Section 17 **Penalties:**

(1) Whoever contravenes or attempts to contravene:-

(i) any provisions of sections 10, 11, 12 and 13 shall be punished with imprisonment which may extend to a period of one year or with fine which may extend to one thousand rupees, or with both, and any licence or permit granted or issued to him under this Ordinance shall be suspended for a period of two years;

(ii) any provisions of section 7 shall be punished with imprisonment which may extend to two years, or with fine which may extend to one thousand rupees, or with both:

(iii) any provisions of sections 8, 9 and 24 shall be punished with a fine which may extend to five hundred rupees;

(iv) any provision of this Ordinance or any rule for the contravention of which no special penalty is provided, shall be punished with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both.

(2) Whoever interferes or attempts to interfere in the performance of any function or in the discharge of any duties under this Ordinance, shall be punished as in clause (i) of subsection (1).

(3) Whoever, having already been convicted of an offence under subsection (1) or subsection (2) is again convicted thereunder, shall, on every subsequent conviction, be punished with imprisonment which shall not be less than twelve months or fine which shall not be less than one thousand rupees or both, and his firearm, vehicle, appliance or anything used in the commission of the offence and his hunting licence shall be confiscated and he shall not be entitled to a hunting licence for a period of ten years.

2. The Sindh Wildlife Protection Rules, 1972

[made under the Sindh Wildlife Protection Ordinance , 1972]

Rule 15 (1) A shooting permit or special permit may be granted only to such persons as are entitled to carry guns and rifles under the West Pakistan Arms Ordinance, 1965, or are exempted from the operation of that Act.

(2) A retainer shall not be entitled to shoot any game animal unless he is in possession of a valid shooting licence under these rules in his own name.

(3) A special permit in Form B shall be issued only to the holder of a valid rifle licence which would be of a calibre not smaller than 240 and hunting with shot gun and smaller calibre rifle shall not be permitted.

(4) The holder of a shooting permit or special permit shall not be entitled to kill on any single day more than the number specified in the First Schedule in the permit or licence as the case may be issued under these rules.

(5) No party engaged in the shooting of partridges shall consist of more than 5 permits and the number of beaters shall not exceed 2 5.

Rule 17No person shall possess, cook or serve in any public place, hotel, cafe, restaurant, hotel, boarding house or any other catering place, any bird or animal mentioned in the First and Second Schedules, except during the periods specified in respect of that bird or animal in the third column of the schedules and save when the bird or animal has been lawfully obtained.

Rule 18No person shall carry a firearm or take with him a sporting dog within a National Park, Wildlife Sanctuary or Game Reserve unless a right of way through such Park, Sanctuary or Reserve exists or a permit for such purpose is obtained form the Honorary District Game Warden or Deputy Conservator of Forests Wildlife

3. The Punjab Wildlife (Protection, Preservation, Conservation & Management) Act, 1974

Section 2 **Definitions:**

In this Act, unless the context otherwise requires, the following words and expressions shall have the meanings hereby respectively assigned to them, that is to say -

.....

(a) hunt means any act directed immediately to the killing or capturing of a wild animal and shall include taking the nest or eggs of a wild animal;

(b) meat means the fat, blood, flesh or any eatable part of wild animal, whether fresh or preserved;
.....
(v) unprotected animal means a wild bird or wild animal specified in the Fourth Schedule.

Section 5 **Constitution of the Board:**

(1) Government shall establish a Board to be called the Punjab Wildlife Management board.

Section 6 **The functions of the Board shall be:**

(a) to take all policy decisions about the conservation and development of wildlife and game management in the Province;
(b) to scrutinise and approve all the development schemes relating to the wildlife and game management in the Province;
(c) to supervise the progress of the development activities in the field of wildlife protection, preservation, conservation and management and to scrutinise the annual progress report submitted in this behalf; and
(d) to undertake such other functions as may be prescribed.

[The remaining provisions of the Act are similar to the Sindh Wildlife Protection Act, 1972]

4. The Balochistan Wildlife Protection Act, 1974

The NWFP Wildlife (Protection, Preservation, Conservation & Management) Act, 1975

[The provisions of these two statutes are similar to the Sindh Wildlife Protection Act, 1972]

The NWFP Wildlife (Protection, Preservation, Conservation & Management) Rules, 1977

Rule 20 (1) No person shall capture any hawk or falcon. Those who are in possession of these birds before the coming into force of these rules will get their hawks/falcons distinctly marked with permanent symbols and obtain a licence from the authorised officer within three months of the enforcement of these rules. (2) Hawking will only be allowed with hawks under sub-rule(1) for which separate hawking licence will be obtained.

[The remaining provisions of these rules are similar to the Sindh Wildlife Protection Rules, 1972]

5. Islamabad Wildlife (Protection, Preservation, Conservation & Management) Ordinance, 1979

[Similar to the Sindh Wildlife Protection Act, 1972]

5. The Pakistan Environmental Protection Act, 1997

The Pakistan Environmental Protection Act, 1997 has certain provisions dealing with protection and conservation of wildlife in the country.

SRI LANKA

Key Issues: Loss of Wildlife; Park Management; Forest Degradation**;** Illegal Poaching; Man-Animal Conflict; Livelihood for Local Peoples; Local Peoples' dependency on Forests; Ecodevelopment; Peoples Participation

Policy Framework: National Conservation Strategy, 1988; National Environmental Action Plan, 1994;

Key Legislation: Conservation Strategy, 1988; National Environmental Action Plan, 1994; National Environment Act, 1980; National Environment (Amendment) Act, 1988; Fisheries and aquatic resources Act, 1996; Forestry Ordinance, the Flora & Fauna Act, the Fisheries Act; Fisheries and aquatic resources Act, 1996; Forestry Ordinance, the Flora & Fauna Act, the Fisheries Act;

Key Institutions: Ministry of Environment and Natural Resources; Central Environmental Authority; Department and Mahaweli Authority; Department of Wildlife Conservation; Ministry of Fisheries and Aquatic Resources;

1. INTRODUCTION

The term wildlife includes all species of animals and plants that are not domesticated by man. A tame animal from a wild species does not fall within this definition. Similarly, a wild plant found naturally or cultivated in a farm or a home garden does not become a domesticated plant. The main statute that deals with the conservation of wildlife in Sri Lanka is the Fauna and Flora Protection Ordinance (FFPO). This law provides for the protection of both wildlife and their habitats. Provisions in several other acts can be used to protect habitats as well as to certain formal of wildlife. Habitats of wildlife can be protected by the Forest Ordinance and the National Heritage Wilderness Areas Act. Others such as the Fisheries and Aquatic Resources Act and the Coast Conservation Act have provisions that can be used to protect certain species of wildlife and same kinds of habitats.

The evaluation of the wildlife protection and the law show that the initial purpose had been mainly towards the protection of the resources for continued exploitation and the collection of revenue from licensing. It provided for the protection of a few species, the regulation of hunting and capturing by licensing such activities and collection of revenues and the preserving or wildlife for future exploitation. Protected areas were initially known as "game parks" or areas that are designated to keep a stock of animals to be hunted (known as "game to Europeans who consider hunting animals as a sport) since independence, the diminishing habitats and the over exploitation and reduction of wildlife has shifted the focus into conservation of species and habitats.

The present wildlife conservation policy, though not explicitly stated, can be understood by the analysis of the provisions of the relevant Acts. This can be summarized as follows.

(a) declaration of areas and providing them with various degrees of protection by restriction of certain types of activities within them;

(b) total protection for those species of animals and plants that need to be conserved by preventing exploitation;

(c) restricting and regulation of the exploitation of other species with commercial potential;

(d) leaving the rest of species for uncontrolled exploitation. This four-point approach is based on the premise that both the species and their habitat need to be protected in order to ensure their survival. The FFPO, which is more oriented towards the conservation and the Fisheries and Aquatic Resources Act (FARA), which is intended to ensure the continued exploitation of fisheries resources, are based on this same approach. This approach to managing natural resources is clear and simple, therefore easy to implement and monitor.

2. PROTECTION OF WILDLIFE HABITATS

The protection of habitats is an "indirect" method of wildlife conservation. According to the Fauna and Flora Protection Ordinance, two main types of protected areas can be declared.

National Reserves

These are declared on state land. If there are any private lands in an area designated to be a National Reserve, they have to be acquired before the declaration

The following types of activities are prohibited in National Reserves:

a) unauthorized entry;
b) hunting, wounding, harming, taking or keeping in possession a wild animal or part, take or destroy the nest or eggs of birds or reptiles;
c) destroy, damage, collect, take or remove any plant;
d) keeping in possession any devise or substance that can harm or destroy animals or plants;
e) clear or break-up land for cultivation, mining or any other purpose;
f) construction of or use of roads;
g) unauthorized construction or occupation of any building; and
h) introduction of any animal or allow any domestic animal to tresspess.

The National Reserves are divided into seven categories, based mainly on the restriction of human activities that can be permitted or authorized in such areas. The amendment to the FFPO in 1993 removed the category known as the intermediate zone and introduced three new categories, namely the Refuge, Marine Reserve and the Buffer Zone. It is evident that several of these have the same degree of protection and that the different names have been adopted from a management point of view. The following is the degree of restriction on these categories.

(i) A permit to enter or remain is given for an official duty or to scientific research only - Strict Nature reserve
(ii) A permit to enter and remain can be given for study and to observe fauna and flora. A fee can be prescribed -National Park
(iii) A permit to enter and remain can be given. A fee can be prescribed - Nature Reserve
(iv) Permitting not specified -Jungle Corridor, Marine Reserve, Refuge, Buffer Zone

No person is allowed to construct a tourist hotel or to provide any services or facilities similar to those provided by a tourist hotel within a distance of one mile from the boundary of a National Reserve. Similarly, and one who wants to carry out any development activity (other than tourist hotels) within one mile from the boundary of a National Reserve has to obtain permission from the director of DWLC.

The provisions protect all animals and plants, which are both, protected and unprotected within the boundaries.

Sanctuaries

This category of protected area can be declared on state land and on private land as well. If affords protection to all animals and to all the plants found in state land inside the sanctuary boundaries. Unlike in National Reserves, it is not necessary to obtain a permit to enter into or remain in side a sanctuary.

The following activities are prohibited inside a sanctuary, inside state or private land:
(i) Hunt, kill or take any wild animal or have in possession any wild animal or part, or the taking or destroying of nests & eggs
(ii) Use or construction of hides or ambushes for hunting or wounding a wild animal
(iii) Set a trap or other instrument to kill or capture an animal
(iv) Cause any act that disturbs or is likely to disturb on animal

The following are deemed as offences if done in state land inside a sanctuary:
a) destroy, damage or collecting, removing of any plant;
b) clear or break-up land for cultivation, mining or other purposes;
c) erect or occupy any building without permission;
d) construct or use any road or path; and
e) kindle or carry any fire

A main drawback in the effective protection of both National Reserves and Sanctuaries is that the ordinance has not given any powers to curb, control or prevent the pollution of these areas. The sources of pollution can be sometime be inside a protected area (in a sanctuary) or outside, and could degrade and destroy the habitat and the wildlife if prompt action is not taken. At present, the DWLC can request either the Central Environmental Authority (CEA) or the local government authorities to take necessary action. This does not happen in a satisfactory manner and the DWLC should be given the necessary powers, including the power to obtain injunctions, to prevent pollution.

Protection of Species

This is the direct method of protecting the species from harm. To be really effective, this has to be concurrent with the protection of habitats. In addition preventive measures have to be taken against such threats as the introduction of pest and predators, diseases and competitors. Some of these could be affected through legal means and others need management practices.

Protection of animals

The FFPO affords protection only to wild animals and has defined the wild animals as animals that are not domestic. A domestic animal is defined as any of the following:

(i) any head of cattle, sheep, goat, horse, ass or mule;
(ii) dogs and cats
(iii) any domestic fowl or other birds commonly reared by men as poultry; and
(iv) any domesticated pig;

This definition clearly excludes all "tame" animals. A tame animal is a member of a wild species that had been reared by man. The previous definition offered the domestic states to several species (e.g. Elephants, deer, and peafowl) if men keep them. This definition excludes the elephants, but tamed elephants are dealt with in another part of the ordinance.

In conferring protection to mammals, birds, and reptiles, the relevant sections have adopted the system known as "negative listing" in the naming of those that are given protection. A negative list has the names of those species that are not protected, as opposed to the more familiar "positive list" which specifies these that are protected.

When large numbers of species are given protection, a list of them becomes long and difficult to go through. If the number that is not protected in the particular class is few, then it is easier to give the names of the few that are unprotected and state that all the others that belong to this particular class is protected. It is however, not possible to have negative lists for classes of species which have very large numbers. A negative list makes it easy for law enforcement as the officials have to get to know only the few that are unprotected, which is made easier in mammals and birds as these are common and well-known.

The following are punishable offences if committed on a protected animal:

(i) Killing, wounding or injuring;
(ii) Taking or destroying a nest and any stage in the life cycle of animals that lay eggs or go through a metamorphosis (e.g. Larvae, nymphs, pupas);
(iii) Capturing or keeping in possession an animal dead or alive or the keeping of any part, including those from any stage of the life cycle;
(iv) Use of any devise or material that can be used for the purposes of killing, injuring, capturing, taking or keeping on animal in captivity; and
(v)) Expose, offer for sale or the transportation of any animal or a part.

The purchase of an animal or a part such as the skin or hide for curing or drying had been made in respect of mammals and reptiles amphibians and fishes and invertebrates. These have no special significance as these offences are anyway covered under "keeping in possession of animals or parts. It provides for the temporary protection of birds and eggs in specified areas by a regulation has almost lost significance because only 7 species are now in need of this provision.

In the protection of mammals, the elephants and buffaloes have been dealt with separately in section two and the term mammals in section 30 means mammals except these. In the protection of elephants the scope of the offence is the same, but the punishments are quite large. Unlike in the case of other mammals, the Director of DWLC has the power to issue permits for the capture of an elephant or buffaloes to be kept in captivity.

Mammals and reptiles are protected and those that are not protected are in placed in a Schedule. The list of unprotected mammals include these that are both common and damage crops. The non-protected rats and mice are often confused because only the scientific names of two household rats are given. But, in the column giving common names, it clearly states that it includes species except the endemic species. Although the Bandicoot Rat (Bandicoot indica) is not in this schedule, it is not protected, as it is not an endemic. The 5 species of unprotected reptiles are all poisonous snakes, which have a lethal bite. It may well be that these have been excluded from being protected for this reason.

Birds have been protected and the list of non-protected species, numbering seven are in Schedule. Before the amendment in 1993, there was a category of birds that are not protected during an "open season" and could be shot during this period without a license. The open season was from November to April. This list contained 25 species, including 13 migrants. A negative list for birds means any new migrant is automatically protected and it is especially important as Sri Lanka is at the end of the migration rout as and it has been seen that more new migrants are recorded every year. A strange feature in the section is that the fine is quite low (Rs.5,000 -10,000) in comparison to fishes, amphibians which all draw higher fines (Rs.10,000 -20,000). In the list is the Striated Weaver (ploceus maynor) a rare bird with a great demand as a pet, which needs to be removed from the schedule.

Amphibians and fishes are protected. The schedule III lists the protected 19 species of amphibians. The identification of many of these requires considerable expertise. In addition, several new species have been described and another large number is awaiting to be formally described. All these newly found species are rare, endemic who needs protection. For these reasons, it is advisable to leave out the several common species in a negative list, as a positive list as it is will become cumbersome.

A list of 12 species of freshwater fished and 7 marine species are protected. There are many marine and freshwater fishes that needs to be included in this list for instance, there are 11 species of Butterfly fishes that cannot survive long in aquariums due to their specialized diet on corals but are however, caught to be exported where they invariably die of starvation. They are known as cut-flower fishes in trade and allowing them to be exported had given a bad name to the country. There are some other rare species of fishes, both marine and freshwater that need to be given protection.

The export of any indigenous animal or any part can only be done under a permit issued by the Director, DWLC. These limits the discretion of the Director as such permits cannot be issued for commercial purposes. It is recognized throughout the world that the trading of wild animals, both legal and illegal had been a cause for the extinction of a large number of species. The convention of the International Trade of Endangered Species (CITES) has come into effect as many countries recognize this threat. This convention is effected by a system of permits and both sections 37 and 40 are wide and strong enough to effectively protect wild animals from being exploited and to control or prevent the import of animals that may endanger a species.

The provisions that relate to exports apply to both protected and unprotected animals. There are several other provisions that confer a certain degree of protection to those not protected as a species. A person who keeps an unprotected animal has to obtain a permit from the Director DWLC who has the power to give specific conditions in such permits and can inspect premises where such animals are kept and to seize any animal kept in contravention of such conditions. Although a person is permitted to hunt unprotected animals if such are outside protected areas, this is again subject to some controls. It is prohibited to use a light at night to dazzle or attract an animal in order to capture or hunt it. No animal should be killed within a distance of l00 yards from a waterhole. Also no animals should hunt or take at night (between sunset and sunrise) or set any net or trap to kill or capture them of the use of poisons stupefying substances or explosives to poison, kill or stupefy an animal.

Protection of Plants

The following are offences, if committed on any protected plant species:

(i) remove, uproot, destroy or cause any damage or injury to a plant growing in another person's property or in a public place;
(ii) destroy it if it is in one's own property:
(iii) remove or destroy, damage or injure a tree on which a protected epiphyte is growing
(iv) sell or expose for sale

Reserved Forests (Forest Reserves)

These are declared by the minister by a notice in gazette and can by another notification declare that a reserved forest or a part of it may not be considered anymore. The following acts are prohibited inside Reserved Forests

a) Willfully damaging trees
b) Damage trees by a negligent act
c) Sets fire, to the forest, kindle or leave a fire burning
d) Fell, cut, collect, convert, remove or transport timer or forest produce or have in possession or control any tree or forest produce
e) Erect scaffolding or saw pits

f) Clear or break up land or cultivate any land already cleared
g) Construct a building or occupy any building whether temporary or permanent
h) Construct or use a road
i) Queries minerals
j) Hunting, shooting, setting traps and fishing
k) Poisons water
I) Trespasses into a forest reserve, and
m) Permit cattle to trespass

These provisions are similar to these that afford protection to National Reserves and Sanctuaries, under the Fauna and Flora Protection Ordinance, since trespass or unlawful entry into a Reserved Forest is made an offence. This need to have permission to enter is of a similar nature to the protection of National Reserves, but the status of the Reserved Forests in relation to National Reserves can only be compared by taking section 8 of the Forest Ordinance into consideration. This section states that none of the aforementioned will be prohibited if it is done in accordance with the regulations made by the minister or with the permission in writing from an authorized forest officer.

This, in other words mean that provisions are not really intended to protect and conserve the habitats and wildlife but to regulate the use or exploitation of such forests by keeping it under a system of permits. The exploitation under section 8 was effected by the regulations (titled "Forest Regulations) published in the Gazette Extraordinary No 14,710/7 of 29.08.1966, which granted permission to many of these activities. This set of regulations was replaced by Forest Regulations, No 01 of 1979 published in Gazette Extraordinary No 68/14 of 26.12.1979 these have completely prohibited the use of explosives or poisonous substances for the capture of or the destruction of any animal in Reserved Forest. But these still make it possible to issue permits to fell trees, collect forest produce, pasture cattle, mine for minerals or even hunt animals (including fishing) under a permit to the effect issued by the Conservator of Forests or by an officer not below the rank of a Divisional Forest Officer.

Village Forests

These are forests that are declared as such for the benefit of a village community or a group of village communities. It is done by the minister by an order published in the gazette that has the power to either cancel or amend the order. This kind of order may not contravene or affect if a person has some right in or ever-such a forest (a private right) that had existed before the declaration.

A community, in whose interest the village forest had been declared, can use the resources of the forest, including the hunting and fishing and felling of timber. In case of injuring trees, which is scheduled, it can be done only by obtaining necessary permission as all trees belonging to any of the 24 species listed in Schedule are considered as a property of the State. It is erroneously assumed by some that these trees in village forest receive total protection.

The cutting of a scheduled tree , or the pasturing of cattle can be done only in accordance with the regulations of the authority of a permit. The only act totally prohibited in a village forest is the poisoning of water. The minister can make regulations for the management of a village forest and the duties of a community in respect of the protection and improvement of the forest. This possibility is the only provision that has the power to conserve the wildlife.

Other Forests

All forests that are neither Reserved Forests nor Village Forests belong to this category. In these, all land is under the authority of the Government Agent and therefore have the same power as the Conservator of Forests (or any authorized officer to issue permits for activities such as clearing of land, hunting and collection of forest produce.

The rules regarding forests other than Reserved Forests and Village Forests was gazette on 29.08.1966 in Gazette Extraordinary No. 14,707/7. These were rescinded and a new set of regulations known as Forest Rules No 1 of 1979 were enacted by Gazette Extraordinary No 68/14 of 26. 12. 1979. Under these it is prohibited to use poisons to kill or capture fish or to use explosives to kill fish or other animals. It is also an offence to kindle a fire under the authority of a permit.

These rules show that very little protection can be given to a forest that falls into this category. Even the limited amount of protection for the habitats can be made only by regulation of permitting which can only be effective if the forest and its resources, the potential threats and conservation requirements have been studied beforehand. Even most of the Reserved Forests have been logged partly, which means that at least parts of these are in degraded conditions.

3. LEGISLATION AND INSTITUTIONS

Forest Ordinance

This ordinance is not inherently a wildlife conservation law and is mainly focused on the use of forests, forest produce, felling of timber and the transportation of timber and other forest produces. This Act has a very broad definition for forests and includes all land at the disposal of State. The provisions of this ordinance can only afford protection to habitats of wildlife and does not have any provisions to protect any species of plants or trees, as in the fauna and flora Protection Ordinance. Another form of indirect control can be exerted by the regulation of the collection of forest produce, which includes trees, plants and all parts and produces of these plants.

Although the ordinance provides that all state land be considered as forests, the minister in charge of the subject can declare two types of forests by regulations published in gazette.

National Heritage Wilderness Areas Act

This Act provides for the preservation of eco-systems genetic resources, habitats of threatened species of animals and plants of universal value from the point of view of science or conservation in their natural State. This Act only provides for the preservation of habitats, which harbour such resources. Under this Act any area that meet one of these criteria can be declared as a National Heritage Wilderness Area by a notification published in the gazette. It is imperative that such land is state land in order to make this declaration. Unlike under other Acts, the Minister can make a declaration only after consulting the ministers in charge of the subjects of environment wildlife, agriculture, cultural affairs, fisheries and indigenous medicine. This had made the whole process a long-drawn one.

A Competent Authority had been appointed under this Act to carry out the required tasks and section 7 has named the Conservator of Forests as the Competent Authority for the purposes of this Act. Among the functions assigned to the Competent Authority are the issue of permits to enter, protection of habitat and the species within, providing facilities for the observation, study and enjoyment of such places and prepare management plans in consultation with other relevant bodies and their implementation.

An important function of the Competent Authority is to issue permits to enter and remain in a National Heritage Wilderness Area. In addition for the discharge of official duties, permits can be issued for the observation of plants and animals and for the conduct of scientific studies. This power, to issue permits has to be taken into consideration with the duties of the Competent Authority which empowers to encouraging and providing and improving facilities for the observation and study and also for the enjoyment of a National Heritage Wilderness Area. It is well known that visitors in large numbers cause a lot of disturbances, degradation and the destruction of habitats and the animals and plants within them. Therefore, these provisions may defeat the purpose of declaring an area to preserve unique eco-systems and genetic resources in their natural state.

The degree of protection given to a National Heritage Wilderness Area is similar to the degree of protection afforded to National Reserves under the Fauna and Flora Protection Ordinance and the provisions relating to visitors makes the status of them similar to that of a National Park or a Nature Reserve and not similar to a strict Nature Reserve as sometimes stated.

Fisheries and Aquatic Resources Act

This Act is intended to manage, regulate, conserve and develop the fisheries and aquatic resources of Sri Lanka. The term "fish" as defined of the Act is quite broad and include any aquatic animal from these aquatic invertebrates to aquatic mammals, their stages in the life cycle (such as eggs or spawn) and even include zooplankton. This definition is biologically incorrect and has therefore drawn a lot of criticism from scientists. However, it serves the purpose of the Act as it includes all such animals that come under the preview of this Act. A simple inclusive definition serves the implementation better than a complicated but biologically correct one that may cause a lot of confusion in enforcement. Similarly the term aquatic resources include all aquatic plants and non-living substances found in aquatic mediums.

This Act, like the Fauna and Flora Ordinance has, taken the four-point approach in the management of resources and provides for the protection of habitats and species.

Institutional Structure

The conservation of wildlife and the management of wildlife habitats in entrusted to the Department of Wildlife Conservation. Offences under the Fauna and Flora ordinance are cognizable.

In order to help the Department of Wildlife Conservation the Minister can appoint prescribed officers. In addition to the officers of DWLC, the Gazette No.9773 of 24.09.1947 has appointed all officers above the rank of forest guard appointed under the Forest Ordinance prescribed offices. All police officers are also deemed to be in this category of the Police Ordinance.

The officers can enforce the provisions that deal with imports and exports appointed under the Customs Ordinance. They can also apply this ordinance in dealing with such offences or in respect of an offence made of the Fisheries and Aquatic Resources Act.

The Forest Conservation Department can enforce the provisions of the Forest Ordinance and the provisions of the National Heritage Wilderness Areas Act. The Fisheries and Aquatic Resources Act is enforced by the Department of Fisheries and Aquatic Resources.

REFERENCES

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2

2. Biodiversity Conservation in Sri Lanka -A Framework for Action (1998) published by Ministry of Forestry and Environment An ordinance for the prevention of cruelty to animals, 1862 No.7.Amended by No.13 of 1907 Amended by No.15 of 1909 Amended by No.19 of 1912.
3. Country Profile on Environment –Nepal, 1997, JICA.
4. Centre for Science and Environment, State of Indian Environment: Citizen's fifth report 1999.
5. Central Bureau Statistics, 1994a. A Compendium on the Environmental Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
6. Dhungel, S.K. (1995). Aspects of Wild Life Conservation in Nepal, Past and Present.
7. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
8. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, lslamabad. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
9. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
10. Fauna and Flora Protection Ordinance, 1937 No.2: to provide for the establishment of national reserves, including acts prohibited within reserves and protection of the Fauna and Flora of Ceylon both within and outside reserves. Amended by No.31 of 1942; Amended by No.12 of 1944; Amended by No. x of 1948; Amended by No.38 of 1949; Amended by No.44 of 1964; Amended by No.1 of 1970; Amended by No.49 of 1993.
11. Green, M.J.B. (1989). Bangladesh: an overview of its protected areas system. UNEP World Conservation Monitoring Centre, Cambridge, UK.
12. Grimwood, I.R. (1969). Wildlife Conservation in Pakistan. Pakistan National Forestry Research and Training Project. Report No. 17. FAO, Rome.
13. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
14. Gilmore, D.A. (1992). Not seeing the trees of the forest. A reappraisal of the deforestation crises in two hill District of Nepal National Planning Commission (1992).
15. Government of East Pakistan (1971). Report of the Technical Sub-committee for East Pakistan of the Wildlife Enquiry Committee. Dacca.
16. Human Development Report 1999, UNDP.
17. Husain, K.Z. (1986). Wildlife study, research and conservation in Bangladesh. Eleventh Annual Bangladesh Science Conference Section 2: 1-32.
18. IUCN and EUAD. 1991. National conservation strategy, IUCN and EUAD, Pakistan Roberts, T. J. 1986. Critical ecosystems in Pakistan. WRI, Washington DC.
19. JICA Annual Report, 1999, JICA.
20. National Conservation Strategy and Policy Statement on Environment and Development (New Delhi, June 1992),19.(2) Ministry of Environment and Forests, Environmental Action Plan: India (New Delhi, 1993.
21. O. P. Dwivedi, Development Administration: From Underdevelopment to Sustainable Development (London: Macmillan, 1994.
22. Planning Commission, Eighth Five Year Plan, 1992-97.
23. Pachauri, R.K.; Sridharan, P.V. (1998) Looking Back to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
24. Rahman, S.A. and Akonda, A.W. (1987). Bangladesh national conservation strategy: wildlife and protected areas. Department of Forestry, Ministry of Agriculture and Forestry, Dhaka.
25. Rahman, S. (1983). Country monograph on institutional and legislative framework on environment, Bangladesh. UN/ESCAP and Government of Bangladesh.
26. Shresta, T.B. and Shakya, P.R. (1993). Human Impacts on Biodiversity in Nepal
27. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
28. The World Fact Book 1999, CIA.

29. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report), JICA Nepal Office, Kathmandu, Nepal.
30. The State of India's Environment, 1982, A Citizens' Report (New Delhi: Centre for Science and Environment, 1982.
31. T.B.S. Mahat, training and Manpower Development in Community forestry, 1997.
32. The Eight Plan. His Majesty's Government of Nepal, Singh Durbar, Kathmandu, Nepal.
33. UNDP/GEF,1999, Country Programme Strategy: Nepal, Kathmandu, Nepal.
34. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal.
35. World Bank, September 1998, World Development Report, Knowledge for Development 1998/99.
36. World Development Indicators, 1999, The World Bank.
37. World Development Report, 1999, The World Bank.

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER XII

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: ECO-TOURISM

BANGLADESH

Key Issues: Wildlife and Park Management; Loss of Biodiversity; Forests Degradation; Education and Awareness; Livelihood of Local Peoples;

Key Legislation: National Environment Conservation Act, 1995; Bangladesh Wildlife (Preservation) Act, 1973; Wildlife (Preservation) Order, 1974; Factories Act, 1965; Forest Act, 1927; Regulation of Foreigners, 1979; Regulation of Foreigners rules, 1996;

Key Institutions: Bangladesh Porjaton Corporation; Tour Operators Association of Bangladesh

1. INTRODUCTION

Bangladesh has got two very "hot spots" from the viewpoint of eco-tourism. The first one is the unique and magnificent Sundarban Mangrove Forest, which is the world's largest mangrove forest and the home of the world renowned Royal Bengal Tiger the most ferocious predatory animal on earth. The other spot is the Chittagong hill districts, where 13 tribal peoples live in an area of about one thousand square miles. Unfortunately, both the spots are almost unknown to the ecotourists of the outside world. So they do not attract that much ecotourists. As being the World Natural Heritage declared by the UNESCO, the mangrove forest now belongs not only to Bangladesh, but also to the whole world, though the responsibility to protect the forest lies on Bangladesh. Bangladesh Porjaton Corporation, the National Tourism organization, and the Tour Operators Association of Bangladesh (TOAB) jointly organized, in Dhaka, a seminar on eco-tourism on the World Tourism Day. The keynote paper presented in the seminar was titled "Ecotourism a key to sustainable development". The World Ecotourism Summit held in Quebec City, Canada. Bangladesh government has taken some initiatives to develop some more tourist facilities in the Sundarban forest.

2. BIODIVERSITY AND ECOTOURISM

These facilities will be developed strictly in consistence with the idea of ecotourism. To protect the biodiversity of the forest, the government has allocated a fund to the tune of about USD 240 million. Bangladesh has reservation about pleasure tourism, but it is ready to embrace ecotourists from all over the world. Sundarban Mangrove Forest deserves attention from the ecotourists. The ecotourism organisations worldwide are to highlight till now unknown destinations like Sundarban forest, Chittagong hill districts and some other unknown ecotourism spots across the world, instead of putting too much attention to already popular spots.

3. ECOTOURISM AND NGOs

First, the organizers must be ready for a difficult undertaking. Villages are usually not ready for a highly dynamic and service-oriented tourism undertaking. Eeco-tourism is an almost alien concept to them. In some cases, some villagers will find it hard to accept that the usual hospitality they give to strangers or friends would be equated with payment. The hard part is making them work as a community towards achieving environmental-economic undertaking such as ecotourism. One way that is proven effective is the NGO approach in community organizing by identifying and tapping the relevant stakeholders. Co-operation of local people is must. Along the way, some stakeholders would lose interest or become

useless then one has to settle for local champions. This process usually takes a minimum of one to two years (although its common of hear of Community organizing that takes up to five years). Another important component is to train the locals to have the necessary skills and appreciation of the tourism needs. It is important to identify the local leaders (but not necessarily the government personnel) and make them part of the over-all tourism planning in the area. The local leaders will have to carry on the burden, so give them that power to lead as early as possible (but make them appreciate that they will have to learn the intricacies of tourism over time) how they choose what to do - most local villagers are not ready for the tourism industry. Many would shy away from actually coming face to face with foreign visitors and would rather go on with their lives.

BHUTAN

Key Issues: Wildlife and Park Management; Loss of Biodiversity; Forests Degradation; Environment Education; Livelihood of Local Peoples;

Key Legislation: the Paro Declaration in 1990; Forest and Nature Conservation Act,1995; National Forest Policy, 1974;National Forest Act (1969); Land Law (1979);

Key Institutions: Department of Tourism; Ministry of Trade and Industry; The Tourism Authority of Bhutan (TAB); Association of Bhutanese Tour Operators

1. INTRODUCTION

With its beautiful and largely unspoiled Himalayan setting, its rich flora and fauna, and its vibrant Buddhist culture, Bhutan has become an increasingly popular destination for Western tourists. Besides being an easy generator of hard currency revenue, tourism also provides impetus for the development of important service sector activities such as hotels, restaurants, transportation, and communications -- services that can also be used by the Bhutanese. Tourism has also helped to promote indigenous cottage industries and handicrafts, and an expanding network of shopkeepers in Thimphu and other frequently visited locations.

Preserving the pristine nature of Bhutan's higher elevations is paramount to maintaining the steady flow of the tourists. Because of the highly fragile nature of mountain ecosystems, damage done takes much longer to undo. Maintaining the integrity of these systems thus requires additional measures of diligence and prevention. If the alpine meadows, streams, and forests that Western tourists are willing to pay substantially more to see are to be preserved, a wide variety of actions will need to be taken to ensure that human impacts are kept well below maximum levels of acceptability.

Among the more pressing environmental problems currently being encountered are:

- the destruction of vegetation through the cutting of slow-growing trees for firewood;
- the erosion of delicate vegetation;
- the creation of "garbage trails" through the indiscriminate disposal of non-biodegradable waste; and

- The alteration of essentially sustainable farming and cropping patterns to unsustainable but highly profitable ones to meet the needs of affluent tourists.

To reduce these adverse impacts, the Ministry of Trade and Industry has drawn up 15 comprehensive guidelines for environmentally friendly tourism.

But there are also socio-economic problems being generated as well and these are less open to solution. Through their lack of awareness of traditional culture and customs, tourists can contribute to the erosion of traditional Bhutanese values and can impose unnecessary pressures on local people, especially in remote areas. Though local people are benefiting from tourism, it has also heightened materialism and eroded traditional community standards. In lieu of extending traditional Bhutanese hospitality at minimal (if any) charge, many villagers now charge rates which other Bhutanese cannot afford to pay. For example, remote village lodges with few modern facilities often charge as much as an average hotel in Thimphu. In a correlated development, barter economies have been transformed into monetary ones.

Though the impacts and activities themselves stretch across a number of economic and social sectors, their management clearly falls upon the tourism sector in so far as it is responsible for coordinating

tourism in the country. A number of the guidelines that submitted by the Ministry of Trade and Industry address the various form of "cultural pollution" currently being experienced. In general, they focus on imposing standards of etiquette, dress, and deportment and limiting tourism activities to select and hence minimal areas of the country. As the tourists themselves cannot be expected to have a proper Bhutanese respect for local tradition, culture, and religion, their guides must be trained in how to influence, regulate, and correct improper behavior.

The Tourism Authority of Bhutan (TAB) is responsible for training and certifying guides. The training involves, teaching them about local culture and history and inculcating respect and appreciation for local standards of dress and etiquette.

2. ECOTOURISM

There is considerable scope for Bhutan to increase its economic gains from eco-tourism without threatening its biodiversity. Jigme Dorji National Park is already a tourist attraction, and the Royal Manas National Park will become one when conditions permit it to be reopened. Other protected areas in Bhutan could also become attractive to tourists with appropriate investment. Bhutan has many of the features of a number of successful ecotourism destinations – the unique high elevation trekking experiences that draw tourists to Nepal, the “charismatic megavertebrates” that draw visitors to Kenya, and the species richness and scenic beauty that draws tourists to Costa Rica. The potential for eco-tourism in Bhutan could be significant. Belize, a country half the size of Bhutan, had tourism receipts of $73 million in 1993 and surveys show that over half of the tourists visiting the country participated in nature based activities. Costa Rica – only slightly larger than Bhutan – reported 684 000 overnight visitors in 1993 who spent a total of $577 million. Tourists spend on average $148 per day in Costa Rica. More than 50 per cent of the visitors to Costa Rica say that the national parks are their “principal attraction”. However, just as a high, volume of tourists can destroy cultural values in a country, so too, it can degrade biodiversity. Bhutan‟s current goal of developing high income/low
volume tourism applies equally to eco-tourism.

3. TOURISM AND THE ENVIRONMENT

Because of the highly fragile nature of mountain ecosystems, unplanned tourism can pose a major threat to environment. In addition, tourism can also cause erosion of cultural integrity and values due to the introduction of „outside‟ influences to indigenous cultures. Among the more pressing tourism related environmental and social problems currently encountered in Bhutan are:

- Destruction of vegetation through the cutting of slow growing trees for firewood
- Depletion of delicate vegetation
- Creation of garbage trails from the indiscriminate disposal of non biodegradable waste
- Alteration of essentially sustainable farming and cropping patterns to unsustainable
- but highly profitable ones to meet the needs of affluent tourists.

The government has been regulating tourism since the industry began in 1974. By the late 1980s, roughly 3,000 tourists were visiting Bhutan every year, revenue from tourism touching US $2 million. Fearing that the volume of tourists was becoming unsustainable, the government sought to limit the number by significantly raising the tourist tariff in 1989. As a consequence, that year there were only half as many visitors but revenue fell only slightly to US $1.95 million. Three years later, absolute number was up again to 2 748 while revenue soared to US $3.3 million, accounting for roughly 15%-20% of the total value of Bhutan‟s exported goods and services. In 2000, more than 7000 tourists visited Bhutan. Given the overall success of its high-value strategy, the government is expecting tourism to continue to provide a sizable portion of the country‟s total foreign revenue earnings. At the same time, environmental and cultural protection remains high on the government‟s agenda. For instance strategies for the development of the tourism sector in the 8th FYP include efforts “to make Bhutan‟s tourism industry responsible and

sensitive to the environment through the promulgation of rules and regulations for tourist activities and increasing awareness and training of tourist and hospitality industry personnel". To this end, the Ministry of Trade and Industry has drawn up some guidelines for the sector. Among the more significant of the remedies being advocated are as follows.

- Substitution of kerosene and liquid petroleum gasoline for fuelwood;
- Construction of permanent campsites, rest houses and toilet facilities along the established;
- trekking routes;
- Full retrieval of all non-biodegradable waste;
- Establishment of Tourism Development Committee with members from private;
- sector tour operators and stakeholder agencies;
- Rules and regulations on trekking;
- Establishment of Association of Bhutanese Tour Operators (ABTO) to promote sustainable tourism development;

To address various forms of "cultural pollution", Bhutan has prepared guidelines that focus on imposing standards of etiquette and dress and limiting tourism to select and hence minimal areas of the country. Tourist guides are also trained about local culture and history in order to influence tourist behavior. There are also plans to levy an environmental fee on all visitors to Bhutan. Revenue from this fee would be used to underwrite the costs of providing ecologically benign facilities and general maintenance and cleaning services. A comprehensive ecotourism project that protects and preserves the pristine environment and traditional culture while at the same time ensures a fair share of tourism revenue to traditional local community also needs to be implemented. Tourism is one of the fastest growing industries the world over. Between 1990 and 1998 alone, international tourism receipts for the world as a whole grew from about US $269 billion to US $445 billion, an annual growth rate of 6.4%. The sector is also an important means of achieving socioeconomic development particularly for developing countries such as Bhutan. The sector can help in promoting understanding among peoples and building closer ties of friendship based on appreciation and respect for different cultures and lifestyles. Most importantly, by its very nature it provides an interface between economic development and the environment. It can provide a major economic rationale for the protection and conservation of scenic and biologically valuable areas and can generate direct visitor pay back into the management of these areas and their economically fragile communities.

The Royal Government of Bhutan has from the outset recognised the need to ensure sustainability in the growth of the sector. Ecotourism and adventure tourism both offer many avenues for the future development of the tourism sector. As the industry looks to expand and improve its infrastructure and attract more tourists through vigorous marketing and publicity, it will need to strengthen its drive towards environmental protection and awareness.

4. TOURISM AND DEVELOPMENT IN BHUTAN

Bhutan, with it‟s natural beauty, rich wildlife and unique culture makes a wonderful and exotic tourist destination. However, it was only in 1974 that Bhutan was opened to international tourism, beginning modestly with only 287 visitors. Bhutan‟s tourism policy is reflective of the larger development philosophy within Bhutan. While the government‟s basic goal, as with other developing countries, is to improve the living standards of its people, development in Bhutan is not judged merely by material prosperity and income growth. The Royal Government of Bhutan has repeatedly affirmed the importance of less quantifiable but more meaningful goals such as the happiness, contentment, and the spiritual and emotional well-being of its people. Thus, the government has taken a cautious approach to development. The Royal Government‟s view is that modernization and development should be guided by the "Gross National Happiness" of the Bhutanese people, rather than by the Gross National Product. Likewise, development should be consistent with Bhutan‟s capacities and needs.

In formulating and implementing national goals and policies, the government places a great deal of importance on the preservation of Bhutan‟s natural resources and cultural traditions. This is believed by the government to be as important a priority as economic growth and development. This development philosophy is essentially one of sustainable and equitable development with a human face. Concerned about the impacts of rapid development, the government has adopted the concept of sustainable development, which has become a central theme to Bhutan‟s development plans. Bhutan‟s approach to sustainable development was articulated in the Paro Declaration in 1990, the salient points of which are as follows:

> "This is the challenge of sustainable development: to raise the material well-being of all our citizens and to meet their spiritual aspirations, without impoverishing our children and grandchildren...
>
> "The key is to find a development path that will allow the country to meet the pressing needs of the people, particularly in terms of food, health care and education, without undermining the resource base of the economy. New industries, new agricultural markets need to be carefully developed, with respect to their broader environmental ramifications...
>
> "Sustainable development, we believe, is a concept that is in harmony with the cultural and religious traditions of Bhutan. Our nation already has a strong conservation ethic, and indeed respect for the natural world is a central tenet of Buddhism. It is therefore essential that the traditional culture be kept strong so that its values can guide our sustainable development path".

5. TOURISM IN BHUTAN

Initially tourism was managed by the Department of Tourism under the Ministry of Finance, which was later reorganized as the Tourism Commercial Organization under the Ministry of Communications and Tourism in 1980. While the policy was still cautious and regulative, tourism activities were made progressively more commercial. This trend continued and culminated in the formation of the Bhutan Tourism Corporation in 1983, which was made a fully autonomous corporation under the Ministry of Trade and Industry. In the Bhutanese government‟s 7^{th} five-year plan, an emphasis was placed on increasing the role of the private sector. Thus, the tourism industry was privatized in October 1991. To date, there are 33 licensed operators under the Tourism Authority of Bhutan (TAB), the regulatory body which is a division of the Ministry of Trade and Industry. TAB oversees tourism activities and ensures that operators comply with government policies regarding tourism.

6. TOURISM POLICY

The Royal Government of Bhutan recognizes that tourism is an important means of achieving socio-economic development. It also recognizes that tourism, by encouraging travel to other countries, can promote understanding among people and build closer ties of friendship based on appreciation and respect for different cultures and lifestyles.

There are, however, problems associated with tourism which, if not controlled, can have devastating and irreversible impacts on the environment, culture and identity of the people. Realizing these problems and the fact that the resources on which tourism is based are limited, the government recognizes the need to develop the Bhutanese tourism industry based on the principle of sustainability (i.e. it must be environmentally friendly, socially and culturally acceptable, and economically viable).

In order to achieve this objective, the government has adopted a very cautious approach toward the growth and development of the tourism industry. One reason for this was the low level of infrastructure in the country which still needs considerable upgrading. In order to minimize the problems, the number of tourists has been maintained at a manageable level, and this control on numbers is exercised through a policy of government regulated tourist tariffs, and a set of administrative requirements. Due to the government‟s desire to minimize the adverse effects of tourism, while ensuring a healthy flow of hard currency, the principle of "High Value - Low Volume" tourism has been used.

Rather than limiting the number of visas issued, tourist arrivals are controlled by a pricing policy. This pricing policy means that tourists must come to Bhutan on a package tour, organized by one of the 33 Bhutanese tour operators (foreign travel agents are not allowed to operate in Bhutan). The whole itinerary, whether it be a cultural tour, trekking or a mixture of both, is organized by the tour operator. The fully inclusive price set by the government is presently US$200 per day, per person. Of this tariff, a 10% commission goes to the external foreign travel agent, 35% is paid as a government royalty, and the remainder is the tour operator‟s to be spent in Bhutan. The tariff increases if tourists want to travel alone or in very small groups. This is because these small groups incur higher per capita expenditure and have a greater impact on the environment than larger groups. There are however concessions available for children and students. If at any point it is felt that the number of arrivals is escalating out of control, the pricing policy may be reviewed and the prices increased. The manageable level of arrivals will depend on the current infrastructure in the country. As infrastructure improves, the carrying capacity will rise.

Trekking in Bhutan requires another permit from the TAB. This is to ensure that no one route is over used or new ones opened without prior approval from the TAB. Trekking tours are only conducted on approved trails and camping in designated campsites. This also helps to even out the density of tourists on the different trekking routes, spreading the income from tourism evenly to the local communities in these areas.

INDIA

Key Issues: Wildlife and Park Management; Loss of Biodiversity; Forests Degradation; Environment Education; Livelihood of Local Peoples;

Key Legislation: National Tourism Guidelines; Forest Conservation Act, 1980; Wildlife (Protection) Act, 1972 and Amendments; Forest (Conversation) Act, 1980

Key Institutions: Ministry of Tourism; Ministry of Environment and Forests

1. INTRODUCTION

Tourism has emerged as an instrument for employment generation, poverty alleviation and sustainable human development. During 1996-97, direct employment in the tourism sector was estimated to be 9.1 million and total employment due to tourism was 21.1 million. It also promotes national integration and international understanding and gives support to local handicrafts and cultural activities. Tourism in India has grown substantially over the last three decades. India"s share in the world tourist market at the end of the Eighth Plan was 0.39 per cent. Foreign exchange earnings from tourism during 1996-97 stood at Rs. 11,264 crore. Thus, tourism has become one of the largest foreign exchange earners of the country.

Domestic tourism plays a vital role in achieving the national objectives of promoting social and cultural cohesion and national integration. Its contribution to negation of employment is very high. With the increase in income levels and emergence of a powerful middle class, the potential for domestic tourism has grown substantially during the last few years. About 156 million domestic tourists made trips outside their places of residence and stayed in paid accommodation establishments during 1997.

In order to further accelerate the development of tourism in the country, the thrust during the Ninth Five Year Plan is on : (a) development of infrastructure; (b) product development and diversification including development of mega tourism resorts; (c) development of trekking, winter sports, wildlife and beach resorts; (d) exploring new source markets in regions and countries having cultural affinity; (e) environmental protection and cultural preservation of national heritage projects; (f) launching of national image building and marketing plans in key markets; (g) providing inexpensive accommodation in different tourist centres; (h) improving service efficiency in public sector corporation; (i) streamlining of facilitation procedures at airports; (j) human resource development; (k) monitoring and evaluation; (I) strengthening of organization; (m) creating awareness and public participation, and (n) facilitating private sector participation in development of infrastructure, etc. Since, most of the delivery systems are with the state governments the infrastructure projects in such cases are implemented through them.

Tourism is highly sensitive to environmental quality, but it also creates its own pollution. On the one hand, the tourist industry has or should have a strong incentive for environmental management of the resources of the area that it utilizes as if these degrade, the demand for the area as a tourist site will not survive in the long run. Another impact of tourism is created by the tourist himself because of the common property nature of some of the resources in question. The tourist is attracted to a beautiful place but has no incentive in ensuring that it is maintained clean and unspoiled for those coming later. The net effect of tourism that is unmindful to the environment is (i) that the local population is adversely affected (ii) that the tourist industry itself will not survive.

In general, the negative effects of tourism on the environment arise from:

i) the high infrastructural requirements of the industry;
ii) the increase in aesthetic and forms of pollution that follows especially when industry is concentrated rather than dispersed; and

iii) the tendency to promote tourism without taking account of the carrying capacity of the area, in terms of the supply and demand for infrastructure, the resource availability and use patterns, and the absorptive capacity and waste discharges.

2. TRENDS IN TOURISM

Tourism in India is relatively underdeveloped, given the size of the country and its potential. India‟s share in the $ 324 billion world tourism market is still quite insignificant, the percentage share having risen from 0.23% in 1975 to only 0.4% in 1992. However, tourism is a growing industry in India and indications are that the present trend of growth will continue. There are a number of reasons why this is happening, among the more important being:

a) increased ease and facilities of international travel to and domestic travel within India;
b) desire of tourist to visit new places;
c) the active role being played by the national government to attract foreign tourist through a number of measure such as brochures, folders and posters; the Annual Diary; the production of films on various destinations;
d) active role of travel agents and international airlines; and
e) large income levels to satisfy demand.

Eco-tourism is defined as a form of environmentally and culturally responsible travel to an area where tourism benefits the local people. While it can be argued that the cultural and ecological impact of tourism on “unspoiled” areas of the world is exploitative and damaging, it can also be argued that eco-tourism in its ideal form, can greatly benefit areas where beautiful waterfalls, rain-forests, deserts, coastlines and other scenic vistas, are pristine. Local companies, stores, and restaurants can advertise their services, special crafts, and precious resources the world over to draw people who will appreciate being surrounded by beauty and nature. The local people can establish tourist activities which serve to educate visitors about the fragile or endangered beauty of areas. such as the Great Barrier Reed and the Daintree Rainforests, without hurting their ecosystems. As visitors are introduced to and learn more about these wonders of the world, they often take an interest in their preservation. More and more national parks and protected areas are now putting a percentage of the money made off of tourism towards preserving the land in its natural state.

There are further cultural and economic benefits as well. A visitor‟s exposure to the different peoples and lifestyles of the world can help increase cultural awareness and cultural appreciation. Economically speaking, many of the areas that would be perfect for the ecotourism industry are in rural parts of the world. The local populations in the rainforest often live in farming communities and do not have the same economic prosperity as more industrialised areas. Ecotourism can offer local people ways to make money using the unpolluted beauty of the places they live as an alternative to making money by destroying the places they live to build up industry. Ecotourism can help people and the environment to thrive together.

The negative effects of tourism on the environment arise from:

(i) the high infrastructural requirements of the industry;
(ii) the increase in aesthetic and other form of pollution that follows especially when industry is concentrated rather than dispersed;
(iii) the tendency to promote tourism without taking account of the carrying capacity of the area, in terms of the supply and demand for infrastructure, the resource availability and use patterns, and the absorptive capacity and waste discharges.

3. ENVIRONMENT IN TOURISM MANAGEMENT

It is very evident that tourism and the environment are closely related in that unless tourism maintains the environmental quality of a place, in the long run it will cease to be of touristic value. One of the

observations that can be made about tourism in India is that the importance of an unspoiled environment for tourism has not been sufficiently appreciated. So far the emphasis has been on maximizing the number of tourist arrivals without reference to the carrying capacity of the place. This will in turn militate against the interests of the industry and the locals of the place whose interests in general have little impact on tourist planning.

Careful planning is thus required:

i) in the interests of the locals who feel the negative impacts of tourism most acutely and who, if neglected, may become hostile to the industry itself;
ii) in the interest of the „consumer" who will cease to find a place attractive if its basic resource „the unspoiled environment" is not conserved; and
iii) in the interest of the ecological integrity of the place, given the uncertainties relating to the type and the extent of damage that tourist development may inflict upon it.

To ensure that environmental considerations are reflected in tourism planning and management, it is necessary to:

(a) avoid saturation of tourist traffic to a particular destination as this pressures infrastructure, food and other consumer prices, stresses the environment and the lives of the local inhabitants of the place. It is absolutely necessary therefore, to determine the carrying capacity of the area in terms of the elements mentioned earlier;
(b) ensure that planning and design of tourist facilities takes account of blends into the natural setting without causing any disruption to the ecosystems. For example, in coastal tourism, the need to ensure that coastal zoning limits are observed in the construction of hotels, resorts and other facilities, as these zonal limits have an underlying ecological basis; and
(c) ensure that environmental quality is maintained and improved upon. The elements of such environmental quality are air and water quality, noise levels, garbage disposal systems, congestion by people and vehicles, and the aesthetics of the built up area. For this, it is necessary that planning for tourism development is integrated with the general land use planning for the region to ensure that resources are used optimally. This will also avoid future conflicts over resources from various sectors.

Tourism is a development option which, as seen, provides jobs, generates income, and contributes to foreign exchange earnings of a place but which also makes demands on land, capital, human and environmental resources. Just as is the case in other development choices therefore, the decision to develop tourism in a particular site should be based on socio-economic parameters on the one hand and scientific inputs from environmental studies on the other. This requires that an analysis be carried out to assess the potential for socio-economic benefits and costs of the tourist project on the one hand and an environmental impact analysis to assess the type, extent and nature of environmental resources that may be affected or at risk on the other. The decision to develop the site for tourism should then be based on a judicious consideration of the results of such an integrated analysis.

The four main components of an EIA process viz. scoping, baseline study, information on the impacting project and the impacting linkages enable a meaningful prediction of environmental impacts. The most important element of environmental studies is to have baseline information in place from which changes resulting from the project may be predicted.

4. ECOTOURISM GUIDELINES FROM MINISTRY OF TOURISM

The guidelines are governed by a tourism management plan, the key elements of which are the protection of natural resources and a positive involvement of local communities, along with an optimum number of environmentally conscious visitors. The principles of management are scientific planning, effective control and continuous monitoring, development of physical infrastructure, zoning and a Management

plan for public use of natural sites. The management plan should establish standards for resort development, style and location of structures, waste disposal, treatment of sewage, control of litter, use of public spaces and fragile areas. The operational guidelines rely on sensitization of all the role players and this programme is based on a self-regulated environmental code.

NEPAL

Key Issues: Wildlife and Park Management; Loss of Biodiversity; Forests Degradation; Environment Education; Livelihood of Local Peoples;

Key Legislation: Tourism Act 1978, Private Forest (Nationalization) Act, 1956; Forest Act, 1961; Forest Protection (Special Arrangements) Act, 1967; Forest Products (Sales and Distribution) Rule, 1970; Panchyat Forest Rule, 1978; Panchayat Protected Forest Rules, 1978; Leasehold Forest Rules, 1978; Private Forest Rules, 1984; The National conservation Strategy for Nepal 1987; Nepal Environment Policy and Action Plan 1993; Forest Act of 1993; the Royal Chitwan National Park Rule (1974), Himalayan National Parks Rule (1979); Wildlife Reserve Rules,1977; National Park and Wildlife Conservation Act 1973 National Parks and Wildlife Conservation Rules (1974)

Key Institutions: Ministry of Tourism; Department of National Parks and Wildlife Conservation; Ministry of Population and Environment;

1. INTRODUCTION

Majorities of the people in the mountain areas of Nepal live in abject poverty. Development has not been able to reach many remote and accessible areas of the mountains and the people there continue to depend on natural and land resources for subsistence. The environment, in terms of renewable natural resources, is degrading, population is growing, and hardships increasing. Opportunities are not forthcoming either. In these apparently hopeless situations, tourism development in the mountain areas provides some hope for the alleviation of the situation faced by mountain people.

In recent time the negative impacts of tourism on fragile Eco-system, on culture and social setting of the country started to surface. Uncontrolled waste littering in and around the Himalayan region, deforestation to provide fuel for cooking and heating, destruction of habitats by building unwarranted infrastructures etc. are some of the negative side of the tourism. Considering all these negative effect of tourism some of the famous tourism places in Nepal as Annapurna Conservation Area, Royal Chitwan National Parks, and other National Parks and Protected areas have adapted the policy of Eco-tourism. The basic concept behind the Eco-tourism is not only to promote the tourism but at the same time to manage it in environmental-friendly ways. Under this policy, help is provided to establish necessary tourist facilities such as lodges, hotels and camp-sites in a planned and organized manner.

The main piece of legislation dealing with tourist activities is the Tourism Act 1978, which is administered by the Tourism Board. The objective of the statute is to prescribe controls upon the operation of the tourist industry, such as hotels, restaurants and trekking agencies. . Several by laws have been enacted pursuant to the Tourism Act, the most pertinent being the Mountaineering Rules, which require mountaineering expeditions to be responsible for their litter and not to despoil the environment.

2. ENVIRONMENT IN TOURISM MANAGEMENT

Garbage generation is already becoming a serious problem in mountain areas. Garbage may be of three types: biodegradable, non-degradable, and toxic. A great deal of this garbage is non-biodegradable, i.e., it does not disintegrate naturally over time as plastic, metal and other manmade materials. Estimates indicates that an average trekking group of 15 people generate about 15 kg of non-biodegradable, non-burnable garbage in ten trekking days. With about 70,000 trekkers visiting the mountain areas, this problem appears to be serious.

Toxic waste results from batteries and other materials that contain heavy minerals. Bio-degradable waste generated ruins cleanliness and hence visitor satisfaction. These wastes can be harmful to human and

livestock directly or indirectly. Seepage can result and water sources, surface and/or ground can become polluted. A third problem is human waste management, as many people in rural areas do not own toilets and use open spaces.

Habitat Destruction

While tourism provides a novel opportunity for development of often remote and mostly resource poor mountain communities without adequate safeguards, it can also create problems and pose new challenges. A fragile mountain ecosystem is already under greater pressure due to the demand made on the environmental resources by growing population. High mountain altitude with steep slopes and rugged topography along the tourism activities, are all responsible for environmental degradation in Nepalese mountain.

The soaring number of trekkers and mountaineers in the high Himalayas over the last two decades have clearly shown its scare on the fragile eco system of the Himalayan mountain. Deforestation is the most severe and best known environmental problem contributed by the mountain tourism. It is estimated that the daily consumption of firewood is 6.4 kg/day per tourist and is increasing by 10 percent annually. The most common species used are rhododendron and birch. Deforestation is thus is the most severe environmental problem contributed by the mountain tourist. Thus the pressure exerted by tourist on the forest is much higher than the local people. The deforestation is directly affecting already.

Sewerage

Despite the slow growth in tourism, in general mountain tourism in particular, Nepal has experienced a variety of impacts both negative and positive. In comparison to mountain tourist, the liquid waste generated by tourist staying in city areas is very large. Some large hotels have soak pits and septic tanks to collect this liquid waste material, but lack of proper management of these results in groundwater contamination as well as in many cases it is discharged directly into sewer which results in pollution of surface water body. In case of mountain tourists siting toilets too close to or over streams or drinking water sources and use of chemical soap for bathing or washing dishes and cloths in streams or too close to water sources have been reported a source of pollution. Similarly, poor lodge and resort management for liquid waste and lack of monitoring form concerned authority is a serious threat to the pollution of water bodies of the area.

Forest

The decline in forestry resources has been aggravated by the failure of the government to provide for workable system of forestry management. In the past government has proposed many legislative measures for the forestry sector, but the role of the indigenous management systems in forestry management was never recognized. Some of the major legislative measures taken are:

- Private Forest (Nationalisation)Act, 1956
- Forest Act, 1961
- Forest Protection (Special Arrangements) Act, 1967
- Forest Products (Sales and Distribution)Rule, 1970
- Panchyat Forest Rule, 1978
- Panchyat Protected Forest Rules, 1978
- Leasehold Forest Rules, 1978
- Private Forest Rules, 1984

Past effort at forest management were heavily centralised and overly bureaucratic where involvement of local people perceived as threat to forest and efforts were made to keep the villagers out. Similarly narrow approach was taken with regard to conservation, where emphasis was on maintaining and planting trees. So main emphasis was to keep villagers out increase the stock. However this concept

changed with the introduction of *Master Plan for the Forestry Sector (MPFS).* This was endorsed by HMG in 1989 and proposed a comprehensive strategy for forestry management in Nepal. The approach focused on establishing procedures to enable a hand over of forests to user groups and the private sector, based on partnership between the MFCS and local forest user that encourage management of all aspects of forests- not just trees, but shrubs, grasses, and other forest base resources.

The Forest Act of 1993 fostered the process of hand over of national forests to community management user groups and other private enterprises. HMG"s current policy is to promote community forestry in the Hills, where forest form an integral part of farming system and are often of high environmental value in terms of stabilizing soils and protecting watersheds. However, due to large potential of the forest sector in Terai region, leasehold management concept is in progress, but there are concern as the responsibilities of potential leasehold concessionaires has not yet matured.

3. NATIONAL PARKS AND WILDLIFE

The National conservation Strategy for Nepal 1987 (NCS) and Nepal Environment Policy and Action Plan 1993 (NEPAP) are long term policy guidelines concerning wildlife conservation and management in Nepal. On the basis of these Acts and Regulations are framed to achieve stated objectives. The Master Plan for Forestry Sector (MPFS) and National Periodic Five-Year Plans of HMGN Planning Commission are long and short term plans respectively to develop and formulate programs for wildlife conservation and management.

The National Park and Wildlife Conservation (NPWC) Act 1973 is the main Act related to conservation of wildlife and protected areas in Nepal. It provides basis for establishment and administration of protected areas and the conservation of wild animals, birds and reptiles and their respective habitats.

The act stipulates/indicates two objective of the protected areas. Primary: Protection of sites or landscapes of scientific, geological, aesthetic importance together with associated flora and fauna. Secondary: Development of such areas for tourism.

The Section 2,3,4,5 and 6 deals with the different management aspect of Parks and Wildlife. The NPWC Act 1973 has been amended four times addressing the changing needs for wildlife conservation and Management in Nepal. The Act is administered by the Department of National Parks and Wildlife Conservation (DNPWCA). The NPWCA describes five categories of protected areas, namely national parks, wildlife reserves, controlled nature reserves, hunting reserves and conservation area. A strict nature reserve is an area of unusual ecological significance set aside for the purpose of scientific studies. National Parks and controlled nature reserves are to be managed as far as possible without human interventions.

The NPWCA also allows for the protection of parks and reserves by soldiers of the Royal Nepalese Army. A research and management division within the DNPWC coordinates wildlife research and the assembled data is used to formulate management plans for each protected areas. The management of each declared area is enforced by set of administrative rules. The *National Parks and Wildlife Conservation Rules (1974)* prescribes various regulations as to the use of all protected areas. More site-specific administrative rules are the *Royal Chitwan National Park Rule (1974), Himalayan National Parks Rule (1979)* and the *Wildlife Reserve Rules (1977).*

Public participation in conservation programmes has been facilitated by the enactment of the *King Mahendra Trust for Nature Conservation Act, 1982*, which established the Trust (KMTNC) as a statutory body to promote nature conservation in Nepal.

The duties of the KMNTC include:

- To conserve, promote and manage wildlife and other natural heritage,
- To make necessary arrangements for the development of national parks and reserves; and

- To undertake scientific research into wildlife and other natural resources.

4. MANAGEMENT OF TOURIST RESORT

The main piece of legislation dealing with the tourist activities is the *Tourism Act, 1978*. The object of this is to prescribe controls upon operations of the tourist industry, such as hotels, restaurants and trekking agencies. But in general, these regulations have been only partially implemented. All tourist resort are privately owned and it is the responsibility of the management to assure that its function are environmental friendly.

Code of Conduct of Tourist

No general code of conduct has been drawn up, although the Tourist Board has ordered that along certain ecologically sensitive trails, only group treks can be made with registered trekking agency, which must ensure that enough kerosene is carried so as to meet all fuel need. Several by laws have also been enacted pursuant to *Tourism Act*, the most pertinent being the *Mountaineering Rules* which require mountaineering expeditions to be responsible for their litter and not to despoil the environment. In addition, mountaineering team are to refrain from any activities calculated to injure the socio-cultural traditions and customs of the mountain communities with which they become in contact (rule 7 (b). Trekking and mountaineering activities in national parks are also regulated by the Himalayan National Park Rule (1979), which requires visitors to be self sufficient in fuel and dispose of garbage in designated areas. *In* order to preserve the local culture, adverse impact on people and environment, as well as on culture and religion it is necessary that the tourists should follow simple voluntary code of conducts. These codes of conducts are:

- Camp site: keep and leave the campsite clean after use
- Limit of Deforestation: make no open fire and discourage others from doing so. Choose accommodation where kerosene or fuel-efficient firewood stoves are used. Plant trees.

Keep Local Water Clean and Avoid Using Pollutants such as Detergents in Stream or Springs:

If no toilet facilities are available make sure you are at least 30 m away from water sources and bury or cover wastage.

- In safe place burn paper and package.
- Plant should be left to flourish in their natural environment.
- Help other to follow conservation measures
- Respect privacy
- Respect holly places
- Refrain from giving money to children since it will encourage begging
- Respect for local etiquette earns you respect

PAKISTAN

Key Issues: Wildlife and Park Management; Loss of Biodiversity; Forests Degradation; Environment Education; Livelihood of Local Peoples;

Key Legislation: National Tourism Policy; National Conservation Strategy; Registration of Foreigners Rules, 1996; Registration of Foreigners Act 1979;

Key Institutions: Ministry of Planning and Development; Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs;

1. INTRODUCTION

In Pakistan, the National Tourism Policy and the National Conservation Strategy emphasize the crucial interdependence between tourism and the environment. Tourism has a significant impact upon the physical and social environment, while, at the same time, tourism's success depends on the continued well-being of the environment. Because the physical and social environment constitutes the resource base for tourism, tourism has a vested interest in conserving and strengthening this resource base. Hence, conserving and strengthening biodiversity can be said to hold the key to tourism's success.

The interdependence between tourism and the environment is recognized worldwide. A recent survey by the Industry and Environment Office of the United Nations Environment Programme (UNEP/IE) shows that the resource most essential for the growth of tourism is the environment (UNEP 1995:7). Tourism is an environmentally-sensitive industry whose growth is dependent upon the quality of the environment. Tourism growth will cease when negative environmental effects diminish the tourism experience.

By providing rural communities with the skills to manage the environment, the GEF/UNDP funded project "Maintaining Biodiversity in Pakistan with Rural Community Development" (Biodiversity Project), intends to involve local communities in tourism development. The Biodiversity Project also recognizes the potential need to involve private companies in the implementation of tourism plans. By making clear the direct linkage between the well- being of the environment and the success of tourism, both local communities and private business will realize their direct economic incentive to conserve biodiversity. It is biodiversity that attracts tourists in the first place

2. ECO TOURISM

Tourism that sustains the physical and social environment has come to be known as "ecotourism". The precise definition of this term remains ambiguous even within the tourism industry itself. However, ecotourism can be differentiated from traditional tourism in that ecotourism not only attempts to minimize the environmental impact of tourism, but also has as a goal that local communities and the physical environment will actually benefit from tourism. In its ideal form, ecotourism is a philosophy, an activity, a development policy and an environmental policy, all at the same time.

Because of the ambiguity of the term ecotourism, the usage of this term by the Biodiversity Project requires clarification. Ecotourism is a buzz-word: everyone knows that it is desirable, but it means different things to different people. Since ecotourism becomes operationalized in different ways by different stakeholders in tourism, rather than attempting to make one definition fit all, it is better for the stakeholders to develop their own definitions.

3. ENVIRONMENT AND TOURISM

The most widely accepted way for stakeholders to develop their own definition of ecotourism and to operationalize the definition is through developing environmental Codes of Conduct. The UNEP/IE, working from Agenda 21, the program of action agreed upon at the United Nations Conference on Environment and Development held at Rio de Janiero in 1992, recommends the development of voluntary Codes of Conduct on the environment by all sectors involved in tourism. The UNEP/IE concludes that codes function to preserve the environment on which tourism depends, preserve biodiversity, and reduce pollution.

The benefits of codes include:

- improvement of the natural environment and of the sustainability of the tourism industry;
- ability to attract tourists who seek environmentally responsible forms of tourism;
- support for local economy and infrastructure which catalyses further tourism development; and
- improved quality of life for host communities.

In other words:

- conservation of biodiversity through ecotourism;
- enhanced marketing of ecotourism;
- income generation at the local level through ecotourism; and
- rural community development through ecotourism.

These codes must be positive, specific, and action-oriented. All codes have these common features:

- an overall commitment to the physical and human environment, acceptance of responsibility for environmental damage and corrective action where necessary, and rewarding of outstanding environmental performance; and
- cooperation with other sectors and stakeholders in tourism and conservation.

Working with all sectors to develop codes, IUCN can assure that the codes do not have conflicting messages, and are developed as the result of partnerships between tourism stakeholders. Because environmental codes for tourism also require implementation and monitoring, IUCN can work with stakeholders developing codes to assist in:

- publicity and dissemination campaigns;
- publications of all types;
- provision of expert services to code signatories;
- provision of networks to improve communication between stakeholders;
- organization of conferences and seminars for exchange of ideas;
- provision of awards for outstanding environmental behavior;
- organization of demonstration projects to set examples for others to follow; and
- incorporating the reactions of people directly affected by the codes into evaluation of code effectiveness.

4. RESOURCE BASE FOR TOURISM

The resource base for tourism is the physical and social environment. The resource base in Chitral and the Northern Areas is great, but not well-known. even to domestic tour operators/trekking companies. Wise use of this resource base holds the key to future income generation. If the resource base is lost, tourism is lost. Our survey of tourists shows that the quality of both the physical and social environment is the single most important factor in whether or not tourists have a positive experience. This analysis is based on our field visits to each valley. The criteria we include in the analysis are:

- outstanding natural features;
- outstanding cultural features;
- outstanding biological features (including botanical features);
- activities for tourists; and
- accessibility.

This analysis can be used to help select areas for immediate attention. Areas with outstanding features (e.g., Karambar Lakes), but difficult access, are less in need of immediate attention by the Biodiversity project than areas presently receiving significant tourist impact due to ease of access. Some areas with outstanding features and easy access (e.g., Chitral Gol National Park and Tooshi Gol in Chitral) are rarely visited by tourists and could be considered by the Biodiversity Project.

5. ECONOMICS OF TOURISM

Tourism is the ninth largest earner of foreign exchange in Pakistan, according to the Tourism Division of the Ministry of Sports and Tourism. In Chitral and the Northern Areas, which are the major destinations for most foreign tourists, it is probably the largest earner of foreign exchange and one of the largest components of the economy. Villagers are quick to point out that they have no industry besides tourism, which provides widespread, though largely seasonal employment opportunities. In some areas, such as Gojal in the upper Hunza River valley, at least one male member of each household finds seasonal work in tourism. In the Hushe Valley of Baltistan's Ghanche district, tourism has become so important that villagers have altered their grazing practices to better accommodate tourism.

The economic benefits of tourism in Chitral and the Northern Areas are at present overwhelmingly positive. We never encountered any persons who were opposed to tourism. Some people wanted to modify tourist behavior, but no one wanted to stop tourism. Villages that once had a more antagonistic attitude toward tourism are now looking to make changes to attract tourists. Nagyr is a good example of this, where the roads are recently paved, new hotels are under construction, and villagers are cooperating to make tourists more welcome. In villages with different religious communities, such as Naltar in the lower Hunza Valley, the communities have established systems of cooperation to ensure the equal distribution of earnings from tourism. Economic benefits are powerful motivators for change and development throughout Chitral and the Northern Areas. Tangible economic benefits come from:

- employment as porters, cooks, and guides; in hotels; and in transportation;
- small business ownership of transport, hotels, shops, and tour operators and travel agencies; and
- increased business activity due to economic input into local economy by tourism.

Tourism carries costs as well. Although everyone is happy to see more tourists, everyone is not glad to see piles of trash at camp sites, trees cut down, toilet paper strewn along trails, heaps of plastic bottles behind hotels, villagers angry with tourists for wearing indiscreet clothing, and trekkers arguing with guides and porters over wages. Tourists, local people, and tour operators/trekking companies need to be aware of these problems and learn how to deal with them.

The "ecotourism activities" generally mentioned as activities "which can either be promoted as an individual activity or as a package". Viewed this way, ecotourism is a commodity to be promoted,

packaged, and sold. This is an unnecessarily narrow definition of ecotourism that constricts the range of activity associated with ecotourism. Starting instead from the broader concept of ecotourism as a way for tourists, host communities, and the tourism industry to act and interact, the potential for useful activities that sustain the resource base for tourism and conserve biodiversity is greater. The transformation of tourism into ecotourism for all three sectors involved is the goal. Formulation of voluntary Codes of Conduct for each sector will begin this process. Meetings in conjunction with formulation of codes will raise the awareness of ecotourism among the stakeholders, and many activities will spontaneously suggest themselves to the stakeholders. Stakeholders will then appreciate assistance in implementing specific activities.

Within the broader concept of ecotourism, not only activities that are income generating, but also activities that conserve and strengthen the resource base for ecotourism should be included. Many of these activities are actually investments that will bring a future return in the form of increased tourism and increased tourism carrying capacity.

"Ecotourism activities" on a sector basis are given bellow. Some activities should be undertaken jointly by stakeholder sectors. Some activities are of special relevance to specific locales, and are so identified.

6. TOURIST ACTIVITIES

Tourists are the ultimate "consumers" of ecotourism. Most activities are organized with them in mind: to enhance their experience; to minimize their impact; and to increase their economic input into the local economy. However, tourists themselves, as stakeholders in tourism, need to know how to be ecotourists. Codes of Conduct facilitate this, through informing tourists how to act appropriately and responsibly.

Pollution & Trash Control

Our survey shows most tourists identify pollution and trash as the major problems they encounter in Chitral and the Northern Areas. Recycling programs, trash disposal programs, and clean-up campaigns are activities that all three sectors can and should participate in. Hence, establishing recycling programs and trash disposal facilities so tourists can participate would be positive actions. In certain high-volume areas, such as Gilgit, Hunza, and the Baltoro Glacier, such facilities are an immediate remedial necessity, as the problem is already critical. The construction of incinerators to burn garbage, especially in remote locations where removal is prohibitively expensive (e.g., Paiju on the Baltoro Glacier trek is one such site) is a solution proven effective in the Nepal Himalaya. Grassroots organizations willing to provide the labor for such activities should be supported and assisted to design, implement, and monitor such programs. Local administrations must also be involved.

Cultural Festivals, Museums & Architecture

Another activity for the host communities is the establishment of cultural museums and the scheduling of cultural festivals. Silk Route festivals, under the auspices of AKCS and Lok Virsa, are already being held in Hunza and Gojal. In Gojal, Wakhi cultural museums, have been established in Gulmit, Passu, and Shimshal. These activities encourage local cultural pride and promote cultural awareness among tourists. Tour operators can use them as destinations to include in tour itineraries, enhancing Chitral and the Northern Areas as interesting destinations.

Local residents should receive training in interpretation and display, to improve the quality of museums and festivals.

New hotels and small scale lodges that include major elements of local design would also enhance tourism for local communities and for stakeholders in the tourism industry.

Ecotourism Training Programs

Our survey indicates that most tourists perceive the lack of an environmentally-conscious attitude by guides, cooks, kitchen helpers, porters, hotel-keepers, and local residents as a major problem and "turn-off" for tourists in Chitral and the Northern Areas. The tourism industry must develop ecotourism training programs. Training programs are initially needed for two key groups: the domestic tour

operators/trekking companies; and hotel operators. The formulation of Codes of Conduct for each sector is a necessary first step toward developing these training programs. Training programs need to be conducted on an annual basis, prior to the start of every tourist season. Principles to include in these training programs for both groups follow.

7. POLICY AND REGULATIONS

In the public sector of the tourism industry, some policy and regulations constrain ecotourism. The Registration of Foreigners Rules, 1996, framed under the Registration of Foreigners Act 1979, places tedious and cumbersome requirements on any foreign staying in Pakistan more than 30 days. This period is too short. Most countries allow tourists a six-month stay beyond which they must seek special resident status and permission. IUCN should lobby with the GoP to lengthen the period before which tourists must obtain residential permission from the current 30 days to at least 90 days.

Certain areas within Chitral and the Northern Areas require a special restricted area permit from the Tourism Division for foreigners to visit. The Baltoro Glacier is one such area. Other attractive areas, such as the Chapursan Valley in Gojal also require a permit. Tourism development and ecotourism is constrained in infrequently visited, but easily accessible areas, such as Chapursan, by the difficulty of obtaining a permit. Currently, any tourist who wants to visit a restricted area must go to Islamabad to obtain the permit and return to Islamabad for debriefing after visiting the restricted area. This hinders and discourages tourists. Given the substantial tourist flow from China over the Khunjerab Pass and the KKH, the establishment of Tourism Division branch offices in Chitral, Gilgit, and Skardu would greatly facilitate ecotourism development in such areas. The permit application process is needlessly cumbersome, often taking five to seven days to complete. In other mountain regions in South Asia, similar permit processes take just one day. The Tourism Division rules and regulations for trekking and mountaineering could be revised to present a clear and transparent porter policy, which would avoid disputes and negative interactions between porters and foreigners.

The Tourism Division currently collects a US$200 non-refundable clean-up fee from all mountaineering expeditions. In 1994, 50 expeditions came to Pakistan, paying a total of US$10,000 in clean-up fees. However, the annual Baltoro Glacier clean-up expedition received Rs. 50,000 (ie, US$1,667) from Tourism Division. The bulk of the fees collected were apparently not utilized for clean-up. These funds should be fully used for the designated purpose, both on the Baltoro Glacier and in other areas receiving mountaineering expeditions, such as Nanga Parbat, Tirich Mir, Rakaposhi, and Diran. IUCN should approach GoP to pursue this constraint on the use of funds for ecotourism.

National Park Identity

National parks all over the world attract tourists, yet Pakistan's national parks are ineffective at doing so. This lost opportunity means lost revenue. Problems with national parks need to be resolved in order to promote the parks as tourist destinations. In particular, existing national park legislation does not provide a sound legal basis for currently accepted management practices. This results in conflict between park managers and local communities. IUCN should vigorously address this specific issue to remove impediments toward ecotourism development.

Fishing Licenses

Fishing licenses are easily obtained at Fisheries offices, but the availability needs more widespread publication.

Antiquities & Export Laws

Antiquities and export laws do not significantly hinder tourist purchases at present.

Marketing & Promoting Ecotourism

This survey indicates a significant potential for tourism in Chitral and the Northern Areas to become ecotourism. Realizing this potential is what we mean when we speak of promoting ecotourism. Responsible tourism on the part of all stakeholders will:

- address existing problems;
- conserve and strengthen the resource base for tourism (ie, biodiversity);
- increase the carrying capacity for tourism;
- enhance Pakistan's international image as a tourist destination; and
- increase the benefits, both tangible earnings and in the quality of life for residents of Chitral and the Northern Areas.

Marketing ecotourism means publicizing Pakistan's efforts to promote responsible tourism. Specific activities can be highlighted to attract visitors. The paradox of Pakistan tourism is that tourists are attracted by the present lack of tourists. Unlike other major Himalayan areas, Pakistan's Karakoram and Hindukush are relatively unspoiled. Hence, Pakistan offers an attractive alternative for tourists. This clean, natural, tranquil environment with friendly, honest people is the image, Pakistan should promote abroad. Tourists, then, must actually find what they are promised. Promotional "gimmicks" that are merely marketing ploys with no resemblance to what the tourist actually encounters are worse than doing nothing.

Rather than developing many new programs and activities, we recommend improving and expanding existing forms of tourism in Chitral and the Northern Areas. Our survey indicates that over 20,000 tourists visiting the area annually. If they are favorably impressed by ecotourism and biodiversity conservation measures, tourism will grow substantially by word of mouth. New programs to attract a new category of tourists (e.g., luxury tourists, helicopter tourists) are more likely to falter and be a waste of scarce marketing and promotional resources.

It is clear to us that the key sector for ecotourism development is the private sector domestic tour operators/trekking companies. These businesses are key, because they mediate directly between tourists, host communities, and tour operators abroad. Additionally, tour operators respond immediately to market factors, unlike public sector stakeholders. Currently, no domestic tour operators/trekking companies is actually implementing ecotourism principles consistently or effectively.

SRI LANK

Key Issues: Wildlife and Park Management; Loss of Biodiversity; Forests Degradation; Environment Education; Livelihood of Local Peoples;
Key Policies: Tourism Policy Statement; Aviation Policy
Key Legislation: Tourist Board Act No. 10 of 1966; Tourist Development Act No. 14 of 1968; National Environmental Act No. 47 of 1980; National Environmental (amendment) Act No. 47 of 1988

Key Institutions: Ministry of Tourism; Tourist Board; Central Environmental Authority; Local Authorities; Coast Conservation Department; Wildlife Department

1. INTRODUCTION

A major issue pertaining to tourism is the bill Boards erected on the either side of High Ways in the places of Scenic Beauty. To prove the offences when they are effected in prohibited places is the accurate identification offenders from advertisements displayed, structures effected or junk stored.

To overcome these issues the Commissioner of Local Government and Road Development Authority takes action to remove or evacuate without compensation offending advertisements, structures or junk yards in areas declared as Protected highways and science reserves respectively.

2. THE INSTITUTIONS REGARDING TOURISM

Ministry of Tourism and the Tourist Board are the main institutions but when and where approvals are necessary for the project the Local Authorities and the Central Environmental Authority too will have to get involved in granting necessary approvals.

3. LEGISLATION AND REGULATIONS

Legislation and regulations regarding Tourist Board Act No. 10 of 1966 and the Tourist Development Act No. 14 of 1968.

The Tourist Development Act provides for the promotion of Tourist Development and provide for the promotion and carrying out of Tourist Development project.

The Act No. 14 of 1968 has been amended by Act Nos 57 of 1981 and Act No. 02 of 1987.

According to section 74 and 96 of the Tourist Development Act Regulations have been made for protection of High ways and plans of Scenic Beauty and the control of Junk Yards. This has been gazetted in gazette No. 14, 839 dated 31st January 1969.

The National Environmental Act No. 47 of 1980 amended by Act No. 56 of 1988 provide provisions to protect scenic Beauty.

The coast conservation Act too will have its role when it comes to approval of building Tourist Hotels.

4. TOURISM POLICY STATEMENT

Preamble

01. The Government recognises tourism as essential for economic and social development of Sri Lanka. Accordingly, tourism is accorded high priority in its overall programme of national development. The Government has already declared tourism as a `thrust industry'

02. Internationally, tourism has become the fastest growing industry and has emerged as the largest contributor to the world GDP (Gross Domestic Product) and employment, accounting for one-tenth of each, with correspondingly high tax-related revenues and investment. International travel and tourism receipts grew faster than the total value of world trade and overlook all other categories of exports three years ago, surpassing crude oil and petroleum products, passenger cars, electronic equipment, clothing, textiles and raw materials.

03. Globle Tourism Forecasts' made by the World Tourism Organization (WTO) indicate that international tourist arrivals will grow over 4% annually during the next two and half decades from 564 million in 1995 to 1,047 million 2010 and to 1,602 million in 2020.

The regional breakdown of these forecasts indicates that tourist arrivals to South Asian region, which consists of ten countries, will increase at a higher average annual rate of around 6% from 4 million in 1995 to 11 million in 2010 and to million in 2020. Thus, Sri Lanka has good prospects for a major thrust in tourism expansion over the next two and half decades, as it is the major tourist destination in the region next to India.

04. The Government is conscious and mindful of the potential adverse effects that uncontrolled and haphazard development of tourism can have on the society and the physical environment. Therefore, the Government will undertake tourism development in terms of the policy guidelines set out below.

Pace of Development and Targets

05. Tourism development will be undertaken on a planned and sustainable basis and at a moderate rate as recommended in the Sri Lanka Tourism Master Plan (1992 - 2001), by taking into consideration the socio-cultural and environmental absorption capacity. The Plan envisages a target of 875,000 tourist arrivals by the year 2001 and around one million by the year 2002.

06. The pace and extent of tourism development envisaged in the Plan is such that it would become a key sector of the national economy of Sri Lanka in the medium term.

Types of Tourism

07. Tourism development will be based on the national attributes and inherited natural and socio-cultural attractions of the country. The marine environment of the island country, remains of the ancient civilization in the historic cities, natural beauty of the hill country region and the friendliness and the hospitability of the Sri Lankan people will take precedence overall other attractions.

08. While the main thrust of promotion will be directed at attracting holiday, vacation and site-seeing tourists, attempts will be made to diversify the tourism demand by tapping the other market segments such as „Special Interest" and MICE travel. Eco-tourism will be developed as an important branch of `Special Interest' tourism.

09. The overall marketing strategy, including the product strategy, promotional strategy and communications strategy will be directed at attracting higher spending quality tourism with a

view to maximizing the economic benefits, while at the same time avoiding the potential adverse impacts that the low spending mass tourism can have on the Sri Lanka society and culture.

Incentives for Tourism Development

10. The Government will provide, as and when it considers necessary, a package of fiscal, monetary and other incentives to - encourage and mobilise the private sector, both domestic and foreign, to invest in tourism projects and to undertake their operations. The Government has already provided a package of such incentives to enable the industry to get through the difficult period caused as a result of terrorist activities.

Facilities Development

11. The hotel development programme is progressing well and is ahead of the targets stipulated in the Tourism Master Plan. There are already 159 hotels in operation with approximately 12,600 guest rooms. In addition, there are 49 other hotel projects with 2,660 rooms which have been given final approval for construction. Further, 92 other hotel projects with 5,825 rooms, have already been given preliminary clearance for preparation of detailed architectural plans, after inspecting the cites. All these add to a little over 21,000 rooms which would be more than adequate to accommodate the targeted one million tourist arrivals by the year 2002.

12. In addition to accommodation facilities, the Government will also promote the development of ancillary services such as recreation, entertainment, shopping and speciality food services. Action has already been taken to promote these services as indicated below.

    a. Five Golf Course projects have already been approved (out of which one will be ready fur operation in mid 1998) to provide land-based recreational facilities.

    b. A study has already been completed with UNDP/WTO assistance on the development of `ocean-based' recreational activities. Action will be taken to implement the recommendations of this study.

    c. The Government has already approved the setting up of a Living Arts Centre at the Colombo Dutch Hospital Building, to provide entertainment to tourists.

    d. Two other proposals to provide entertainment services are now being processed one to set up a Sea Life Park at Muturajawela and the other to set up a Son-et-Lumier show at Sigiriya, with Sigiriya Rock as the background.

    e. The Government as already commissioned a study with WTO assistance to set up down-town duty-free shopping facilities with international brand-named goods.

    f. It has been proposed to declare Sita Eliya in Nuwara Eliya as a place of worship and develop it to attract the Indian tourists in large numbers.

    g. Action will be taken to implement the recommendations of the Handicraft and Souvenir Development Study, conducted with UNDP/WTO assistance.

13. Approvals have already been given to set up a large number of Speciality Restaurants serving popular international cuisines like Japanese, Korean, Thai, Indian, Chinese, French, German, Dutch, Mexican foods.

Environmental Considerations

14. Tourism development will be according to the comprehensive environmental standards stipulated by the Central Environmental Authority and other relevant governmental agencies such as Coast Conservation Department, Wildlife Department, Immigration Department etc.

15. All new tourist hotels irrespective of their size should be required to install their own waste water treatment plant in order to protect pollution of the beaches and other water.

Marketing and Promotion

16. The Government has already launched an Image Building Campaign which will be carried out in 18 prime tourists generating markets, over a period of two years, to improve the image of Sri Lanka as an attractive tourist destination.

17. In addition, the regular promotional campaigns will be intensified in all markets in order to accelerate the growth of tourist arrivals to achieve the one million target by the year 2002.

18. At present, bulk of the tourist visiting Sri Lanka, amounting to over two-thirds, come from the European Markets. Action will be taken to diversify the tourist markets sources by implementing the recommendations of the study already completed, namely Asian Market Development Strategy and Plan, with UNDP/WTO assistance. The main focus of promotion will be the emerging tourist generating markets of Japan, South Korea, Taiwan, Hong Kong, Singapore, Malaysia, Thailand and India.

Training and Manpower Development

19. The Government recognises that training and manpower development are essential prerequisites for successful operation of the tourist industry. Therefore, in terms of its national development priorities and strategies, the Government will undertake, as part of its overall human resources development programme, the necessary manpower and skills development for efficient operation and management of the tourist industry.

20. An ultra modern new Hotel School complex is already under construction to provide training at all levels to meet the manpower requirements of the hotel and catering industry. In addition, a major Trainer Development Programme funded by the EU has already been completed to provide training at entry level.

Role of the Private Sector

21. In accordance with the Government's Development Strategy, the Private Sector will play a major role in the development and promotion of tourism while Government will act only as a facilitator.

22. The Government will encourage the different sub-sectors of the tourist industry to form trade or professional associations to enable them to safeguard their interests and make representations to the Government can matters affecting their members.

23. Such associations will form the nucleus for consultation with the travel trade in making strategic decisions relating to the development and promotion of tourism.

Tourism Organization

24. The Government will take action to re-structure the present Tourist Board with a view to promoting a healthy partnership between the Government and the private sector. For this purpose, the Tourist Board Act will be repealed and replaced it with a Statutory Body to be called `Tourism Authority of Sri Lanka' with the majority of Directors of the Board of Management drawn from the private sector.

25. Provision will also be made for the new Authority to set up and operate a Tourist Promotional Cess Fund by charging a CESS on the business turnover of all the recognised tourism business establishments such as hotels, guesthouses, travel agencies, restaurants, recreational and entertainment agencies etc.

Aviation Policy

26. Tourism Development Policy will be coordinated with the Aviation Policy in order to promote the harmonious growth and development of both sectors. The Aviation industry needs to be expanded by promoting both scheduled arid charter air carrier services to meet the growing demand for seats from the Tourism Sector.

Economic Considerations

27. Tourism development will be undertaken in such a manner as to ensure maximum economic benefits to the country by way of foreign exchange earnings, income generation, employment creation and public sector revenue generation. Also, the spatial distribution of tourism development in remote and under-developed areas in the country will ensure that economic and social benefits of tourism will percolate down to a wider section of the local community.

28. Tourism sector linkages with the other production sectors of the national economy will be strengthened so that tourism demand will act as a catalyst for development of the other economic sectors. This will help to maximize the indirect and induced effects of tourism through the operation of the multiplier principle.

29. A system to continuously monitor the economic benefits of tourism will be established by building an Econometric Model using the technique of input-output tables. For this purpose foreign funding assistance will be sought from the WTO/UNDP sources

5. THE KANDALAMA HOTEL IN SRI LANKA: AN ECO EXPERIENCE

The Kandalama Hotel is the first hotel in Asia to be certified under the provisions of Agenda 21 of the Rio Earth Summit as a Green Globe Hotel. Built next to an ancient irrigation tank and surrounded by tropical dry evergreen forest, the hotel is within Sri Lanka‟s Cultural Triangle and is flanked by two World Heritage sites. The initial public protest due to the sensitivity of the hotel‟s location was overcome through the completion of a formal EIA report and the successful implementation of the report‟s recommendations. The environmentally sensitive design of the hotel avoids disturbance to the existing landform profile and trees, which needed to be removed during construction, were rootballed and replanted. To replant denuded patches of land, a nursery of 3 000 indigenous plants was established.The village community was given the highest priority in the provision of employment and many of the services and utilities brought into the remote rural area were extended to local villages including electricity, roadways, deep wells and biogas generators.

The environmental management of hotel operations are categorized into six key elements: waste minimization (reuse, recycling and reducing); energy efficiency conservation and management; fresh water resources management; wastewater management; environmentally sensitive purchasing; and social and cultural development. These areas are in accordance with those laid out in Agenda 21 of the Earth Summit. In order to obtain total participation of hotel staff, environmental committees have been established to cover key factors and every employee as a member of at least one committee. Environmental conservation is an essential responsibility in everyone‟s job description. The hotel‟s environmental policy is available to the public and the environment factors are deeply integrated into the hotel management. Leaflets and brochures with emphasis on nvironmental conservation are available for all stakeholders. Guests have access to information on nature, special bird watching trails, the

surrounding forest, its fauna, flora and its unique bio-diversity. Sustainable practices such as use of rainwater, solar heating panels are currently being employed, whilst windmill pumps and biogas generation are planned for the future.

In recognition of the standards of environmental management adopted by Aitken Spence, the operators of the Kandalama Hotel, the hotel as won the following environmental awards : · International Green Globe Award for 1996, 1997, 1998 and 1999; · Sri Lanka Association for the Advancement of Science Award-1997; · TRAVTALK‟ Award-1997 by the World Tourism and Travel Council; and · PATA Green Leaf (Gold Award) for Environmental Education-2000.

REFERENCES

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Centre for Science and Environment, State of Indian Environment: Citizen‟s fifth report 1999.
3. Country Profile on Environment –Nepal, 1997, JICA.
4. Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, lslamabad. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
5. Coast Conservation Act, 1981 No.57: to make provisions for Coast Conservation including the preparation of a Coastal Zone Management Plan based on the surveys within the zone including all coastal wetlands with an indication of their significance as fisheries or Wild life habitats (Section 11) and taking over some functions of Crown Lands Ordinance No.8 of 1947. 1981 No.59 Marine Pollution Prevention Act: to provide for the prevention , reduction and control of pollution in Sri Lanka waters and for matters connected with including power to take action against any marine pollution caused to the living marine resources and wildlife.
6. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
7. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations
8. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
9. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
10. Human Development Report 1999, UNDP.
11. JICA Annual Report, 1999, JICA.
12. Ministry of Environment and Forests, Environmental Action Plan: India (New Delhi, 1993).
13. Ministry of Environment and Forests, Policy Statement for Abatement of Pollution (New Delhi, 1992).
14. Mahaweli Authority of Sri Lanka Act, 1979 No.23 establish the Mahaweli Authority of Sri Lanka. The jurisdiction of the Authority is within any area that may be developed with the water resources of the Mahaweli or any major river, declared as a special area.
15. National Conservation Strategy and Policy Statement on Environment and Development (New Delhi, June 1992).
16. National Environment Act, 1980 No.47: to establish a Central Environmental Authority and matters connected therewith including recommendation to the government a system of rational exploitation and conservation of aquatic and wildlife resources, with special attention to the threatened species of fish and flora and a system of park and wildlife management.Amended by No.56 of 1988.
17. Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat.
18. The State of the Environment, 1984-1985 (New Delhi: Centre for Science and Environment 1982.

19. The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
20. The World Fact Book 1999, CIA.
21. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report), JICA Nepal Office, Kathmandu, Nepal.
22. The Eight Plan. His Majesty‟s Government of Nepal, Singh Durbar, Kathmandu, Nepal, Central Bureau Statistics, 1994a. A Compendium on the Environmental.
23. UNDP/GEF,1999, Country Programme Strategy: Nepal, Kathmandu, Nepal National Planning Commission (1992).
24. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal
25. World Bank, September 1998, World Development Report, Knowledge for Development 1998/99.
26. World Development Indicators, 1999, The World Bank.
27. World Development Report, 1999, The World Bank.

JOURNALS FOR FURTHER REFERENCE:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER XIII

STATUTORY TOOLS

BANGLADESH

Key Issues: Implementation; Public Participation; Education and Awareness; Enforcement and Compliance; Monitoring, Evaluation and Assessment of Tools

Key Legislation: Environmental Conservation Act, 1995; Forest Act of 1927 National Environmental Impact Assessment Guidelines 1993; Environment Conservation Rules 1997; Penal Code 1860; Explosives Act 1884; Bangladesh Wildlife (Preservation) Act, 1973; Bangladesh Wildlife (Preservation) Act, 1973; The Antiquities Act 1968 as, amended by the Antiquities (Amendment) Ordinance 1976; Groundwater Management Ordinance 1985; Public Health (emergency provisions) Ordinance, 1944; The Factories Act 1965; Protection and Conservation of Fish Rules 1985; Pesticide Ordinance, 1971; Brick Burning (Control) Act,1989; Boilers Act, 1923

Key Institutions: Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; Department of Forests; International Institutes of Environment; Forest Research Institute, Bangladesh; Forest Industries Development Corporation; Institute of Forestry and Environmental Sciences

1. INTRODUCTION

The environmental aspects are addressed by the regulatory regimes of policies legislation and institutions. In **Bangladesh,** there are about 186 laws related to the environment. A Comprehensive Environment Conservation Act was enacted in 1995 for the protection and conservation of the environment. Bangladesh, in response to the National Environment Policy, 1992, the critical pieces of environmental legislation have been set as the framework for environmental management of the country: i) The 1995 Environmental Conservation Act ii) The Environmental Conservation Rules of 1997 iii) The 1997 EIA Guidelines for Industries iv) The 1999 Environmental Court Act. The 1995 law is an enabling act, which gives the MoEF the power to draw up rules and guidelines for managing the environment. The law also designates the DoE as the responsible body for enforcing the EIA procedures outlined in the 1997 Rules, along with the legal procedures to be followed for implementing the EIA process. The rules also designate four classes of possible interventions by degree of expected environmental impact. The Environmental Conservation Rules also contain national environmental standards, including those for water quality standards for different sectors and purposes. There are about 182 laws that have a bearing on environment in Bangladesh - however most of these laws remain unenforced due to too many legislative and institutional failures such as lack of rules, identification of institutions responsible for enforcement, absence of statutory environment quality standards, lack of legal education and awareness; a National Environment Policy has been adopted in 1992 that provides sectoral policy Guidelines in combating and promoting environmental matters.

2. STANDARDS

The National Environmental Quality Standards are given in the Environmental Conservation Rules of 1997 (**Bangladesh**). These set a range of water quality criteria and limits depending upon the intended uses, including use for human drinking water, livestock drinking, fisheries, recreation, irrigated agriculture and industry. Discharge standards are also specified by sources, including public sewage outfalls, irrigation water and specific types of industrial discharges by size. The overriding problem of

environmental standards in Bangladesh is difficulty in enforcing them. Moreover, the regulations are essentially ‗end-of-pipe' standards, or just abstractions. Although, there is an Ambient Water Standard, it covers none of the many chemical pollutants known to be discharged. There is no effective regulation that takes into account the ability of rivers to dilute and disperse effluent, especially in times of low flow, and under complex cumulative discharge patterns. These cumulative impacts are crucially important for the natural aquatic environment.

With EPA, proposals for all plans, programmes and projects which are likely to have an effect on the environment, irrespective of their ownership, will need to be submitted to the government agencies concerned for approval through IEE and EIA reports. Responsibility to conduct IEE is left to implementing agencies, all cases requiring an EIA must be referred to the Ministry of Populations and Environment.

National Environmental Impact Assessment Guidelines 1993 states that a draft EIA report must be released for public review and comment. The review of the draft report and comments should be made available for review by the project proponent, NGOs and concerned public.

3. ECONOMIC INSTRUMENTS

EPA makes provision for rebates and facilities to any industry, commercial activity and technological innovation resulting in a positive impact on the environment. The Industrial Enterprises Act , 1992, requires that permission shall be granted for reduction of up to 50% from the taxable income for the investment of an industrial process or equipment which has the objective of controlling pollution or which may have a minimum effect on the environment; under the EPA the government can provide additional facilities to those already provide under existing laws, to any industry, occupation, technology or process that has a positive impact on environmental protection. In tackling the environmental problems of the country various environmental legislation have been made from time to time in Bangladesh. Like in some other countries environmental laws deal speciafically with land use, air and water pollution, noise, toxic chemicals, solid waste, forest conservation, wildlife protection, mineral resources and coastal zone management, industry, environmental health and sanitation etc.

Some of these laws, now in force-such as the Forest Act of 1927 were inherited. Others were enacted after 1947 as the issues arose which needed addressing through legal measures. These laws were previously useful when they were enacted but do not satisfy present needs. Moreover, environmental scenario of the world and the country has changed considerably, therefore, for better environmental management, updating of related laws are required. Environmental legislation in Bangladesh covers laws on the (i) protection of environmental health (ii) control of environmental pollution, and (iii) conservation of natural and cultural resources. The above categorisation is being made on the basis of broad objectives of the environmental laws exiting in Bangladesh. The exiting laws are not mutually exclusive. It is obvious that many of the laws falling in one category are bound to relate to objectives falling in the other categories. This is only natural because of the fact that environment protection is a multi-sector phenomenon not limited to any particular aspect of nature.

4. RELEVANT LEGISLATION

Though laws which has been used as tools in environmental management are many, major ones have been chosen to illustrate as follows :

1. Bangladesh Environmental Conservation Act 1995 (ECA 1995)

The Act established for environment conservation, environmental standard development and environment pollution control and abatement, although it is known by the shortened title above. It has repealed the Environment Pollution Control Ordinance, 1977.

A special presidential order again renamed the DEPC to the Department of Environmental Pollution Control Ordinance, 1989.

The Environmental Conservation Act, 1995 (ECA'95) is currently the main legislative framework document relating to environmental protection in Bangladesh, which repealed the earlier Environment Pollution Control Ordinance of 1997 and has been promulgated in 1995.

The main objectives of ECA, 1995 are -

-

Conservation and improvement of environment and
- Control and mitigation of pollution of environment.

The main strategies of the Act can be summarized as

- Declaration of ecologically critical areas, and restriction, on the operation and process which can be carried or can not be initiated in the ecologically critical area.
- Regulation in respect of vehicles emitting smoke harmful for the environment.
- Environmental clearance.
- Regulation of the industries and other development activities-discharge permit.
- Promulgation of standard limit for discharging and emitting waste.
- Formulation and declaration of environmental guidelines.

The first set of rules to implement the provisions of Act has been promulgated in 1997. The Department of Environment (DOE) is implementing the Act. DOE is headed by a Director.

In emergency, there is no opportunity for appeal. Power to declare an area affected by pollution as an ecologically critical area. The type of work or process, which can take in such an area, is governed by DOE. Similar to in aforementioned clause, if any part of the environment is polluted/damaged by operations, the Director General can request or force the operator to make rectifying arrangement, its; operators must inform the Director General any pollution incident or near miss;

In the event of an accidental pollution even the Director General may take control of an operation and the respective operator is bound to help. The operator is responsible for costs incurred (and possibly) compensation.

- Before new project can go ahead as stipulated under the rules, they must obtain an Environment Clearance from the Director General. An appeal precedure does exist for these promoters who fail to obtain clerance;

2. Environment Conservation Rules 1997 (ECR, 1997)

'These are the first set of rules, promulgated under the -Environment Conservation Act 1995.Among other things, these rules set (i) the National Environmental Quality Standards for ambient air, various types of water, industrial effluent, emission, noise, vehicular exhausts., (ii) requirement for and procedures to obtain environment clearance (iii) requirement for IEE/EIA according to categories of industrial and other development interventions.

According to the rules, any project/development intervention of the Red category, is to obtain environmental clearance in two steps - first to obtain site/location clearance based on the application along with necessary papers, including the initial environmental Examination, IEE which will contain the scope of work of the proposed EIA and then to obtain Environmental clearance by submitting the application along with necessary papers and-after obtaining the approval on the Environmental Impact Assessment Report, which is to obtained in between). The Department of Environment may take up to

sixty days to issue the-site clearance (from the date of receiving the application-), sixty days to approve the EIA and thirty more days to issue the Environmental Clearance, provided everything goes well.

This may be quite a lengthy process if DOE uses the full extent of the time limits. The rules however provide the Director General a discretionary authority to grant 'Environmental Clearance' to an applicant exempting the requirement of site/location clearance, provision considers it appropriate.

3. The Penal Code 1860 (Chapter XIV of offences affective the Public health, safety, convenience, decency and morals).

Article 277: Failing Water or Public Spring or Reservoir-

Whoever voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used, shall be punished with imprisonment of either description for a term which may extend to three months, or with fine which may extend to five hundred taka or with both.

Article 278: Making Atmosphere Noxious to Health-

Whoever voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighborhood or passing along a public way, shall be punished with fine which may extend to five hundred taka.

Article 284: Negligent Conduct with Respect to Poisonous Substance-

Whoever does, with any poisonous substance, any act in a manner so rash or negligent as to endanger human life, or to be likely to cause hurt or injury to any person, or knowingly or negligently omits to take such order with any poisonous substance in his possession as is sufficient to guard against probable danger to human life from such poisonous substance,

"Article 285: Negligent Conduct with Respect to Fire or Combustible Matter

Whoever does, with fire or any combustible matter, any act so rashly or negligently as to endanger human life, or to be likely to cause hurt or injury to any other person, or knowingly or negligently omits to take such order with any fire or any combustible matter in his possession as is sufficient to guard against any probable danger to human life from such fire or combustible matter, shall be punished with imprisonment of either description for a term which may extend to six with both.

Article 286 : Negligent Conduct with Respect to Explosive Substance -

Whoever does, with any explosive substance, any act so rashly or negligently as to endanger human life, or to be likely to cause hurt or injury to any other person, or knowingly or negligently omits to take such order with any explosive substance in his possession as is sufficient to guard against any probable danger to human life from that substance, shall be punished with imprisonment of either description for a term which may extend to one thousand taka or with both.

4. The Explosives Act 1884

Section 6(3) reads

Any person manufacturing possessing, using, selling, transporting or importing an explosive in contravention of a notification issued under this section shall be punishable with imprisonment for a term which may extend to fifty thousand taka, in default of which with a further imprisonment for a term which may extend to one year, and in water or land, the owner and master of the vessel or carriage

excuse, each be punished with imprisonment for a term which may extend to ten years and shall not be less than two years and also with a fine thousand taka, in default of which with a further imprisonment for a term which- may extend to one year.

Further section 8(1) and 8(2) reads as

> (1) Whenever there occurs in or about or in connection with, any place in which an explosive is manufactured, possessed or used, or any carriage or vessel either conveying an explosive or on or from being loaded or unloaded, any accident by any explosion or by fire attended with loss of human life or serious injury to person or property, or of a description usually attended with such loss in injury the occupier of the place, or the master of the vessel, or the person in charge of the carriage, as the case may be, shall within such time and in such manner as may be by rule give notice thereof and of the attendant loss of human life or personal injury, if any, to the Chief Inspector of Explosives in Bangladesh and to the officer in charge of the nearest police-station-
>
> (2) Whoever in contravention of sub-section (1) fails to give notice of any accident shall imprisonment for a term which may extend to three months and also with fine which may extend to five thousand taka, in default of which with a -further imprisonment for a term which may extend to three months and also with fine which may extend to five thousand taka in default of which with a further imprisonment for a term which may extend to one month , and if the accident is attended by loss of human life, with imprisonment for a term which may extend to one year and also with a fine which may extend to ten thousand taka. In default of which with a further imprisonment which may extend to two months.

5. The Explosive Substances Act 1908

One of the punishment sections read as follows:

Section 3: Punishment for causing explosion likely to endanger life, person or property
Any person who unlawfully or maliciously causes by any explosive substance and explosion of a nature likely to endanger life or to cause serious injury to person or property shall, whether any injury to person or property has been actually caused or not, be punisyhable with death, or with imprisonment for a term which may extend to ten years and shall not be less than five years, to which fine may be added.

6. Bangladesh Wildlife (Preservation) Act, 1973

This law provides for the preservation, conservation and management of wildlife in Bangladesh. The earlier laws on wildlife preservation, namely, the elephant Preservation Act - 1879, the Wild Bird and Animals Protection Act - 1912, and the Rhinoceros Preservation Act - 1932 have . been repealed and their provisions have been suitably incorporated in this law.

This act encompasses a range of. different activities ' including the hunting and fishing although the provisions of greatest significance relate to the establishment of wildlife sanctuaries and national parks by the MoEF. Such designations have enormous significance for the types of developments that may take place. However, it must be recognized that no wildlife sanctuaries or national parks occur in close promity to the proposed project site.

The main provisions are as follows:

1. The Wild animals specified, as "game animals" shall not be hunted, killed or captured save in accordance with the terms of a permit issued under this order.

2. The Wild animals specified in this order shall be known as "Protected Animals" and shall not be hunted, killed or captured save as otherwise expressly provided in this order.

3. No person shall, with a view to carrying on a profession, trade or business, buy, sell or otherwise deal in wild animals, trophies or meat, or process or manufacture goods or articles from such trophies or meat unless he is in possession of a valid permit, issued for the purpose by an officer authorized in this behalf.

4. The Government may, by notification in the official Gazette declare any area to be wildlife sanctuary.

5. The Government may declare any area to be a national park provided that the government may, for scientific purpose or for betterment of the national park or for aesthetic enjoyment of scenery or for any other exceptional reason, relax all or any of the prohibitions specified above.

Article 23 (2): No person shall:

i) Damage or destroy any vegetation in any wildlife sanctuary.
ii) Cause any fire in a wildlife sanctuary:
iii) Pollute water flowing in or through a wildlife sanctuary.

This legislation does not provide scope for creation of a strong organization, which can adopt appropriate measures to protect wildlife. The importance of wildlife could be highlighted in the legislation, which is not there. Punitive provisions are not readily usable. The types of endangered and ecologically valuable animals/birds could be highlighted in the legislation. It should have asked for active participaton and specific action from local administration to protect wildlife. It also does not prescribe seasons when certain animal/birds can not be hunted or captured.

6.1 Latest Executive Order

A very recent executive order issued in June 1998 in relation to the Bangladesh Wildlife Preservation Order 1973 has imposed a ban for the next five years on hunting of any form of wildlife.

7. The Bangladesh Forest Act 192

The law updated and consolidated the provisions of the laws passed earlier regarding protection and development of forests after repeating the Indian Forests Act 1878; Forest Act 1890 and the amending Acts of 1891, 1901, 1911, 1914, 1918.

The Government may assign a reserve forest to any village community, the Government may declare any forest land and waste land belonging to the government or having property rights to be "protected forests". The government may stop any public or private way or watercourse in the interest of preservation of the forest.

The relevant section is 26 of the Act, which reads:

Acts prohibited in such forests - (1) Any person who, in a reserved forest -
(a) Kindles, keeps or carries any fire except at such seasons as the Forest-officer may notify in this behalf-,
(b) trespasses or pastures cattle, or permits cattle to trespass;
(c) causes any damage by negligence in felling any tree or cutting, or dragging ;and
(d) quarries stone, burns lime or charcoal, or collects, subjects to any manufacturing

process, or removes, any forest produce other than timber; or who enters a reserved forest with fire arms without prior permission from the Divisional Forest Officer concerned shall be punishable with imprisonment for a term which may extend to six months and shall also be liable to fine which may extend to two thousand taka, in addition to such compensation for damage done to the forest as the convicting Court may direct to be paid.

8. The Antiquities Act 1968 as, amended by the Antiquities (Amendment) Ordinance 1976

The Act was enacted to consolidate and amended the laws relating to preservation and protection of antiquities and repealed "The Ancient Monuments Conservation Act 1904" and "The Antiquities (Export Control) Act 1947).

The main provisions of the Act are as follows:

I If the government has reasonable grounds to believe that any land contains any antiquity, it may direct to acquire such land or any part thereof under the land Acquisition Act, 1894 (I of 1894), as for a public purpose. The Government (Director) may, purchase, or take lease or accept a gift or bequest of any antiquity.

2. If the Government apprehends that a protected immovable antiquity -is in danger of being destroyed, injured or allowed to fail into decay, it may, after consultation with the Advisory Committee, acquire such antiquity or any part thereof.

3. Subject to the provisions of this Act or of any agreement, no person shall, except for carrying out the purpose of this Act, destroy, break, damage, alter, injure, deface or mutilate, or scribble write or engrave any inscription or sign on any antiquity in respect of' which the Director has accepted guardianship or the Government has acquired any right.

4. No person shall make on any land excavation for archaeological purpose except under and in accordance with a license granted by the Director.

This legislation does not call for strengthening of the concerned organization, which will take care about the major provisions under this legislation. How the provisions under this law are going to be implemented, that is not clearly mentioned. This legislation also does not spell out the need for preservation the antiquates of the country or their value in terms of social and cultural aspects. However, according to the Archaeology Department, any one finding any object of historical or archaeological value during any excavation or site preparation for their own purpose, is to submit the nearest Civil Administration of the Police Department

9. The Groundwater Management Ordinance 1985

This is a framework type of 'legislation with enabling power to make rules by the Government by notification in the official Gazette. This ordinance is mostly related to tube well licensing which is authorized to the Upazilia Parishad (presently the Thana Executive office). Before granting such license, the points to be reviewed include:

- 'the aquifer condition of the soil where the tube well is to be installed
- will not have any adverse effect upon the surrounding area' 'the distance of the nearest existing tube well' 'the suitability of the site for installation of the tube well'.

These tube wells mostly concern for irrigation water required for agricultural production and for matters connected there with

10. The Groundwater Management Rules 1987

These are the first set of rules under the ordinance of 1995. These detail out the tube well license issue further, how to obtain it, how to cancel and suspend etc. Schedule I of the rules require I) the minimal distance of a new tube well at about three quarter of a mile from the nearest river of all time flow ii) plantation of the tube well to be above the water level during floods.

11. **The Public Health (Emergency Provisions) Ordinance, 1944**

This is an ordinance to make special provisions in regard to public health. This is a framework kind of legislation with provision to make rules, which, among others, may prescribe any disease against the spread of which special precautions are considered by the Government to be necessary", and "prohibit any act which in the opinion of the Government is likely to lead to or facilitate the spread of any disease prescribed under the above clause.

12. The Factories Act 1965

This is an Act to repeal and with certain amendments, re-enact the Factories Act, 1934.

This Act requires (section 12(l)) that "every factory shall be kept clean and free from effluvia arising from any drain privy or other nuisance and in particular accumulation of dirt and refuse shall be removed daily. Section 13(1) specifies that ―effective arrangement shall be made in every factory for the disposal of wastes and effluent due to the manufacturing process carried on therein".

Further section 14(l) mentions that, effective and suitable provision shall be made in every factory for securing and maintaining in every workroom

a) adequate ventilation by the circulation of fresh air, and
b) such temperature as will secure to worker therein reasonable conditions of comfort and prevent injury to health, and in particular -

i) the walls and roofs shall not be exceeded but kept as low as practicable;
ii) Where the nature of the work carried on iri the factory involves, or is likely to involve, the production of excessively high temperature, such adequate measures as are practicable, shall be taken to protect the workers thereform by separating the process which process such temperature from the work-room by insulting the hot parts or by other effective means.

Section 15.1 of the Act stipulates,

i) In every factory in which, by reason of the manufacturing process carried on, there is given off any dust or fume or other -impurity of such a nature and to such an extent as is likely to be injurious or offensive to the workers employed therein. Effective measures shall be taken to prevent its accumulation in any work-room and its inhalation by workers, and if any exhaust appliance is necessary for this purpose, it shall be applied as near as possible to the point of origin of the dust, fume or other impurity, and such point shall be enclosed so far as possible.

ii) In any factory no stationary internal combustion engine shall be operated unless the exhaust is conducted into open air, and no internal combustion engine shall be operated in any room unless effective measures have been taken to prevent such accumulation of fumes thereform are likely to be injurious to the workers employed in the work room. employed in the work-room.

Further section 17 asks for workspace requirement

1) No work room in any factory shall be overcrowded to an extent injurious to the health of the workers employed there in.
2) Without prejudice to the generality of provisions of sub section (1) there shall be provided for every worker employed in a work room -
   a) at least three hundred fifty cubic feet to space in the case of factory in existence on the date of commencement of this Act; and
   b) at least five hundred cubic feet of space in the case of a factory built after the commencement of this Act-

In every factory -

a) sufficient latrines and of prescribed types shall be provided conveniently situated and accessible to workers at all times while they are in the factory

In every factory the following shall be securely fenced by the safeguards of substantial construction which shall be kept in position while the parts of machinery required to be fenced are in motion or in use, namely-

a) Every moving part of a prime mover and every fly wheel connected to a prime mover ;
b) The head race and tailrace of every water wheel and water turbine; -
c) Any part of a stock bar which projects beyond the head stock of a lathe; and
d). Unless they are in such position or of such construction as to be as safe to every person employed in the factory as they would be if they were securely fenced -

i. every part of an electric generator; a motor or rotary converter;
ii. every part of transmission machinery; and
iii. every dangerous part of any machinery.

The Conservation Act, 1950 as amended by the Protection and Conservation of Fish (Amendment) Ordinance, 1982 and the Protection and Conservation of Fish (Amendment) Act. 1995. Conservation of fish in inland waters of Bangladesh. This is relatively unscientific and similarly provides a means by which the Government may introduce rules to protect those inland waters not in private ownership. As the Brahmaputra river is not privately owned, it is covered by this Act. This is framework legislation with rule making powers. Among others, some of these rules may -

a) prohibit or regulate all or any of the following matters, that is to say the construction,
temporary or permanent, of weirs, dams, bunds, embankments and other structure

b) prohibit the destruction of, or any attempt to destroy, fishes by explosives, gun, bow and_arrow inland water.

c) prohibit the destruction of, or any attempt to destroy, fishes by tile poisoning of water or the depletion of fisheries by pollution, by trade effluent or otherwise.

13. The Protection and Conservation of Fish Rules 1985

These are a set of rules in line with the overall objectives of the Fish Act. Some of those are Section-4 "No person shall construct bunds, weirs, dams and embankments or any other structure, whether temporary or permanent, in, on, across or over the rivers, canals, khals or beels for any purpose other than irrigation, flood control or drainage".

Section 5 - "No person shall destroy or make any attempt to destroy any fish by explosives, gun, bow and arrow in inland waters or within coastal waters". Section 6 - "No person shall destroy or make any attempt to destroy any fish by poisoning of water or the depletion of fisheries by pollution, by trade effluents or otherwise in inland waters".

14. Pesticide Ordinance, 1971 - as amended by the Agricultural pesticides (Amendment) Act 1980 and the Agricultural pesticides (Amendment) Ordinance 1983.

The Act provides for the regulation of import, manufacture, formulation, sale distribution and use of pesticides in order to prevent injury to public health or to animals or vegetation.

The main provision of the Ordinance is as follows:

No person shall import, manufacture, formulate, repack, sell, offer for sale, hold in stock for sale or in any manner advertise any brand of pesticide unless the same has been registered, and a licence has been obtained from the government for such dealing.

15. The Brick Burning (Control) Act, 1989 (Act number 8 of 1989)

This act has been promulgated to control brick burning. This requires obtaining a license from the appropriate authority (District Commissioner) to go into brick burning.

The Act restricts brick burning with fuel wood and categorically mentions that no one will be allowed to use fuel wood for brick burning.

The Act has a provision of punitive measures of imprisonment for six months or a fine of Taka Fifty thousand only or both. The Act also provides for inspection of the brick fields to check the use of fuel wood and the inspecting authority has the right to confiscate all the bricks and fuel wood found on the particular brickfield.

16. The Brick Burning (Control) (Amendment) Act 1992

This Act was promulgated in July 1992 and was intended for certain amendment of the Act of 1989. The two major issues need special mention in this regard is the shifting of authority from the Upazilla Parishad Chairman to the District Commissioner and the redefination of fuel. In this act the definition of fuel is any floral based fuel other than the dead (motha) of the bamboo. The Act replaces the earlier fuel wood of the earlier Act with this fuel.

17. The Boilers Act 1923

This requires that no owner of a boiler shall use the boiler or permit it to be used, unless it has been registered in accordance the- provisions of this act. The Act mentions, among other things, that the authorizing certificate ceases to be in force when any accident occurs to he boiler, when any structural alteration is made.

The punishment is Taka ten thousand and may be extendable to Taka two thousand per day for the period of violation. The boiler user can not use the boiler not rest without the certificate, but also at a higher pressure than allowed. The boiler owner is to inform the inspector within twenty four hours in case of any accident.

BHUTAN

Key Issues: Implementation; Public Participation; Education and Awareness; Enforcement and Compliance; Monitoring, Evaluation and Assessment of Tools

Key Legislation: EIA guidelines, 1993;

Key Institutions: National Environment Commission Secretariat; Planning Commission;; Ministry of Rural Development; Ministry of Rural Development

1. ENVIRONMENTAL ASSESSMENTS IN BHUTAN

Draft EIA guidelines for Bhutan were prepared in 1993 by the National Environment Commission Secretariat. The guidelines were generic in nature (not tailored closely to Bhutanese conditions) and institutional arrangements were not clearly defined. In addition, lack of suitably trained personnel restrained NEC and other government ministries from pursuing the guidelines effectively. The EIA guidelines were revised in 1999. In the revised guidelines, 4 categories of projects were identified based on the nature of impacts. The categories of project are the following:

Category A: Proposals, which require a full environmental assessment to establish the extent and magnitude of potential impacts. These projects are usually categorised as complex

Category B: Proposals, which have potentially significant impacts, however management and treatment options are well developed and understood. These projects can be adequately managed through application of detailed impact management and monitoring plans Category C: Proposals that have moderate impacts, which tend to be repetitive (e.g., certain aspects of road construction, or forest harvesting practices). These impacts can be managed by attaching environmental codes-of-best-practice to licenses and permits and

Category D: Proposals that have moderate and easily managed impacts. Simple environmental terms are attached to the business permits or licenses (e.g., waste disposal and hygienic practices for the restaurant business). Category A, B, and C projects will require environmental clearance by the NEC before the competent authority provides development consent. Category D projects can be issued development consent by the competent authority without obtaining an environmental clearance by NEC. However, the competent authority will submit a list of projects approved under category D to the NEC for annual review. In the two years since the EA guidelines were prepared there has been good progress in implementing the process. Limitations identified while implementing the EIA process are as follows:

- The lack of comprehensive objectives and standards and the regulatory regimes necessary to cause it to function most effectively
- The shortage of trained environmental personnel in both public and private sectors
- The lack of environmental awareness and institutions in line ministries, public corporations, private industries,
- The very small private engineering and environmental consulting sector;
- Limited facilities and capabilities for environmental quality analysis and

- Limited capacity in environmental inventory and research to provide reliable baseline information and to establish cause-effect relationships between development activities and the Royal Government of Bhutan recognizes that an effective way to ensure the long-term

> sustainability of its natural resource base is to institutionalize environmental impact assessments (EIAs) as routine procedures for all relevant development activities. EIAs can be conducted at many levels, from a simple 10-minute environmental questionnaire to a detailed, year-long assessment by independent contractors. Comprehensive EIAs should be applied only to a development project which a preliminary screening indicates is likely to have major economic, social, cultural, or biological impacts.

In proposing the institutionalization of EIAs, the Government of Bhutan is seeking to:

- make development projects environmentally and economically sustainable in the long term;
- reduce adverse environmental (physical/biological), economic, cultural, and social impacts;
- identify environmental impacts on ecologically fragile landscapes before development projects proceed;
- assess the effects of development pressures on the natural resource base and peoples;
- reduce the overall environmental, cultural, social, and economic cost of projects; and
- optimize project benefits.

To achieve its maximum benefit, the proposed EIA system needs to be part of a well-developed and well-understood framework for consulting with all stakeholders including local governments, NGOs, private sector interests, and those segments of the population directly and indirectly affected by proposed projects or policies. In addition, they should be applied to all government and private sector projects, regardless of whether they are foreign or domestic in origin. Equally important, EIAs must be applied to the policy-making process where it may affect the social, cultural, physical, or natural environment.

The NEC has been given the mandate of developing the national guidelines for EIAs. The National Environmental Secretariat has been put in charge of introducing environmental impact assessments in the Bhutanese context. The priority strategic approaches include:

1) institutionalize Initial Environmental Examinations (IEE) and Environmental Impact Assessments and establishing environmental baseline data.

2) develop a basic EIA process, laws and regulations (link with planning, enforcement, participation) and draft a framework for a Bhutanese EIA system, including institutional roles, participatory mechanisms, flow diagrams, and needed legislation/regulations;

3) provide guidelines & training and draft detailed guidelines for priority sectors (hydropower, agriculture, industrial development, tourism);

4) demonstrate EIA on infrastructure projects (roads & hydro development) - to assist the NEC/EIA Task Force with the actual preparation of an EIA for the hydropower and infrastructure sectors. The dual purpose of this is to meet an immediate need of the NEC and to expose a team of Bhutanese practitioners to the rigors of preparing an EIA.

INDIA

Key Issues: Implementation; Public Participation; Education and Awareness

Key Legislation: Environment Protection Act, 1986; Coastal Regulation Zone (CRZ) notification, 1991; Audit Statement, 1994; EIA Notification on Project Development;Guidelines for Environmental Impact Assessment of River Valley Projects ;Environmental Management of Mining Operations; Siting Guidelines for Industries; Environmental Guidelines for Thermal Power Plants; Environmental Guidelines for Rail/Road/Highway projects; Environmental Guidelines for Airport Projects; Environmental Guidelines for Ports and Harbour Projects; Environmental Guidelines for Communication Projects; Guidelines for Environmental Impact Assessment of New Towns; Water (Prevention and Control of Pollution) Act,1974; Water (Prevention and Control of Pollution) Cess Act,1977; ;Air (Prevention and Control of Pollution) Act,1981

Key Institutions: Ministry of Environment and Forests, Ministry of Finance; Finance Commission; Bureau of Indian Costs and Pricing; National Institute of Planning and Finance Policy

1. INTRODUCTION

The balance between development and the environment is addressed through the Environment Impact Assessment (EIA) methodology presently in force in **India**. This takes into consideration the need for development and the imperative of protecting the environment. The EIA reports cover the impact of development projects on ambient air and water quality, land degradation and the ecology. Standards have been established for pollution control. This is accompanied by environmental management plans for developmental projects. For furthering transparency in the project appraisal process, public hearing has been made mandatory for critically polluting activities. In the process of public hearing, relevant project documents and EIA reports are made available to the public at designated places and through newspaper inserts. Suggestions made by the public are incorporated in the project design wherever possible. A monitoring mechanism has been put in place for ensuring compliance with the prescribed mitigative measures. This will be further strengthened. State agencies and regional centres of the CPCB monitor critical environmental parameters. The national environment policy will seek to complement the existing monitoring arrangements by involving universities and other professional educational institutions in corresponding field of activities.

2. ENVIRONMENT IMPACT ASSESSMENT

In **India**, EIA evolved in the late seventies when the Planning Commission requested the then Department of Science and Technology and subsequently Department of Environment to examine river valley projects for their environmental impact. Thereafter the Ministry of Finance, Department of Expenditure made it obligatory for the Public Investment Board to deal adequately with environmental aspects and cost of such measures for all developmental activities. The *Environmental Protection Act 1986* in **India** has made EIA mandatory. A significant notification by the Ministry of Environment and Forests in 1994 makes it statutory for an EIA study to be conducted for almost all developmental activities, small and large, which has to be evaluated and assessed by an impact assessment agency (Ministry of Environment and Forests) which may consult an Expert Committee, if deemed necessary. The salient provisions of the notification were: Environmental Impact Assessment was limited to 29 activities; Only Central Government was empowered to appraise the projects; Two stage clearance was provided for site specific projects; Public hearing to be held only if required; and a time limit was fixed for taking decision on the proposals for environment clearance.

Expert groups have been set up in the sectoral agencies to ensure a broad range of sectoral inputs to the process. These committees meet regularly to review and discuss proposals.

The need to integrate environmental and developmental decision making process has been recognized as contributing to economically efficient, socially equitable and responsible environmental management. Environmental impact assessment (EIA) is an analytical tool for assessing development programmes which have an adverse effect on environment or on human health.

The concept of EIA evolved in the late seventies when the Planning Commission requested the then Department of Science and Technology and subsequently Department of Environment to examine river valley projects for their environmental impact. Thereafter the Ministry of Finance, Department of Expenditure made it obligatory for the Public Investment Board to deal adequately with environmental aspects and cost of such measures for all developmental activities.

For assisting the project proponent, the Ministry developed the following guidelines focussing on the special requirements of different sectors, viz:

Guidelines for Environmental Impact Assessment of River Valley Projects.
Environmental Management of Mining Operations
Siting Guidelines for Industries
Environmental Guidelines for Thermal Power Plants
Environmental Guidelines for Rail/Road/Highway projects
Environmental Guidelines for Airport Projects
Environmental Guidelines for Ports and Harbour Projects
Environmental Guidelines for Communication Projects
Guidelines for Environmental Impact Assessment of New Towns.

A significant notification by the Ministry of Environment and Forests in 1994 makes it statutory for an EIA study to be conducted for almost all developmental activities , small and large, which has to be evaluated and assessed by an impact assessment agency (Ministry of Environment and Forests) which may consult an Expert Committee, if deemed necessary.
The salient provisions of the notification were:

Environmental Impact Assessment was limited to 30 activities;
Only Central Government was empowered to appraise the projects;
Two stage clearance was provided for site specific projects;
Public hearing to be held only if required; and
A time limit was fixed for taking decision on the proposals for environment clearance.

Following the notification, the Ministry constituted five Expert Committees to cover Industry, Mining, River Valley, Thermal Power and Infrastructure (Ports and Harbours, Highways, Airports) and miscellaneous projects. These Committees consider cases from technical angle and in many cases site visits are made for appreciation of ground realities. The recommendations of the Expert Committees are then processed by the Impact Assessment Division of the Ministry and final decisions taken according of environment clearance to projects. As per the notification, no developmental activity can be taken up unless the conditions stipulated under the respective environmental and forestry clearance have been complied with.

Since the issue of notification the Expert Committees have appraised more than thousand projects and have given their recommendations. While appraising these projects it was noted that the appraisals of individual projects do not sum up the total impact of projects in a given area. In view of the same a need was felt to take up carrying capacity studies which would provide information on supportive and assimilative capacities of the area and provide information to planners and appraising agencies the requisite information to evaluate a project from an overall perspective. In view of the same, carrying capacity studies were initiated in the following areas: Doon Valley, National Capital Region, Damodar River, Basin, Tapti Estuary and

Greater Cochin. These studies are expected to provide basic environmental information for these areas so that development strategies incorporating principles of sustainable development can be worked out.

Having achieved substantial progress in terms of EIA and based on its experience, the Ministry further streamlined and strengthened impact assessment procedures in April 1997 by making public hearing for all activities listed in the notification mandatory. In order to assess the acceptability of projects and to avoid court cases it was considered desirable to take the views of all those who had a stake in an area where the project was being established. Another significant step has been that of empowering State Governments to appraise certain types of thermal power plants without reference to the Central Government.

Orienting itself to preserving ecologically fragile areas and the coastal environment from unregulated and environmentally damaging activities a series of major notifications under provisions of the Environment Protection Act were issued. The Coastal Regulation Zone (CRZ) notification of February, 1991 provides the basis of categorizing coastal areas in 4 categories of CRZ-I,II, III & IV and regulating the permissible activities in the different zones.

In July 1997, significant changes were made in the CRZ Notification, which permitted State Governments to take decisions on proposals falling within CRZ II irrespective of costs. Various powers have also been delegated to the Ministry of Surface Transport on expansion, modernization of existing ports and harbors. In addition, harvesting of ground water for drinking purposes in the zone between 50 metres to 200 meters from High tide Line has been permitted. As part of the Government's ongoing process of rationalizing the CRZ notification, Expert Committees have been constituted where extreme hardships are being caused to local population residing in coastal areas. Further in November 1998 the Ministry has constituted Coastal Zone authorities both at the Centre as well as in Coastal States/ Union Territories, to take measures for protecting and improving the quality of coastal environment.

The notifications on Doon Valley, Dahanu Taluka, Aravalli region Murud-Jangira, Numalgarh focus on the specific problems of these eco-fragile regions and regulate various developmental activities within these specific areas. The Ministry has also issued a draft notification regulating activities in Pachmarhi, Madhya Pradesh. These notifications have particularly played a significant role in reducing deterioration to the sensitive eco-systems of the regions.

Monitoring: Emphasis now is on enforcement and performance evaluation of assets created. This objective is being achieved through monitoring of the conditions stipulated while according environmental clearances. The regional offices of the Ministry located at Bangalore, Bhubaneswar, Bhopal, Chandigarh, Lucknow and Shillong, have officials periodically visiting the project sites and ensuring that the conditions are implemented.

The following have also been constituted:

* National Environment Appellate Authority to consider appeals against environmental clearances grated by the Central and State Governments.
* Dahanu Taluka Environmental Protection Authority for the protection of ecologically fragile areas of Dahanu Taluka, Maharashtra**.**
* Aquaculture Authority to deal with the situation created by the shrimp culture industry in the coastal states and Union Territories.
* The Central Ground Water Authority for the purpose of regulation and control of Ground Water Management and development.

3. ENVIRONMENTAL AUDIT

An environmental audit in the form of environmental statement has been made mandatory for the polluting units seeking consent either under the Water (Prevention & Control of Pollution Act), 1974 or the Air (Prevention and Control of Pollution) Act, 1991 or both and authorization under the Hazardous Wastes (Managing & Handling) Rules, 1989 for submission to the concerned State Pollution Control

Boards for the financial year ending 31st March on or before 30th day of September every year with effect from 1993. Implementation of this scheme is expected to promote not only smooth monitoring of industrial activities but also adoption of low waste technology and minimization of consumption of resources.

The Department of Company Affairs has been requested to include a provision in their proposed amendment of the Company's Act, 1956. Accordingly, the Department of Company Affairs has included a new clause in the proposed amendment of the Company's Act. As per this clause, the companies will be required to attach with the every balance sheet of the company a report by its Board of Directors regarding measures taken for environment protection.

Potential Use of Environmental Audit Statement

If the information provided in the Environmental Audit Statement is correct and valid, the Environmental Audit Statement would be a potential useful tool to both the Government and the industry. This would have the following benefits:

For Government authorities:

- Provide appropriate information to enable reformulation of Government's policies and programmes to make them more proactive towards prevention and control of pollution including waste minimization;
- Provide information for building up national and regional as well as sectoral data bases;
- Enable development of policies and schemes to promote conservation of resources, waste utilisation and reduction of overall industrial pollution load discharged into the environment;
- Identification of industry sectors requiring structural and technological changes and thus promotes industrial competitiveness both nationally and internationally.

For Industries:

- Provide technical guidance in identifying potential of waste minimisation, evolving waste minimisation measures and implementing the same;
- Provide national and international comparisons with similar better performing industries and in identification of ways and means to bring Indian industries at par with international level;
- Provide measures to reduce the cost of production and thus enhance the profitability.

Analysis, evaluation and assessment of environmental audit statements:

In order to serve environmental audit as a management tool to both the Government and the Industry, it is necessary to analyse, evaluate and assess the information given in the environmental audit statements with respect to environmental performance of the industries. This is required to be carried out through identified institutions. The scope of the work under the proposed activity should include:

- Procurement of environmental audit statements from the concerned State Pollution Control Boards;
- State-wise and Sector-wise compilation of environmental audit statements;
- Accurate data entry and validation as per the requirement of the software –Paryavaran";
- Modification/upgradation of the existing software for analysis purpose;
- Preparation of recommended production – pollution coefficient and resource consumption guidelines for the selected industrial sectors;
- Publication of reports on sectoral environmental performance of the industries and dissemination of the information to the concerned units;

- Interaction with the concerned industry associations for follow-up on implementation of the recommendations/guidelines emerged out of the analysis of the statements on a continual basis;
- The information regarding emissions from the units could be used for PRTR (Pollution Release and Transfer Register).

Environmental Audit

An environmental audit in the form of environmental statement has been made mandatory for industrial units seeking consent either under the Water (Prevention & Control of Pollution) Act, 1974 or the Air (Prevention and Control of Pollution) Act, 1991 or both and authorization under the Hazardous Wastes (Managing & Handling) Rules, 1989. Recently, Environmental Management Systems (EMS) has emerged as the latest field of specialization in providing a systematic approach for effective environmental management. On the lines of ISO 9,000 series of quality standards, ISO 14,000 series has also been put in place. These standards do not establish any absolute requirements for environmental performance. However, all of them do require that the system be designed to measure improvement in environmental performance. The thrust is to have preventive rather than curative mechanism in place. Currently, a number of companies are going in for EMS certification.

4. STANDARDS

Over the last two decades, there has been a considerable development in pollution control activities at the national, regional and global levels. The scope of such activities entails reduction of wastes and conservation of natural resources. The mode of controlling pollution, in particular the setting of standards, raises several debatable issues before the regulatory authorities. The debate centers around the perspectives of different people or groups of people who hold different views on the extent of pollution control and the concomitant cost. More often than not, this debate brings to the fore the obvious question-who is bearing the risk and who is to bear the cost ?

It is increasingly becoming evident that the aspects of prevention and control of environmental pollution involve a number of complex issues in a social system which must be analyzed within a framework to include all intrinsic and extrinsic factors that might alter human health and other targets.

For the protection of environment through pollution control and abatement, the following considerations are important:

i) Determination of acceptable risk- Although it is very difficult to determine such acceptable levels, it can be reasonably assessed with research effort. However, ultimately, actual fixation of the threshold level of risk is subjective decision.
ii) Determination of population/objects to be protected.
iii) Choice of control technology- It requires both formulation of strategy and selection of appropriate control techniques.
iv) Economic considerations-It strikes a balance between cost and benefits.
v) Legislation for setting standards-It considers existing national legal framework and identifies necessary legal strategies.

These considerations call for the knowledge of technical, social, financial, legal and administrative implications of the solutions to be adopted, so as to examine links between environmental problems and their solution in relation to the society.

The Ministry recently laid-down industry specific as well as general effluent and emission standards for different categories of industries under the Environment (Protection) Act, 1986. So far the Ministry has set up environmental standards for almost all categories of polluting industries. The standards for certain

categories are being reviewed. During the year two Expert Committee meetings were held to review the standards for soda-ash, brick kilns, coke oven plants, DG sets etc.

Under section 12 and 13 of the Environment (Protection) Act, 1986 the Ministry recognizes environmental laboratories and the Government Analysts working in the laboratories to carry out the functions entrusted to them under the Act. While powers for recognizing environment laboratories of the Government and autonomous organizations have been delegated to the Central Pollution Control Board, laboratories in the Private Sector are recognized by the Ministry. Ministry also participates in the joint inspection of environmental laboratories with CPCB, State Pollution Control Board and Pollution Control Committees. During the year two joint inspections were organized and application of 11 laboratories were scrutinized. So far Ministry has recognized 14 private laboratories under the Environment (Protection) Act, 1986. All the recognized laboratories have to participate in the annual Analytical Quality Control (AQC) exercise being conducted by the CPCB. Dummy samples are sent to the recognized laboratories and the analysis reports of the laboratory are compared with the standard result of the same and variations, if any, are reported to the concerned laboratory for improvements.

The Indian Environmental (Protection) Act, 1986 under section 3 empowers the Central Government to lay down environment standards for the quality of environment in its various aspects, standards of emission or discharge of environmental pollutants from whatsoever source, procedures and safeguards for the prevention of accidents, which may cause environmental pollution, and procedures, and safeguards for the handling of hazardous substances. The setting of environment standards is the mandate of Ministry of Environment and Forests. The enforcement agencies are the Central and State Pollution Control Boards

5. PERMITTING, LICENCING/CONSENT MECHANISM

The industries continue to be under compulsory licensing for several reasons, which also include environment issues and hazardous processes adopted by them. The consent to the industries are issued by the SPCBs under the Water (P&CP) Act, 1974 and the Air (P&CP) Act, 1981.

Under Water Act

Sections 25 and 26 of the Water Act deal with consent liability of new and old outlets and discharges. Sub-sections 25(1) and 25(4) are particularly relevant to the subject of this para and these are reproduced below:

25(1): Subject to the provisions of this section, no person shall, without the previous consent of the State Board-

a) establish or take any steps to establish any industry, operation or process, or any treatment and disposal system or any extension or addition these to, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land (such discharge being here after in this section referred to as discharge of sewage); or
b) bring into use any new or altered outlets for the discharge of sewage; or
c) begin to make any new discharge of sewage

Under Air Act

Section 21(1) of the Air Act states that no person shall, without the previous consent of the State Board, establish or operate any industrial plant in air pollution control area. Section 22 states that no person operating any industrial plant, in any air pollution control area shall discharge or cause or permit to be discharged the emission of any air pollutant in excess of the standards laid down by the State Board

under clause (g) of sub-section (1) of section 17. The intent of section 22 may be the same as that of section 24 of Water Act to cover sporadic emissions. Thus, any industrial plant becomes relevant to Air Act consent procedure, if only it is located in any air pollution control area to be declared by the State Government under Section 19. A related provision exists in Water Act, Section 19, by which the Act may be restricted in application to only certain areas of the State. In fact by judiciously using the two sections of the Acts, the State Boards could have initially focussed on significant sources of pollution. Depending upon man power availability and need, application of the Acts could have been extended to cover other areas over a period of time. However, due to various reasons, in several States, the entire State is declared as air pollution control area and no area of the State is taken out of the applicability of the Water Act.

Section 2(k) states that industrial plant means any plant used for any industrial or trade purposes and emitting any air pollutant into the atmosphere. Air pollutant is defined in section 2(a) as meaning any solid, liquid or gaseous substance including noise present in the atmosphere in such concentration as may be to tend to be injurious to human beings or other living creatures or plants or properly or environment. Therefore, it is only an industrial unit emits substances at such levels resulting in concentrations which may be injurious to human beings etc., it will qualify to be an industrial plant for the purposes of section 21 and 22 of the Air Act. The Boards at various fora have pleaded for deletion of these definitions of air pollution because of difficulties in quantifying easily determinable or demonstrable injury to human beings etc. An industrial unit even if located in an air pollution control area, as per the Act, need not necessarily be an industrial plant for the purpose of section 21. This means that if the Boards could identify such units in an air pollution control area based on accepted criteria, then those units can be considered as not relevant to Section 21 of Air Act and that would be legal as per the Air Act.

Determining certain types/categories of industries as not relevant to Water and Air Acts for the purpose of consent coverage is not against the spirit or even letter of the Acts.

Zoning Atlas for Siting of Industries

In order to delineate the areas that are suitable for industrial siting and for classification of different categories based on their existing environmental future, a project for preparation of district wise zoning atlas has been taken up by the Central Pollution Control Board in collaboration with the State Pollution Control Boards. Various other agencies including the National Atlas and Thematic Mapping Organization (NATMO) and the National Remote Sensing Agency (NRSA) are also involved in this project.

The zoning atlas for siting of industries zones classifies the environment in a district and presents the pollution receiving potential of various sites/zones in the district and the possible alternate sites for industries through easy-to-read maps. The industrial zones are identified based on the sensitivity and the pollution receiving potential of the district. During pilot studies conducted in 1995, 19 districts covering 14 States were covered. These studies have been extended to more districts in different states under the Environmental Management Capacity Building of the World Bank which continue during the 9th Plan. The atlases prepared in the first phase have been validated with the concerned Government Departments/Agencies and are now being published for public use. Training programmes to educate the user of the atlas viz. implementing agencies like industrial departments, pollution control boards etc. are being conducted.

As a continuation of zonal atlas studies, industrial estate planning studies are being taken up at micro-level (1: 50,000 and lower) to finally come up with probable sites for industrial estates. The exercise for preparation of maps on environmentally sensitive zone wise National Parks, Reserved Forests, Protected Forests etc. is also being done.

6. ENVIRONMENTAL MANAGEMENT SYSTEM

Environmental Management System (EMS) has come up as the latest field of specialization. It provides a systematic approach for effective environmental management. On the lines of ISO 9,000 series of quality standards, ISO 14,000 series for environment is in the offing. ISO 14,001 pertaining to EMS has already been registered as an international standard. The British Standard BS 7740 for EMS has been published in January, 1994.

These standards do not establish any absolute requirements for environmental performance. However, all of them do require that the system be designed to measure improvement in environmental performance. The thrust is to have preventive rather than curative mechanism in place. Currently, more than 500 companies in India have already obtained certification. Others are in the pipe line for obtaining the same. Many of them have realised the benefits at the implementation stage itself. It would not be long before there is a surge in the number of companies opting for EMS certification.

The challenge of managing corporate change to move forward simultaneously, both in economic development and environment protection is immense. But we do not have to start from scratch. Business has proved its ability to manage fundamental changes in planning and action during the quality revolution" which influenced virtually every business and industry all over the world. Already, companies are gearing up to project one's own image as that of an environmentally responsible enterprise. Many organizations have undertaken environmental reviews or audits to assess their environmental performance. On their own, however, reviews and audits cannot provide an assurance that environmental performance not only meets but will continue to meet policy requirements. To be effective, all such efforts need to be conducted within a structured management system integrated with overall management activity. Just like ISO 9000 series certification on quality, companies can seek EMS certification against the EMS standard (ISO 14001)

7. GREEN RATING

Green rating is a comparatively new tool for Prevention and Control of Pollution. Indonesia is probably the first country to have Green -rating got done for certain sector of Industry with the assistance of World Bank. Under the scheme, the industries are given a kind of Logo (Golden, Green, and Yellow dot) recognizing the environmental performance of a industry. The recognition can play an effective role in environment protection as well as it can serve as a marketing tool.

The Green-rating as envisaged will serve as a indicator for industry's environmental performance at the facility level and will also act as a image building for the industry. It will be a effective tool for providing information to the stakeholders about the environmental performance of the industry. The rating will inculcate the culture of competition among the industries for better environmental performance and thereby facilitate information sharing and transparency providing greater participation.

The Key Objectives of Green Rating Project

1. To monitor the environmental performance of Indian companies and create a reputational incentive for improving this performance over time through a transparent rating system.
2. To raise the importance of environmental management within the company to the level of top management, including the CEO.
3. To make the managers of the company aware of what is expected of them in terms of good environmental management, which goes beyond the rules and norms set by the government, so that companies begin to take a proactive role on this front.

Publicity Tool

* Green-Rating serves as a means to recognize good environmental performance, as well as improvements in performance of the unit. It creates positive incentives for corporate to rise beyond compliance.

Feedback Mechanism

* Green-Ranting helps corporate to benchmark their performance against competitors/international standards, and hence, work towards continualimprovements. It facilitates the dissemination of best practices across industry.

* By simplifying and condensing environmental risk into a single indicator, Green- Rating helps stakeholders understand environmental risk issues better. It enables them to incorporate environmental risk criteria in their decision-making processes.

Green Rating Facilitate Corporate to :

- share its environmental achievements/improvements with an external audience;
* know where its production units stand vis-a-vis domestic and international benchmarks;
- track a unit's performance over a period of time;
- compare environmental performance across units; and
- identify its key areas of weakness, as per an independent and objective assessor.

In order to meet any of these objectives, the corporate gives consent to get its unit (s) Green-Rated.

8. ECO-MARK SCHEME

The Government have instituted a scheme for Labeling of Environment Friendly Products, with a view to provide accreditation and labeling for household and other consumer products which meet certain environmental criteria along with quality requirements of the Indian Standards Institutes for that product. The label shall be known as the ECOMARK. Any product, which is made, used or disposed of in a way that significantly reduces the harm would otherwise cause the environment, could be considered as an Environment Friendly Product. Till date, this Ministry has issued 18 notifications on different products criteria. This is a social scheme to help consumers to contribute their mite in the protection of the environment.

Labelling of Environment Friendly Products

Products which have the least impact on the environment and health in their category are given a mark (like the ISI mark) of EFP or a symbol or logo called Eco-Mark. This is the labelling of the product for environment friendliness. The Labeling scheme authorises companies producing goods, which meet certain performance and environmental criteria to label these as environment friendly with the recognised symbol. If these goods come to enjoy an increased market share through positive choices made by consumers, there would be an incentive for more companies to change their process and/or products to meet the criteria.

Objectives

The Objectives of the scheme are:

- To provide an incentive for manufacturers and importers to reduce adverse environmental impact of products.
- To reward genuine initiatives by companies to reduce adverse environmental impact of products.
- To assist consumers to become responsible in their daily lives by providing them information to take account of environmental factors in their purchase decisions.
- To encourage citizens to purchase products which have less harmful environmental impacts
- Ultimately, to improve the quality of the environment and to encourage the sustainable management of resources.

To bring sustainability it must make sense in the business to achieve cleaner production. The sustainable corporation must transform material and provide materials which people value for the contribution to the quality of life and their protection of environment. This require cleaner production, or eco efficiency which include the delivery of competitive priced goods and services that satisfy consumers needs and

bring quality of life while progressively releasing ecological impacts and resource intensity throughout the lifecycle, to enable at least in line with the earth‘s estimated capacity. The following conclusions are drawn:

- It is one of promising tool of economic instruments.
- The environment label would be an important element in future environment policy
- The environment label would prove itself a useful instrument based on co-operation and self-commitment on the part of industry.
- The Environment Friendly Scheme would definitely help to solve the pollution in certain areas.

9. MARKET BASED INSTRUMENTS

The use of market-based instruments (MBIs) to address environmental problems has been endorsed by the international environmental community at the Rio declaration, and also by the Indian government in its Policy Statement for Abatement of Pollution. MBIs comprise a wide range of instruments from traditional ones such as pollution taxes and traceable permits to input taxes, product charges and differential tax rates. The common element among all MBIs is that they work through the market and later the behaviour of economic agents (such as firms and households) by changing the nature of incentives/disincentives these agents face.

Broadly speaking, MBIs comprise three groups of instruments: (i) price-based instruments; (ii) quantity-based instruments, and (iii) all other categories. Price-based instruments make the generators of pollution (firms or individuals) internalize the costs of pollution by increasing the cost of ‗using‘ environmental resources, such as air and water. Quantity-based instruments, on the other hand, restrict, a priori, the quantity of pollution that can take place. The last (residual) group of MBIs comprises instruments such as fees for exceeding discharge standards and performance bonds.

Two MBIs that have received the most attention are emission/effluent charges (also known as pollution charges), and traceable/marketable pollution permits. Pollution charges are levied on polluters based on the quantity and/or quality of pollutants discharged into the environment. Under tradable permits the pollution control agency determines a target level of environmental quality, and translates this into the total amount of allowable emission that can be discharged. The agency then allots/sells/auctions the rights to discharge units of pollution of firms in the form of permits. Subsequently, these rights can be bought and sold, subject to an overall ceiling of allowable discharges which has been fixed a priori.

Of the several policy instruments available MBIs are, in theoretical terms, the most cost-effective means of achieving a given target of pollution abatement. It is primarily for this reason that economists have advocated use of MBIs for three decades. A number of simulation studies have demonstrated the cost-effectiveness of MBIs over traditional regulatory approaches (also known as command and control, or CAC) which require that all polluters meet the same discharge standard. The main factor driving this result is that the costs of reducing a unit pollution are not the same across firms. Thus, if firms can reduce pollution by different amounts, while collectively achieving the same aggregate reduction as under CAC regulations, then costs can be reduced. Thus, MBIs establish a benchmark for how a cost-effective industrial pollution abatement regime should work.

A review of the current regulatory and fiscal regime for industrial pollution abatement in India reveals that there is considerable scope for improvement. To begin with, there are several deficiencies in the laws for pollution abatement in India, both in the way they are framed, and in their implementation. With respect to the former, the laws mandate uniform effluent/emissions standards for discharges from individual sources, and do not take into account differences in abatement cost across firms. Further, the standards, particularly for water pollution, are mostly specified in terms of concentration and not in terms of the pollution load. Therefore, they do not necessarily affect the quantum of pollution being discharged.

Economic incentives

Economic instruments provide economic incentives to economic actors introducing them to behave in an environmentally more appropriate or acceptable way. The economic instruments include the following:

- R&D subsidies;
- Subsidies on clean alternatives;
- Pollution charges – A levy per unit of emission;
- Product/input charges – A levy on polluting product or input;
- Tradable permits – A polluter who pollutes less (more) than his current permit can sell (buy) surplus permits to (from) other firms;
- Deposit - Refund.
- Water cess
- fiscal incentives

To start with water cess as fiscal incentives were introduced in India to provide economic incentives to the industries. The Water (Prevention and Control of Pollution) Cess Act, 1977 provides for a 25% rebate on the cess payable if the person or local authority concerned installs a treatment plant for sewage or trade effluent. To ease the economic burden on installation of pollution control equipment/systems, the Government has provided rebate on customs and excise duty for specific pollution control equipment/systems. 100% depreciation has also been provided to selected pollution control equipment/system under the Income Tax Act. An exemption from income tax on amounts contributed for programmes of conservation of resources is also provided under the Income Tax Act. These amounts are deductible from taxable income.

To encourage shifting of industries from overcrowded cites and to reduce pollution, the capital gains arising from transfer of buildings or lands used for the purpose or exempt from tax if these are used from acquiring land or construction building for the purpose of business of a new place. Since 1983-84, this exemption has been extended to capital gains arising from transfer of machinery and plants. An Environmental Relief Fund was created by the Public Liability Insurance Act, 1981 to provide relief to any person affected by handling any hazardous substance. Soft loans at reduced rate of interest are provided to encourage installation of pollution control devices and systems.

10. ECONOMIC INSTRUMENTS

Water Cess

Since 1977, the Water (Prevention and Control of Pollution) Cess Act of 1977 empowers the State Boards to levy a cess on local authorities supplying water to consumers and on consumption of water by persons carrying on certain activities. The cess has been introduced mainly to augment the resources of the Central and State Boards. However. the Act also provides for a 25 per cent rebate on the cess payable if the person or local authority concerned installs a plant for treatment of sewage or trade effluent , hence the cess is potentially an important instrument for inducing abatement. However, so far cess rate levied on water consumption are very low.

Before 1992 amendment rebate in cess was allowed to any person or local authority is proposed to be reduced from 70 per cent, and it was also intended to provided that a person or local authority shall not be entitled to a rebate if water in excess of the prescribed quantity is consumed, or the provisions of section 25 of the Water (Prevention and Control of Pollution) Act, 1974 or the standards laid down by the Central Government under the Environment (Protection) Act, 1986, are not complied with.

The earlier provision of rebate of 70% where a person or local authority has installed on effluent treatment plant has led to misuse. Other industries claim a rebate merely on the installation of the effluent treatment plant even thought it was prescribed standards. With a view to encourage economy in the use of water and pollution control, the provisions of 70% rebate provided in the Act was revised to 25% provided that the Industry or local authority meets the water consumption standards where proscribed and also the effluent quality standards as laid down by the State Board in the consent given to

the industry or as laid down by the Central Government under the Environment (Protection) Act. Prima facie this may appear as a reduction in rebate form 70% to 25%, but it may be emphasized that as per the provisions, the industry by complying with the standards, pays the lesser of the two rates and by complying with the water consumption standards will be consuming less water so that the overall increase in cess amount payable by the Industry will be compensated by the economy in the water consumption. Moreover, in terms of revenue and saving an important natural resource, the benefit that shall accrue to the country will help achieve sustainable development.

Cess as economic instrument

The policy enforcement regime lays down a specific quantitative restriction to which all polluters must conform. Those who fail to comply are punished. This kind of regulation uniformly restricts the set of choices available to all polluters, regardless of differences in either their preferences or their opportunity costs of compliance. It is therefore a somewhat blunt and inefficient instrument for achieving specified ambient standards. The same ambient standards could in principle be achieved through a system of economic incentives which internalize the externalities of pollution. With all polluters internalize their opportunity costs at the margin, given standards could be achieved at lower social cost than the command and control system. More generally, society could also equalize benefits and costs at the margin and arrive at a socially optimal combination of pollution and economic or other activities which are in themselves desirable but have the undesired effect of causing pollution. The high cess rates and rebate shall work as deterent and incentive to the water consuming industries and local authorities.

MALDIVES

Key Issues: Implementation; Public Participation; Education and Awareness; Enforcement and Compliance; Monitoring, Evaluation and Assessment of Tools

Key Legislation: Environmental Impact Assessment (EIA), 1994; Environmental Protection and Preservation Act, 1993

Key Institutions: Ministry of Home Affairs, Housing and Environment; Ministry of Planning and Environment; National Environment

1. ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Environmental Impact Assessment (EIA) has been made mandatory for large scale projects in the Maldives through the Environmental Protection and Preservation Act of Maldives (4/93). The legislation provides the basic framework for the EIA process in the country and the EIA procedures are laid out in the form of guidelines. According to article 5 (a) of the Act, an impact assessment study shall be submitted to the Ministry of Planning, Human Resources and Environment before implementing any activity that may have an impact on the environment. Article 5 (b) states that the principles of EIA and the projects that require an EIA shall be determined by the Ministry of Planning, Human Resources and Environment. To streamline and facilitate the EIA process in the country the Ministry developed a set of guidelines outlining the procedures for EIA and these were approved by the Cabinet in December 1994.

2. SUCCESS STORIES

The participants discussed various successful programme and projects that have implemented in the Maldives and decided to include tourism development and tuna fishery as success stories. The Maldives has developed a very suitable form of tourism, appropriate for the small island environment. The present form of tourism development has not generated any serious environmental impacts. This has been accomplished through careful management. In order to regulate the carrying capacity and to retain the natural beauty and environment of the islands that are developed as tourist resorts, special guidelines and regulations have been issued by the Ministry of Tourism. In tourist resorts only a maximum of 20% of land can be utilized for buildings; when clearing land for construction enough vegetation to block the view of buildings should be left untouched; no building should appear above the top vegetation line; to handle waste generated on islands incinerators and compactors should be present; adequate desalination plants should be utilized to prevent groundwater depletion and during pier and wharf construction physical interference with island coastlines are current patterns should be minimal. The success of tourism development in the Maldives is based on the co-operation extended to the government by the Maldives Association of Tourism Industry in early identification of critical issues and in instituting a responsive policy framework to meet the challenges facing the industry.

To ensure that fisheries development is sustainable, the Ministry of Fisheries has set quantity limits and controls on type of fishery that can be carried out. In the Maldives drift net fishing is not permitted and in tuna fishery the pole in line method is used. The fisheries law strictly prohibits commercial exploitation of several marine species including black coral, giant clams, whale sharks, turtle and dolphins. Detailed information is available on tourism development and tuna fishery in the Maldives.

The Maldives also has the rich experience of a very successful community decision making process that has been in operation over the last 16 years. Each inhabited island has an development committee that

advise the government on land use planning in the respective island and make important decisions in the area of island development. The members of the island development committee are elected by the people of the island. These non-political planning entities have demonstrated that community decision making is practical and very effective. The participants noted that human resource development is essential so that informed decisions can be made by these bodies.

NEPAL

Key Issues: Implementation; Public Participation; Education and Awareness

Key Legislation: Environmental Protection Act, 1996 and Rules, 1997; Environment Impact Assessment, The National Parks and Wildlife Conservation Act, 1973; Industrial Enterprises Act, 1992

Key Institutions:

1. INTRODUCTION

In **Nepal,** it is the duty of environmental units and of environment ministry for carrying the environmental impact assessment. There are several environmental units in Nepal ranging from committee to council and to ministry. The Parliamentary Committee on Natural Resources and Environmental Protection (PCNREP), under the chairmanship of a parliamentarian, oversees government action in initiating natural resources conservation and environmental protection measures. The Environmental Protection Council (EPC) is a high-level body that was created to provide guidance on the formulation of policies, the preparation of working procedures and the implementation of policies related to various aspects of environmental conservation, including by not limited to the development of a national system for environmental planning, environmental impact assessment and evaluation, pollution control and the protection of the national heritage.

2. ENVIORNMENT IMPACT ASSESSMENT

The two main functions of the Ministry of Population and Environment in **Nepal** cover: formulating, refining and implementing EIA guidelines. This function involves three specific activities: (a) preparing, revising and refining sectoral EIA guidelines; (b) encouraging those agencies concerned to conduct EIAs as per approved guidelines before implementing any development project; and (c) examining and approving EIA reports of intersectoral and national importance; and implementing the provisions of, and obligations arising from, international agreements, treaties and conventions on the environment, by: (a) acting as the national agency for international treaties on environment; (b) preparing a strategy to implement the provisions of international treaties; (c) taking a lead role in cooperating with other ministries in fulfilling obligations arising from international conventions, treaties, agreements and declarations; and (d) participating in programmes conducted in pursuance of international conventions.

According to issues related to EIA, under the Environment Protection Act (EPA) 1997 of **Nepal**, proposals for all plans, programmes and projects which are likely to have impact on the environment, irrespective of their ownership, will need to be submitted to the government agencies concerned for approval through IEE and EIA reports. Despite the requirement for an IEE, if examination shows that a proposal will not have a significant adverse effect on the environment, it can be approved by the concerned agency itself and forwarded to the Ministry of Population and Environment. If examination of the IEE indicates that an EIA should also be carried out for that particular proposal, the agency can direct the party concerned to take the required action. After receiving the proposal together with an EIA report, the agency concerned is required to forward the report and its evaluation to the Ministry of Population and Environment. If it is considered necessary, the ministry can set up a committee of experts from the agencies concerned to review the project, and formulate comments and reaction on the EIA report. If the committee finds that the proposal will have no significant adverse impact on the environment, the Ministry of Population and Environment will then approve the proposal.

Nepal's Eighth Five-Year Plan (1992-1997) recommended Formulation guidelines, which prioritize the obligatory assessment of environmental impacts in feasibility studies by various sectoral agencies. On the basis of such studies, adequate funds will be allocated within the project budget for minimizing any adverse effects on the environment. The EPA of Nepal, proposals for all plans, programmes and projects, which are likely to have an effect on the environment, irrespective of their ownership, will need to be submitted to the government agencies concerned for approval through IEE and EIA reports. Responsibility to conduct IEE is left to implementing agencies; all cases requiring an EIA must be referred to the Ministry of Populations and Environment. The National Environmental Impact Assessment Guidelines 1993 states that a draft EIA report must be released for public review and comment -the review of the draft report and comments should be made available for review by the project proponent, NGOs and concerned public. The Nepal has harmonized their EIA legislation into National EIA Guidelines - clearly define the agencies responsible for reviewing the EIS which consists of the National Planning Commission, Environment Division and line ministries associated with the project - the Guidelines also detail the parameters for evaluation of the project and its impact on the environment.

The Environmental Protection Act and Rules, 1997 obliges the proponents to prepare Initial Environmental Examination (IEE) and/or Environmental Impact Assessment (EIA) report in relation to prescribed plan, program or projects which may make changes in existing environmental conditions by physical activity, development activity or change in land use. Under present legislation it is the line ministry of the proponent who should submit the EIA report to Ministry of Population and Environments and jurisdiction lies with it for approval.

The existing laws relating to urban planning and development are in place but these legislation do not recognize the contribution which EIA can make in the area of development control and environmentally sound development. Nonetheless, the most recent Water Resources Act and Electricity Act require the preparation of an EIA report. These two Acts are the main legislation that has introduced the legislative model of EIA in Nepal. Beside these two pieces of legislation, the Environment Protection Act make Initial Environmental Examination (IEE) and EIA mandatory for all proposals which are likely to have significant impact on the environment.

Policies to address environmental damages resulting from large-scale projects included developing EIA and mitigation measures in the feasibility studies. Large-scale projects would be required to establish a conservation section within the project to manage the social and environmental programs and a fund would be created to help finance these programs.

2. STANDARDS

There are no mandatory environmental quality standards in Nepal. A few sectoral specific discharge standards have been developed by the Nepal Bureau of Standards and Metrology but these standards are only voluntary. These standards are specific to leather, food, textile and carpet, fermentation industry, distillery, sugar industry. Under the Water Resources Act, the Ministry of Works and Housing has developed Drinking Water Standards in 1975 including 29 parameters with tolerance limit, but this standards has not been implemented yet.

Unless there are ambient air and water quality standards developed and enforced, it is very unlikely to enforce existing pollution prevention and control related legal provisions scattered in various pieces of legislation and provisions of the Environment Protection Act. With the support of ADB TA No. 2847-NEP to Ministry of Population and Environment an Ambient Standards for water and air has been proposed. Unless these ambient air and water quality standards as well as sector specific environmental standards are enforced, it is difficult to implement existing pollution prevention and control related legal provisions scattered in various pieces of legislation and the Environment Protection Act.

Under section 24, concerned ministries have the authority to frame new regulations including environmental standards.

3. LICENSING/PERMITTING

Licencing and permitting for industrial establishments is governed by the *Industrial Enterprises Act, 1992.* The Act has classified the industries on the basis of investment and type. For industries other than those significantly cause adverse effect on public health, security and environment not required to obtain permission for their establishment. According to Environmental Protection Act 1996, and Regulation 1997, a proponent shall have to carry out initial environmental examination and environmental impact assessment of any for the proposal mentioned in the Schedule 1 and Schedule 3 respectively as provided for in section 3 of the Act.

In the mining sector, the licence to operate a mine is governed by the Department of Mines and Geology. In other sector as forestry, agriculture, water resources etc. it is the responsibility of the proponent to obtain license or permit from prescribed authority or Departments of the respective line Ministries, and observe the prescribed conditions.

Market Based Instrument, Incentive and Disincentives

Recently government has introduced few economic related incentives to promote environmental consideration in activities. For example, the recent HMG/Nepal policy to involve the private sector on the import of agri-inputs, and decrease in the level of subsidy would provide a basis for more efficient use of agricultural inputs. Similarly government protection for tea and coffee would bring positive impact on soil conservation.

Methane gas production has taken a very encouraging place in alternate energy utlisation in Terai belt. Subsidies on this plant in rural areas are likely to have positive impacts on forest based environment, as majorities of people depend on firewood to meet their energy need. This will also help to minimize the indoor air pollution. The government has the policy to provide interest free loans with a repayment period of seven years and direct subsidy of Rs. 5,000 per methane production plant. This incentive will save about 4.8 to 6.5 tons firewood per households per year. The policy of subsidy on kerosene would also contribute to reduce pressure on forest.

The Industrial Enterprises Act, 1992 has included incentive to enterprises who wants to use environment friendly equipment or process. According to section 15 (k), —Permission shall be given for a reduction of up to 50 percent from the taxable income for the investment of an process or equipment, which has the objective of controlling pollution or which may have a minimum effect on the environment. Such remission may be deducted on the lumpsum or on an installment basis within a period of three years. Another incentive to industry under this Act is —After an industry comes into operation, 10 per cent of the gross profit shall be allowed as a deduction against taxable income on account of expenses related with technology, product development and efficiency improvement."

The Environmental Protection Act, 1996 has a provision to provide fund to the agencies working towards the environmental conservation activities. The National Parks and Wildlife Conservation Act, 1973 (amendment 1993) provides a special provision to allocate 30 to 50 percent of the total revenue generated in the protected areas for community development. This provision is a positive motivational factor towards the conservation of forest and forest based products.

Recently, after banning the diesel operated three wheeler from Kathmandu Valley MOPE is providing soft loans for of Electrical Three wheeler and 95 percent on petrol operated small commuter vans most or even all of the existing laws and regulations are heavily orientated towards "command and control" measures with provisions for various penalties and punishments. In view of the present liberal, market-oriented policy of the Government, it would also be advisable to introduce economic instruments and market mechanisms for compliance with environmental measures. Taking into consideration the

economic growth and environmental situation of the country, it will be worthwhile exploring some possible policy options and incentive measures.

The existing policy of providing heavy subsidies for chemical fertilizers and some petroleum products needs a critical review. The application of subsidies has resulted in limited consumption of fertilizers in some places and for some crops because of inadequate and untimely supply, while encouraging liberal usage in other places and for other crops. Available evidence also indicates that for farmers an adequate and timely supply is more important than price. Likewise, underpricing of water and electricity also encourages their unnecessary use and perpetuates the problem of inadequate supply as a result of resource constraint. These policies are all unsustainable and therefore need correcting at some stage through a gradual phasing out of subsidies and the introduction of price adjustments for public utilities, at least on a cost-recovery basis. There should be done in parallel with the introduction of additional taxes and tariffs on polluting materials such as high lead content petroleum products, high sulphr content coal, as well as a carbon tax on the import or sale of vehicles. However, Government subsidies, if properly directed, can become both growth promoting and environmentally friendly. For example, the present capital and loan interest subsidy for biogas plants is having the positive effects of reducing firewood consumption and pollution and, at the same time, of enhancing the adoption of an alternative source of energy, especially in rural areas. A similar subsidy for the installation of micro-hydropower plants, solid waste recycling plants and solar energy plants deserves consideration.

As a part of the financial reform measures, some of the environmentally friendly industrial enterprises and other development activities in the private sector could also be treated as "priority areas" and included in the present central bank definition of such areas, so that the financial institutions can be encouraged to direct part of their lending to such activities. It is also worthwhile making it mandatory, on the part of the financial institutions, to look into the environmental aspects when scrutinizing a project proposal for a loan in order to determine whether the environmental costs are externalized or internalized. Such an analysis should be particularly relevant in the case of industries, which use non-renewable natural resources as raw materials. Also, the interest rate structure could be made discriminatory as a way of penalizing environmentally unfriendly projects.

As a part of the trade sector reforms, it is desirable for a negative list of highly polluting items to be prepared; the import of such items could then be banned, restricted or subjected to import licensing under stringent conditions, to ensure that they are used only for the specified purposes. Likewise, some imported polluting items could be subjected to a pollution tax in addition to the regular customs tariff, or to a depository refunding system under which the deposited money can be refunded only after the submission of a certificate of proper disposal of waste residues.

As a part of the fiscal reforms, recycling industries in general could be provided with some tax incentives and recycled products could be exempted from sales tax or the value-added tax expected to come into force from fiscal year 1997/98. Similarly, differential tax rates could be introduced to discourage the establishment of industries using non-renewable resources as raw materials, while encouraging those industries, which produce environmentally friendly substitutes for polluting imports

PAKISTAN

Key Issues: Implementation; Public Participation; Education and Awareness; Enforcement and Compliance; Monitoring, Evaluation and Assessment of Tools

Key Legislation: Pakistan Environmental Protection Act, 1997; Environmental Impact Assessment; **Pakistan Environmental Protection Council**

Key Institutions: Pakistan Environmental Protection Agency

1. ENVIRONMENT IMPACT ASSESSMENT

The EIA process is a mechanism used in national laws in many countries for the purpose of integrating, environmental considerations into national and social economic planning and finding best project option in both environmental and social economic terms. EIA can definitely serve an integrative and preventative role in development planning, as it requires public participation, inter-sectoral co-ordination and the consideration of alternatives. However, the main draw back of this mechanism as seen in the Developing Countries is the natural inclination of the investor to pursue profits at the expenses of even irreversible environmental degradation because the EIA is a part of the project preparation and can be a costly affair. The opinion of the people most likely to benefit from a proposed project could seriously influence the EIA process. Sri Lankan experience with regard to Katunayake Express Highway, Marine Drive, Kotmale Hydro Power Project go to illustrate this point. The element of public involvement in the EIA process helps to form better informed and more balanced decisions by the decision makers.

Article 14 of the CBD requires parties to introduce appropriate environmental impact assessment (EIA) procedures for projects, programmes and policies that may have significant adverse impacts.

EIA is most commonly used as a tool at the project level, to identify the environmental effects of a proposed project and to plan ways of reducing negative impacts. Most projects are typically designed in a series of stages, involving needs identification, prefeasibility and feasibility studies, appraisal, and approval. In many cases, ElAs have been undertaken very late in this design process, when it has become too expensive to re-design or halt the project - even if significant negative impacts have been identified. To be most effective, ElAs need to be initiated at an early stage in project development and include adequate means for public participation in the review of potential effects of the development on human health, property and local livelihoods.

EIA has now been made mandatory for all development projects in Pakistan. The Pakistan Environmental Protection Act (1997) provides that:

1) No proponent of a project shall commence construction or operation unless the proponent has filed with the Federal Agency an Initial Environmental Examination (IEE) or, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA).
2) The Federal Agency shall:

   i) review the IEE and recommended the approval of the project, or require submission of an EIA by the proponent;
   ii) review the EIA, with public participation where it may deem appropriate, and recommend that the project be approved subject to such conditions as it may deem fit to impose, or rejected in the interest of such modifications as may be stipulated, or rejected in the interest of environmental objectives.

3) The provisions of sub-sections (1) and (2) shall apply to such categories of projects and in such manner as may be prescribed.

A particular strength of the Pakistan Environmental Protection Act 1997 is that it specifically includes damage to sustain environment in its definition of "adverse environmental effect".

2. STANDARDS

The Pakistan Environmental Protection Council shall provide guidelines for the protection and conservation of species, habitats, and biodiversity in general, and for the conservation of renewable and non-renewable resources, and coordinate integration of the principles and concerns of sustainable development into national development plans and policies as specified by section 3; and the Pakistan Environmental Protection Agency, as stipulated in section 5, shall prepare or revise, and establish the National Environmental Quality Standards with the approval of the Council, the Federal Agency shall publish the proposed National Environmental Quality Standards for public opinion accordance with the prescribed procedure, and establish standards for the quality of the ambient air, water and land, by notification in the official Gazette, in consultation with the Provincial Agency concerned.

Section 6 (1) e, f & g of Pakistan Environmental Protection Act, 1997 provides the ―unction of federal agency" which are as follows;

(e) prepare, establish and revise the National Environmental Quality Standards with approval of the Council:

Provided that before seeking approval of the Council, the Federal Agency shall publish the proposed National Environmental Quality Standards for public opinion in accordance with the prescribed procedure; and

(f) ensure enforcement of the National Environmental Quality Standards;

(g) establish standards for the quality of the ambient air, water and land, by notification in the official Gazette in consultation with the Provincial Agency concerned:

Provided that—

(i) different standards for discharge or emission from different sources and for different areas and conditions may be specified;
(ii) where standards are less stringent than the National Environmental Quality Standards prior approval of the Council shall be obtained; and
(iii) certain areas, with the approval of the Council, may exclude from carrying out specific activities, projects from the application of such standards;Standards have been defined in section 2 (xli) of Pakistan Environmental Protection Act, 1997 under ―definition", like;

"standards" means qualitative and quantitative standards for discharge of effluent and wastes and for emission of air pollutants and noise either for general applicability or for a particular area, or from a particular production process, or for a particular product, and includes the National Environmental Quality Standards, emission standards and other standards established under this Act and the rules and regulations;

The Pakistan Environmental Protection Act, 1997 define the NEQS under section 2 (xxix) as;

(xxix) "National Environmental Quality Standards" means standards established by the Federal Agency under clause (e) of sub-section (1) of section 6 and approved by the Council under clause (c) of sub-section (1) of section 4;

In Pakistan, National Environmental Quality Standards, exists since after promulgation of Pakistan Environmental Protection Ordinance 1983 (repealed in 1997, which afterwards protected by ~~"re~~peal, saving and succession", clause of section 34 of Pakistan Environmental Protection Act, 1997.

The Federal Environmental Protection Agency has already been drafted, the revised NEQS which has not been notified yet and still in draft form awaiting from the Law and Justice Division.

3. LICENCING AND PERMITTING

Section 14 of Pakistan Environmental Protection Act, 1997 provides the provision of licensing and permitting under Handling of Hazardous Substances;

Subject to the provisions of this Act, no person shall generate, collect, consign, transport, treat, dispose of, store, handle or import any hazardous substance except—

(a) under a licence issued by the Federal Agency and in such manner as may be prescribed; or
(b) in accordance with the provisions of any other law for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement or other instrument to which Pakistan is a party.

Market Based Instruments, Incentives and Disincentives, Environmental Resources Valuation, Public Participation, Right to Information, and Partnership

Incentive and Disincentive Mechanisms

This is yet another method adopted in contemporary legislation as a means of achieving sustainable development. Incentives such as user pay schemes and disincentives such as the polluter pays principle have gained much popularity among the contemporary law-makers. Some Governments have even deal with certain consumer practices that contribute to pollution by imposing direct taxes on products that are considered environmentally unfriendly.

For example, the Government of the Republic of Korea was considering imposing a tax on disposable items as it is the consumer who pollutes by purchasing disposable items. Another method invented to encourage the development of environmentally sound products is to grant eco-mark labels to such products. Such a programme has commenced in the Republic of Korea.

4. PUBLIC PARTICIPATION IN ENVIRONMENTAL MATTERS

It is now well-established that public participation in decision-making is essential for local level development in general, and in the management of natural resources, in particular. The principle may be directed at empowerment of the civil society in decision-making or, more sharply, it may empower members of the public to seek enforcement of environmental protection through Judicial and/or administrative mechanisms, and thus underlines the highest expression of public participation

Public participation may ultimately be provided for through at least three legal machineries. First, such a right may be entrenched in the national constitution often as part of the Bill of Rights. The second mechanism may be in the public participation in the review of environmental impact assessment. Thirdly, it may be through direct *locus standi* for the public in environmental causes. But while the character of grant of public participation may vary from country to country, it is of crucial importance that it be provided for as is increasingly happening at national level.

The Stockholm Declaration does not include any explicit principle on public participation. It is admitted that the concept had not taken root seriously even though the 1969 US National Environment Protection Act had recognized the necessity of public participation in promoting the enforcement of environmental law. The

only reference is the Stockholm principles is Principle 19 where explicit provision for the dissemination of knowledge and information as a form of empowerment, is *made.*

Mechanism For Integrating Environmental Considerations In Development Decision Making At Central, State/Provincial And Local Levels.

The effective implementation of environmental legislation pre-supposes the existence of appropriate basic principles in that legislation and the mechanism in development decision making for integrated environmental considerations is somehow taken as new approach which sets out the broad objectives and the bane principles of environmental management and sustainable development for framework legislation.

Section 4(1) (e) of the national framework legislation i.e. Pakistan Environmental Protection Act, 1997 provides the provision for such a mechanism under functions and powers of the Pakistan Environmental Protection Council. Hence, PEPC is a very high level forum of decision making. The functions and powers of the PEPC specified, inter-alia, by coordinating integration of environmental principles and concerns of sustainable development in decision making process for formulation of national development plans and policies.

The drafting of Pakistan Environmental Protection Act, 1997 itself result of a highly consultative public participatory work. The first draft of Pakistan Environmental Protection Act was circulated in 1993 among large number of individuals, groups, media. Parliamentarians, federal & Provincial Government functionaries, Federation of Pakistan Chambers of Commerce and Industry, Bar Councils and Associations, Journalists, educational institutions and NGOs. special workshops were also held in the provinces to elicit view and comment. On the basis of feed back received from extensive consultation and participatory work, the final draft was placed before the parliament for enactment as a law.

The involvement of public participation provided in the Pakistan Environmental Protection Act, 1997 includes,

> Under Section 4(2) —The Council may, either itself or on the request of any person or organization, direct the Federal Agency or any Government Agency to prepare, submit, promote or implement projects for the protection, conservation's, rehabilitation and improvement of the environment, the prevention and control of pollution, and the sustainable development of sources, or to undertake research in any specified aspect of environment."
>
> Under Section 5(6) —for assisting the Federal Agency in the discharge of its functions, the Federal Government shall establish Advisory Committees for various sectors, and appoint as members thereof eminent representatives of the relevant sector, educational institutions, research institutions and non governmental organization. "
>
> Under Section 6(1)(e) —Provided that before seeking approval of the Council, the Federal Agency shall publish the proposed National Environmental Quality Standers for public opinion in accordance with the prescribed procedure,"
>
> Under Section 6(1)(O) —Provide information and guidelines to the public on environmental matters, "
>
> Under Section 8(6) — For assistance of the Provincial Agency in the discharge of its functions, the Provincial Government shall establish sector Advisory Committees for various sectors and appoint members from amongst eminent representative of the relevant sector, educational institutes, research institutes and non-governmental organizations."
>
> Under Section 12(7) —The Federal Agency shall maintain separate Registers for initial environmental examination and environmental impact assessment project, which shall contain brief particulars of each project and a summary of decisions taken thereon, and which shall be

open to inspection by the public at all reasonable hours and the disclosure of information in such Registers shall be subject to the restrictions specified in sub-section (3)."

5. APPLICATION OF INCENTIVES AND MARKET BASED INSTRUMENTS.

Import duties for pollution monitoring and control instruments/equipments should be reduced or waived. Non-regulatory measures should also be taken to promote compliance of the legislation. These measures include education and information, technical advice on license compliance and waste minimization, industry code of practice, promotion of environmental assessment and encouragement of environmental improvement plans. Close contact and coordination with local communities should be encouraged for good environmental performance.

With a view to facilitate entrepreneurs, custom and other regulatory duties on import of anti-pollution equipment should be reduced or waived off as is being reduced to the level of 10% in Pakistan. This is expected to expedite procurement process and installation of pollution free equipment. Government of Pakistan have reduced the tax on the Industry designing and manufacturing such equipment/machinery to be used for compliance of the various environmental laws.

The Pakistan Environmental Protection Act, 1997 introduced many provisions on the application of incentive and market based instrument, this includes;

Under Section 6(2) (d) –The Federal Agency may, recommend to the Federal Government the adoption of financial and fiscal programmes, schemes or measures for achieving environmental objectives and goals and purposes of this Act, including -

(i) Incentives, prices, awards, subsidies, tax exemptions, rebates and depreciation allowances, and
(ii) Taxes, duties, cesses and other levies"

Under Section 6(2) (f) –provide or arrange, in accordance with such procedures as may be prescribed, financial assistance for projects designed to facilitate the discharge of its functions",

Under Section 9(3) (a) & (b) –The Provincial Sustainable Development Fund shall be utilized for -

(a) Providing financial assistance to the projects designed for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution, the sustainable development of resources and for research in any specified aspect of environment; and

(b) Any other purpose which is the opinion of the Board will help achieve environmental objectives and the purposes of this Act."

Under Section 10(2) (a) —In accordance with such procedure and such criteria as may be prescribed, the

Board shall have the power to –

(a) Sanction financial assistance for eligible projects",

The other features in the Pakistan Environmental Protection Act, 1997 in respect of incentive and market based instruments include the following:

Polluter pay principle. Imposition of pollution charges on staggered basis (i.e) gradually increasing, based on the concept that it should initially hurt but not bite but with the time scale it increases at par, with the cost of environmental mitigation. Thus the penalties also follow this principle of polluter pays.

Carbon trading principle. Though this principle is not provided in the text of Pakistan Environmental Protection Act, 1997 but under section 31 & 33 of PEP Act, 1997 for making Rules and regulations, introduction of carbon trading principle will hopefully become the provision as market based instrument for pollution control and abatement in the country.

SRI LANKA

Key Issues: Implementation; Public Participation; Education and Awareness; Enforcement and Compliance; Monitoring, Evaluation and Assessment of Tools

Key Legislation: National Environment Protection Act, 1980 (Amended in 1988); the State Lands Ordinance (No.8 of 1947, Part IX) National Water Supply and Drainage Board Act (No.2 of 1974, National Environment Action Plan (NEAP) 1998 National Environmental (Protection and Quality) Regulations, No.01 of 1990; Coastal Conservation Act of 1981 amended in1988;

Key Institutions: Mahaweli Authority of Sri Lanka Act (No.23 of 1979; Ministry of Environment and Natural Resources; Coastal Conservation Department; National Environmental Steering Committee; Central Environmental Authority; Ministry of Finance, Planning, Ethnic Affairs, and National Integration; National Planning Department; Board of Infrastructure Investment

1. LICENSE AND PERMITTING

The Sri Lanka has a framework law, the National Environmental Protection Act which established the Central Environmental Authority. Many laws have been enacted over the years. The most important include: National Environment Protection Act, 1980 (Amended in 1988); the State Lands Ordinance (No.8 of 1947, Part IX) which provides for the regulation and control of public waters and streams through a system of permits. The Irrigation Ordinance (No.32 of 1946 with amendments) which consolidates laws relating to irrigation. The Mahaweli Authority of Sri Lanka Act (No.23 of 1979) which enpowers MASL to use and develop the water resources of the Mahaweli River; the National Water Supply and Drainage Board Act (No.2 of 1974, as amended) which describes the statutory duties of the NWSDB to provide water for public, domestic and industrial purposes. The Electricity Act (No.19 of 1950, as amended) provides licensing of installations for the generation of electricity. These licences confer all rights necessary for the purpose of electricity generation including the right to use water; the Ceylon Electricity Board Act (No.17 of 1969, as amended) describes the duty of the CEB to develop and operate systems for the supply of electricity including the right to use water for hydropower; the Fisheries and Aquatic Resources Act (No.2 of 1996) provides for the licensing of fisheries and aquacultural operations which require an allocation of water to carry out approved activities. The National Environmental Act No.47 of 1980 with Amendment Act no.56 of 1988, lays down that ~~"n~~o person shall pollute any inland waters of Sri Lanka or cause or permit to cause pollution in the inland waters of Sri Lanka". The concern shown by successive governments of the increasing level of water pollution and the resultant degradation of the living environment, is clearly evident from policy measures and instruments set in place during the last few decades. These include the National Conservation Strategy, the National Environment Action Plan (NEAP) 1998 - 2001, the Pollution Abatement Strategy and the Wetland Conservation Plan.

Licensing system is included in the National Environmental Act, The principal economic instrument now using in our country is Environmental Protection License scheme. Part IV of the National Environmental Act No.47 of 1980 amended by Act No.56 of 1988 provides for Environment Protection and contains the legal framework for the issue of the License. The National Environmental (Protection and Quality) Regulations, No.01 of 1990, Gazette on *02/02P* 990 contains the procedure to operationalize the EPL process in accordance with the enabling legislation.

NEA provides that 'no person shall discharge, deposit or emit waste into the environment which will cause pollution except:

- under the authority of a license issued by the Central Environmental Authority and,

- in accordance with such standards and criteria as may be prescribed under this Act. The powers to implement the EPL process in respect of 15 types of industry (referred to as low polluting industry) was delegated to Local Authorities by the CEA with effect from January 01,1994. Further 5 industries were added to the list in 1996.

The licence shall be valid for one year from the date of issue. An application for renewal of the licence should be made at least one month prior to the date of expiry of the licence.

The holder of the licence shall permit the Director -General or any other officer duly authorized in writing by him at any time to enter the premises in respect of which the licence is issued to examine and inspect any equipment or industrial plant. The holder of the licence shall comply with any requirement communicated from time to time by the Authority as regards.

The holder of the licence shall ensure that monitoring of environmental pollution or other acts that the Authority considers necessary to protect the environment. This licence is valid only for the type and nature of the industry, process, operation as stated in the preliminary application and to the information made to the industry, process or operation should be indicated forthwith to Authority.

An application for the license shall be made

a) Separately, in respect of each premises at which the Acts authorized by the licence are carried out.
b) Substantially in Form A in scheduled II here to.
c) Accompanied by a receipt for the payment of the fee specified in Schedule III here to
d) at least 30 days prior to the relevant date or the date on which the applicant is required to have the licence, whichever is earlier,

Every Licence issued by the Authority shall be

* in form B in schedule II here to;
* valid for a period of one year, subject to any suspension or cancellation of the licence under section 23 D of the Act; and
* no irreversible damage or hazard to man and environment or any nuisance will result from the acts authorized by the licence.
* The applicant has taken adequate steps for the protection of the environment in accordance with the requirements of the law.

An application for a renewa1 of the licence shall be made,

* at least one month before the date of expiry of the licence or one month before effecting any changes, alterations or extensions to the premises at which the acts authorized by the licence are carried out, as the case may be;
* accompanied by a receipt for the payment of the fee for the renewal of licence specified in schedule III here to

The Authority may, before issuing an order suspending or cancelling a licence under section 23D of the Act gives the holder of the licence an opportunity to show cause why such order should not be issued.

Any applicant for a licence who is aggrieved by the refusal of the Authority to grant a licence, or any holder of a licence who is aggrieved by the suspension or cancellation of a licence to the refusal to renew a licence may, within thirty days after the date of notification of such decision to him, appeal in writing against such refusal, suspension, cancellation or refusal to renew, to the secretary of the Ministry in charge of the subject of policy planning and implementation such applicant shall be given an opportunity of making representations in person or by authorized representative in connection with his set aside, vary or confirm the decision appealed from and-the Authority shall give effect to the secretary's decision. It shall be final and conclusive.

The holder of a licence shall forthwith notify the Authority of:

* any changes made or proposed to or made in the particulars furnished in connection with his application for a licence.
* any decision to termirtate any activity to which the licence relates; and shall comply with any directions that may be issued by the Authority to prevent or mitigate environmental pollution and hazards.

Every applicant or every holder of a licence shall comply with any directions given by or on behalf of the Authority for the purpose of protecting the environment. Every person who acts in contravention of any regulations commits an offence punishable under section 31 of the National Environmental Act.

2. PUBLIC PARTICIPATION

The Central Environmental Authority had published a special hand-book regarding the public participation in 1997 with the help of the Ministry of Forestry and Environment under the CEA publication series. It shows the value of public participation in environment activities.

> Public Participation starts at the stage of scooping. It is a meeting os several meetings at which all those interested or concerned in a new development project are given an opportunity to make known their views. The purpose of scooping is to find out what environmental effects and problems the project might have and to decided if the developer must undertake an EIA or IEE.

The present rules merely say that the Project Approving Agency (PAA) may take into considerations the views of the public so writing a letter to the PAA as soon as a person heard about a project is important. The letter should give name, address and contact phone number. In the letter it should state the concerns briefly and if he or she has any documents to support for the saying, copies should be included. At the scooping meeting the PAA and other government agencies wi1l also raise their concerns. During the meeting the PAA will make a hot of environmental effects that may take place through the project. If public fell that any of these issues are of 1ong duration or have significantly wide extent or high intensities, public should say so. For instance, the intensity and extent of an environmental effect would often depend on the context in which it take place.

Then at these meetings it reviews the 'bigness' or 'smallness' of the environmental effects. If the project has —bi” effects then the law stated that the developer should be asked to perform an EIA. Projects that do not have significant environmental effects should only be asked to perform a simple IEE. It is made sure that the public concern are included in the Terms of Reference.

> After the Developer is issued a TOR by the PPA, the developer hires consultants to carry out the EIA. Consultants have been advised to make contact with affected members of the public and discuss the possible effects of the project. So it is therefore important for public to make contact with the consultants and make their interests and views known to them.

When public make comments, comments are written down and it should be sent in time. (letter must be posted on or before the 30th day} Letters should be in clear writing. Public comments can address a number of issue and can be both Positive and Negative.

The only people who are entitled in law to attend a public hearing are those who have sent in written comments but often the PAA will allow others also to participate. The PAA will invite every member of the public who has sent in comments during the commenting period. When public make an oral presentation it should be clear, short and accurate. Evidence also can be led, according to the public hearing guidelines.

Once a developed appleas, the public who have participated by sending comments or usually done by applying for a writ of certiorari to the Court of Appeal or High Court

3. RIGHT AND INFORMATION

Right to information is given mainly in the constitution. It is included in the National Environmental Act also. When receipt of the IEE or an EIA the PAA should make a preliminary assessment of its adequacy as expected in the TOR. If found adequate on prima facie review, the document should be open for public scrutiny for a period of 30 working days and must be so announced in the Gazette and once newspaper in English, Sinhala and Tal. The 30 days will be calculated excluding public holidays and Sundays.

According to the Environmental Act, PAAs should establish procedures for making IEEs/EIAs readily available to the public for reading in Colombo and in the district or division in which the project is proposed. PAAs should establish an efficient an process to allow copies of IEE/EIAs to be made of the public upon request and upon-payment of the full reproduction costs by the requesting party or parties. PAAs should forward all comments received to the PP for review and response. Uponn receipt of the PPS written response to comments, the PAA should evaluate the responses before making a decision.

This shows that the right to information is accepted in the National Environmental Act and also by the Central Environmental Authority and by the government.

4. ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The EIA Process was first introduced to Sri Lanka by the Coastal Conservation Act of 1981 1ater in 1988 it was included in the National Environmental Act introducing EIA process to the entire Island.

An EIA is defined as ~~a~~ written analysis of the predicted environmental consequences of a proposed project" [Section 33 of the NEA]. The same definition has been included in the Coast Conservation Act and amendment of 1993 to the Fauna and Flora Protection Ordinance. The Southern Development Authority Act of 1996 also contains the same definition.

The following contents must have been included in an EIA

1. A description of the proposed PP;
2. Prediction of Environmental Consequences of the proposed PP;
3. Avoidable and unavoidable adverse impacts of the PP;
4. Description of irreversible and irretrievable commitment of resources for the PP;
5. Alternatives to the proposed PP;
6. Reasons why these alternatives were rejected; and
7. An environmental cost / benefit analysis, if one has been prepared.

According to the definition of EIA, the EIA process is envisaged for individual projects. Every Prescribed project, whether undertaken by the Government or a private proponent must undergo the EIA process. For every prescribed project an EIA or an lEE must be prepared Prescribed projects were listed in the Gazette Notification No 772/22 of 24th June 1993, and will be implemented through designated Project Approving Agencies (PPA) as prescribed by the Minister under section 23 Y of the NEA In Gazette Extra - Ordinary No 859/14 of 23rd February 1995. Under section 23 CC of the NEA, regulations have been made by the Minister stating the procedures that should be followed in order to achieve the EIA requirements of the NEA.

The Central Environmental Authority (CEA) as the agency charged with the responsibility of implementing the above provisions of the NEA, will promptly advise PPAs of any amendments to the NEA relevant to part IV C and/or the orders and regulations included in Gazette Extra -Ordinary No 772/22 of 24th June 1993.

The National Environmental Act had identified two levels in the EIA process.

1) lEE -Initial environmental Examination.
Is a report where possible impacts of a prescribed projects are assessed with a view to determining whether the impacts are significant or not. An lEE must address the possible impacts and the intensity of such impacts.

2) EIA -is a report which is a more comprehensive document whereby alternatives to the proposed project are considered and the option with the least impact on the environment identified and assessed Mitigation measures for the impacts identified as significant are part of an EIA. An environmental cost benefit analysis is also undertaken where ever possible.

The timing of the IEE/EIA is Crucial if it is to become a useful tool in decision making. If the timing is late then many important decisions would have been made. Project proponents are thus advised to come within the EIA process at a very early stage in the project cycle.

There are 5 major steps in the EIA process. First step is Preliminary Information. A project proponent is required to give the PAA preliminary information on the proposed prescribed project as early as possible. The preliminary information submitted should be comprehensive and may even suffice to be considered as IEE.

Second step is Environmental scooping is the process of identifying the important issues which must be addressed in detail in the IEE/ EIA.

The next step is public participation. It is one of the Most crucial aspect of the EIA process. The Provisions for public participation is contained in the NEA. Decision making is the next step. According to the regulations, the PAA shall grant approval for the project subject to specified conditions or refuse approval for the implementation of the project with reasons for doing so.

The next step is monitoring. The success of the EIA process would be totally negated if the conditions imposed by the P AA are not effectively monitored.
EIA report must be in a recommended format. Agencies should use a format for EIAs that will encourage good analysis and clear presentation of the Alternatives including the proposed action.

The text of EIA (excluding appends) should normally be less than 50 pages. For proposals unusual scope or complexity it should normally be no more than l00 pages. EIA should be written in plain language and may use appropriate graphics so that decision makers and the public can readily understand them. EIA's may be written in English, Tamil or Sinhala and is advisable to make available it in Sinhala. But it is advisable to make available it in Sinhala or Tamil at the public inspection.

Central Environmental Authority had prepared guidelines for an Extended Benefit Cost Analysis for the use of the project proponents to make an Extended Benefit Cost Analysis for the projects. And also the project proponents should ensure the professional integrity, including scientific integrity of the discussions and analyses in EIAs.

After an EIA is prepared, the project proponent must submit it to the P M who must check its adequacy against terms of reference. [EIA regulation II (i)] In the case of an IEE there is no such requirement to check the adequacy. If the PM is not satisfied with the EIA, then it should ask the project proponent to make the necessary amendments and resubmit it [EIA regulation II (ii)] .The P M must thereafter publish

notice in the gazette and in daily newspapers in all 3 languages inviting the public to inspection and make comments on the EIA /IEE within 30 days. [NEA, section 23BB(2) read with EIA regulations 8(ii) and 12(ii)] These costs are to be pre-estimated and collected before scooping as administrative charges from the project before scooping as administrative charges from the project proponent. [EIA regulations 7 (iii)] The notice should say where and when the EIA /IEE can be inspected. [NEA, section 23BB(2) read with EIA regulations (iii) and 12(ii)] Once the public comment period is over the PM must decide whether the case warrants a public hearing. [NEA, section 23BB(3)] At the conclusion of the hearing and/ or comment period, the P M must send the project proponent for review and comment. [EIA regulations 12 and 9(i)] When the response is received, the PM has seven days in the case of an IEE and 30 days in the case of an EIA to make its approval decision [EIA regulations 10 & 14].

In the case of an IEE, the Prime Minister can grant approval with conditions or refuse approval (giving reasons) or call for an EIA where significant impacts are disclosed. [EA regulations 10] In the case of an EIA, the P M can grant approval with conditions or refuse approval with reasons. [EIA regulation 14]

When the PAA approves a project proposal with or without conditions, a notice of this fact must be published in the gazette and in the daily newspapers in the three languages. [NEA, Section 23BB (4) read with EIA regulation 17] The approval remains valid for 24 months [EIA regulation 18] where approval is refused, the project proponent has a right to appeal to the secretary of the Ministry of Environment [NEAs' 23 DD read with EIA regulation I5] There is no time limit fixed for the appeal and, therefore, it may be lodged within a reasonable period of time. The appeal must be in writing and the Secretary may hear the appellant in support of his appeal. The Secretary can confirm, reject or modify the P AA's decision.

The Central Environment Authority had prepared guidelines for implementation of the EIA process in three volumes. {1) A General Guide for Project approving Agencies (PAA) (2) A General Guide for Conducting Environmental Scooping. (3) Public Participation Handbook. In addition to these, several sectoral guidelines have been prepared by the CEA.

The project -oriented focus of the EIAs process could be considered as a drawback in the process. Because EIA are prepared for individual projects, the cumulative impacts of projects could be overloaded. It is desirable to prepare EIAs at the strategic level on a regional basis once development projects for a particular region have been identified.

Though NEA envisages the preparation on EIA reports for individual projects, it does not rule out macro-level planning or the preparation of ElAs on a macro level. On the contrary, the NEA itself requires the preparation of a land use scheme for Sri Lanka.

For macro level EIA planning, the word 'effects' in the definition of an EIA in Article 33 of the NEA could be interpreted as including cumulative environmental effects. The guidelines prepared by the CEA for implementation of the EIA process recognise the importance of discussing the cumulative impacts of Projects where the impacts of individual Projects may be insignificant, but cumulatively may give rise to a Significant impacts.

The individual project base EIA process can overlook the overall consequences or the Cumulative impacts of the activities. This seriously undermines the important role played by EIAs as a tool to achieve sustainable development

Standards section 10 of the Sri Lankan National Environmental Act tasks the Central Environmental Authority to specify environment standards, norms and criteria for the protection of beneficial uses and for maintaining the quality of the environment: and under Part IV the Authority in consultation with the Council shall recommend to the Minister the basic policy on the management and conservation of the country's natural resources in order to obtain the optimum benefits therefrom and to preserve the same for future generations and the general measures through which such policy may be carried out effectively with the assistance of the Ministry of the Minister in charge of the subject of Lands, formulate and recommend to the Minister a land use scheme; with the assistance of the Ministry of the Minister in

charge of the subject of Fisheries, recommend to the Minister a system of rational exploitation of fisheries and aquatic resources within the territorial waters of Sri Lanka, or within its exclusive economic zone, or within its inland waters and shall encourage citizen participation therein to maintain and enhance the optimum and continuous productivity of such waters; with the assistance of the Ministry of the Minister in charge of the subject of wildlife conservation recommend to the Minister a system of rational exploitation and conservation of wildlife resources and shall encourage citizen participation in such activities; with the assistance of the Ministry of the Minister in charge of the subject of Forestry, recommend to the Minister a system of rational exploitation of forest resources, regulation of the marketing for threatened forest resources, conservation of threatened species of flora, and shall encourage citizen participation therewith to keep the country's forest resources at maximum productivity at all times; and with assistance of the Ministry of the Minister in charge of the subject of soil conservation, recommend soil conservation programmes including therein the identification and protection of critical watershed areas, encouragement of scientific farming technique, physical and biological means of soil conservation, and short term, and long term research and technology for effective soil conservation.

Standards are introduced to Sri Lankan Government by the National Environment by the National Act No 47 of 1980 as amended by Act No.56 of 1988. The Gazette notification of 2nd February 1990 published those general standards for discharge of effluents into inland surface waters, tolerance limits for industrial effluents discharged on land for Irrigation purpose, tolerance limits for industrial and domestic effluents discharged into marine coastal areas, tolerance Limits for effluents from rubber factories discharged into inland surface waters and tolerance limits for effluents from tanning industry.

These standards should be followed by the industries when they discharge things to the environment. The Gazette notification further says in Regulations 2, "No person shall, on or after the relevant date discharge, deposit or emit cause pollution or cause noise pollution, except,

(a) under the authority of a licence issued by the Central Environmental Authority and

(b) in accordance with the standards and criteria specified in scheduled I hereto;

Provided that, where a licensee who doesn't conform to the standards on criteria specified herein is at the discretion of the Authority, directed to implement a program of action within specified period, so as to conform to the aforesaid standards and criteria and to observe certain conditions during such period such license shall, so long as he observes such conditions, be deemed to comply with the preceding provisions of this regulation.

The regulation 3 says Not withstanding anything contained in regulation 2, the Authority may, by a direction issued under regulation 13 (13- Ever applicant or every holder of licence shall comply with any direction given by or on behalf of the Authority for the purpose of protecting the environment), impose more stringent standards and criteria than those specified in schedule I hereto in respect of any particular industry operation or process, having environment.

According to the regulation 4 it says 'where an activity in respect of which an application for a licence is made is not covered by the standards and criteria specified in schedule 1 hereto, the Authority will decide on such application on its merits and the applicant shall comply with all such directions as may be issued to him by the Authority for the protection of the environment.

So when a person / licensee does not work under the standards, the Authority could stop their license or they can fine them according to the regulations of the National Environmental Act.

5. STRATEGIC ENVIRONMENTAL ASSESSMENT

Sri Lanka also has accepted in principle the concept of Strategic Environmental Assessment (SEA). SEA is defined as ~~"a~~ systematic process for evaluating the environmental consequences of proposed policy, plan or program initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social consideration."

The typical focus of EIA is at the project level or usually single development activity on set of activities located at a single site while the SEA is not project focus. It focuses on development plans and programmes within a specific sector such as energy plans, irrigation schemes, transportation plans. The SEA also focus on issues and impact in a distinctly spatial setting i.e. plans for development and management of provinces, cities, river basins and water sheds. The SEA also focus on policy impact assessment such as broad development and resource management policy at the national or regional level, i.e. national industrial siting policy, wetlands protection policy and recycling policy.

The SEA has following advantages: (a) environment is an inherent component of SEA along with economic and social considerations rather than simply a constraint; (b) SEA directly integrates environmental concerns into the formulation of policies, plans and programme development; (c) SEA facilities consultation among government agencies and regulatory bodies with potentially overlapping jurisdictions; (d) SEA enhances meaningful public involvement in the plan formulation stages of decision making rather than as a late stage formality; (e) SEA make possible more effective analysis of potential cumulative effects of both large and small projects; (f) SEA involve in consideration of policy, siting and decision alternatives that are often ignored or not feasible during project EIA; (g) SEA helps to focus the TOR for subsequent project level EIA and may sometimes replace full scale project level EIA.

The schematic presentation of the SEA processs

It could be concluded that environmental management at the policy planning level is indeed necessary for achieving sustainable development. However in this regard remaining questions are: who has the responsibility to carry out such assessment? Who should review them, what are the advantages that such an assessment will have for future proponents carrying out EIAs for individual projects should the law be amended to legalize the SEA process or should it remain as an administrative tool? And should there be public participation in this process?

6. STANDARDS

In **Sri Lanka,** the new initiatives adopted by the Government under new National Environmental Protection Act (NEPA) and a new draft Forest Conservation Act for the environment management and resource conservation. The United National Environment Programme (UNEP), Nairobi, supported the drafting of NEPA. Both these laws are in draft form and the draft NEPA is before a Cabinet subcommittee. The NEPA is a comprehensive law which updates existing legislation and introduces many new concepts including the "polluter pays" principle, environmental tribunals, enforceable rights to a healthy environment, administrative penalties, green marking etc. The new forest law contains provisions for tenure agreements between communities and the Government to be registered and re-orients the classification and regulation of forests in keeping with modern trends. New institutions for environmental management were not established until the 1980s. The Central Environmental Authority (CEA), the apex environmental agency, was established by the National Environmental Act (NEA) in 1980. Its functions include environmental standard setting, pollution control and environmental planning including EIA. In the early l990s a Cabinet Ministry for the Environment was established and has since functioned as the national environmental planning and policy-making body. In 1981, the Coast Conservation Act established the Coast Conservation Department with primary responsibility for prevention of coastal erosion and management of the coastal zone. The Fisheries Department is another agency with a long history and oversees the management of both inland and marine fisheries resources. It currently operates under the

Fisheries Act of 1996. Marine pollution falls within the purview of the Marine Pollution Prevention Authority (MPPA) established by the Marine Pollution Prevention Act of 1981. The National Conservation Strategy was adopted in December 1988. Following the Strategy a National Environmental Action Plan (NEAP) was adopted in 1991. Certain actions from NEAP have been identified and developed into the Environmental Action 1 Project (EA1P), which has been funded by the World Bank beginning in 1997.

Sri Lankan's National Environmental Act - Section 23(BB) of the Sri Lankan National Environmental Act imposes that it shall be the duty of all project approving agencies to require from any Government department, corporation, statutory board, local authority, company, firm or individual who submits any prescribed project for its approval to submit within a specified time an initial environmental impact assessment report as required by the project approving agency relative to such project and containing such information and particulars as may be prescribed by the Minister for the purpose. In recognition of the importance of EIAs, in 1984 the government made them mandatory for development projects undertaken by both the public and private sectors. In 1988, EIAs became a legal requirement for the whole country through amendments to the National Environmental Act (NEA). However, the relevant provisions only came into effect in mid-1993.

The EIA process applies only to prescribed projects, which have been identified and detailed in a schedule under the provisions of Part IV C of the NEA, which was published in a Gazette Extraordinary, dated 24 June 1993. The basic considerations underlying the identification and listing of project activities, as "prescribed projects" are sensitivity and magnitude, since those factors are likely to cause adverse impacts on the environment. Such projects include, *inter alia*, those, which may have adverse impacts on natural resources, and those, which have a high pollution potential. Implementation of EIAs is through the designated Project Approving Agencies (PAAs) gazetted by the Minister for Environment and Forestry. At present, several ministries and other State organizations have been specified as PAAs. Central Environmental Authority (CEA) is the State agency charged with the responsibility for implementing the provisions of the NEA in regard to EIAs. The EIA practices and procedures of every PAA ensure that high-quality environmental information is available to concerned public officials, as well as other interest groups and the general public, before any decision is made and before the government makes any significant resource commitment that has an impact on the environment. To achieve the goal set in 3, a PAA must integrate EIA requirements with other planning and environmental review procedures required by law or by agency practice, so that all such procedures run concurrently rather than consequently; use the EIA process to identify and assess reasonable alternatives to proposed actions for avoiding or minimizing adverse effects on the quality of the environment. The major steps to be taken in conducting an EIA are preliminary information, environmental scoping, public participation, decision-making, and monitoring.

CONCLUSION OF THE CHAPTER

Some governments are continuing to support laws, policies and subsidies that promote and sustain inefficient and unsustainable resource use. By incorporating the idea and economics of resource productivity into their economic policies, governments can achieve the goals of economic benefit, environmental protection as well as the increased quality of life for the population. The inefficiencies causing the environmental degradation often cost more to states than the policies to reverse them. Improvements in resource productivity through the use of less natural, material and energy resources, and cleaner technology are a proven way to effect sustainable development, increasing economic growth and being environmentally responsible at the same time. This idea provides a practical agenda for governments to achieve sustainable development. To achieve the development objective of reducing consumption and intensity of resource use requires the development of policies and regulations, which offers incentives to developers and to the consumers. The systems of corporate governance must strive to make the private sector and industry internalize environmental costs.

The creation of special funds that can be drawn upon by governments where necessary to deal with environmental concerns has become a standard practice in several developing countries. These resources

are often used for financing capital expenditures in environmental protection systems and responding to environmental emergencies. Contributions to such funds are received from the regular government budget, fines or licencing fees received from polluting industries or activities, or even international donations.

The EIA process is a mechanism used in national laws in many countries for the purpose of integrating, environmental considerations into national and social economic planning and finding best project option in both environmental and social economic terms. EIA can definitely serve an integrative and preventative role in development planning, as it requires public participation, inter-sectoral co-ordination and the consideration of alternatives. However, the main draw back of this mechanism as seen in the developing countries is the natural inclination of the investor to pursue profits at the expenses of even irreversible environmental degradation because the EIA is a part of the project preparation and can be a costly affair. The opinion of the people most likely to benefit from a proposed project could seriously influence on the EIA process. Sri Lankan experience with regard to Katunayake Express Highway, Marine Drive, Kotmale Hydro Power Project go to illustrate this point.

Environmental protection and the conservation of natural resources emerged as key national priorities in India in the wake of the 1972 Stockholm Conference on Human Environment. Between the Stockholm Conference and the Rio Earth Summit, India has been able to develop a stable organizational structure for environmental protection in the country. Legislation, policies and programmes evolved during the same period, geared to the task of protection of the environment. The balance between development and the environment is addressed through the Environment Impact Assessment (EIA) methodology presently in force. This takes into consideration the need for development and the imperative of protecting the environment. The EIA reports cover the impact of development projects on ambient air and water quality, land degradation and the ecology. Standards have been established for pollution control. This is accompanied by environmental management plans for developmental projects. For furthering transparency in the project appraisal process, public hearing has been made mandatory for critically polluting activities. In the process of public hearing, relevant project documents and EIA reports are made available to the public at designated places and through newspaper inserts. Suggestions made by the public are incorporated in the project design wherever possible. A monitoring mechanism has been put in place for ensuring compliance with the prescribed mitigative measures.

The need to integrate environmental and developmental decision-making process has been recognized as contributing to economically efficient, socially equitable and responsible environmental management. Environmental Impact Assessment (EIA) is an analytical tool for assessing development programmes which have an adverse effect on environment or on human health. The need to integrate environmental considerations into national socio-economic planning is now widely recognized across the Asia-Pacific region. The Environmental Impact Assessment (EIA) process has become the most common institutional mechanism for achieving such integration. EIA has become an important tool in guiding policy choices and has helped to create an environmental awareness amongst agencies involved in project implementation. With EIA, potential environmental damages can be minimized or even prevented at the initial project formulation stage.

The critical issues for EIA development in the Asia-Pacific region are consistency in application, obtained through a centralized management, decentralized implementation and the access to independent expertise. The EIA process must continue to be focus on greater public participation in the process and greater access of information to the public in order to make their participation meaningful. Although great progress has been made in the EIA legislative development of countries in the region, problems remain at the actual implementation of the EIA provisions. EIA procedures must not be seen as being obstructive to the goals of development in order to prevent circumvention. Inter-sectoral coordination in the administration of EIA should be strengthened. The EIA process needs to strive for and maintain an open and transparent nature. EIA decision-making should make a valid consideration of all alternatives.

The balance between development and the environment is addressed through the Environment Impact Assessment (EIA) methodology presently in force in India. This takes into consideration the need for development and the imperative of protecting the environment. The EIA reports cover the impact of development projects on ambient air and water quality, land degradation and the ecology. Standards have been established for pollution control. This is accompanied by environmental management plans for developmental projects. For furthering transparency in the project appraisal process, public hearing has been made mandatory for critically polluting activities. In the process of public hearing, relevant project documents and EIA reports are made available to the public at designated places and through newspaper inserts. Suggestions made by the public are incorporated in the project design wherever possible. A monitoring mechanism has been put in place for ensuring compliance with the prescribed mitigative measures. This will be further strengthened. State agencies and regional centres of the CPCB monitor critical environmental parameters. The national environment policy will seek to complement the existing monitoring arrangements by involving universities and other professional educational institutions in corresponding field of activities.

In India, Central Government and the State Governments are beginning to partner with different stakeholders in implementing environmental policies, projects and programmes. NGOs and communities themselves have started to assist governments in playing an important role as monitors of industry environmental compliance. Schools and universities are increasingly including environment as part of their curricula. The role of supporting institutions such as policy research institutes and the private sector have assisted and complemented the programmatic efforts of state governments. A few institutions have been created which specialize in the area of environmental research and outreach to the public. Environmental institutions must put continued emphasis on scientific data collection, and public awareness in order to encourage participation and support from both the private sector and the public in the environmental management process. Promotion of ‗Preventive' rather than ‗curative' strategy requires policy direction and commitment, shift to adoption of cleaner technologies. India got a boost with the Resolution of Government of India in February, 1992 on ‗Policy Statement for Abatement of Pollution' which recognized that mere notification of laws is not enough and instead the focus has to be on Integration of environmental concerns in the development planning, pollution prevention at source by encouraging development and application of best available technical solution etc. The national environment policy framework in India has been provided in the form of policy statements, namely, the National Forest Policy (1988), the Policy Statement for Abatement of Pollution (1992) and the National Conservation Strategy and Policy Statement on Environment & Development (1992). The National Conservation Strategy provides for the integration of environmental considerations in the policies and programmes of different sectors. It emphasizes sustainable life styles and the proper management and conservation of resources. The Pollution Abatement Policy stresses the prevention of pollution at source. It encourages the development and application of the best available practical technical solutions. The policy conforms to the "polluter pays" principle. It underlines the protection of heavily polluted areas and river stretches. The Forest Policy stresses the maintenance of environment through preservation and restoration of ecological balance. The policy seeks to substantially increase the forest cover in the country through afforestation programmes.

REFERENCES

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Akhtar, S. M. 1978. Economic Development of Pakistan. Vol. 2. Publishers United Ltd , Lahore.
3. Centre for Science and Environment, State of Indian Environment: Citizen‘s fifth report 1999.
4. Central Pollution Control Board: Annual Report 1999-2000.
5. Central Pollution Control Board: Pollution control acts, rules regulations, rules and notifications issued thereunder, 1998.
6. Central Pollution Control Board CPCB (2000a) ‗Polluting industries‘. Parivesh newsletter 2000,
7. Country Profile on Environment –Nepal, 1997, JICA.
8. Environment Protection Council, 1993. Integrating Environment and Development, Nepal Environmental Policy and Action Plan.
9. EUAD. 1991. Pakistan national report to UNCED, submitted to the United Nations Conference on Environment and Development. Environment and Urban Affairs Division, Government of Pakistan, Islamabad.
10. FINNIDA/Asian Development Bank, 1988. Master Plan for the Forestry Sector.
11. Government of India, Planning Commission Ninth Five Year Plan 1997-2002, Vol II, Thematic issues and Sectorial programmes.
12. Groombridge, B. 1988. Balochistan province, Pakistan: a preliminary environmental profile. IUCN Conservation Monitoring Center, Cambridge. (Mimeographed).
13. Human Development Report 1999, UNDP.
14. JICA Annual Report, 1999, JICA.
15. JICA Nepal Office, Kathmandu, Nepal.
16. MoEF (1997) White paper on pollution in Delhi with an action plan. New Delhi: Ministry of Environment and Forests.
17. Ministry of Finance, 1996. Economic Survey 1995/96.
18. Ministry of Population and Environment, 1996. Scope of work..
19. Munasinghe, M. and W. Cruz, 1995. Economy-wide policies and the environment: lessons from experience, World Bank Environment Paper No.10. Washington, DC.
20. Mahaweli Authority of Sri Lanka Act, 1979 No.23 establish the Mahaweli Authority of Sri Lanka. The jurisdiction of the Authority is within any area that may be developed with the water resources of the Mahaweli or any major river, declared as a special area.
21. National Planning Commission (1992). The Eight Plan. His Majesty‘s Government of Nepal, Singh Durbar, Kathmandu, Nepal, Central Bureau Statistics, 1994a. A Compendium on the Environmenta
22. National Planning Commission, 1995. An institutional analysis of EIA implementation in Nepal", Nepal EIA Strengthening Project. National Planning Commission/Asian Development Bank.
23. National Planning Commission, 1970. The Fourth Five-Year Plan (1970-1975).
24. National Planning Commission, 1975. The Fifth Five-Year Plan (1975-1980).
25. National Planning Commission, 1980. The Sixth Five-Year Plan (1980-1985)
26. National Planning Commission, 1992. The Eighth Five-Year Plan (1992-1997).
27. National Planning Commission, 1997. Unpublished draft note on the preparation of the Ninth Five-Year Plan (1997-2001) document.
28. National Environment Act, 1980 No.47: to establish a Central Environmental Authority and matters connected therewith including recommendation to the government a system of rational exploitation and conservation of aquatic and wildlife resources, with special

attention to the threatened species of fish and flora and a system of park and wildlife management. Amended by No.56 of 1988.
29. O. P. Dwivedi, 'India: Pollution Control Policy and Programmes', International Review of Administrative Sciences, Vol. 43, No. 2 (1977).
30. Policy Statement for Abatement of Pollution , Ministry of Environment and Forests, (New Delhi, 1992).
31. Pachauri, R.K.; Sridharan, P.V. (1998) Looking Back to Think Ahead: growth with resource enhancement of environment and nature. New Delhi: Tata Energy Research Institute.
32. Singh, 'Planning for Environmental Sustainability', The Indian Journal of Public Administration vol. 39, No. 3, July-September 1993.
33. S. Singh, 'Eco-Funds: Budgeting for Environment', The Hindu Survey of the Environment (Madras: The Hindu, 1993.
34. Statistics of Nepal: Issues and Facts. National Planning Commission Secretariat..
35. The World Fact Book 1999, CIA.
36. TEAM Nepal (P) Ltd., March 1997, Country Profile Study on Environment in Nepal (Final Report) .
37. UNDP/GEF,1999, Country Programme Strategy: Nepal, Kathmandu, Nepal.
38. World Bank, World Development Report 1992: Development and the Environment (New York: Oxford University Press, 1992.
39. World Bank, Country Assistance Strategy: Nepal (1999 - 2001), Kathmandu, Nepal
40. World Bank, September 1998, World Development Report, Knowledge for Development 1998/99, The International Bank for Reconstruction and Development/ The World Bank, Washington D.C. (ISBN 0-19-521118-9).
41. World Development Indicators, 1999, The World Bank.
42. World Development Report, 1999, The World Bank.

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law

CHAPTER XIV

MULTILATERAL ENVIRONMENT AGREEMENTS AND THEIR IMPLEMENTATION

BANGLADESH

Key Issues: Implementation of MEAs**;** Technology Transfer; Inbuilt Funding Mechanism; Synergy with other Agreements; Informed Negotiations, Coordination of Secretariats; Education and Awareness; Enforcement and compliance

Domestic Legislative Measures: Bangladesh Environment Policy, 1992; Forest Policy 1994; Forest Master Plan, 1996; Integrated Forest Management, 1995; Bangladesh Wildlife (Preservation Amendment) Act, 19974; National Biodiversity Strategy; Bangladesh Environment Conservation Act 1995; Destructive Insects and Pests Act, 1914; The Poisons Act, 19 Imports and Export Control Act. 1950; The Dangerous Cargoes Act 1953; the Factories Act, 1965; The Customs Act, 1969; The Agricultural Pesticides Ordinance. 1971; Bangladesh Petroleum, 1974; Drugs (control) Ordinance 1982; The Forest Act, 1972; The Protection and Conservation of Fish Act, 1950; The Government Fisheries Protection) Act, 1959; The Agricultural Pesticides Ordinance, 1971; The Bangladesh Wildlife (Preservation) Order, 1973; The Seeds Ordinance, 1977; The Marine Fisheries Ordinance, 1983, The Highways Act. 1952; The Vehicles Act, 1927 Factories Act 1965; The Petroleum Act, 1974; The Motor Vehicle Ordinance, 1983

Key Institutions: The Department of Forest; Ministry of Environment and Forest; The Ministry of Planning; National Environmental Council; Department of Forests; International Institutes of Environment;

1. INTRODUCTION

Bangladesh has taken part in numerous international negotiations from which have emerged treaties, conventions, agreements or protocols. This participation is based on the recognition that only through involvement of all countries with the global community be able to take appropriate measures to protect a common heritage. However, there are limitations to the country's participation in the subsequent implementation of any agreement reached with the international community.

Bangladesh has so far signed, ratified and acceded to 28 international conventions, treaties and protocols related to environment. The important ones, among them, signed at the UN Conference on environment and Development (UNCED), held at Rio de Janeiro,. Brazil in1992 are the Agenda 21. Climate Change Convention and Biodiversity Convention. The Agenda 21 is a basis to attain sustainable development through policies initiated and coordinated at the national level. The second phase of the Bangladesh National Conservancy Management Plan (NEMAP) and the National Environment Management Action Plan (NEMAP) all reiterate Bangladesh's commitment to implement the international conventions and treaties signed from time to time.

As a signatory of these international and regional treaties/conventions,/protocols, and in fulfilling the constitutional obligation, further efforts will be continued to chart the course to property ensuring that no irreparable damage is inflicted to the environment and prosperity is sustained in the long run. The UNEP has brought out a list of 200 agreements on environment related topics. Several related to specific areas

or regions, not covering Bangladesh. However, there all some which have relevance in the context of the country. These are currently' being examined with a view to determining which among them may be adhered to.

2. INTERNATIONAL CONVENTIONS/TREATIES/PROTOCOLS (ICTPS) SIGNED, RATIFIED OR ACCESSED BY BANGLADESH

SL. No.	Convention/Treaty/Protocol	Signed	**Ratified/Accessed Accession**	**In the process of ratification**
1.	International Plant Protection Convention, Rome, 1951.		01.09.78	
2.	International Convention for the Prevention of the Sea by oil, London, 1954 (as amended on 11 April 1962 and 21 October 1969)		28.12.81 (entry into force)	
3.	Plant Protection Agreement for the South East Asia and Pacific Region (as amended). Rome 1956.		04.12.74 (AC) (entry into force)	
4.	Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water, Moscow, 1963.	13.03.85		
5.	Treaty on Principles governing the Activities of States in the Exploration and use of outer Space including the Moon and Other Celestial Bodies, London, Moscow, Washington, 1967.		14.01.86(AC)	
6.	International Convention Relating to intervention on the High Seas in Cases of Oil Pollution Causalities, Brussels, 1969		04.02.82 (entry into force)	
7.	Convention on Wetlands of International importance especially as Waterfowl Habitat, Ramsar, 1971 (Popularly known as Ramsar Convention).		20.04.92 (ratified)	
8.	Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons, and on their Destruction, London, Moscow, Washington, 1972.		13.03.85	
9.	Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 1972.		03.08.83 (Accepted) 03.11.83 (ratified)	
10.	Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 1973 (Popularly known as CITES)	20.11.81	18.02.82	
11.	United Nations Convention on the Law of the Sea, Montego Bay, 1982.		10.12.82	
12.	Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985		02.08.90(AC) 31.10.90 (entry into force)	
13.	Montreal Protocol on substances that Deplete the Ozone Layer, Montreal 1987.		02.08.90 (AC) 31.10.90 (entry into force)	
14.	London Amendment to the Montreal Protocol on		18.03.94 (AC)	

	substances that Deplete the Ozone Layer, London, 1990. Copenhagen Amendment.		16.06.94 (entry into force) June, 1996	
15.	Convention on Early Notification of a Nuclear Accident, Vienna, 1986.		07.01.88 (ratified) 07.02.88 (entry into force)	
16.	Convention on Early Notification of a Nuclear Accident, Vienna, 1986.		07.01.88 (ratified) 07.02.88 (entry into force)	
17.	Agreement on the Network of Aquaculture Centres in Asia and the Pacific, Bangkok, 1988		15.05.90 (ratified)	
18.	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989.		01.04.93(AC)	
19.	International Convention on Oil Pollution Preparedness, Response and Cooperation, London, 1990.	30.11.90		
20.	United Nations Framework Convention on Climate Change, New York, 1992.	92	16.02.94	
21.	Convention on Biological Diversity, Rio De Janeiro, 1992.	05.06.92	20.03.94	
22.	International Convention to Combat Desertification, Paris, 1994.	21.06.94		Ratified by cabinet during October 1995.
23.	Convention on the Prohibition of Miliitary or Any other Hostile Use of Environmental Modification Techniques, Geneva, 1976		03.10.79(AC) (entry into force)	
24.	Agreement related to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, New York, 1994.	28.07.96		
25.	Agreement for the implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and management of Straddling fish Stocks and Highly Migratory fish Stocks, New York, 1995.	04.12.95		
26.	Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Paris, 1993	14.01.93		
27.	United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Paris, 1994	14.10.94	26.01.96	
28.	Convention on Nuclear Safety, Vienna, 1994	21.09.95	21.09.95 (AT)	

3. CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE SPECIALLY AS WATERFOWL HABITAT, RAMSAR 1971

Major Concerns :

The major concerns of the convention has been to stem the progressive and loss of wetlands, happening currently and is likely to happen future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific and recreational value.

(a) Each Contracting Part shall designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance.
(b) The Contracting Party shall consider its international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl.
(c) Parties to establish wetland nature reserves. Cooperate in the exchange of information and train personnel for wetland management;
(d) Conferences on the conservation of wetlands and waterfowl to be convened as the need arise.

National Measures for Implementation

This convention aims to protect threatened wetlands and Bangladesh is a signatory. However, although Bangladesh has several significant wetlands of international importance, none of them have been included in the Ramsar Convention list of threatened wetlands of international significance. Bangladesh has some significant publications but is a minor player.

4. CONVENTION FOR THE PROTECTION OF THE WORLD CULTURAL AND NATURAL HERITAGE

Major Concerns

To establish an effective system of collective protection of the cultural and natural heritage of outstanding universal value organized on a permanent basis and in accordance with modern scientific methods.

National Measures for Implementation

The Sandarbans the World's largest Mangroves were formally recognised as the World Heritage by the UNESCO on December 6, 1997. Prime Minister Sheikh Hasina on 4 February officially unveiled the world Heritage sites plaque at a ceremony in Sandarbans.

This is for the first time that World Heritage Committee of UNESCO reconised a mangrove forest as a World heritage. The 1,400 Square Kilometers of the forests have been recognised as of "exceptional universal value."

The total area of the Sandarbans World Heritage site is composed of three wildlife sanctuaries-East Wildlife Sanctuaries, South Wildlife sanctuary and West Wildlife Sanctuary.

The total area of the World Heritage site is 1,400 Sq. Km. Due to the top dying of the sandari trees. If the trend continues then it will not be possible to maintain the heritage of the sandarban. The Lack of sweet water flow in the tributaries of the Padma flowing through the sandarbans increased salinity in the area,

which caused the top dying of sandari trees. The Government has approved Tk. 382 crore bio-diversity conservation project to protect the forest.

Indiscriminate deforestation, air pollution, dumping toxic waste into water etc., the list grows everyday. Sandarbans has been not spared of these outs of self- destruction. In the process Royal Bengal Tiger has become an endangered species. and so have many others.

5. CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA, WASHINGTON, 1973

Major Concerns

The Convention makes it mandatory for parties to take the following minimal measures to give effect to and enforce its provisions. The underlying duty of the parities is embodied in Article VIII which emphasizes that they shall take appropriate measures to enforce the provisions of the Convention, and to prohibit trade in specimens in violation thereof. Parties must at least take the following action:

- Penalize trade in, or possession of such specimens, or both;
- Provide for the confiscation or return to the state of export of such specimens.

Additionally, it is in the discretion of individual parties when they deem it necessary to provide for any method of internal reimbursement for expenses incurred as a result of the confiscation of a specimen traded in violation of the measures taken in the application of provisions of the convention. Parties are also required to designate one or more Management Authorities and to designate one or more Scientific Authorities.

National Measures for Implementation

Bangladesh became a party to the Convention on International Trade in Endangered species Wild Fauna and Flora (CITES) in 198I. This carries with it certain obligation with regard to the flow between convention of flora and fauna identified and accepted as endangered or threatened species. Any export re-expert of those flora and fauna included in the list must therefore revise approval from the authorities convened.

Administration.

The Department of Forest, Ministry of Environment and Forest is the management Enforcement of the convention is accomplished by the department of Forest

Domestic Legislation

The existing local legislation, which exercise authority on wild life, i. e. the Bangladesh Wildlife (Preservation Amendment) Act, 19974. The main provision of the Act are as follows :-

(1) The wild animals specified in the first Schedule shall be known as "game animals" and shall not be hunted, killed or captured, save in accordance with the terms of permit.
(2) The wild animals specified in the Third Schedule to this Act shall be known as "Protect Animals." and shall not be hunted, killed or captured save as otherwise expressly provided in this Act that no person shall **:**

The Act provides that no person shall

(a) (i) hunt any wild animal by means of set-gun, drop spear, dreadful gun trap, an explosive projectile bomb, grenade, electrical contrivances, an baited hook or

any other trap whatsoever,

(ii) Hunt any game animal by means of an automatic weapon of a calibre used by the Bangladesh Army, Bangladesh Rice or Police Force, a shot gun, rifle of 22 calibre or less, or a projectile containing any drug or chemical substance having the property of anesthetizing, paralyzing, stupefying or rendering a
wild animal crippled whether partly or totally;

(b (i) use any motor vehicle, motor driven vessel, watercraft of any type or aircraft or any other manually of mechanically propelled vehicle of any type to pursue
any game animal, or to drive or stampede game animals for any purpose

(ii) use or have in his possession any person or like injurious substance for the purpose of hunting a game animal;

(iii) shoot any game animal from any aircraft, motor vehicle, rail trolley cart, boats or any kind. of watercraft or any other conveyance;

(iv) hunt with the help of live decoys, call birds or any other artificial contrivances

(c) construct or use or have in his possession any pitfall, game pit, trench or similar excavation or any fence or exposure, or set fire to any vegetation or any other contrivance for the purpose of hunting any game animal.

(1) No person shall transfer by gift, sale or otherwise to any other person any wild animal, meat or trophy of any kind unless he is in possession of a certificate of Lawful Possession of respect thereof.

(2) No person shall receive by gift, purchase or otherwise any wild animal
trophy or meat unless he receives at the same time a valid Certificate, of
Lawful Possession in respect thereof.

Further, the act provides:

(1) No person shall import or attempt to import into Bangladesh any live wild animal of an endemic or exotic species, or any trophy or meat of a kind specified in the Second Schedule, -

(i) except through a customs port of entry:
(ii) unless he produces to the Customs Officer satisfactory proof that such wild animal, trophy or meat has been lawfully exported from the country of export;
(iii) unless he produces an Import Permit issued by the Government under this Act.

(2) It shall be the duty of a Customs Officer to detain any live wild animal of any trophy or meat of any kind specified in the Second Schedule until the documents required by clause (1) have been produced to him and if those documents are not produced within a reasonable time, the wild animal, trophy or mea shall be forfeited and disposed of in such manner as may be prescribed.

The Act also provides:

(1) No person shall export or attempt to export any wild animal, trophy or meat except those mentioned in the First Schedule, -

(i) Except through a customs port of Exit;
(ii) unless he produces to the Customs Officer an Export Permit issued by the Government under this Act.

(2) An Officer may issue, or refuse to issue without assigning any reason, an Export Permit to the owner having the certificate of lawful Possession of any wild animal, trophy or meat of any kind specified in the First Schedule, and in case of receipt of such Export Permit the owner of the wild animal, trophy, or meat shall immediately surrender to the said officer Certificate of Lawful Possession relating thereto.

The Department of Forest is presently implementing number of projects to protect and to create public awareness regarding CITES.

6. CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS (1979)

Major Concerns

To recognize that the States are and must be the protectors of the migratory species of Wild animals that lives within or passes through their national jurisdictional boundaries.

7. UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

Major Concerns

The United Nations Convention on Law of the Sea received considerable attention on the protection and preservation of marine environment and has gone a long way in laying down many important provisions on controlling marine oil pollution. The articles on the protection and preservation of marine environment that finally emerged as Part. III of the Convention represent the first attempt to set out a general framework for a legal regime that establishes on a global conventional basis the obligations, responsibilities and powers of the States in all matters ot~ marine environmental protection.

8. VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER (1985)

Major concerns

To protect human health and the environment against adverse effects resulting from modifications of the ozone layer.

9. MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER (1987)

Major Concerns

The objective of the Protocol is to protect the ozone layer by taking precautionary measures to control global emissions of the substances that cause its depletion.

The provisions of the Protocol, inter alia, in short are:

a) Annual consumption and production of substances named in Annex A at the 1986 annual level; for substances in both Groups I and II, of Annex A commencing 7 months and 36 months, respectively, after the Protocol enters into force;
b) Annual Consumption and production of the substances in Group I to be reduced to fifty percent of the 1986 annual level from July 1, 1988 (Article 2);

Developing countries consuming less than O .3 Kg per capita of the controlled substances, with the entry into, force of the Protocol for them, respectively, may delay compliance to paragraphs 2, 3 and 4 of Article 2 of the Protocol by ten years, provided that during that period they do not exceed 0 .3 Kg per capita (Articles 2 and 5);

A year after the entry of the Protocol into force, Parties may not import tile substance from a non-Party to tile Protocol. After January 1993, developing countries may not export such substances to a non-Party (Articles 4 5);

The Protocol, which operates within the framework of the Vienna Convention for the Protection of the Ozone layer, provides for measures of exchange of technology and information, calculation of control levels and assessment and review of the progress achieved.

The Protocol amendment: in 1990 (London Amendment), in 1992 (Copenhagen Amendment) and in 1997 (Montreal Amendment).

Implementation status in Bangladesh: Bangladesh has accessed to the London Amendment on March 18, 1994 while the date of entry into force has been June 16,1994. Accession to the Copenhagen Amendment was approved by the Cabinet in 1996. Besides, the following activities have taken place in Bangladesh regarding implementation of the Protocol.

i) A Reconnaissance Survey of ODS use was conducted in 1993.
ii) A plan has been formulated to phase-out ODS in 1994.
iii) A National Technical Committee on Ozone Depleting Substances was constituted in the Ministry of Environment and Forest in 1995.
iv) Ozone Cell has been constituted in 1995 in the Department of Environment to oversee ODS phase-out activities.
v) ODS-use has been inventorised for the years 1994, 1995, 1996 and 1997.
vi) Draft economic and legal policies for ODS Phase-out in Bangladesh have been framed.
vii) Training Programmes were organized for technicians working in various; refrigeration and air-conditioning service shops in 1999.
viii) Training Programmes were organized for technicians working in various refrigeration and air-conditioning service shops in 1999.

10. BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARV MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL (1989)

Major concerns

The objective of the convention has been to set up obligation for parties with a view to (a) reducing transboundary movements of wastes subject to the Basel Convention to a minimum consistent with the environmentally sound and efficient management of such wastes; (b) minimizing the amount and toxicity of hazardous wastes generated and ensuring their environmentally sound management (including disposal and recovery operation) as close as management of hazardous and other wastes they generate.

Implementation status in Bangladesh :

Bangladesh signed the Basel Convention on the Control of Transboundary Movements of Hazardous waste and their disposal on 22 March 1989, accessed on April 1993 and the Convention entered into force on 30 June 1993.

Bangladesh is committed to implement the Basel Convention, with this objective in mind; the Government of Bangladesh has already adopted the Environment Conservation Act 1995. The Act provides a specific definition of hazardous wastes and has covered broad aspects of the management of It, It may be mentioned that the Government of Bangladesh has also adopted "Coast Guard Act 1994" which, inter alia, provides to prevention of illegal traffic of hazardous wastes. Since Bangladesh has very, limited technical know-how and facilities for Identification, treatment and safe disposal of hazardous wastes, a ban has been imposed on the import of all sorts of wastes in the Import Policy Order 1997 -2002, Export of waste from Bangladesh has also been banned.

A Project captioned “Regulatory Framework on Import of Hazardous and Toxic Materials" was implemented with funding from the Asian Development Bank in 1995. The Report of the project is still under consideration at the appropriate levels of the government.

A project on chemical safety is under implementation under the Department of Environment with funding from the World Health Organization.

11. CONVENTION ON BIOLOGICAL DIVERSITY

Major Concerns

The objectives of the Convention are to conserve biological diversity promote sustainable use of its components and encourage equitable sharing of the benefits arising out of the utilization of genetic resources. Such equitable sharing includes appropriate access to genetic resources as well as appropriate transfer of technology, taking into account the existing rights over such resources and technologies.

National Measures for Implementation

Conservation of Biological Diversity was a major objective of the Earth Summit, and one of the conventions agreed upon was the convention on Biological Diversity .Agenda 21 says that "urgent and decisive action is needed to conserve and maintain genes, species and ecosystems, with a view to the sustainable management and use of biological resources". This view was endorsed by the government when it signed the convention in Rio, and ratified it in 1994. The convention calls for developing national strategies, plans or programmes for the conservation and sustainable use of biological diversity. Subsequently, on the urging of IUCN, many countries have prepared the National Biodiversity strategy and Action Plan.

Among the other recommendations of the conventions, Bangladesh government has begun work on in-situ and exist conservation and along with NGOs and IUCN have promoted public education and awareness of the importance of Biodiversity IUCN has been assisting in preparing a National Bio-legal and Institutional Profile. Much more needs to be done. The NCS Implementation Project begun in 1995 has as its objective conservation of some wetlands and forest areas and the coral island and surveys of flora and fauna along with socioeconomic, ecological and demographic. The Convention calls for identit1cation of ecosystems and habitats containing high diversity and species and communities, which are threatened. This systematic work cannot possibly be undertaken without a National Biodiversity Strategy. The Bangladesh National Biodiversity group has been formed under the aegis of IUCN.

The revival of the wildlife Division in the forest Department has given a new lease of life to the efforts to preserve species and their habitats. Early n 1996 the Wildlife Sanctuaries in the Sundarban forest were declared as World Heritage Sites. This will no doubt give an impetus to preserving Biodiversity. Man sites have been suggested the NCS to be declared as protected Areas, and the government has them under active consideration. The NGO members of IUCN and IUCN Country Office has issued five posters on the Wildlife of' Bangladesh, which has promoted awareness of the natural resources. NGOs have also published booklets on birds and trees for children in non-formal primary schools.

Closely related to Biodiversity is the issue of Biotechnology. Agenda 21 calls for environmentally sound management of biotechnology. This requires global partnerships, because most of the expertise and investments are in the developed countries and most of the biological resources are in the developing countries. This is a new area of research, investment and development in Bangladesh, and so far little has been achieved.

12. UNITED NATIONS (1992) FRAMEWORK CONVENTION ON CLIMATE CHANGE (1992)

Major Concerns

The objective of the Convention is to regulate levels of greenhouse *gas* concentration in the atmosphere so as to avoid the occurrence of climate change that would impede sustainable economic development, or compromise initiatives in food production.

National Measures for Implementation

Bangladesh has already gathered and analyzed a vast amount of information pertinent to climate change, policy-wise, both internally and domestically. The country is in process of preparation of a National Climate Change Action Plan.

The country study on climate change undertaken under the US Country Studies Programme has resulted in substantial volume of updated information, data and insight to both the greenhouse gas emissions and their possible mitigation as well as the vulnerabilities to climate change and sea-level rise together with possible adaptation strategies. Mitigation options have also been prepared for submission to the Global Environment Facility (GEF) and other donor agencies including International and Regional Banking Institutions.

13. UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION IN THOSE COUNTRIES EXPERIENCING SERIOUK DROUGHT AND LOR DESERTIFICATION, PARTICULARLY IN AFRICA (1994)

Major Concerns

To combat desertification and mitigate the effect, of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements.

National Measures for Implementation

Whereas Bangladesh is not in danger of desertification but becoming increasingly more affected by droughts. This is party because the increase of population has led to overuse of land and water resources, and partly because of development efforts along narrow sectoral lines. Agenda 21 call for managing fragile ecosystems by combating the tendency to desertification and increasing drought. The western part of Bangladesh has greater variability of rainfall and in more susceptible to drought than the eastern part. The reduction in the flow of the Ganges river during the dry months has seriously compounded dad the drought preparedness in both the short and long term, aimed at reducing the vulnerability of production systems to drought". The government has signed the Convention on Desertification and takes an active part in expert level meetings on the issues raised therein.

14. STOCKHOLM DECLARATION OF THE UNITED NATIONS CONFERENCE ON THE HUMAN ENVIRONMENT (1972)

Major Concerns:

To considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment.

Rio Declaration on Environment and Development (1972)

Major concerns:

To establish a new and equitable global partnership through the creation of new levels of cooperation among States, key sectors of societies and people and working towards international agreements which respect the interests of all and protect the integrity of the global environmental and developmental system;

National Measures for Implementation

The Earth summit was a watershed event which affected the approach to issues throughout the world. An agreed text on all major issues of global concern, known as Agenda 21, was issued at the conference. This vast set of integrated strategies and detailed identified number of issues for conservation and management of for development. This is the core of the global environmental. To achieve success in the identified issues, it called for strengthening role of major groups, such as women, youth, indigenous, people, local trade unions, scientific and technological community and so on. Since the Earth summit all environmental action, on a national, regional or global basis, is taken, in Bangladesh, on the basis of Agenda 21 and the conventions which were signed at the Earth Summit.

In discussing the Social and economic dimension, Agenda 21 mentions the great importance of combating poverty as a means of ensuring the conservation and sustainable utilization of resources. It says, quite bluntly, that 'a specific anti-poverty strategy is therefore one of the basic conditions for ensuring sustainable development. This antipoverty strategy was strongly endorsed by both the government and the NGOs of Bangladesh.

All other dimension concerns demographic dynamics and its effect on sustainable development. UNCED called for disseminating knowledge concerning the links between demographic trends and factors and sustainable development and also for formulating and then implementing integrated environment and development programmes, taking into account demographic trends and factors. In Bangladesh there is ample awareness of the effect of demographics and both the government and NGOs are actively promoting family planning.

Agenda 21 also pointed out that health and development are intimately interconnected. Bangladesh government and NGOs are quite aware that sound development is not possible without a healthy population. In the four years since the NCS was first drafted, the rapid growth of the Dhaka metropolitan area into a megacity, with 10 million people by the year 2000 is causing serious concern. Agenda 21 calls for various measures for improving the urban and rural habitat. This is a development area of such vast dimension that only a modest beginning has been made in Bangladesh. Recently, the Dhaka Metropolitan Development Plan has been completed but so far only a modest beginning has been made in implementing it,

Agenda 21 also discusses the necessity of integrating the issues of environment and development in decision-making. The Fifth Five Year Plan has a chapter on environmental issues, which would have to be taken into account when implementing economic development. In 1992, the Government issued the Environment Policy and Action Plan, which have since guided further policy action and project planning.

Since then the Ministry of Environment and Forest has entered into an agreement with IUCN for an environmental economist to work in the Planning Commission on integrating issues of environment and development. It has been the practice for development plans to be made without reference to environmental issues and therefore it has felt that such issues should be integrated within the documents defining the development process. It was also felt that the provision of an effective legal and regulatory framework is urgently needed to strengthen the process by which development would be made environmentally sustainable. To this end the Government passed the Environment Protection Act (EPA)

in 1995. The ECA is a broad piece of legislation greatly empowering the DOE, However, to make its provisions implement able, a number of specific laws would have to be formulated.

15. THE FOREST PRINCIPLES (1992)

The aim of the Forest Principle is to contribute to the management, conservation and sustainable development of forest and to provide for their multiple and complementary functions and uses.

National Measures for Implementation

Forest Policy 1994 was announced in 1995 and the Forest Master Plan, was in early 1996. This Plan supports all the initiatives urged in Agenda 21 specifically the Wildlife Division in the Forest Department has been revived, has been institutional strengthening, there has been a very successful coastal programme and various project for social afforestation are being encouraged. Parallel to this effort, UNDP/FAO study in Integrated Forest Management has also been published in 1995.

16. WASHINGTON DECLARATION ON PROTECTION OF THE MARINE ENVIRONMENT FROM LAND-BASED ACTIVITIES (1995)

Major Concerns:

To protect and preserve the marine environment for present and future generations, and to involve major groups in national, regional and international activities to degradation of the marine environment by land-based activities,

National Measures for Implementation:

Marine environment is an essential component of the global life support and is a positive asset that present opportunities for sustainable Bangladesh is fortunate in having a long coastline open to the oceans The NCS has discussed the marine environment, and in particular the areas in some detail. It was realised that the coastal ecosystem of Bangladesh is very productive and that the marine environment would offer further opportunities for sustainable economic development. Agenda 21, in fact, fully support the viewpoint expressed in the NCS. It calls for integrated management and sustainable development of coastal areas including the EEZ.

South Asian Regional Seas Action Plan

Major Concerns

For the purposes of this Action Plan, the South Asian Seas Region covers the and related coastal environment, including international water adjacent to states: Bangladesh; India; Maldives; Pakistan; Sri Lanka.

Existing legislative Arrangement

The Bangladesh Environment Conservation Act 1995 does not provide for any action related to implementation of environment International Conventions, Treaties and Protocols signed and ratified by Bangladesh although specific mentions have been made in the Bangladesh Environment Policy, 1992 and Action Programme above various Ministries Divisions and agencies with definite responsibilities. However, the existing legislative arrangements vis-a-vis the above groups of ICTPs can be summarized in the following table:

Group of ICTPs	Legislation
Group (a)	Destructive Insects and Pests Act, 1914; The Poisons Act, 19 Imports and Export Control Act. 1950; The Dangerous Cargoes Act 1953; the Factories Act, 1965; The Customs Act, 1969; The Agricultural Pesticides Ordinance. 1971; Bangladesh Petroleum, 1974; t11e Drugs (control) Ordinance 1982: etc.
Group (b)	The Forest Act, 1972: The Protection and Conservation of Fish Act, 1950; The Government Fisheries Protection) Act, 1959; The Agricultural Pesticides Ordinance, 1971: The Bangladesh Wildlife (Preservation) Order, 1973; The Seeds Ordinance, 1977; The Marine Fisheries Ordinance, 1983, etc.
Group (c)	The Highways Act. 1952: The Vehicles Act, 1927 Factories Act 1965: The Petroleum Act, 1974: The Motor Vehicle Ordinance, 1983; etc.

The existing legislative arrangements are undoubtedly, far below than being adequate. The environmental ICTPs in consideration require, inter alia, designating at least one, if not several, focal point for each; setting up of depository and repository in each focal points: constituting implementation and monitoring cells with adequate manpower, equipment and financial implementation and monitoring cells with adequate manpower, equipment and financial resources and, above all, provisions for follow-up activities in respect of the respective requirements through updating the existing legislation, in case where the existing legislation can not be made to sufficiently cover our international obligations, new legislation should be made in place.

BHUTAN

Key Issues: Implementation of MEAs; Technology Transfer; Inbuilt Funding Mechanism; Synergy with other agreements; Informed Negotiations, Education and Awareness; Enforcement and Compliance

Domestic Legislative Measures: Forest Act 1969, Forest and Nature Conservation Act 1995, Mines and Management Act 1995;Environmental Assessment Act 2000; National Environmental Strategy**;** Paro Resolution on Environment and Sustainable Development (1990); National Forest Policy, 1974; National Forest Act (1969); Land Law (1979); Pastureland Law (1979); Inheritance law (1979); Livestock Law (1979); Wildlife Act (1985); Plant and Quarantine Act and regulations (1988);

Key Institutions: National Environment Committee; National Environment Commission;

1. INTRODUCTION

Although there are numerous agreements related to the environment at the international level, a few of particular relevance to countries of the region are mentioned here. As pointed out earlier, some of these are meant exclusively for protection of the environment, while others link environment with trade. However, both types of agreements have an influence on the economies of countries. Bhutan has been partner in the following Multilateral Agreements:

2. VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER, 1985

The Convention is aimed at introducing measures to prevent depletion of the ozone layer. Such depletion, which is a serious threat to human life, has actually resulted from emission of certain toxic gases in the air, either by industrial units or by consumers using certain harmful products.

3. MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER, 1987

The Protocol is concerned with phasing out ozone-depleting substances by 2010. This would mean a change in industrial production and consumption patterns throughout an economy.

4. BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL, 1989

The Convention is aimed at controlling the transboundary movements of hazardous wastes and their disposal. On occasion, countries have allowed other countries or industries to dump their hazardous waste by charging them a significant amount of money. These short-term economic gains can have a serious adverse effect on the environment and quality of life of a country.

5. RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT, 1992

The Rio Earth Summit laid the foundation for a new kind of global partnership to achieve sustainable development and lent impetus to the search for a policy framework that would seek to promote both economic efficiency and environment improvement. The areas of discussion included in the Rio Declaration were (a) promoting sustainable development through trade; (b) providing adequate financial resources to developing countries; and (c) encouraging macroeconomic policies supportive of both environment and development aspirations. The Declaration is non-binding in nature.

6. AGENDA 21 OF THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT

This includes a wide range of environmental issues related to forestry, desertification, ocean resources and linkages between trade and environment etc. It is an agreed text adopted by the General Assembly but is non-binding in nature.

7. WORLD TRADE ORGANIZATION

The negotiations in this international organization concern trade issues. It has adopted some agreements which have a bearing on the environment. These agreements give either incentives for the production and trade of environmentally friendly products or disincentives for the opposite. For example, under one of the WTO agreements, 20 per cent of the cost of adaptation to environmental requirements can be subsidized.

8. UN FRAMEWORK CONVENTION ON CLIMATE CHANGE

Bhutan was among the 150 countries that signed the United Nations Framework Convention on Climate Change (UNFCCC) at Rio de Janeiro in 1992. The Royal Government of Bhutan ratified this convention at the 73rd session of the National Assembly on August 25th, 1995. After the ratification of the UNFCCC, the RGOB designated the NEC as the focal point for climate change activities in Bhutan. The Royal Government also set up a National Climate Change Committee.

The support of the Global Environmental Facility the Bhutan National Greenhouse Gas Project is being implemented. This project seeks to enhance the capability of the Royal Government of Bhutan, through the NEC Secretariat, to fulfill its obligations to the United Nations Framework Convention on Climate Change under Articles 4 and 12 (Communication of Information Related to Implementation) leading to the National Communication.

The project aims to:

(a) develop methods, build capacity and strengthen institutions to assess the socio-economic and environmental impacts of climate change; and
(b) increase the capacity of the RGOB to identify and evaluate policy options and plans for adaptation to possible climate change.

9. UN CONVENTION ON BIOLOGICAL DIVERSITY

The Royal Government of Bhutan ratified this convention at the 73rd session of the National Assembly on August 25th, 1995. After the ratification of the UNCBD, the RGOB designated the NEC as the focal point. The NEC in collaboration with the Nature Conservation Section of the Forestry Services Division has been carrying out the activities related to the convention. An action plan on biological diversity has been recently developed. This action complements the overall development activities.
National Mechanisms and Legal Instruments

10. DOMESTIC LEGISLATIVE MEASURES

Development of law at the national level with relation to sustainable development has led to legislation on environmental and environment-related issues by adding regulatory instruments with well-defined requirements

The Program for Further Implementation of Agenda 21 established the target year of 2002 for all countries to have formulated national sustainable development strategies. Bhutan‟s national strategy, the

National Environment Strategy, has already been in place for four years now, making the Kingdom one of the 85 countries globally to have completed such a sustainable development strategy.

Bhutan has used a combination of the sustainable development strategy and five-year development sector plans. These sectoral plans have facilitated the Government in receiving financial resources for helping decision-makers to achieve and measure progress toward sustainable development goals and targets. The National Environment Commission (NEC) is the national coordinator of the country‟s sustainable development strategy; its long-term objective is to define policies, programs, plans and actions for promoting and ensuring the sustainability of Bhutan‟s natural resources. The NEC provides input into major policy areas in which environmental concerns and economic development need to be balanced, such as tourism; road access; resource-based mechanisms for financing sustainability; public health; urbanization; and population and sustainability.

Development of law at the national level with relation to sustainable development has led to legislation on sectoral environmental and environment-related issues by adding regulatory instruments with well-defined requirements. Policies also have been refocused to better integrate fragmented sectoral laws and regulations into a coherent framework, streamlining and harmonizing regulatory requirements.

A prerequisite for creating environmental legislation is the establishment of environmental standards. Such standards have never been systematically developed for Bhutan, which has often led to the adoption of regional and international standards instead. Environmental legislation eventually will be developed for all sectors based on environmental quality standards determined by the National Environment Commission and sectoral Ministries.

The majority of Bhutan‟s existing environmental legislation concerns the conservation of forests and the protection of wildlife and their habitats. More recent legislation covers the industrial and mining sectors and environmental assessment, as has been mentioned. The next set of environmental laws in Bhutan will have to be built upon the framework of current laws such as the Forest Act 1969, Forest and Nature Conservation Act 1995, Mines and Management Act 1995 and the Environmental Assessment Act 2000. In addition, an umbrella law is needed to facilitate implementation of a holistic approach to environmental issues. The Royal Government has thus initiated the development of such a law, the National Environmental Protection Act, which is currently under way. Committee members for the formulation of this Act have already undergone training in various field of environmental law.

Bhutan participates actively in both global and regional forums on sustainable development issues. It has signed and ratified the Rio instruments as well as the Convention on Biological Diversity. Toward meeting the obligations to the latter, the Biodiversity Action Plan was prepared in 1998. Bhutan also has signed and ratified the United Nations Framework Convention on Climate Change and participates actively in the South Asian Association of Regional Cooperation (SAARC) Environment Ministers fora. It further participates in other bilateral and multilateral fora of the United Nations Environment Program (UNEP), the Economic and Social Commission for Asia and the Pacific (ESCAP), World Bank, Asian Development Bank and the International Center for Integrated Mountain Development (ICIMOD).

INDIA

Key Issues:
Implementation of MEAs; Technology Transfer; Inbuilt Funding Mechanism; Synergy with other agreements; Informed Negotiations, Education and Awareness; Enforcement and Compliance

Domestic Legislative Measures:
Wildlife (Protection) Act, 1972; Forest (Conservation) Act, 1980; Environment (Protection) Act, 1986; National Forest Policy as amended in 1988; National Conservation Strategy and Policy Statement for Environment and Sustainable Development, 1992; National Agricultural Policy; National Land Use Policy; National Fisheries Policy; National Biodiversity Policy; National Wildlife Action Plan; Environmental Action Plan,1993

Key Institutions:
Ministry of Environment and Forests**;** Ministry of External Affairs; Botanical Survey of India; Zoological Survey of India; Ministry of Agriculture; Ministry of Water Resources; Ministry of Surface Transport; Ministry of Industry; Ministry of Health; Ministry of Agriculture; Ministry of Non-Conventional Energy Sources; Ministry of Commerce**;** Ministry of Urban Development; Planning Commission;

1. INTRODUCTION

India has been very active partner in the development and negotiations of various International Conventions, Treaties and Protocols. India is member of almost all important environment conventions. Some of the major conventions have been provided below:

2. THE CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA WAS SIGNED IN 1976

India is one of the 12 mega biodiversity centres in the world, representing two of the major realms and three basic biomes of the world. The country is divided into 10 biogeographic regions: Trans-Himalayan, Himalayan, Indian Desert, Semi-Arid, Western Ghats, Deccan Peninsula, Gangetic Plains, North-East India, Islands and Coasts.

The diversity of the Country's biological resources is yet to be fully surveyed. Approximately 65 per cent of the total geographical area has been surveyed so far. Based on this, over 47,000 species of plants and 81,000 species of animals have been recorded. This list is being constantly upgraded, specially in respect of lower plants and invertebrate animals.

Conservation and sustainable use of biological resources based on the local knowledge systems and practices is ingrained in Indian ethos and way of life. Formal policies and programmes for conservation and sustainable utilisation of biodiversity resources date back to several decades. The concept of environmental protection is enshrined in the Indian Constitution in Article 48(a) and 51(g). Major central acts relevant to biodiversity are:

Wildlife (Protection) Act, 1972
Forest (Conservation) Act, 1980
Environment (Protection) Act, 1986.
The various central acts are supported by a number of state laws and statutes concerning forests and other natural resources.
Policies and strategies directly relevant to biodiversity include:
National Forest Policy as amended in 1988

National Conservation Strategy and Policy Statement for Environment and Sustainable Development
National Agricultural Policy
National Land Use Policy
National Fisheries Policy (under preparation)
National Biodiversity Policy (under preparation)
National Wildlife Action Plan
Environmental Action Plan, 1993

A programme captioned "eco-development" through World Bank's assistance for in situ conservation of biological diversity involving local communities has been initiated in recent years. The concept of eco-development integrates the ecological and economic parameters for sustained conservation of eco-systems by involving the community.

3. THE UN CONVENTION ON THE LAW OF THE SEA WAS SIGNED IN 1995

India's coastline including major indentations and the shores of islands is about 7,500 km. long. About 55 per cent has beaches, which include spits, barriers and sandy stretches. The rest are constituted by rocky, overhanging cliffs and prograding shore including deltas. The Indian coastline is relatively stable with certain marked progradation near river mouths. These are two groups of islands, the Arabian Sea Islands (Lakshadweep and Minicoy) and the Bay of Bengal Islands (Andaman & Nicobar) which differ significantly in origin and physical characteristics.

The maritime zones of the country are demarcated under the Maritime Zones Act 1976 as 12 nautical miles of territorial seas, 24 nautical miles of contiguous zone and 200 nautical miles of Exclusive Economic Zone. Nine States and two Union Territories are located along the Indian coastline and the EEZ of 2.02 million sq. km. is adjacent to these States and Union Territories. India's population as per the census conducted in 1991 stood at 846 million. The nine coastal States and two Union Territories and the islands account for 419 million which is 49.5 per cent of the population of the country. However, not all the districts of the coastal States are situated on the coast. The population of coastal areas is 154 million which is 18.2 per cent of the total population of the country.

The western EEZ of India and also Andaman & Nicobar waters are being used as international tanker routes. It has been estimated that nearly 3500 tankers ply this area carrying about 470 million tonnes oil per year. A National Contingency Plan to deal with oil spill disasters has also been prepared. Infrastructure to deal with the oil spills are also being augmented. India has ratified Marpol 73/78 and adopted the provisions in Merchant Shipping Act.

India ratified the UN Convention on the Law of the Sea in June 1996. The Government of India have rules and regulations for dealing with various activities in the coastal zone which covers the inter-tidal area and the land area of 500 metres from the high tide line. A coastal zone management plan indicating various zones have been prepared by the States of the country so that the rules and regulation as defined in the relevant notification can be dealt appropriately at these zones. The government also has proposed to extend these rules to the ocean part.

The Government has initiated following steps, inter alia, for sustainable development of both the island groups:

- Setting up of Andaman & Nicobar Integrated Development Corporation to undertake developmental activities in an integrated manner in order to ensure the sustainability of all economic activities and to avoid conflicts

- Under the Environment Protection Act, l986, rules have been prescribed to prohibit environmentally destructive activities including mining of corals in the coral reef areas and several developmental along the coastlines of the islands have been regulated

- An apex body namely, the Island Development Authority has been functioning under the Chairmanship of Prime Minister of India to ensure performance of various developmental activities within the framework of sustainable development

- Research and Development activities are being promoted to develop eco-friendly technologies like cage culture with indigenous species for islands

- Promotion of Research for culture of bait fish in Lakshadweep to sustain the tuna fishery.

Keeping in view the need for sustainability in fisheries development and environment protection considerations, India's approach to coastal fisheries has been oriented towards mitigating the adverse effects of such activities on the environment as well as the users. Steps towards achieving sustainable development, inter alia, include enforcement of regulatory measures to control fishing activities in the inland and marine water areas, implementation of Coastal Regulation Zone (CRZ), enforcement of Marine Fishing Regulation Act (MFRA), and strengthening infrastructure for monitoring marine pollution, etc.

The Government has initiated following steps, inter alia, for sustainable development of both the island groups:
- Setting up of Andaman & Nicobar Integrated Development Corporation to undertake developmental activities in an integrated manner in order to ensure the sustainability of all economic activities and to avoid conflicts
- Under the Environment Protection Act, l986, rules have been prescribed to prohibit environmentally destructive activities including mining of corals in the coral reef areas and several developmental along the coastlines of the islands have been regulated
- An apex body namely, the Island Development Authority has been functioning under the Chairmanship of Prime Minister of India to ensure performance of various developmental activities within the framework of sustainable development
- Research and Development activities are being promoted to develop eco-friendly technologies like cage culture with indigenous species for islands
- Promotion of Research for culture of bait fish in Lakshadweep to sustain the tuna fishery.

4. THE CONVENTION ON BIOLOGICAL DIVERSITY

Pursuant to the ratification of the Convention by India in February,1994, several steps have been initiated to meet the commitments under the Convention as also to bring the legislative, administrative and policy regime regarding biological diversity in tune with the Articles of the Convention.

A National Action Plan on Biological Diversity is under finalisation. While consolidating the ongoing efforts of conservation and sustainable use of biological diversity, the draft Action Plan aims at establishing a policy and programme regime which brings the National Action on various aspects of the subject including capacity building and biosafety measures in tune with the Articles of the Convention.

India believes that national action regarding conservation and sustainable use of biodiversity and equitable sharing of benefits arising out of the utilisation of genetic resources demands appropriate actions on the part of international community. Some key issues in this regard are as follows:

i) Development of suitable enabling environment by the other parties, particularly the developed country parties, to ensure benefits to countries of origin. These benefits should not only include measures like royalty payment or monetary compensation, but also location of research and technologies in the countries of origin in accordance with the provisions of the Convention.

ii) Development of an internationally recognised regime for recognising the property rights - both intellectual and physical of the local communities. Development of such a regime may take time. Pending which all patent applications should be required to disclose: (a) the source and origin of the genetic material used; (b) knowledge and practices about the use of the said genetic resources by the local communities and identification of such communities; and (c) give a declaration that laws, practices on guidelines for the use of such material and knowledge systems in the country of origin have been followed.

iii) Capacities of biodiversity rich countries should be built to enable them to do bio-prospecting and products develop from genetic resources.

iv) Introduction of transgenic, alien species should be only with requisite safeguards.

Biosafety:

- The Convention on Biological Diversity (CBD) obliges Parties to ensure safety in the development, handling and use of GMOs (referred to as LMOs in the Convention). Sub-paragraph (g) of Article 8 and paragraph 3 of Article 19 of the Convention deal with the subject of safety in matters relating to LMOs. Paragraph 3 of Article 19 obliged Parties to consider the need for a Protocol in the field of safe transfer, handling and use of LMOs to ensure safety in biotechnology.

- A Protocol on Biosafety, specifically focussing on transboundary movement of living modified organisms (LMOs), under the aegis of the CBD was finally adopted on 29th January, 2000 in Montreal, Canada.

- India‟s position on some of the contentious issues on which there has been no earlier consensus include:
    1. Scope of the protocol: India‟s view has been that the AIA should extend to LMOs used for food, feed and processing (commodities).
    2. Trade Related Articles: there should be harmonization of trade and biosafety considerations.

- A three member Indian delegation participated in the fifth meeting of the conference of Parties to the CBD held in Nairobi, Kenya from 15-26 May, 2000. The meeting included a two-day high level segment which focused on the Cartagena Protocol on Biosafety. 67 countries signed the Biosafety protocol on 24th May, 2000. Although India did not sign the protocol, a statement outlining India‟s commitment to the cause of the environment was made by the Minister of State.

Access to genetic resources and benefit sharing:

- India has been emphasizing that while access to genetic resources and realisation of benefits is subject to national legislation through PIC and MAT, national action is not sufficient to ensure realisation of benefits to the country of origin or provider country. The responsibility must also be shared by the user country to create an enabling environment and confidence through legislative and other measures so as to ensure compliance of PIC stipulations, for ensuring equitable sharing of benefits as visualised in the Convention.

CBD and IPRs:

Although, the TRIPs and the CBD are intrinsically linked with one another, they represent two significantly separate multilateral approaches to utilization of living resources.

"While **TRIPs** seeks to promote and foster technological innovation by ensuring the certainty of intellectual property protection and of world markets for at least some biotechnological inventions, its provisions are silent on how this protection can achieve the objective of sustainable development, especially in developing countries."

"The **CBD** seeks to facilitate access to living resources, while focusing on conservation and sustainable use, as well as the equitable sharing of benefits of such use. In its effort to create a stake for developing countries in conservation and sustainable use, as well as the equitable sharing of benefits of such use, the CBD emphasizes the need to share with the benefits which include the need to share in the development and transfer of technology."

- India has had a consistent view regarding mutual supportiveness of Trade Related Intellectual Property Rights agreement (TRIPs) and the CBD. National legislation in the country of origin/provider country alone for regulating access to genetic resources would not be adequate in securing benefits in terms of the CBD. Particularly in cases where genetic material is utilised in

another country for developing products and processes on which patent protection is obtained. A need has thus been identified to call for enabling provisions in patent laws and other IPR systems to facilitate implementation of such access regulations.

- It is necessary that the intellectual property protection seeker should disclose the country of origin, the prevalent usage of the resource at the source point, and the available knowledge about the usage in the patent application alongwith a declaration that the access regulations of the country of origin have been followed in using the resource. This information should be open to public scrutiny after the application for such a protection is filed to enable the countries of origin to examine, comment and oppose, if need be. The Article 29 of the TRIPs agreement, which deals with „conditions on Patent Applications", should therefore be suitably amended to incorporate mandatory disclosure of the information about the country of origin.

India's Status of Implementation of Convention Commitments

1. A National Policy and Macro-level Action Strategy for conservation and sustainable use of Biodiversity have been prepared.

2. GEF funds have been accessed for formulating the detailed micro-level action plans through the NBSAP project.

3. An All India Coordinated Project has been launched for establishing prioritized Centres for Research in an attempt towards building capacity in Taxonomy. To encourage excellence a National Award on Taxonomy has also been instituted.

4. India"s First National report to the CBD was prepared and submitted to the CBD Secretariat. Steps are being undertaken to further strengthen the existing measures for in-situ and ex-situ conservation of biodiversity.

5. Legislation on biodiversity has been prepared and introduced in the Parliament. The legislation primarily addressees the issue relating to regulation of access to the country"s genetic resources and associated knowledge by foreign individuals, institutions or companies and equitable sharing of benefits arising from the use of these resources and knowledge to the country and the people.

5. UNITED NATIONS FRAMEWORK CONVENTION CLIMATE CHANGE

The United Nations Framework Convention on Climate Change (UN-FCCC) was ratified by India on November 1, 1993.

India feels that if developed countries use up „environmental space" then the same will not be available to developing nations when they need the space for their own growth.

India actively participated in the INC and was on the Bureau of AGBM. India also served as Vice-Chairman of IPCC Sub Group-A "Energy & Industry" of Working Group-II and was elected as Vice-Chairman of the Intergovernmental Panel on Climate Change in 1997.

India has all along opposed 'wait & see' policy advocated by many developed countries. India feels that if developed countries prolong their commitments to reduce the emissions, they use up limited carbon emissions budgets available to humanity in future. India also feels that if developed countries use up the 'environmental space' then the same will not be available to developing nations when they needed for their own growth.

The Convention establishes the balance of 'responsibilities of the Parties and dictates that the developed countries have to take a lead in reducing their GHG emissions. India has underlined that the first and

overriding priority of developing countries was social and economic development and poverty eradication. To that end, it is felt that all the three integrated principles including eradication of poverty, avoiding risks to food production and sustainable development are deeply embedded in the Convention. As a result the origin and sources of global warming and climate change do not lie in the developing part of the world.

Although India is not required to adopt a National GHG reduction target, it has launched national programmes for promoting sustainable development including enhancement of energy and production efficiency, clean fuels, renewable energy technologies, afforestation and wasteland development.

India participated in the 12th Session of the SBSTA which was held in Bonn, Germany from 12-16 June, 2000. The main Agenda items for discussion included Implementation of Articles 4.8 and 4.9 of the Convention, matters relating to Article 3.14 of the Kyoto protocol, Procedures and mechanisms relating to compliance under the Kyoto Protocol, methodological issues including, land-use, land-use change and forestry (LULUCF), good practice guidance and uncertainty management in national greenhouse gas inventorization etc and development and transfer of technology.

India's Status of Implementation of Convention Commitments

1. In accordance with the provisions of FCCC, India is not required to adopt a national green house gas or C02 reduction target. It also needs to the underlined that India's past and present contributions to global C02 emissions are not significant.

2. The current gross C02 emissions per-capita in India is only 0.2 T/yr, against the world average of 1.2 T/yr i.e. India's per capita C02 emissions are only 1/6th of the world average.

3. The Convention provides that developing countries shall make its initial communication within three years of the entry into force of the Convention for the Party or from the availability of financial resources. India has initiated the necessary steps for drawing up its national communication in accordance with the Convention through financial assistance from the Global Environment Facility (GEF). India expects to submit its initial national communication in by 2002

4. In India Carbon (C) emission from forestry is offset by C sequestration leading to no net C emission. There have been some apprehensions that India could be the sixth largest producer of carbon dioxide emissions. Many Indian studies have unequivocally refuted such apprehensions. According to data available from some studies, the annual net emissions of all greenhouse gases in India as percentage of global emissions is of the order of 0.013%, which is not significant as compared to a number of developed and developing countries.

5. Several 'policy declarations' and 'Acts' contribute to the minimization of greenhouse gas emissions in India. India's approach towards implementation of the Framework convention and associated environmental matters is covered within policy declarations, namely, National Conservation Strategy and Policy Statement on Environment and Development (1992) and a policy statement on abatement of pollution (1992) for regulating various environmental parameters. In addition, the Forest (conservation) Act, 1980; various other enactments such as the Air Pollution (prevention and control) Act, 1981, amended in 1987 and Motor Vehicles Act, 1939, amended in 1988 contribute significantly towards minimising the causes of climate change. The Environment (Protection) Act, 1986 contains sufficiently stringent measures to regulate environmental protection and also empowers the Government to further formulate statutory rules for fulfilling various requirements. Further, Environmental Impact Assessment has been made statutory for various development activities and there also exists the Coastal Regulation Zone Notification (1991) for management of coastal zones.

6. The Indian facilities available for Global Change research include Indian Remote Sensing Satellites, two major research vessels, 3 rocket ranges, high altitude baloon facilities and major computer facilities. And other facilities such as laser Heterodyne, Mm-wave radiometer, UV-B monitoring, scanning spectroradiometer, Lidar Ozonesondes, BAPMON and Methane monitoring systems are also available. Both Government as well as NGOs are involved in Climate change research in India with the former supporting a variety of projects in the area of Global Change research.

7. Last but not the least, in India, since 1991, the Government has embarked on a Macroeconomic stabilization programme. Long overdue structural reforms in the foreign trade and payments regime, the tax system, industrial policy and in the financial sector have been undertaken, all of which are likely to have positive implications for GHG stabilisation.

8. Under the Enabling activities programme of the Global Environment Facility, India participated in the Asia Least Cost Greenhouse Gas Abatement Strategy (ALGAS) and prepared a country report on various issues relating to Climate Change.

9. Currently a study is underway in another enabling activity project supported by the Global Environment Facility titled " Selected options for stabilizing greenhouse gas emissions for sustainable development' which will examine sectors such as Coal, Renewable energy, Power and Forestry.

10. Research and systematic observations are encouraged and supported with a view to enhance the data base and the understanding of the climate change related issues.

6. UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION AND DRAUGHT

India signed the convention on 17th June 1994 and ratified the same on 17th December 1996, which came into effect on 17th March 1997.

India hosted the first Asian Regional Action Programme (RAP) Conference in August 1996 at New Delhi. Following which it participated in the Inter-ministerial Meeting held in Beijing during May, 1997 and in the Expert Group meeting held in November, 1998.

India has actively participated in the Intergovernmental Negotiation Committee on Desertification (INCD) and in the Conference of Parties held in 1997, 1998 and 1999.

In August 1999, a National Steering Committee (NSC) was constituted under the Ministry of Environment and Forests (MoEF) which is the national focal point (NFP) for all UNCCD activities. The National Report has been prepared on the basis of discussions held in the Working Groups constituted under the NSC, and was submitted to the CCD Sectt. in June 2000.

India, through the MoEF has begun the detailed exercise preparation of the National Action Programme (NAP).

India has participated in the first Regional Action Programme (RAP) for Asia, on Thematic Programme Network (TPN). India is the nodal country for, and MoEF is the nodal point for implementation of TPN-2 on „Agroforestry and Soil conservation". It was launched in March (14-18), 2000 at New Delhi-Jodhpur with participation from 14 countries along with representatives from donor countries and agencies. The Central Arid Zone Research Institute (CAZRI), Jodhpur under the ICAR involved in programmes on soil conservation and agro forestry in arid regions is the focal institution for TPN-2. In addition 5 focal institutions have also been identified to deal with specific degradation problems such as wind erosion, waterlogging & salinisation, gullied and ravine land, mine spoils.

India also participated in TPN-1 for which China is the nodal point. Like in other Conventions, India contributes to the core budget of the CCD. An amount of US$ 21,518 was contributed to the Core budget during 1999-2000. An amount of US$ 26,218 is earmarked for the year 2000-2001.

7. MONTREAL PROTOCOL/VIENNA CONVENTION

India acceded to the Vienna Convention on 18th March 1991 and the Montreal Protocol on 17th September 1992. It is committed to meet obligations as laid out in Articles 2 & 5 of the Montreal Protocol. India is taking every practical step to fulfill these commitments.

India has been elected as the Chairperson of the Executive Committee of the Multilateral Fund of the Montreal Protocol at the 11th meeting of the Parties held on 3rd December 1999 in Beijing. India‟s fully supports the Beijing Declaration which emphasizes on the commitments of the developed countries to the replenishment of the Multilateral Fund.

India has taken a stand that that transfer of technology to developing countries as laid out in Article 10a should be on fair and most favoured terms.

Developed countries have been taking the stand that the technology in some cases can only be transferred under commercial terms in view of IPR and patent regime. As a result of this view which is quite contrary to the understanding at the Earth Summit and the basic tenets of Agenda 21 in regard to technology transfer, technology for manufacture of HFC-134a, which is the main substitute for CFC, is not being transferred to Article-5 countries by the developed nations.

The Use of chlorofluorocarbons (CFCs) in India:

India‟s per capita consumption of Ozone Depleting Substances is at present less than 3 grams and did not cross 20 gms between 1995-97, as against 300 gms permitted under the Protocol. India is self sufficient in production of chlorofluorocarbons (CFCs). India commonly produces and uses seven of the 20 substances controlled under the Montreal Protocol. These are CFC-11, CFC-12, CFC-113, Halon-1211, Halon-1301, Carbon tetrachloride and methyl chloroform.

The early use of these chemicals was in refrigerators and the CFC-12 needed for servicing was imported. Since 1965, refrigeration industry in India started developing. Other industries using CFCs such as foams, aerosols have developed only during the last 15 to 20 years in India. With the availability of CFC-11 and 12 from indigenous production, the growth of these industries consuming CFCs have now increased very rapidly.

Use of ODS as solvents accounts for the maximum consumption, both in ODS as well as Ozone Depleting Potential (ODP) terms. Refrigeration & Air-conditioning and Foam are the next large user sectors, followed by Aerosol. The consumption of ODS in fire extinguisher sector has considerably decreased over the years because of voluntary switch over to non-ODS technology by some enterprises.

India's Status of Implementation of Montreal Protocol Commitments

In 1993, India prepared a detailed India Country Programme (CP) to phaseout of ODS in accordance with its national industrial development strategy. The CP also ensured that the phaseout will be done without undue economic burden to both consumers and industry and provided India with the opportunity to access the Protocol‟s Financial Mechanism. At present an exercise is underway, in consultation with Confederation of Indian Industry (CII), to update the Country Programme.

The main objectives of the Country Programme have been to minimize economic dislocation as a result of conversion to non-ODS technology, maximize indigenous production, give preference to one time replacement, emphasize decentralised management and minimize obsolescence.

The Government of India has entrusted the work relating to ozone layer protection and implementation of the Montreal Protocol to the Ministry of Environment and Forests (MOEF) which is the coordinating Ministry in India for all matters relating to the Montreal Protocol. The MOEF has set up an Ozone Cell as a national unit to look after and to render necessary services to implement the Protocol and its ODS phaseout programme in India.

The MOEF has also established an Empowered Steering Committee, which is supported by three Standing Committees, namely the Technology and Finance Standing Committee, Committee for Small Scale Industry and Monitoring and Evaluation Committee and is responsible for the implementation of the Montreal Protocol provisions, review of various policy and implementation options, project approvals and project monitoring.

Current Situation: ODS Phaseout Progress in India

Updating of the India Country Program for phaseout of ODS as per the schedule in the Protocol was initiated in 1998 and is likely to be completed by early 2000. All the producers, as of now, are contemplating to go for a gradual closure scenario, and plan to follow accelerated phase-down on a linear decline of production in each industry. The World Bank has prepared a phaseout project for the 4 producers of CFCs in India. This project has been submitted to the Executive Committee of the Multilateral Fund for deciding the level of compensation to be paid to the producers. Compensation to the tune of US$ 82 million was agreed to be given in a phased manner for the gradual closure of the CFC production in India. This project is under intense negotiations with the developed countries for an early settlement.

A total of 226 projects in the consumption sector have been approved and funded by the Multilateral Fund, of which 187 are ODS phaseout investment projects and 39 are support activities. Projects worth US$ 5 million were approved for conversion and phase-out of ODS in the consumption sector, in the executive committee meeting of the Multilateral Fund.

Fiscal Measures

The National Ozone Unit (NOU), the Government body that is responsible for monitoring and implementation of the CP recognized that without the proposed policy framework, plant investment and non-investment projects would not be successful. Accordingly, it initiated an aggressive programme to create the regulatory framework to reinforce the investment, training and other ODS phase out measures.

The Government of India has decided to grant full exemption from payment of Customs and Excise duties on capital goods required to implement ODS phase out projects funded by the Multilateral Fund. The Government decided to extend the benefit of Customs and Excise duty Exemptions for ODS phaseout projects which were eligible for funding under the Multilateral Fund, whether or not such enterprises actually sought assistance from the fund. The benefit is available subject to the condition that enterprises should give clear commitment to stop using ODS in all future manufacturing operations after the projects were implemented. The benefit of duty exemption has been extended for new capacity with non-ODS technology. Indian financial institutions have decided not to finance/re-finance new ODS producing/consuming enterprises.

The Tariff Advisory Committee (TAC) - a statutory body under the Insurance Act, 1938 - has decided to grant suitable discounts on fire insurance premiums if alternative agents are used to replace halons.

Regulatory Measures

- Trade in ODS with non-Parties has been banned.
- The import and export of all Annex A and Annex B ODS are subject to licensing requirement.

- The export of Annex A and Annex B ODS to Non-Article-5 Parties has been banned.
- A draft notification prohibiting setting up fresh capacity for manufacturing Aerosol products, except metered dose inhalers for medical purpose have been published in the Gazette of India in 1998.
- Draft Ozone Depleting Substances (Regulations) Rules has been notified in the Gazette of India in 1998 for public comments. It is in the process of finalization and publication.
- Proposed Ozone Depleting Substances (Regulation) Rules: In accordance with the National Strategy for ODS phaseout the Ministry of Environment and Forests, Government of India, have framed comprehensive draft rules, covering various aspects of production, sale, consumption, export and import of ODS.

Some of the important provisions of the proposed draft ODS Rules, are as follows:

- *ODS Producers*

- Compulsory to register with MOEF :
- Restriction on production levels as per "base level" and reductions specified.
- Ban on creating new capacity or expansion of capacity
- Export restricted to countries who are signatory to Montreal Protocol
- Quantity produced in excess of maximum allowable consumption for the respective years, if any, to be for export purposes only.

- *Manufacturers of ODS based Products (ODS Users)*

- Ban on capacity expansion or setting up new facility for production of ODS based equipment. New facility/expansion after 25.7.95 not eligible for funding from MPMF.
- Compulsory registration with designated authorities
- Declaration, in prescribed format, to the seller, at the time of purchase of ODS

- *Sellers, Exporters, Importers, Stockist etc.*

- Exporters & Importers need to register with designated authorities.
- No sales to persons/organizations which have not intimated the Government of India about use of ODS based equipment, including compressors without license.

- *General*

- Compulsory registration for reclamation and destruction of ODS.
- All registration will be valid for specified periods, after which they are to be renewed with the same authority.
- Every person who produces, uses, imports, sells, stocks, reclaims, destroys ODS has to maintain records and file reports as specified.
- Every person who has received technical and/or financial assistance from any international agency or financial assistance from Government of India including duty concessions/exemptions, to maintain records and file reports as specified.

India's Proposed Phaseout dates for ODS in the Rules :-

Name of Activity	PhaseoutDate
1 Manufacture of aerosol products excluding Metered Dose Inhalers (MDI)	Jan. 1, 2003
2 Manufacture of foam products (including domestic refrigerators)	Jan. 1, 2003
3 Manufacture of Mobile Air-conditioners (MAC"S)	Jan. 1, 2003
4 Manufacture of other refrigeration &. Air-conditioning products.	Jan. 1, 2003
5 Manufacture of products based on other ODS	Jan. 1, 2010
6 Manufacture of Metered Dose Inhalers (MDI)	Jan. 1, 2010

7 Use of methyl bromide except Quarantine and Preshipment	Jan. 1, 2015
8 Manufacture of products based on HCFC	Jan. 1, 2040

8. RAMSAR CONVENTION

India acceded to the Ramsar Convention in 1982. India has been elected a member of the Standing Committee twice.
- for 3 years in 1993
- alongwith Japan for the Asian region in the CoP meeting held in Costa Rica in 1999

Several initiatives were taken by India to promote conservation and wise use of wetlands in the Asian Region.

India contributed significantly in the technical meetings particularly in those held in Kualalumpur in 1994, Bogor in 1994 and Selangoar in 1995.

India organised the meeting of Contracting Parties from the Asian region in March 1995, in which the Delhi Declaration highlighting 19 action points was adopted.

India also played a significant role in the CoP meeting held in 1996 in Brisbane, Australia.

India is considering hosting the 9th CoP meeting in 2005, in New Delhi, for which necessary action is being taken. Spain is hosting the 8th CoP meeting in the year 2002.

India's Status of Implementation of Convention Commitments

1. India has designated 6 wetlands for inclusion in a List of Wetlands of International Importance (Ramsar sites). In February 2000, the Ministry of Environment and Forests, Government of India, identified 10 (*) new wetlands, and has started the process of designation as Ramsar Sites in consultation with the World Wide Fund for Nature-India (WWF-India).

   - Chilka (Orissa) - Loktak (Manipur)
   - Wular (J&K) - Harike (Punjab)
   - Keoladeo National Park, Bharatpur (Rajasthan) - Sambhar (Rajasthan)

   - Dipor Beel (Assam)* - Bhitarkanika (Orissa)*
   - East Calcutta wetlands (WB)* - Kabar Tal (Bihar)*
   - Tso Morari (J&K)* - Pong Dam (HP)*
   - Point Calimere Sanctuary (TN)* - Pulicat Lake (TN and AP)*
   - Lali Sanctuary (AP)* - Andaman and Nicobar Islands*

2. Three Indian sites, Chilka Lake, Loktak Lake and Keoladeo National Park have been included in the Montreux Record. The inclusion of the wetland in the Record does not mean Red Listing of a site but highlights the importance of the site for taking conservation measures on priority basis. The respective State Governments for developing conservation strategies are properly assessing these three sites.

3. The Ministry of Environment and Forests (MoEF), Government of India, functions as the nodal agency for participation in international agreements including the Ramsar Convention. It has both a National Programme for conservation and management and a separate programme for Urban lakes under National Lake Conservation Programme (NLCP). Progress in activities in relation to the Ramsar Convention are highlighted below:

- 20 Wetlands and 10 Urban Lakes have been identified for conservation and management
- Management action plans have been prepared for 18 wetlands (inclusive of designated 6 Ramsar sites), 15 mangroves and 4 coral reef areas that are under implementation at various stages.
- All the 6 designated sites are being notified under the provisions of EPA, 1986. This will be finalised after information on their ecological status is received from the concerned State governments.
- National Committee on Wetlands, Mangroves and Coral reefs in its last meeting held in December 1996 has recommended formulation of National Wetland Policy. The Indira Gandhi Institute for Development and Research (IGIDR), Bombay, have prepared a draft which was presented to the National Committee (NATCOM).
- Additional sites for designation under the Convention are being considered after detailed assessment of these sites.
- Inventory of wetlands has been done and the MoEF has published a directory of wetlands in 1990. It was updated in 1993 in collaboration with WWF.
- India wants to designate all the wetland sites as Ramsar sites.

9. CONVENTION RATIFIED

1. Waste Management and Hazardous waste

- Basel Convention on Trans-boundary Movement of Hazardous Substances 1991-92

2. International resources

- The Antarctic Treaty (Washington, 1959)
- United Nations Convention on the Law of the Sea (Montego Bay, 1982)
- International Tropical Timber Agreement (Geneva, 1983)

3. Global climate

- Vienna Convention on ozone depleting substances
- Montreal Protocol
- Framework Convention on Climate Change
- Kyoto Protocol 1992

4. Marine pollution (conventions of the International Maritime Organisation, IMO)

- The international convention for the prevention of pollution from ships, 1973 (MARPOL 73)
- The international convention on civil liability for oil pollution damage, 1969 (Effective from June 19, 1975)
- Protocol to the international convention on civil liability for oil pollution damage, 1969
- The international convention on the establishment of an international fund for compensation for oil pollution damage 1971 (Effective from October 16, 1978)
- Protocol to the international convention on the establishment of an international fund for compensation for oil pollution damage, 1971
- IMP Protocol - 1978 and the IMO 1973 convention.
- Convention on the prevention of marine pollution by dumping of wastes and other matter, 1972 (Effective from August 30, 1975) Not ratified by India, since it considers this convention to be linked with the Basel convention on transboundary movement of hazardous substances.

5. Wildlife

- Convention on Biologic Diversity
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora
- (CITES), Washington D.C.
- The Convention on Wetlands of International Importance, Especially as Waterfowl Habitat, (The Ramsar Convention)
- Convention relative to the Preservation of Fauna and Flora in their natural State, London 1936
- International Convention for the Regulations of Whaling (Washington, 1946)
- International Plant Protection Convention (Rome, 1951)
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979)
- Convention on the Conservation of Antarctic Marine Living Resources (Canberra, 1980) 1992

6. Environmental Planning

- The Rio declaration on environment and development
- Agenda 21
- Convention to combat desertification 1992 1994

7. Other environmental fields

- Convention concerning the protection of workers against ionizing radiation (Geneva, 1960)
- Protection (of industrial workers) against hazards of poisoning arising from benzene
- Treaty banning nuclear weapon tests in the atmosphere, in outer space and under water(Brussels, 1975)
- Convention on the protection of world cultural and natural heritage (Paris, 1972)

MALDIVES

Key Issues: Implementation; Technology Transfer; Inbuilt Funding Mechanism; Synergy with other agreements; Informed Negotiations, Education and Awareness

Key Legislation: National Environment Action Plan; Environmental Protection and Preservation Act, 1993; Environmental Impact Assessment (EIA); Fisheries Law of the Republic of Maldives, 87

Key Institutions: Ministry of Home Affairs, Housing and Environment; Ministry of Planning and Environment; National Environment Council; National Commission for the Protection of the Environment; Ministry of Fisheries & Agriculture; Ministry of Tourism; Ministry of Health and the Ministry of Construction & Public Works; Ministry of Tourism

1. INTRODUCTION

The Maldives is Party to the UNFCCC, Convention on Bio-diversity, United Nations Convention on the Law of the Sea, Vienna Convention for the Protection of the Ozone Layer, Montreal Protocol on Substances that Deplete the Ozone Layer, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

Apart from the Convention of the Law of the Sea, the Ministry of Home Affairs, Housing & Environment has the obligation to administers all other Conventions. There are two projects currently being implemented by the Environment Section one for the implementation of the UNFCCC, & other for the Convention on Bio-diversity.

2. CONSERVATION OF BIODIVERSITY

The Maldives was among the first countries to ratify the Convention on Biological Diversity. The Maldives signed the Biodiversity Convention on 12 June 1992 and ratified the convention on October 1992. Under GEF assistance the Maldives will be formulating its National Biodiversity Conservation Strategy in 1997.

3. CLIMATE CHANGE

The Maldives ratified the UN Framework Convention on Climate Change (FCCC) in October 1992. The participants noted with serious concern the slow progress in the global implementation of the United Nations Framework Convention on Climate Change particularly on key issues like the adoption of a protocol or another legal instrument on arresting greenhouse gases and technology transfer as well as the provision of new and additional funding for developing countries. The Maldives along with other members of the Alliance of Small Island States (AOSIS) has played a very important role in the difficult negotiations towards the adoption of a protocol on reducing greenhouse gas emissions.

- UNFCCC,
- Convention on Bio-diversity,
- United Nations Convention on the Law of the Sea,
- Vienna Convention for the Protection of the Ozone Layer,
- Montreal Protocol on Substances that Deplete the Ozone Layer,
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

NEPAL

Key Issues: Implementation; Technology Transfer; Inbuilt Funding Mechanism; Synergy with other agreements; Informed Negotiations, Education and Awareness; Enforcement and Compliance;

Domestic Legislative Measures: Environmental Protection Act, 1997; Environment Protection Regulations (EPR 2054, 1997) and its 1st Amendment 1998); ODS Consumption (Control) Rules, 2001;; Conservation Area Management Regulations, (1996); Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977);

Key Institutions: Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resource; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation

1. INTRODUCTION

The international community is playing an important role in the conservation of environment through various measures. Cross-sectoral environmental issues are frequently addressed and national actions promoted through the adoption and implementation of environment related resolutions enshrined in international conventions. Nepal has also joined these international efforts by either being Party to several Conventions or by participating in the legally non-binding instruments such as Agenda 21.

In June 1972, Nepal participated in the United Nations Conference on 'Human Environment' held in Sweden. The Conference prompted Nepal to initiate several environment-friendly activities and rehabilitate its degraded lands. It has since continued to participate in several meetings and conferences. Nepal actively participated in the Earth Summit in June 1992, which adopted Agenda 21 as a blue print of actions on environment and development for the 21st century. Nepal has also re-emphasised its plan to attain the goals of sustainable development, embodied in "Our Common Future." Nepal has also been actively participating in regional environment management efforts. It is member of various regional inter-governmental bodies such as South Asian Co-operative Environmental Programme (SACEP) and South Asian Association for Regional Co-operation (SAARC), both of which aim at fostering relationships and working for the management of the environment, individually or jointly.

2. LEGALLY BINDING INSTRUMENTS

The past two decades have witnessed the birth of a considerable number of international Conventions and Agreements in the field of environment conservation. Several international environmental instruments were adopted to address a wide variety of environmental problems such as transboundary air pollution, protection of the ozone layer, transboundary movements of hazardous wastes, trade in endangered species, protection of international waterways, climate change, conservation of biological species and combating desertification. In accordance with the commitments in the international fora, Nepal has ratified or has access to 16 environment related Conventions and Agreements. However, despite HMG being bound under the Nepal Treaty Act to take legislative measures for the implementation of treaties to which Nepal is party (Belbase, 1997), a significant gap between international environmental instruments

and their implementation at the national level is apparent. This may be due to the absence of a specific agency to implement these treaties.

As a Party to these Conventions, Nepal has to prepare and implement national action programmes to bring about change in the consumption pattern, ensure the conservation of biological species and/or forests, and implement land improvement activities. Some environmental obligations of the Conventions and Agreements, to which Nepal is a Party, are presented in Table.

Nepal is also Party to the Convention on the High Seas; Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Under Water; Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and Other Celestial Bodies; Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-bed and the Ocean Floor and in the Subsoil Thereof; United Nations Conventions on the Law of the Sea; and the International Tropical Timber Agreement.

3. OBLIGATIONS OF THE SELECTED CONVENTIONS

Name of the Conventions	**Entry into Force in Nepal**	**Major Obligations**
UN Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1994	13-Jan-97	· Combating desertification and mitigating the effects of drought by adopting integrated approach to address the physical, biological, and socio economic aspects of the processes of desertification and drought; and
		· Integration of strategies for poverty eradication, and preparation and implementation of the National Action Programmes
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989	13-Jan-97	· Protection of the environment and adoption of measures to safely transport, dispose and manage hazardous wastes;
		· Controlling illegal traffic of hazardous wastes
Vienna Convention for the Protection of the Ozone Layer, 1985	4-Oct-94	· Adoption of appropriate measures for the protection of human health and the environment resulting from modifications in the ozone layer;
		· Adoption of measures, procedures and standards to minimise the use of ozone depleting substances; and
		· Initiation and co-operation to carry out research and scientific assessment on processes that may affect the ozone layer
United Nations Framework Convention on Climate Change, 1992	31-Jul-94	· Stabilisation of green house gases concentrations in the atmosphere and protection of the climate system;
		· Precautionary measures to anticipate, prevent or minimise the causes of climate change;
		· Formulation of national policies and corresponding measures; and
		· Promotion, co-operation and facilitation in research and public awareness on climate change and its effect
Name of the Conventions	Entry into	Major Obligations

	Force in Nepal	
Convention on Biological Diversity, 1992	21-Feb-94	· Conservation and sustainable use of biological diversity, and equitable sharing of benefits;
		· Preparation and implementation of national strategies, plans or programmes for the conservation and sustainable use of biodiversity; and
		· Conservation in in-situ and ex-situ conditions, and promotion on biotechnology and genetic research
Agreement on the Network of Aquaculture Centers in Asia and the Pacific, 1988	4-Jan-90	· Expansion of aquaculture development through multi-disciplinary research on selected aqua-farming system and transfer of technologies; and
		· Establishment of a regional information system, and train and upgrade core personnel for national aquaculture planning, research, training, extension and development
Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971	17-Apr-88	· Designation of wetlands of national and international importance and conservation, management and wise use of migratory stock of waterfowl and their habitats
Convention for the Protection of the World Cultural and Natural Heritage, 1972	20-Sep-78	· Adoption of effective measures for the protection of cultural and natural heritage through national and international co-operation
Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973	16-Sep-75	· Protection of natural ecosystem including wild fauna and flora; and
		· Regulation on trade, import and export of species listed in Appendices
Plant Protection Agreement for the South East Asia and Pacific (as amended), 1956	12 August, 1965	· Prevention on the spread and introduction of pests of plants and plant products, and promotion of measures for their control during import and export

Since the last three decades, efforts for species conservation in the protected areas have also brought about a change in the population of a few of the endangered wild animals. The CITES played a major role in contributing towards adoption of stringent measures for the conservation of the rhinoceroses

4. LEGALLY NON-BINDING INSTRUMENTS

A number of international conferences and meetings have adopted environment-related principles and recommendations to improve the environmental quality. Though legally non-binding, however, it is the moral responsibility of the Party country to implement them through integration into the national programmes. In this context, the principles adopted in the Stockholm Conference and Rio Earth Summit are of major importance. Agenda 21 of the Earth Summit and the authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests enable and facilitate a country to prepare and implement environment friendly activities. In accordance with the spirit of these principles, Nepal has developed and implemented numerous environmental policies and programmes. HMG's National Environmental Policy and Action Plan (NEPAP), 1993 has embodied some of the concerns which were prepared after the Rio Earth Summit.

Nepal has accorded high priority to implementing these Conventions and legally non-binding instruments. However, it has yet to develop and implement all the Convention resolutions through the development f strategies and regulatory measures.

5. DOMESTIC LEGISLATIVE MEASURES

There are a number of steps that needed to be taken at the national level for a treaty to become binding on the signatory. Legal measures for the ratification and implementation of treaties in Nepal can be divided into two main categories: Procedures relating to constitutional provisions and statutory implementation measures.

Constitutional Provisions

Under the *Constitution of the Kingdom of Nepal, 1990* there are three general types treaties that require various procedures for their ratification or acceptance:

a) Treaty that requires the ratification of , accession to, acceptance of or approval by a majority of two thirds of the members present at a joint sitting of both House of Parliament. Pursuant to Article 126(2) of the Constitution, such treaties are categorize as follows:
   i) peace and friendship,
   ii) defense and strategies alliance,
   iii) boundaries of the kingdom of Nepal, and
   iv) natural resources, and the distribution of their uses, which is not ordinary in nature and which may affect the nation extensively, seriously or in the long-term.

b) A treaty or agreement that requires the ratification, accession to, acceptance or approval of a simple majority of members present in the House of Representative. This procedure applies to treaties that fall under sub-clause (a) and (d) of Article 125(2), in which the treaty or agreement is of an ordinary nature that does not affect the nation extensively, seriously or in the long term (Article 126(2).

c) A treaty that does not require an act of ratification for its commencement. This may occur only if a treaty or agreement does not fall into the four categories of treaties or agreements under Article 126(2) of the Constitution.

Article 126(4) provides that a treaty or agreement that is detrimental to the territorial integrity of the Kingdom of Nepal shall not be concluded. According to this constitutional regime, treaties concerning environmental matters would presumably be subject to one of the procedures. Under Article 126(2)(d) of the Constitution, the treaty category „natural resources and distribution of their uses" would conceivably apply to a large number of treaties relating to international environmental matters. Acceptance of such treaty would require a majority of two-third of the members present in both House of Parliament. Alternatively, if a treaty is deemed to be "..of an ordinary nature that does not affect the nation extensively, seriously or in the long term, „it is subject to ratification or approval by a simple majority of members present in the House of Representative (Article 126(2)). It is difficult to establish how these provisions are applied since there are few examples of their application under the relatively new constitution. However, the *Convention on Climate Change* and the *convention on Biological Diversity* were passed by a simple majority, and were presumably viewed to be of an „ordinary nature" according to the Constitution. In practice, it appears that when there is little opposition to a treaty, it is passed by simple majority, and this process does not necessarily reflect on the relative importance of the treaty.

Statutory Measures

National legal systems have various ways of internalizing a treaty. Some legal systems regard treaties as automatically part of the domestic law by virtue of ratification; other require separate implementing legislation. Section 9(1) of the *Nepal Treaty Act (NTA),* 1991 concerns all matters in a treaty to which

Nepal is a party by having ratified , acceded to , approved or accepted the treaty by Parliament. Section 9(1) of NTA specifies that when a matter in a treaty is inconsistent with the existing domestic laws, these laws shall be void to the extent of the inconsistency, and the provision of the treaty shall prevail as the law of Nepal.

HMG is required to submit a proposal to Parliament pursuant to Section 5 of NTA, if it wants to ratify, accede to, accept or approve treaties related to subjects mentioned in Article 126(2) of the Constitution, or if the government wants permission for accession of such treaties. Section 4 of NTA provides for the ratification or accession procedures for treaties. Pursuant to Section 4(i) and apart from the treaties mentioned under Article 126(2) of the Constitution, treaties that require ratification, accession to, acceptance or approval, must be submitted to the House of Representatives by the government for ratification, accession, approval or acceptance. Section 4 (iv) provides that the kingdom of Nepal or HMG cannot become a party to treaties that establish an intergovernmental organisation or party to a treaty which is inconsistent (adverse) to the prevailing law of Nepal unless a proposal providing for its ratification, accession, acceptance or approval is passed by the House of Representatives.

Section 6 of NTA stipulates that if a treaty is signed by HMG, the kingdom of Nepal or HMG is deemed to be a party to that treaty and that it has been accepted, provided the treaty is not included in Section 4 of NTA or in Article 126(2) of the Constitution. However, Section 4 of the NTA and Article 126(2) of the Constitution together include most treaties, and make it unlikely that a treaty could be ratified, acceded to or accepted without having the majority approval of the House of Representatives. Furthermore, under Section 9 of NTA, HMG is obliged to inform the House of Representatives of the treaties HMG has approved and executed within 30 days of its sessions. The government is also required to publish in the Nepal Gazette the treaties that are ratified, acceded to, approved or accepted by Parliament, within 60 days of ratification accession, acceptance or approval and a certified copy of any other treaty to which Kingdom of Nepal or HMG is a party which HMG deems appropriate to be published.

6. LIST OF INTERNATIONAL ENVIRONMENTAL INSTRUMENTS RATIFIED OR ACCEDED TO BY NEPAL

- Plant Protection Agreement for the South-East Asia and Pacific Region, Rome, 1956. Nepal acceded to the Agreement on 12 August 1965.
- Convention on the High Seas, Geneva, 1958. Nepal ratified the Convention on 28 December 1962.
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Under Water, Moscow, 1963. Nepal ratified the Convention on 7 October 1964.
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, Washington, 1967. Nepal ratified the Convention on 10 October 1967.
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971. Nepal acceded to the Convention on 17 December 1987.
- Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea Bed and Ocean Floor and the Subsoil Thereof, London, Moscow, Washington, 1971. Nepal ratified the Convention on 6 July 1971.
- Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972. Nepal accepted the Convention on 20 June 1978.
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 1972. Nepal ratified the Convention on 1 January 1973.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973. Nepal acceded to the Convention on 18 June 1975.
- Vienna Convention on the Protection of the Ozone Layer, 1985. Nepal ratified the Convention in 1994.
- Montreal Protocol on Substances that Deplete the Ozone Layer, 1987. Nepal acceded to the Protocol in 1994.

- London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, 1990. Nepal acceded to the Convention on : 1994.
- Agreement on the Network of Aquaculture Centres in Asia and the Pacific, 1988. Date of Ratification/Accession (AC): 4 April 1990 (AC).
- United Nations Framework Convention on Climate Change, 1992. Nepal ratified the Convention on 2 May 1994.

- Convention on Biological Diversity, 1992. Nepal ratified the Convention on 23 November 1993.
- Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989. Nepal acceded to the Convention in August 1996.
- Convention on Combating Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1994. Nepal ratified the Convention in 1996.

7. INTERNATIONAL ENVIRONMENTAL INSTRUMENTS RATIFIED OR ACCEDED TO BY NEPAL, AND NATIONAL IMPLEMENTATION MEASURES

Nepal has become a signatory to a number of treaties relating to the protection of biodiversity, habitat and national heritage. The four main treaties examined below are as follows:

- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (hereafter Ramsar Convention)
- UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (hereafter World Heritage Convention)
- Convention on the International Trade in Endangered Species of Wild Fauna and Flora (hereafter CITES) and
- Convention on Biological Diversity

8. RAMSAR CONVENTION ON WETLANDS

The Ramsar Convention provides a framework for international cooperation in the conservation of wetland habitats. It entered into force in 1975 with the accession of the seventh party, and by the end of 1992, it had 71 contracting parties.

National Implementation Measures
Nepal acceded to the Ramsar Convention on 17 April 1988. Unfortunately, His Majesty's Government has not yet recognized that the current legislation in Nepal precludes optimal fulfillment of the Convention's obligations. There is limited legislation, which provides only a modicum of wetlands conservation, despite glaring deficiencies.

Policy Measures

Nepal Environmental Policy and Action Plan
The Nepal Environmental Policy and Action Plan (NEPAP) indicates that wetland in Nepal have often been overlooked as an important habitat. It recommends actions such as the identification and protection of marshes, wetland and water bodies significant to biodiversity conservation.

Legislative Measures

Aquatic Animals Protection Act 1961
The Aquatic Animals Protection Act 1961 (AAPA) is one of Nepal's oldest pieces of legislation. It indicates an early recognition of the value of wetlands and aquatic animals.
Soil and Watershed Conservation Act, 1982

The mismanagement of watersheds leads to the degradation of valuable land by flooding, water-logging, salinity in irrigated areas and acceleration of siltation in storage reservoirs. In order to properly manage the watersheds of Nepal, the Soil and Watershed Conservation Act 1982 (SWCA).

Water Resources Act, 1992

The Act strives to minimise environmental damage to wetlands, especially lakes and rivers, through environmental impact assessment studies.

Electricity Act 1992

Section 24 of the Electricity Act 1992 forbids negative impacts on the environment, such as soil erosion, flooding, landslides, and air pollution, while generating, transmitting or distributing electricity. In theory it can therefore cover wetlands.

National Parts and Wildlife Conservation Act 1973

In relation to the conservation of natural heritage, the National Parks and Wildlife Conservation Act 1972 (NPWCA) provides a relatively strict approach to the conservation of natural areas and wild species. Under this Act, there are six categories of protected areas among which national parks, wildlife reserves and conservation zones are given the highest of protection. Two national parks, Royal Chitwan National Park and Sagarmatha National Park, are world heritage sites and are given the status of national parks under the Act.

9. THE WORLD HERITAGE CONVENTION

The World Heritage Convention entered into force on 17 December 1973. The Convention defines cultural and natural heritage in broad items. Cultural heritage is divided into three categories: monuments, groups of building and sites (Article 1). Natural heritage includes natural features consisting of physical and biological formations or groups of formations, geological and physiographical formations, precisely delineated areas that constitute the habitat of threatened animal and plan species, and natural sites or precisely delineated natural areas (Article 2).

National Implementation Measures

Nepal's fulfillment of the requirements for protecting cultural heritage sites listed on the World Heritage List can be said to be unsatisfactory to date. With respect to the conservation of natural world heritage properties, Nepal has been successfully fulfilling its obligations primarily through the implementation of the National Parks and Wildlife Conservation Act 1973. Nepal's natural heritage its protected in national parks and protected areas. Two national parks, Royal Chitwan National Park and Sagarmatha National Parks, are world heritage sites.

National Conservation Strategy

In 1988, the NCS Conservation Action Agenda made, among others, the following recommendations in relation to physical cultural heritage.

Nepal Environmental Policy and Action Plan

NEPAP identifies one of the most serious threats to heritage sites in urban areas as uncoordinated development of unsuitable buildings that are erected close to temples, shrines and other important monuments.

Legislative Measures

Ancient Monuments Protection Act 1956

The Ancient Monuments Protection Act 1956 (AMPA) contains various regulatory powers to ensure the preservation of listed cultural heritage sites.

Kathmandu Valley Development Authority Act, 1988

Kathmandu Valley Development Authority Act, 1988 (KVDAA) was enacted to reverse the disorderly development occurring throughout the strained Kathmandu Valley, where seven out of the nine World Heritage Sites are located.

10. CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) entered into force on 1 July 1975, and Nepal became a contracting party to the Convention on 18 June 1975. CITES principally provides for the international coordination of trade controls on wild fauna and flora with an unfavorable conservation status through the acceptance of obligations under international law.

Policy Measures

National Conservation Strategy

The NCS is concerned with illegal trade in plants and wildlife. It indicates that illegal trade in valuable tree species such as khair and sal, medicine plants, orchids, and to a lesser degree, in wildlife products, currently exists between Nepal and India, and often has serious environmental repercussions.

Legislative Measures

National Parks and Wildlife Conservation Act 1973

The NPWCA provides a regulatory approach to conserving endangered species and their habitats, which indirectly curbs trade in specimens of such species.

11. THE CONVENTION ON BIOLOGICAL DIVERSITY

The Convention on Biological Diversity entered into force in December 1993, and the Nepalese Parliament ratified it in September 1993. Its intention is the preservation of flora and fauna for the benefit of both humanity and the flora and fauna itself.

Legislative Measures

Aquatic Animals Protection Act 1961

The Aquatic Animals Protection Act 1961 (AAPA) provides for some legislative protection of the habitats of aquatic species.

National Parks and Wildlife Conservation Act 1973

The conservation of ecologically valuable areas and indigenous wildlife is provided for by the NPWC Act. Nepal has 14 national parks, protected areas and wildlife reserves. Section 3 of the NPWC Act prohibits the following in national parks, protected areas and wildlife areas, among other things:

- hunting of any animals or birds,
- building any house, hut or other structure,
- clearing or cultivating any part of the land or harvesting any crops,
- pasturing or watering any domesticated animals or birds,
- cutting, burning or damaging any tree, bush or other forest product, and
- mining within national parks or protected areas.

Water Resources Act 1992

The Water Resources Act 1992, for the first time in Nepal, makes an environmental study a mandatory prerequisite for water resource and electricity projects.

Forest Act 1993

The new Forest Act 1993 recognizes the importance of forests in maintaining a healthy environment. The Act requires decision-makers to take account of all forest values, including environmental services and biodiversity, as well as the production of timber and other commodities.

The provisions relating to protected forests, community forests and leasehold forests will have a long-term impact on the conservation and sustainable use of components of biodiversity in the Kingdom.

Constraints on implementation of Conventions

The most serious constraint on the implementation of environmentally-related Conventions to which Nepal is committed has obviously been the absence of any coordinating agency such as the Ministry of Population and Environment which is responsible for the incorporation or integration of various international obligations into the existing laws or when preparing new legislation. Even where there is a specific government agency directly concerned with or obviously responsible for implementation of some Conventions, implementation has not been particularly encouraging. The glaring examples are the Department of National Parks and Wild Life Conservation with the implementation CITES, 1973, and the Department of Archaeology with the Convention Concerning the Protection of the World Culture and Heritage, 1972. It should, however, be noted that under the present trade policy, introduced in 1992, the government has imposed a ban on export of images of gods and goddesses, palm leaf inscriptions (Tad Patra) and plant leaf inscriptions (Bhojpatra), scrolls (Thanka) of historical importance, wild animals, bile and any other part of animals, musk, snake and lizard skins, raw hides and skin, and logs and timber.

Even after almost two decades, important and relevant Conventions have not yet been effectively implemented. CITES and the World Cultural and Natural Heritage Conventions are glaring examples. The United Nations Educational, Scientific and Cultural Organization/International Council of Monuments and Sites Review Mission of 14-30 November 1993 recommended that several World Heritage Sites in the Kathmandu Valley be placed on the World Heritage in Danger List. When even the implementation status of international environmental instruments to which Nepal became a party more than 15 years ago is so weak, the status of other Conventions such as the Convention on Biological Diversity and Convention on Climatic Change can easily be imagined.

Although Agenda 21 is not legally binding, Nepal is committed to it as are all other nations which attended the United Nations Conference on Environment and Development in June 1992. It deserves immediate implementation by the government, especially those chapters which have a direct relevance to Nepal such as those dealing with integrating environment and development in decision-making, managing fragile ecosystems, sustainable mountain development, promoting sustainable agriculture and rural development, and conservation of biodiversity.

Since two important central coordinating agencies, that is, EPC and the Ministry of Population and Environment, now exist with the necessary mandates, they can be expected to take appropriate and effective steps to see that the international obligations of Nepal are duly honoured and implemented in the interests of both Nepal and the international community. As an initial and immediate step, it is necessary first to take stock of those international obligations emanating from environmentally-related Conventions to which Nepal is already a party, and to examine how those obligations can be implemented effectively. To facilitate such action, the Ministry of Population and Environment could constitute a "legal committee" of experts and take the necessary steps on the basis of the findings and recommendations by that committee. The extensive study jointly commissioned by NPC and the World Conservation Union (IUCN), entitled the National Conservation Strategy Implementation Project, is now near completion. The study will serve as an excellent document for both the government and the proposed "legal committee" in making their review and recommendations, and in taking the necessary actions.

The most serious constraint on the implementation of environmentally-related Conventions to which Nepal is committed has obviously been the absence of any coordinating agency such as the Ministry of Population and Environment which is responsible for the incorporation or integration of various international obligations into the existing laws or when preparing new legislation. Even where there is a specific government agency directly concerned with or obviously responsible for implementation of some Conventions, implementation has not been particularly encouraging. The glaring examples are the Department of National Parks and Wild Life Conservation with the implementation CITES, 1973, and the Department of Archaeology with the Convention Concerning the Protection of the World Culture and Heritage, 1972. It should, however, be noted that under the present trade policy, introduced in 1992, the government has imposed a ban on export of images of gods and goddesses, palm

leaf inscriptions (Tad Patra) and plant leaf inscriptions (Bhojpatra), scrolls (Thanka) of historical importance, wild animals, bile and any other part of animals, musk, snake and lizard skins, raw hides and skin, and logs and timber.

Even after almost two decades, important and relevant Conventions have not yet been effectively implemented. CITES and the World Cultural and Natural Heritage Conventions are glaring examples. The United Nations Educational, Scientific and Cultural Organization/International Council of Monuments and Sites Review Mission of 14-30 November 1993 recommended that several World Heritage Sites in the Kathmandu Valley be placed on the World Heritage in Danger List. When even the implementation status of international environmental instruments to which Nepal became a party more than 15 years ago is so weak, the status of other Conventions such as the Convention on Biological Diversity and Convention on Climatic Change can easily be imagined.

Although Agenda 21 is not legally binding, Nepal is committed to it as are all other nations, which attended the United Nations Conference on Environment and Development in June 1992. It deserves immediate implementation by the government, especially those chapters which have a direct relevance to Nepal such as those dealing with integrating environment and development in decision-making, managing fragile ecosystems, sustainable mountain development, promoting sustainable agriculture and rural development, and conservation of biodiversity.

Since two important central coordinating agencies, that is, EPC and the Ministry of Population and Environment, now exist with the necessary mandates, they can be expected to take appropriate and effective steps to see that the international obligations of Nepal are duly honoured and implemented in the interests of both Nepal and the international community. As an initial and immediate step, it is necessary first to take stock of those international obligations emanating from environmentally-related Conventions to which Nepal is already a party, and to examine how those obligations can be implemented effectively. To facilitate such action, the Ministry of Population and Environment could constitute a "legal committee" of experts and take the necessary steps on the basis of the findings and recommendations by that committee. The extensive study jointly commissioned by NPC and the World Conservation Union (IUCN), entitled the National Conservation Strategy Implementation Project, is now near completion. The study will serve as an excellent document for both the government and the proposed "legal committee" in making their review and recommendations, and in taking the necessary actions.

12. MONITORING MECHANISMS AND ENFORCEMENT SYSTEMS

Monitoring mechanisms

The absence of a permanent system for generating and maintaining, on a regular basis, basic data on various aspects related to the environment is a serious problem in Nepal. A unified system does not exist under which relevant data can be generated on principal natural resources such as land, water, forests and biodiversity, and changes occurring in their use over time. Similarly, data systems do not exist either on the extent of untreated toxic effluent discharges into the natural system or the effects of such discharges on ecosystems and human health. Emissions from industrial establishments and vehicles are becoming more and more of a serious problem, particularly in the fast-growing urban centres. Except for a "project approach" for measuring some of the environmentally damaging consequences (e.g., vehicular emissions in the Kathmandu Valley), there are various contributing factors to such pollution.

As stated above, umbrella legislation on environment protection has just been passed and regulations have to come into force making the Act fully operational. The monitoring mechanism envisaged in the Act is the appointment of environment inspectors or the assignment of other officials to act as inspectors. The functions of such an inspector, among others, are: (a) to monitor the actions taken to

reduce, eliminate and control pollution according to the Act and its regulations; and (b) to monitor whether the conditions attached to the permit for a particular project have been followed. The inspector has the right to inspect the premises concerned, factories, equipment, vehicles, livestock, documents etc., and is authorized to impose a fine of up to Rs 5,000 on any individual or institution obstructing his or her work, subject to appeal to the appointed authority. According to the authorities concerned, the inspectors will be drawn from the respective agencies under the overall responsibility of the Ministry of Population and Environment. The agencies concerned with the environment, such as the Ministry of Industry, the Ministry of Forest and Soil Conservation and the Ministry of Water Resources, are all working on regulations necessary to carrying out their respective functions in coordination with the Ministry of Population and Environment. However, it will take some time for all the regulations to be put in place and the coordination mechanism to evolve and function.

The EIA guidelines deal in detail with monitoring and evaluation as well as pelling out the principles, types and intensity of monitoring. They also deal with indicators and the institutional aspects. Follow-up action on implementation of the guidelines has been slow, perhaps in anticipation of the umbrella legislation becoming effective.

Currently, "environmental administration is dispersed over a wide range of unrelated governmental agencies that lack intersectoral coordination and cooperation" (National Planning Commission/World Conservation Union, 1991a). The monitoring functions are spread among different agencies as provided for in the respective legislation. Much of the legislation has not been adequately designed, nor properly supplemented with supporting regulations. Hence, the monitoring work is weak and, in many cases, non-existent. A brief review of the existing monitoring mechanism shows that the monitoring function in the Ministry of Population and Environment is incorporated in the Environmental Standards,

Monitoring and Evaluation Section under the Environmental Division. Monitoring at the Ministry of Finance, is undertaken through the Monitoring and Evaluation Division, whereas at the Ministry of Industry and Ministry of Water Resources, the monitoring function is performed by the Planning Divisio n. In the departments, the monitoring function is mostly combined with the planning function and, in some cases, with the management function. In the Department of Forests and Department of Industry/Irrigation, the monitoring function is under the Planning Division. In the Department of Soil Conservation and the Department of National Parks and Wildlife Conservation, the environment function comes under the Parks and Sanctuary Management Division and Management and Monitoring Division, respectively. Most departments have district offices which do the on-site monitoring. The monitoring function is usually all embracing and is not limited to the environmental aspects. As a matter of fact, the principal work is the monitoring of the development activities of the implementing agency, with environmental monitoring being a subsidiary activity only. In other words, environmental monitoring has yet to be institutionalized.

In the forestry sector, the Ministry of Forest and Soil Conservation is basically the policy and programme formulating agency, and the Department of Forests, the Department of Soil Conservation are the implementing agencies as well as the monitoring agencies in their respective areas. In certain cases, the authority has been vested in a specific project or agency such as the Bagmati Watershed Management Project, which is directly supervised by the Ministry of Forest and Soil Conservation. Apart from such exceptions, the Department's jurisdiction covers the whole country. The Department of Forests, for example, is the custodian of the all the national forest areas and is supposed to preserve, maintain and utilize the forests. The Forest Act and regulations empower the Department to take punitive actions against those destroying or damaging forest property. The maximum penalty is a Rs 10,000 fine and imprisonment for one year, with minor penalties for smaller offences. The penalty is not specific to environmental damage, as it is of a generic nature dealing with forest encroachment and property damage. The Department of Forests, the Department of Soil Conservation and the Department of National Parks and Wildlife Conservation have district offices, which are authorized by the Forest Act and regulations to undertake supervision and monitoring activities in their respective jurisdictions.

In the industry sector, the main monitoring agencies are the Department of Industry/Irrigation, and the Department of Cottage and Small-Scale Industries. In the industrial policy 1992, NBSM has been designated as the agency for monitoring industrial pollution. Since 1994, NBSM has been continuously monitoring the effluents of tanneries, wool processing industries and distilleries.

In the current situation, the ministries are responsible for policy formulation and adaptation, while the departments and agencies under them are responsible for implementation and, hence, monitoring the enforcement. It should be noted that enforcement of existing provisions with regard to the environment is minimal, except in the case of the Department of National Parks and Wildlife Conservation and the Department of Forests, which have traditionally carried out some policing work in order to prevent and contain forestry encroachment and the poaching of wild life, respectively.

Implementation of Conventions in **Nepal** is **t**he most serious constraint on the implementation of environmentally-related Conventions to which Nepal is committed has obviously been the absence of any coordinating agency such as the Ministry of Population and Environment which is responsible for the incorporation or integration of various international obligations into the existing laws or when preparing new legislation. Even where there is a specific government agency directly concerned with or obviously responsible for implementation of some Conventions, implementation has not been particularly encouraging.

Since two important central coordinating agencies, that is, Environmental Protection Council (EPC) and the Ministry of Population and Environment, now exist with the necessary mandates, they can be expected to take appropriate and effective steps to see that the international obligations of **Nepal** are duly honored and implemented in the interests of both Nepal and the international community. As an initial and immediate step, it is necessary first to take stock of those international obligations emanating from environmentally related Conventions to which Nepal is already a party, and to examine how those obligations can be implemented effectively. To facilitate such action, the Ministry of Population and Environment could constitute a "legal committee" of experts and take the necessary steps on the basis of the findings and recommendations by that committee. The extensive study jointly commissioned by National Planning Commission (NPC) and the World Conservation Union (IUCN), entitled the National Conservation Strategy Implementation Project, is now near completion. The study will serve as an excellent document for both the government and the proposed "legal committee" in making their review and recommendations, and in taking the necessary actions.

PAKISTAN

Key Issues: Implementation; Technology Transfer; Inbuilt Funding Mechanism; Synergy with other agreements; Informed Negotiations, Education and Awareness; Enforcement and Compliance

Domestic Legislative Measures: Environmental Protection Ordinance (PEPO), 1983;Pakistan Environment Protection Act, 1997; Environmental Quality Standards

Key Institutions: Ministry of Environment; Pakistan Environmental Protection Council (PEPC); Pakistan Environmental Protection Agency; Provincial EPAs; Environmental Tribunals

1. INTRODUCTION

Pakistan is signatory to various international conventions and protocols. Different projects are under implementation and various activities are underway to discourage use of ozone depleting substances, protection of biodiversity, promoting use of renewable energy, energy conservation in road transport sector, enhancing forestry cover etc.

2. INTERNATIONAL CONVENTIONS SIGNED RATIFIED BY PAKISTAN

- Convention on Biological Diversity CBD No data
- Framework Convention on Climate Change FCCC No data
- Vienna Convention for the Protection of Ozone Layer No data
- Convention on International Trade In Endangered Species of Wild Fauna and Flora CITES No data
- Ramsar Convention: Convention on Wetlands of International Importance Especially asWaterfowl Habitats 1982
- United Nations Convention on the Law of the Sea No data
- International Convention for the Prevention of Pollution from ships No data
- Convention of Protection of Marine Life No data
- Basel Convention on the Transboundary Movements of Hazardous Wastes and their Disposal No data
- Convention on Desertification No data
- Treaty Banning Nuclear Weapons Test in the Atmosphere in Outer Space and Under Water No data
- Convention on the Prohibition of Military or Any Other Hostile Use of Environmental

Pakistan has signed and ratified many conventions and protocols, some of the important conventions and protocols have been described here.

3. MONTREAL PROTOCOL

Ozone layer acts as a shield against the harmful effects of the sun‟s ultraviolet radiation. In response to a growing scientific consensus that substances such as chloroflurocarbons (CFCs), carbon tetrachloride and halons etc. would ultimately destroy the ozone layer, the United Nations Environment Programme (UNEP) began negotiations to develop multilateral protection measures for the ozone layer in 1981. These negotiations culminated in framing the Vienna Convention for the protection of the Ozone Layer in March 1985, which led to the signing of the Montreal Protocol relating to phasing out ozone depleting substances (ODS) in September 1987.

Pakistan Joins the Montreal Protocol

Pakistan became a Party to the Montreal Protocol by ratifying the Protocol and its London Amendments on 18 December 1992. The subsequent amendments known as the Copenhagen Amendments which, accelerates the phase out dates were ratified in January 1995.

Use of Ozone Depleting Substances (ODS) in Pakistan

The use of ozone depleting substances (ODS) in Pakistan is mainly in deep-freezers, refrigerators, car air-conditioners, foam, dry-cleaning, fire extinguishers and solvents etc. ODS consumption during 1995, 1996 & 1997 was 3188, 2510 & 2352 metric tons respectively, which comes to about 0.02 kg per capita. As Pakistan‟s per capita consumption of ODS is less than 0.3 kg, Pakistan falls under the category of Article 5 (I) Parties. Pakistan is required to phase out certain ODS such as chloroflurocarbons as given in Group I, Annex-A of the Protocol by the year 2010 (50% by the year 2005 & 85% by the year 2007). Detail of consumption of ODS in the country during 1995, 1996 & 1997 is at Appendix-I.

Establishment of Ozone Cell

The Ministry of Environment, Local Government & Rural Development assumes sole responsibility for implementation of the provisions of the Montreal Protocol. Keeping in view Pakistan‟s commitments to the international community, an Ozone Cell under the project entitled “Institutional Strengthening for the Implementation of the Montreal Protocol for the phase-out of Ozone Depleting Substances” with the financial assistance of Multilateral Fund of the Montreal Protocol has been established in this Ministry. Total cost of the project is US $ 259,000, which is being provided by the Multilateral Fund for the Implementation of the Montreal Protocol (MFMP) through United Nations Development Programme (UNDP). Ozone Cell became operational in January 1996.

4. UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Pakistan signed the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and ratified it in 1994. the ratification of the Convention triggered a series of activities in Pakistan regarding climate change issues. These included the Asia Least-cost Greenhouse Gas Abatement Strategy (ALGAS) project completed in 1998, which was the first comprehensive national project on climate change and that covered both quantification of emissions and the setting out of a long-term emissions reduction programme as well as the Country Case Study on Climate Change Impacts and Adaptation Assessments in Pakistan which was also completed in 1998 and which assessed the impact of Climate Change on four major sectors of economy, i.e. agriculture, forestry, water resources, and meteorology.

All parties to the Convention are required to prepare a National Communication to the UNFCCC, which contains an inventory of Greenhouse Gases (GHGs), and also indicates policies and measures, which the government will take to adapt to or mitigate the adverse impacts of Climate Change. In response to the Convention‟s requirement of submission of a National Communication, the Ministry of Environment, Local Government and Rural Development (MELG&RD), constituted a National Study Team (NST) to prepare the report. The NST consisted of consultants, Pakistan Agriculture Council, Pakistan Forest Institute, National Institutes of Oceanography, Pakistan Science Foundation, ENVORK – environmental consultant firm, Marine Investigators and some independent sector experts. The Pakistan National Communication (PNC) has been prepared by the National Study Team (NST).

5. CONVENTION ON BIOLOGICAL DIVERSITY

Biodiversity is defined as " the variability among living organisms from all sources including inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (CBD1992).

A United Nations Convention on Biological Diversity (CBD) was developed in 1992. The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

Pakistan ratified the Convention in 1994 and is a Party to the CBD. This Convention duly recognizes the intrinsic value of biological diversity and ecological, genetic, social, economic, cultural, educational, recreational, and aesthetic values of biodiversity and its components. In addition Pakistan is also signatory to the Convention on International Trade in Endangered Species (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (Bonn), World heritage Convention and Ramsar Convention. All these Conventions aim at protection and conservation of components of biological diversity.

Country Parties to the CBD are obliged to take steps for the conservation and sustainable use of biological resources in their countries in accordance with the Convention. Article 6 of the CBD requires that each Contracting Party to the Convention, shall, in accordance with its particular conditions and capabilities (1) develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity-, and (11) integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

A Biodiversity Action Plan (BAP) for Pakistan has been prepared using financial assistance provided by the Global Environment Facility (GEF). The Plan aims at fulfilling provisions of the provision of the CBD . The preparation of BAP has undergone extensive consultations with all major stakeholders including the federal and provincial government departments/organizations/institutions, NGOs and individuals. It provides an integrated framework for biodiversity conservation, prioritizing interventions and- setting targets for implementation.

Preparation of Biosafety Guidelines on Genetic Engineering and Biotechnology

Pakistan is Party to Convention on Biological Diversity (CBD). Article 19 of CBD provides that the parties may need to consider setting out appropriate procedures for safe transfer, handling and use of any living modifies organism resulting from biotechnology that may have adverse affect on the conservation and sustainable use of biodiversity. Pakistan has prepared these guidelines to fulfill the obligation. The Guidelines were discussed in a national workshop organized by this Ministry and will soon be finalized.

Preparation of Biodiversity Action Plan for Pakistan (BAP)

Pakistan being party to CBD is required to prepare national strategy and action plan for the conservation and sustainable use of biodiversity. A Biodiversity Action Plan for Pakistan has been finalized and printed for dissemination to all concerned Government Institutions/NGOs and other stakeholders. The broad objectives of BAP are to:

1) To create a policy framework that fosters the sustainable use of biological resources and the maintenance of biodiversity.
2) To strengthen and promote national biodiversity conservation programmes and develops international and regional cooperation.
3) To create conditions and incentives for biodiversity conservation at the local community level.
4) To strengthen and apply more broadly the tools and technologies for conserving biodiversity.
5) To strengthen human knowledge, will and capacity to conserve biodiversity.

To oversee the implementation and coordination of BAP, a Federal Steering Committee has been established. A Biodiversity Working Group is also being established which will be an advisory group on biodiversity issues. Provincial Steering Committees are also being established in the provinces.

Preparation of National Action Programme to Combat Desertification (NAP) in Pakistan

For fulfilling its obligations under CCD, Pakistan has prepared a national programme to combat desertification in Pakistan. The final draft of NAP has been prepared after wide consultation of all relevant organizations/individuals. It will be presented to the next meeting of PEPC for its approval. The programme of action aims at:

a) Providing a guidelines/framework for sustainable development of the natural resources and preservation of biological diversity in different agro-ecological regions of the country.
b) Alleviating poverty and improving living standard of the people of arid lands by adopting improved technologies and by having access to extension and support services.
c) Providing an effective institutional mechanism at various levels of formulating policy and plans and conducting research and development in the arid lands.
d) Human resource development through capacity building and creating awareness among the masses for identification and tackling area specific problems.
e) Gender-balanced decision making and effective participation through the recognition of the economic value of women‟s work.

Preparation of National Country Reports on the Implementation of Convention on Biological Diversity (CBD) in Pakistan

Pakistan being party to CBD since 1994 is required to submit reports on the implementation of CBD. First and second National Reports on the implementation of CBD have been prepared through a wide consultation process involving all relevant Government.

6. CONVENTION TO COMBAT DESERTIFICATION AND DROUGHT (CCD)

Desertification is defined as "land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities". Land degradation means reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, of range, pasture and woodlands resulting from land uses and from a process or combination of processes, including processes arising from human activities and habitation patterns such as:

- soil erosion caused by wind and/or water;
- deterioration of the physical, chemical and biological or economic properties of soil; and
- long-term loss of natural vegetation.

Desertification is one of the major problems at global level, which is affecting more then 100 countries of the world resulting in environmental degradation, loss of soil fertility, biodiversity and reduction in land productivity. United Nations established an Inter-governmental Negotiation Committee (INC) to look into the matter which, after a series of meetings developed the United Nations Convention to Combat Desertification (CCD) which was adopted in 1994. The Convention was signed and ratified by Pakistan in 1996.

The objective of the CCD is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements, in +,he framework of an integrated approach which is consistent with Agenda 21, with a view to contributing to the achievement of sustainable development in affected areas. Achieving this objective will involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level.
The countries, which are Party to the CCD, are required to prepare "National Action Plans to Combat Desertification". To fulfil this obligation, a National Action Plan to Combat Desertification in Pakistan (NAP) has been prepared with the financial and technical support of United Nations Environmental Programme (LTNEP) and Economic and Social Commission for Asia and the Pacific (ESCAP). NAP has gone through an extensive consultation process involving all major stakeholders.

The proposed Plan identifies the factors contributing to desertification and practical measures necessary to combat desertification and mitigate the effects the drought. It calls for participatory process as well as results of research closely inter linked with other efforts to formulate national policies for sustainable development. The Plan aims at:

i) Providing a guideline/framework for sustainable development of the natural resources and preservation of biological diversity in different agro-ecological regions of the country.

ii) Alleviating poverty and improving living standard of the people of aridlands by adopting improved technologies and by having access to extension and support services.

iii) Providing an effective institutional mechanism at various levels for formulating policy and plans and conducting research and development in the aridlands.

iv) Human resource development through capacity building and creating awareness among the masses for identification and tackling area-specific problems.

v) Gender-balanced decision making and effective participation through the recognition of the economic value of women's work.

Pakistan is party to CCD since 1997 and is required to regularly submit reports on the implementation of CCD in Pakistan. First National Report on the implementation of CCD has been prepared and submitted to CCD Secretariat.

Focal Point of Convention on Convention to Combat Desertification and Drought

Pakistan is party to CCD since 1997. Ministry of Environment, LG&RD is focal point for CCD in Pakistan. Ministry is coordinating with CCD Secretariat in disseminating relevant information about the Convention from the Secretariat to all stakeholders in Pakistan and preparing country reports on the implementation of CCD and other information required to the Secretariat. ERNP sub-projects were also engaged in the World Environment Day 2001 celebrations at their headquarters in Punjab and NWFP.

7. WILDLIFE RELATED CONVENTIONS (CITES, RAMSAR AND CMS)

NCCW is implementing the obligations of the following three Conventions to which Government of Pakistan is signatory:

a. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
b. Convention on Wetland of International Importance Especially as Waterfowl Habitat (Ramsar).

c. Convention on the Conservation of Migratory Species of Wild Animals (CMS).

A ban on commercial export of CITES Appendix-I and II species was implemented with exception of scientific use. Similarly the export of mammals and reptiles, which are not common in the country, remained closed. The commercial export of common birds, mostly captive bred species was encouraged. This policy was regulated by NCCW in collaboration with Ministry of Commerce and Provincial Wildlife Departments.

For better implementation of Ramsar Convention, Pakistan had notified eight Ramsar sites in collaboration with Ramsar Bureau. With the addition of eight new wetlands, now there are 16 Ramsar Sites notified for conservation of wetland associated biodiversity. This recent increase in Ramsar Sites enhanced the image of the country in conservation circle.

NCCW also encouraged the Provincial Wildlife Departments to implement the obligations of Convention on Conservation of Migratory Species of Wild Animals (CMS) also known as Bonn Convention. The threatened migratory species like cranes, geese, storks, pelicans etc. are protected in most of the provinces. NCCW, as an obligation of MOU signed under CMS, is trying to protect the threatened Siberian crane in collaboration with WWF-Pakistan and NWFP Wildlife Department. Similarly another Conservation Plan and MOU is under consideration for conservation of marine turtles. NCCW is also trying to minimize the hunting pressure on Houbara bustard and falcon species in collaboration with Houbara/Falcon Foundation International-Pakistan.

SRI LANKA

Key Issues: Implementation; Technology Transfer; Inbuilt Funding Mechanism; Synergy with other agreements; Informed Negotiations, Education and Awareness; Enforcement and Compliance

Domestic Legislative Measures: National Conservation Strategy, 1988; National Environmental Action Plan, 1994; National Environment Act, 1980; National Environment (Amendment) Act, 1988; Control of Pesticide Act, 1980; Coast Conservation Act, 1981; Coast Conservation (Amendment) Act, 1988;Marine Pollution Prevention Act, 1981; Fisheries and aquatic resources Act, 1996; Forestry Ordinance, the Flora & Fauna Act, the Fisheries Act; National Environmental (Protection and quality) Regulation, 1990;

Key Institutions: Ministry of Environment and Natural Resources; Central Environmental Authority Department; Department of Wildlife Conservation; Coastal Conservation Department; National Environmental Steering Committee, Metrological Department; Ministry of Agriculture, Lands and Forestry; Natural Resources, Energy and Science Authority; Ministry of Fisheries and Aquatic Resources; Ministry of Transportation; Sri Lanka Standards Institute

1. INTRODUCTION

Sri Lanka created a well-developed institutional infrastructure to implement vthe conventions and protocols. Government has set up an inter-ministerial coordinating committee on climate change for implementation of the Framework Convention on Climate Change. This committee in turn appointed a steering committee for the purpose of preparing a national action plan on climate change for achievement of the objectives of the Convention. In addition, a Montreal Protocol Unit was established within the Ministry of Environment to coordinate matters related to the Protocol. Almost all countries formed their own commissions for complying with Agenda 21. However, the implementation of Agenda 21, which calls for the integration of environment and economy, is undertaken on a superficial level. Following conventions and Protocols have been signed and ratified

- Ramsar Convention on Wetlands, 1975;
- Basle Convention on the Transboundary Movement of Hazardous Waste, 1992;
- Biodiversity Convention, 1992;
- Vienna Convention on Substances that Deplete the Ozone Layer and the
- subsequent Montreal Protocol, 1989;
- Framework Convention on Climatic Change, 1993;
- Bonn Convention on Migratory Species, 1989;
- Convention on International Trade in Endangered Species, 1973.
- Montreal Protocol (1987) was ratified on 15 December 1989
- London Amendment (1990) was ratified on 16 June 1993
- Copenhagen Amendment (1992) was ratified in July 1997
- The latest report to the Montreal Protocol Secretariat was prepared in June 1997
- UNFCCC was ratified on 23 November 1993
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Convention on Wetland of International Importance Especially as Waterfowl Habitat (1971)-Ramsar

- Convention concerning the protection of the World Cultural ad Natural Heritage (1972)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973)-CITES
- Convention on the conservation of Migratory Species of Wild Animals (CMS 1979)
- United Nations Convention on the Law of the Sea-
- Marine Pollution Prevention Authority Vienna Convention for the Protection of the Ozone Layer (1985)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989)-
- Convention on Biological Diversity (1992)
- United Nations Framework Convention on Climate Change (1992)
- United Nations Convention to Combat Desertification (1994)
- Nations Convention on the Law of the Sea of 10 December 1982
- Montreal Protocol on substances that deplete the Ozone Layer.
- Convention on early notification of a nuclear accident
- Agreement on the Network of Aquaculture Centers in Asia and the Pacific
- Convention on the Prohibition of the Development, Production, Stockpiling and use of Chemical Weapons and on their destruction
- Agreement for the establishment of the Indian Ocean Tuna Commission - Nov. 1993/
- International Plant Protection Convention.
- International Convention for the Preservation of Pollution of the Sea by Oil (as amended)
- Marine Pollution Prevention Authority Plant Protection Agreement for Asia and Pacific Region * (as amended)
- Convention on the Continental Shelf
- Convention on Fishing and Conservation of the living resources of the high seas
- Treaty banning nuclear weapon tests in the atmosphere, in outer space and under water.
- Treaty on principles governing the activities of states in the exploration and use if outer space including the moon and other celestial bodies.
- International Convention on Civil Liability for Oil pollution Damage (as amended
- International Convention Relating to intervention on the high seas in cases of oil pollution casualties
- Convention on the prohibition of the development, production and stockpiling of bacteriological (biological) and toxin weapons and on their destruction
- Convention on the prohibition of military or any other hostile use of environmental Codification techniques.
- The International Convention for the Prevention of Pollution from the ships (MARPOL)-1973
- Biosafety Protocol 24.05.2000/

2. CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

Sri Lanka is one of the few countries in South Asia having a wealth of biodiversity. Within a land area of 25,000 sq. miles, this rich biodiversity is distributed within a wide range of eco-systems varying from rainforests to grasslands, freshwater bodies, wetlands and rivers, and coastal and marine eco-systems. An important feature of the climate is that there are two basic eco-zones: a wet zone and a dry zone. Since these two zones are not sharply distinct, there is also what may be termed, an "intermediate" zone gradually merging into the wet and the dry zones. These climatic conditions and the panorama of natural eco-systems in the country support over 3,800 species of flowering plants, of which 23% are endemic, 314 species of fern and derivatives of the fern family. Species diversity is also high among mosses and fungi. In addition, the country has a high faunal diversity. Available information shows that Sri Lanka's

biodiversity per unit of land area is among the highest in South Asia. The diversity of the country's biological resources has not yet been fully surveyed. Conservation and sustainable use of these resources based on the indigenous knowledge systems and practices is ingrained in Sri Lanka's ethos and way of life.

Major legislative enactments on the biological resources of Sri Lanka are the National Environmental Act 1980, Forest Ordinance, The Flora and Fauna Protection Ordinance, National Heritage Wilderness Areas Act, Botanic Gardens Ordinance, Fisheries and Aquatic Resources Act, the Plant Protection Ordinance, and the Customs Ordinance.

The concept of environmental protection is enshrined in the country's constitution.

The preparation of the Biodiversity Action Plan was undertaken in response to Article 6 of the Convention (CITES). While consolidating the ongoing efforts of conservation and sustainable use of biological diversity, the Action Plan aims at establishing a policy and programme regime, which brings national action to various aspects of the subject, including capacity-building and bio-safety measures, in tune with the articles of the Convention.

The Government is to adopt this National Biodiversity Action Plan for the conservation and sustainable use of these resources in the near future. Wildlife preservation, in the form of zoos and national farms, is used for the *ex-situ* preservation of wildlife. Also, efforts are being made to strengthen the legislative framework to derive maximum benefit from biotechnology while minimizing its risks. The lack of technology and technical capacity, as well as financial constraints, have weakened the national efforts to protect biodiversity.

Decision-Making Structure

The Ministry of Forestry and Environment is responsible for policy-making with the approval of the Cabinet. A network of over 100 NGOs has been built up and biodiversity focal points have been established in development ministries and agencies to get environmental advocacy in formulating biodiversity policies.

The developed countries should ensure that benefits of biotechnology accrue to the country of origin of the biological resources; these benefits to include royalty payments and transfer of technologies to the countries of origin of the biological resources in accordance with the provisions of the Convention.

It is also necessary to develop an internationally recognized regime for recognizing the property rights, both intellectual and physical, of the local communities. The capacities of biodiversity-rich countries should be built up to enable them to carry out bio-prospecting and undertake technology assessment for protection of their resources. The introduction of transgenic and alien species should be only with the requisite safeguards.

Capacity-Building/Technology Issues:

Attention is given to institution building including capacity-building, and developing bio-safety measures in keeping with the articles of the Convention. Sri Lanka is trying to build up a bio-technology information network and capacity in the area of taxonomy. The facilities for cryo-preservation of germ plasma in the country are very limited. The Plant Genetic Resource Centre at Peradeniya is the only institution with such facilities and only a fraction of the range of the agricultural germ plasma available in the country is stored at this centre. It is necessary to build capacities and develop programmes for gaining a better understanding of the different components of the country's biodiversity. The country's capacity in the area of taxonomy needs to be built up. The opportunities available for training in this area are limited.

Regional/International Cooperation:

There is regional and national cooperation for technology transfer, capacity- building and for the exchange of information. The SAARC countries cooperate in identifying regional issues and taking regional and international measures for the conservation and sustainable use of biological resources. However, national action regarding conservation and sustainable use of biodiversity and an equitable share of benefits, demands contributory action on the part of the international community, particularly the developed countries.

3. THE BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL

Sri Lanka ratified the Basel Convention in August 1992. The Ministry of Forestry and Environment is the focal point and the Central Environment Authority is the competent authority for this convention.

The regulations for the internal management of hazardous waste were published in 1996, by the Ministry of Environment. Regulations for the transboundary movement of hazardous waste are being formulated and will be brought into operation under the Import and Export Control Act.

Guidelines are being prepared for the safety measures to be adopted during collection, transportation, storage, recovery, recycling and disposal of hazardous wastes.

A project under World Bank funding was completed to establish an inventory of hazardous waste, the current disposal practices in Sri Lanka, and also to carry out a prefeasibility study to identify and rank suitable hazardous waste disposal sites. Arrangements are being made to prepare a National Action Plan for Clinical Waste Management.

Decision-Making Structure: The National Co-ordinating Committee for the implementation of the Basel Convention, chaired by the Secretary, Ministry of Forestry and Environment.

Capacity-Building/Technology Issues: Due to the high cost of, and inadequate accessibility to, environmentally- sound technology and the level of technical capacity to select, maintain and use the proper technology, industries find it difficult to comply with the hazardous waste regulations. The capacity of the regulatory bodies are also inadequate to ensure the effective implementation of the new hazardous waste regulations.

Major Groups: The Ministry of Forestry and Environment; Central Environmental Authority; Ministry of Shipping, Ports, Rehabilitation and Reconstruction; Ministry of Trade, Commerce and Food; Ministry of Planning Ethnic Affairs and National Integration; Ministry of Labour and Vocational Training; Ministry of Defence; Ministry of Health and Indigenous Medicine; Ministry of Science, Technology and Human Resources Development; Ministry of Industrial Development; Marine Pollution Prevention Authority; Federation of Chamber of Commerce and Industries of Sri Lanka; Ceylon Chamber of Commerce; Board of Investment of Sri Lanka; Ceylon Fertilizer Corporation; Sri Lanka Ports Authority; Pesticide Registration Office; Sri Lanka Customs; Government Analyst Department; Ceylon Institute of Scientific and Industrial Research; Import and Export Control Department.

Finance: Sri Lanka lacks financial assistance for the efficient implementation of the Basel Convention. Particularly, financial assistance is essential to build the capacity of the country for hazardous waste management, including establishing hazardous waste disposal facilities.

4. MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER

The Ministry of Environment and Forestry is the focal point for all environmentally-related international agreements, and it has set up a Montreal Protocol Unit within its own organizational structure to coordinate all matters relating to the Protocol..

At a meeting of the parties to the Protocol held in 1995, the time target applicable to developing countries for phasing out ozone depleting substances (ODS) such as chlorofluorocarbons (CFCs), carbon tetrachloride (CTC) and methyl chloroform has been set as the year 2010. For hydrochlorofluorocarbons (HCFCs), which have an ozone-depleting potential of only 5 to 11 per cent of that of CFCs, the time target has been set as the year 2040. Also, amendments introduced to the Protocol in 1992 have increased the list of HCFCs to 40, while a list of 34 new substances called hydrobromofluorocarbons (HBFCs) and another new substance, methyl bromide, have been included. In Sri Lanka, methyl bromide has applications in the tea sector.

Although adequate time is available before 2010 for developing countries to begin phasing out consumption of ODS, Sri Lanka has taken measures to phase OD out earlier because it is economically advantageous to do so. Also, time targets for phasing out ODS have to be set in order to obtain assistance from the Multilateral Fund for technology transfer and investments necessary implementing the changeover. Furthermore, time targets are necessary for the trade and industry sectors to plan their strategies for changing over to new technologies. Therefore the Ministry of Environment and Forestry has prohibited the use of CFCs, CTC and methyl chloroform in trade and industry after 1 January 2000, except for the purpose of servicing equipment which is allowed until 1 January 2005. The current consumption of CFCs in Sri Lanka is of the order of 350 tons annually and is used mainly in the refrigeration sector.

Coordinating the implementation of that aspect of the Protocol with the refrigeration and air-conditioning industry and the trade sector takes place through the interministerial committees that function in the Ministry o Environment and Forestry, and encompasses the Ministry of Industria Development, Science and Technology and Ministry of Internal and International Commerce and Food. The consumption in developed countries of methyl bromide, which is widely used in agriculture to fumigate soils and grains, was frozen in 1995 and is due to be banned by the year 2010, with an exemption granted for quarantine and preshipment applications. However, in the case of developing countries, consumption of methyl bromide will not be frozen until the year 2002, with an exemption given for critical agricultural applications. In view of its application in agriculture, no decision has been taken yet on a complete ban in the case of developing countries.

In Sri Lanka, methyl bromide is used because of its versatility in controlling a wide spectrum of pests, pathogens, insects and nematodes. It also has sufficient phytotoxicity to control many weeds and seeds. As a result of its efficacy, it is used in pest control (basically in stored products), on the tea plantations, and for plant quarantine mainly at ports and airports to fumigate export and import cargo. Its annual consumption totals about 60 tons, divided approximately equally between the tea sector and other uses. It is used by the tea sector for fumigating soils to control soil-born pests as well as diseases in nurseries. The product is recommended for use by SLTRB.

Apart from having an adverse impact on the ozone layer (its ozone depleting potential is 0.6 that of CFCs), methyl bromide is extremely hazardous to humans and animals as it causes eye and skin burns on contact.

Since it is a pesticide, in Sri Lanka its use is controlled by the Control of Pesticides Act. As such, methyl bromide imports, storage, labelling, transport, sales and use are regulated through a registration procedure. No person is allowed to undertake any of the above activities unless registered. Upon registration, the Registrar of Pesticides, together with relevant restrictions and conditions, to ensure safe and effective use, issues a licence. Furthermore, since it is identified in Sri Lanka as one of the restricted pesticides it cannot be sold on the open market. Registered persons are allowed to import methyl bromide with the prior approval of the Registrar of Pesticides and to issue the product directly to authorized users. Users are identified by the Registrar, based upon the intended specific use, as well as facilities and expertise available to them.

According to the Montreal Protocol, methyl bromide could continue to be used in developing countries until alternatives are developed for agricultural applications. However, in addition to setting time targets for the ban on manufacture and import of ODS, the Montreal Protocol has also imposed restrictions on their trade. Therefore, developing countries like Sri Lanka, which depend on imports of such products from developed countries, will still encounter constraints for its continued use. Therefore the Ministry of Environment and Forestry has already begun seeking alternatives to methyl bromide for use in the tea sector.

However, constraints to finding alternatives are arising because methyl bromide has a wide range of applications and is a convenient material to use. It is quite penetrative and effective at low

concentrations, and its action is sufficiently rapid in treated systems to cause relatively little disruption to commerce, and especially crop production. Difficulties in finding alternatives have already been reported by a Methyl Bromide Technical Options Committee which was established by the parties to the Montreal Protocol to review the technical issues concerning the chemical.

According to the Methyl Bromide Technical Options Committee, several identified potential alternatives include fumigants and non-fumigants. However, the environmental and health considerations that limit the use of any pesticide need to be taken into account when selecting alternatives. Further regulatory restrictions on the use of agrochemicals are likely to increase, resulting in higher costs and increasing inconvenience. The costs of achieving full commercial registration of unregistered material are high and the process is slow. The rapid introduction of alternatives also face specific constraints associated with the time taken to gain registration as well as regulatory acceptance of some procedures. When related to the treatment of exports to meet quarantine standards, the problem becomes even more acute when extensive trials and protracted bilateral negotiations are required.

The above constraints also apply to Sri Lanka. Although SLTRB has recommended alternatives to methyl bromide they do not appear to have been taken up, perhaps because of their specificity to particular applications. In that connection, the tea sector faces a number of constraints related to registration procedures etc. under the Pesticides Control Act when adopting entirely new alternatives.

To achieve the national policy objectives of phasing out ODS under the Montreal Protocol, a significant constraint concerns the Multilateral Fund. When the London Amendment to the Montreal Protocol was being negotiated in 1990, the Multilateral Fund was established on the insistence of developing countries, without imposing any conditions for disbursement of the funds. However, in submitting recent requests for funds, developing countries such as Sri Lanka have found that new criteria have been introduced, making it particularly difficult for countries with low-volume consumption levels of ODS to benefit from the Multilateral Fund.

One such criterion is that projects are approved on the basis of their cost effectiveness, defined in terms of United States dollars invested per ton of ODS eliminated. Generally, the figure is high for low-volume consuming countries such as Sri Lanka and therefore the projects receive low priority. In addition, the funds are disbursed for the transfer of technology at industry/trade level and not to direct users.

Even in the case of methyl bromide, disbursements from the Multilateral Fund are generally not made for research on alternatives. The cost of finding alternatives, including the necessary laboratory and field trials, is quite high and generally will not be covered by the Multilateral Fund. Currently, the Ministry of Environment and Forestry is negotiating with other donor agencies to obtain funds for research work. Meanwhile, CEA has approved a research grant in local currency to SLTRB, to undertake research work related to the quest for alternatives. Those endeavours will be coordinated by CEA and the Ministry of Environment and Forestry with SLTRB and the Ministry of Plantation Industries, through the Interministerial Coordinating Committee, in order to ensure the integration of policy objectives.

5. FRAMEWORK CONVENTION ON CLIMATIC CHANCE

The annual emission of several billion tons of GHGs, mainly carbon dioxide, methane, nitrous oxide and CFCs into the atmosphere, principally from fossil fuels and biomass combustion as well as agricultural activities, is expected to cause severe changes in the Earth's climatic system including global warming and a rise in sea level. To avoid such a disaster, and on the initiative of the World Meteorological Organization and the United Nations Environment Programme, the international community adopted the Framework Convention on Climatic Change at the United Nations Conference on Environment and Development (Earth ummit) held in Rio de Janeiro in June 1992. Sri Lanka became a signatory to that Convention and ratified it in 1993. As far as Sri Lanka is concerned, the

biophysical impacts related to the of climate change will generally manifest themselves in almost every sector of the economy.

In the agriculture and forestry sectors, there could be both direct and indirect impacts. Direct impacts will result from increased carbon dioxide levels, which affect photosynthesis, and rising temperature which, in turn, cause heat stress and increased evapo-transpiration in crops. Indirect impacts will result from changes in moisture levels, an increased incidence of pests and growing spoilage of agro-products as a result of enhanced microbial activity. These effects could result in reduced yields and shifts in productivity.

Changes in rainfall patterns and increased temperature could have a direct impact on water resources, leading to their decline in general. The patterns of floods, droughts, storms and cyclonic activity could change, leading to major implications with regard to the drinking water supplies, hydropower generation, irrigation activities, and threats to life and property.

A rise in the sea level would have repercussions for coastal ecosystem management, aquaculture and urban water supplies as a result of enhanced salinity levels and the inundation of low-lying coastal areas. The latter problem would also affect the extent of beaches, beach erosion, river run-off, human settlements, coastal structures, highways and railways. Offshore effects would likely include heightened growth of phytoplankton, declining fish yields and changes in marine migratory patterns.

Both human and animal health are also vulnerable to climate change. The incidence of the more common vector-borne diseases such as malaria and filariasis could increase. Other vector-borne diseases, such as encephalitis and dengue fever, could also increase. In addition, frequent heat waves and fresh-water shortages will take their toll.

According to the Sri Lanka country report in "Climate change in Asia" by ADB, assessing the impacts of future climate change is an undertaking filled with uncertainty. Although the rates of GHG increases are known, it is not known whether the rate will continue. In addition, the sensitivity of the climate to changes in GHGs is still unknown.

According to current climate change predictions (tables 10 and 11) for Sri Lanka, the effects of climate change by the year 2010 will be marginal, reaching only +0.50C for temperature increase and +5 per cent for evaporation/rainfall (wet season only) in the high scenario. However, in the scenario for 2070 the changes become quite significant.

The trends shown in tables 10 and 11 also suggest that within the averages, the intensity of dry weather and rainfall may increase. Therefore, climate change could have increasingly significant effects even in the scenario for the year 2010. Studies on weather patterns and crop yields for the past years have shown that drought affects tea by reducing the yields. On the other, irregular patterns of rainfall and high seasonal concentrations in the wet zone, with attendant increases in run-off ratios, could result in soil erosion, land degradation and the loss of productivity in the case of tea.

The Framework Convention on Climatic Change was adopted with the objective of stabilizing GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Developed country parties (those listed in Annex 1 of the Convention) are required to reduce their GHG emissions to 1990 levels by the year 2000. However, there is no such requirement for developing countries (i.e., non-Annex 1 parties). Under the Convention, every party is required to submit a national communication to the Climate Change Secretariat before a stipulated date, including: (a) a national inventory of anthropogenic emissions and removals of all GHGs; (b) a general description of steps taken or envisaged to implement the Convention; (c) any other information (which may include technical and financial needs) relevant to achieving the objectives of the Convention.

Initiatives taken by Sri Lanka under the Framework Convention on Climatic

Change

The Ministry of Environment and Forestry, as the national focal point for implementing the Framework Convention on Climatic Change, appointed an Inter-Ministerial Coordinating Committee on Climate Change, chaired by the Secretary of the Ministry. The Committee has initiated bilateral programmes with India and the United States of America, and coordinated the preliminary study on climate change sponsored by ADB, as part of a regional programme.

To achieve the objectives of the Convention, the Ministry of Environment and Forestry recognized that an action plan was needed which outlined the measures that the country planned to take in mitigating emissions and adapting to any adverse impacts. In early 1996, the Interministerial Coordinating Committee appointed a Steering Committee for the purpose of preparing NAPCC. The Steering Committee chaired by the Secretary of the Ministry, comprises high-level representatives of several government agencies, universities etc.

As far as the plantation sector (including tea) is concerned, the Ministry of Plantation Industries is responsible for the task of preparing the sectoral plan. In undertaking the task, the Ministry will: evaluate plantation mitigation, vulnerability, and adaptation technologies and measures; prepare the plantation sector part of the action plan; and integrate it with other national plans. Other responsible ministries for their specialized sectors are undertaking similar exercises.

In preparing the initial draft of the sectoral plans, each responsible ministry selects senior officers from the departments and institutions which are within their purview, and co-opts specialists from other institutions such as universities and NGOs, to form working groups to assist in the task.

The Ministry of Finance and Planning and the Central Bank of Sri Lanka are responsible for assessing the impact on the national economy and for developing policy measures on adapting to adverse impacts, in order to integrate climate change concerns into medium and long-term planning. The Ministry of Environment and Forestry coordinates all related activities, compiles the NAPCC based on inputs from individual working groups, and prepares the national communication required under the Framework Convention on Climatic Change.

An initial workshop was held to apprise members of the working groups of the issues involved in climate change studies such as GHG inventories, vulnerability assessments, mitigation and adaptation measures etc. The workshop was open to other interested parties, both in the government and the private sector.

In assessing the technologies available for mitigation and adaptation, the various economic, environmental and social impacts are being given due consideration. Priority areas in each sector are selected by the working groups after consultations with all stakeholders in the sector through workshops and individual meetings. Efforts are also being made by the Steering Committee, through the Framework Convention on Climatic Change Secretariat, to obtain contact points overseas for technology transfer. The Steering Committee will provide inputs for the preparation of the first national communication.

The broad objectives of the NAPCC are:

- To identify and prioritize the mitigation and adaptation measures to be implemented by all State agencies concerned;
- To prepare Sri Lanka's first national communication required under the
- Framework Convention on Climatic Change;
- To conduct in-depth assessments of promising mitigation and adaptation technologies, and to formulate policies and strategies for promoting the deployment of the selected technologies;
- To develop policy measures aimed at minimizing the impacts of climate

change and adapting for vulnerabilities;
- To develop project concepts for seeking financial support for the implementation of the NAPCC.

The ADB-supported study on climate change identified the lacunae in current knowledge of climate change impacts in Sri Lanka. Therefore, as a follow-up measure, further studies have been carried out on:

- The preparation of the national inventory of GHG emissions and sinks;
- The measurement of emission factors for the emission of GHG during biomass combustion;
- The evaluation of mitigation options in the agricultural and energy sectors;
- A vulnerability assessment of coastal zone water supply and beach erosion;
- A vulnerability assessment of the incidence of malaria.

The above studies are being conducted by researchers attached to three universities, the Institute of Fundamental Studies and CISIR. The results of the GHG inventory will be utilized in identifying the mitigation options available to the various sectors. Furthermore, as a commitment under the Framework Convention on Climatic Change, the GHG inventory has to be updated periodically; hence the need to sustain this activity beyond the country studies programme has been recognized. In addition, since the mitigation elements identified under the country studies programme and vulnerability assessments cover only a few sectors, there is scope for further study.

Based on the findings of the individual sections of the action plan, the Steering Committee will prepare the draft national communication. For that purpose, the Steering Committee will take into account the Framework Convention on Climatic Change Secretariat guidelines and format. The draft plan will be made available for public comment and subsequently discussed at a public seminar. The Steering Committee will then prepare the final version of the national communication for submission to the Climatic Change Secretariat. Its anticipated date of completion was the end of 1997.

The framework of the national communication was expected to include:

A national inventory of anthropogenic emissions and removals of GHGs; Programmes related to sustainable development, research and systematic observation, education and public awareness, training etc.; Policy options concerning adequate monitoring systems and response strategies for climate change impacts on terrestrial and marine ecosystems; Policy frameworks for implementing adaptation measures and response strategies in the context of coastal zone management, disaster preparedness, agriculture, fisheries and forestry, with a view to integrating climate change impact information, as appropriate, into the national planning process; Programmes containing measures that would contribute to addressing climate change and its adverse impacts, including the abatement of increases in GHG emissions and the enhancement of removals by sinks; Project proposals for the removal of GHGs together with an estimate of all incremental costs to be incurred in the reduction of emissions as well as the consequent benefits;

The financial and technological needs and constraints associated with communicating and further improving the national communication, including a reduction of the margin of uncertainty in emissions and the removal of variables through appropriate institution-building and capacity-building; The financial and technological needs associated with the activities and measures envisaged under the Convention, according to national priorities; The financial and technological needs for carrying out an assessment of national vulnerability to climate change and for taking measures to facilitate adequate adaptation.

Since the implementation of the action plan requires substantial amounts of public funds, and once the priority areas are identified, the Steering Committee will select those projects which may need support in developing full project proposals. Support by the public will also be solicited for the implementation of the plan through seminars and presentations in the electronic and print media.

The constraints faced by Sri Lanka in incorporating the issues pertaining to the Framework Convention on Climatic Change into domestic policy formulation relate to:

The financial and technological needs associated with activities and measures envisaged under the Convention, according to national priorities; The financial and technological needs for the assessment of national vulnerability to climate change and for taking the necessary measures to facilitate adequate adaptation.

In that connection, technical assistance is required for:

Introducing analytical tools for evaluating policy options, programmes and technologies; Familiarization and study visits to climate change centres in developed countries; Utilizing the services of consultants for technology assessment and capacity-building.

6. URUGUAY ROUND MULTILATERAL TRADE AGREEMENT OF THE WORLD TRADE ORGANIZATION

The conclusion in 1994 of the Uruguay round of multilateral trade negotiations and the establishment in 1995 of WTO as a successor to the General Agreement on Tariffs and Trade imposed stringent conditions which impact on the trade of signatory countries. Furthermore, under the agreement, WTO is empowered to prohibit the trade of goods, which are not produced under acceptable sanitary standards.

The use of trade policies as a means of achieving environmental objectives has become a highly controversial issue, since developing countries argue that the imposition of such standards could be a subtle means of imposing non-tariff barriers on their exports. Nevertheless, the environmental concerns of the developed countries also provide new opportunities for developing countries like Sri Lanka. One striking example is the relatively high-value, environmentally friendly organic products demanded by consumers in developed countries.

Sri Lanka, like other WTO members, is also bound by the Agreement on Technical Barriers to Trade (TBT) and is obliged, among other things, to circulate full information on standards, technical regulations and conformity testing procedures among the other members. Furthermore, the new TBT agreement includes the Code of Good Practice for the Preparation, Adoption and Application of Standards which contains important provisions dealing with the development of standardization, in which information services also have an important role to play.

WTO has also recognized the importance of ISO certification and has urged governments to make the broadest possible use of international standards with a view to facilitating the free circulation of goods. It is also encouraging its members to actively participate in international standardization.

In that context it is pertinent to state that Sri Lanka has adopted the Black Tea Standard, ISO 3720, as the Sri Lanka Standard equivalent which ensures that the technical parameters and quality requirements are the same. Although a Sri Lanka Standards Certification Scheme has been implemented by SLSI for certain non-traditional products, it does not apply to tea, as SLTB with assistance from SLTRB carries out checks on tea shipments to ensure that the product conforms to international standards. As a result, Sri Lanka teas have gained the reputation of being among the cleanest teas in the world. However, with respect to ISO 9000 quality certification, the Sri Lanka tea

industry appears to be facing certain constraints concerning the availability of professional assistance for the installation of ISO 9000 quality management systems.

SLSI, is one of several accredited bodies in Sri Lanka for granting certification of ISO 9000 quality management systems, and it has so far certified 18 companies which have installed such systems covering all sectors. However, according to available information, the tea sector has received barely any certification.

Although several private sector consultancy firms provide services for the installation of ISO 9000 quality management systems, they do not appear to have the necessary expertise for providing adequate support to the tea sector. According to available information, SLTRB has been slow in filling that gap through the development of appropriate procedures and manuals for installing such systems.

In order to comply with the hygienic standards and procedures required by European Union for food imports, the early adoption of ISO 9000 systems and procedures by the tea sector is imperative.

In addition to the above considerations, increased awareness of the urgent need to protect the environment is catalysing changes in all spheres of human activity including the production, marketing, utilization and disposal of goods and services in domestic and international markets. Consumers and retailers are increasingly basing their purchasing decisions not only on the key aspects of quality, price and availability of goods, but also on the environmental aspects associated with the products, such as the environmental impacts that might occur from the raw material stage to actual production. In that context, the ISO 14000 series of environmental standards reflect the increasing concern of the international community for the preservation of the environment, as they relate specifically to the steps that enterprises need to take in meeting internationally accepted environmental management criteria.

Compliance with the ISO 14000 series will increasingly be a competitive factor in international trading. It is therefore receiving the attention of all, including the producers and exporters of commodities, such as tea, and government agencies such as SLSI. Although SLSI is still not an accredited body for ISO 14000, 16 of its staff members have been trained and registered with IQA in the United Kingdom of Great Britain and Northern Ireland as Environment Management Systems (EMS) auditors. Hence, SLSI certification has validity. However, the development of EMS related to the ISO 14000 series is at the embryonic stage.

A number of countries, including competitors of Sri Lanka, have implemented eco-labelling schemes. Thus eco-labelling (also known as green labelling or environmental labelling) is now one of the most important international trading issues that is facing the tea industry. In Sri Lanka a recognized certification body as well as a scheme to offer a registered eco-label are needed. However, the costs related to securing an eco-label or, for that matter, certification under other related schemes is bound to be a contentious issue, in terms of the ability of products to remain price competitive in international markets.

However, a healthy development is the increasing interest among the producers and exporters in the production of environmentally preferable (organic) food products. In the tea sector the production of organic teas (although still in limited quantities) has been undertaken by a few producers and exporters, more as a challenge and in response to demand and premium prices in the niche markets.

7. AGENDA 21 AND NATIONAL POLICY RESPONSES

In December 1989 the United Nations General Assembly called for a global meeting to devise strategies for taking steps to reverse the effects of environmental deterioration and establishing a basis for sustainable and environmentally sound development in the twenty-first century.

Montreal protocol on substances that deplete the ozone layer

The Ministry of Environment and Forestry is the focal point for all environmentally-related international agreements, and it has set up a Montreal Protocol Unit within its own organizational structure to coordinate all matters relating to the Protocol..

At a meeting of the parties to the Protocol held in 1995, the time target applicable to developing countries for phasing out ozone depleting substances (ODS) such as chlorofluorocarbons (CFCs), carbon tetrachloride (CTC) and methyl chloroform has been set as the year 2010. For hydrochlorofluorocarbons (HCFCs), which have an ozone-depleting potential of only 5 to 11 per cent of that of CFCs, the time target has been set as the year 2040. Also, amendments introduced to the Protocol in 1992 have increased the list of HCFCs to 40, while a list of 34 new substances called hydrobromofluorocarbons (HBFCs) and another new substance, methyl bromide, have been included. In Sri Lanka, methyl bromide has applications in the tea sector.

Although adequate time is available before 2010 for developing countries to begin phasing out consumption of ODS, Sri Lanka has taken measures to phase ODS out earlier because it is economically advantageous to do so. Also, time targets for phasing out ODS have to be set in order to obtain assistance from the Multilateral Fund for technology transfer and investments necessary to implementing the changeover. Furthermore, time targets are necessary for the trade and industry sectors to plan their strategies for changing over to new technologies. Therefore the Ministry of Environment and Forestry has prohibited the use of CFCs, CTC and methyl chloroform in trade and industry after 1 January 2000, except for the purpose of servicing equipment which is allowed until 1 January 2005. The current consumption of CFCs in Sri Lanka is of the order of 350 tons annually and is used mainly in the refrigeration sector.

Coordinating the implementation of that aspect of the Protocol with the refrigeration and air-conditioning industry and the trade sector takes place through the interministerial committees that function in the Ministry of Environment and Forestry, and encompasses the Ministry of Industrial Development, Science and Technology and Ministry of Internal and International Commerce and Food.

The consumption in developed countries of methyl bromide, which is widely used in agriculture to fumigate soils and grains, was frozen in 1995 and is due to be banned by the year 2010, with an exemption granted for quarantine and pre-shipment applications. However, in the case of developing countries, consumption of methyl bromide will not be frozen until the year 2002, with an exemption given for critical agricultural applications. In view of its application in agriculture, no decision has been taken yet on a complete ban in the case of developing countries.

In Sri Lanka, methyl bromide is used because of its versatility in controlling a wide spectrum of pests, pathogens, insects and nematodes. It also has sufficient phytotoxicity to control many weeds and seeds. As a result of its efficacy, it is used in pest control (basically in stored products), on the tea plantations, and for plant quarantine mainly at ports and airports to fumigate export and import cargo. Its annual consumption totals about 60 tons, divided approximately equally between the tea sector and other uses. It is used by the tea sector for fumigating soils to control soil-born pests as well as diseases in nurseries. The product is recommended for use by SLTRB.

Apart from having an adverse impact on the ozone layer (its ozone depleting potential is 0.6 that of CFCs), methyl bromide is extremely hazardous to humans and animals as it causes eye and skin burns on contact.

Since it is a pesticide, in Sri Lanka its use is controlled by the Control of Pesticides Act. As such, methyl bromide imports, storage, labelling, transport, sales and use are regulated through a registration procedure. No person is allowed to undertake any of the above activities unless registered. Upon registration, a licence is issued by the Registrar of Pesticides, together with relevant restrictions and conditions, to ensure safe and effective use. Furthermore, since it is identified in Sri Lanka as one of the

restricted pesticides it cannot be sold on the open market. Registered persons are allowed to import methyl bromide with the prior approval of the Registrar of Pesticides and to issue the product directly to authorized users. Users are identified by the Registrar, based upon the intended specific use, as well as facilities and expertise available to them.

According to the Montreal Protocol, methyl bromide could continue to be used in developing countries until alternatives are developed for agricultural applications. However, in addition to setting time targets for the ban on manufacture and import of ODS, the Montreal Protocol has also imposed restrictions on their trade. Therefore, developing countries like Sri Lanka, which depend on imports of such products from developed countries, will still encounter constraints for its continued use. Therefore the Ministry of Environment and Forestry has already begun seeking alternatives to methyl bromide for use in the tea sector.

However, constraints to finding alternatives are arising because methyl bromide has a wide range of applications and is a convenient material to use. It is quite penetrative and effective at low concentrations, and its action is sufficiently rapid in treated systems to cause relatively little disruption to commerce, and especially crop production. Difficulties in finding alternatives have already been reported by a Methyl Bromide Technical Options Committee, which was established by the parties to the Montreal Protocol to review the technical issues concerning the chemical.

According to the Methyl Bromide Technical Options Committee, several identified potential alternatives include fumigants and non-fumigants. However, the environmental and health considerations that limit the use of any pesticide need to be taken into account when selecting alternatives. Further regulatory restrictions on the use of agrochemicals are likely to increase, resulting in higher costs and increasing inconvenience. The costs of achieving full commercial registration of unregistered material are high and the process is slow. The rapid introduction of alternatives also face specific constraints associated with the time taken to gain registration as well as regulatory acceptance of some procedures. When related to the treatment of exports to meet quarantine standards, the problem becomes even more acute when extensive trials and protracted bilateral negotiations are required.

The above constraints also apply to Sri Lanka. Although SLTRB has recommended alternatives to methyl bromide they do not appear to have been taken up, perhaps because of their specificity to particular applications. In that connection, the tea sector faces a number of constraints related to registration procedures etc. under the Pesticides Control Act when adopting entirely new alternatives.

To achieve the national policy objectives of phasing out ODS under the Montreal Protocol, a significant constraint concerns the Multilateral Fund. When the London Amendment to the Montreal Protocol was being negotiated in 1990, the Multilateral Fund was established on the insistence of developing countries, without imposing any conditions for disbursement of the funds. However, in submitting recent requests for funds, developing countries such as Sri Lanka have found that new criteria have been introduced, making it particularly difficult for countries with low-volume consumption levels of ODS to benefit from the Multilateral Fund.

CONCLUSION OF THE CHAPTER

The global legal and institutional framework places specific responsibilities on all countries to implement declarations and the provisions of the agreements and conventions. Developing countries in South East Asia often do not have the adequate technical and financial resources, and require technical assistance to develop their own national environmental legislation and institutions. In the past, international donors have provided advisory technical assistance and training to assist developing countries develop the necessary legal instruments. While progress has been made, many South East Asian countries are still

grappling with the creation of sustainable development strategy and action plans or their Agenda 21and Rio Principle. And many countries are still establishing the basic legal framework for the environmental protection and environmental impact assessment. Developing countries have much work to do to create framework of national laws and regulations, policy guidelines and relevant institutional frameworks to support the sustainable development.

To implement the Conventions in letter and spirit, institutional policy reforms are needed to foster intrasectoral integration. Both new policy instruments and organization development are required. Specific reforms are needed in all sectors (e.g. industrial, land, forest, water, and urban). For example, the framework laws in the region focus coordination between and within the Central, Provincial, District governments and private sector.

The results of past international negotiations, including the slow and inadequate implementation of international conventions such as those on climate change, biodiversity conservation and desertification, indicate the importance of accountability mechanisms. From a South Asian perspective, the primary function of the WSSD at Johannesburg, was to set up international regimes under which building such capacity is facilitated and to design systems of accountability that ensure the desired results.

Unquestionably, implementing Agenda 21 and introducing policies, technologies and action that can make development more sustainable needs more money than is currently available for development programmes. This was clearly recognized at Rio but the international community has failed rather miserably on this front. Concessional funding flows to the South Asian sub-region have been totally inadequate. In fact its share had declined from 17% in 1989 to 14% in 1996. But there is also a growing recognition that more money alone cannot solve the problems faced by nations in their efforts to modernize their economies. Fundamental changes are also needed in the global economy, as well as in the domestic economies of nations, if the benefits of increasing prosperity are to reach everyone, now and in the future.

REFERENCES:

1. ADB Capacity Building for Environmental law in the Asian and Pacific Region: Approaches and Resources, 2002,Vol. 1&2
2. Balbase, „Implementation of International Environmental Law in Nepal", IUCN, 1997
3. Biodiversity Conservation in Sri Lanka -A Framework for Action (1998) published by Ministry of Forestry and Environment.
4. Central Pollution Control Board: Pollution control acts, rules regulations, rules and notifications issued thereunder, 1998.
5. Dhungel, S.K. (1995). Aspects of Wild Life Conservation in Nepal, Past and Present National Planning Commission (1992). The Eight Plan. His Majesty"s Government of Nepal, Singh Durbar, Kathmandu, Nepal.
6. IUCN and EUAD. 1991. National conservation strategy, IUCN and EUAD, Pakistan.
7. King Mahendra Trust for Nature Conservation, undated. A New Approach in Protected Area Management: a Decade of Conservation for Development (1986-1996). Kathmandu
8. Ministry of Law, Justice and Parliamentary Affairs, 1990b. Constitution of the Kingdom of Nepal. Kathmandu, Legal Books Management Board.
9. National Planning Commission/World Conservation Union, 1993. National Environmental Impact Guidelines, National Conservation Strategy Implementation Project.
10. National Planning Commission/World Conservation Union, 1995.Regulating growth: Kathmandu Valley, main report (draft).
11. 10. National Conservation Strategy Implementation Project, National Planning Commission.

12. National Planning Commission/World Conservation Union, 1996a. NCS Nepal Newsletter of the National Conservation Strategy Implementation Project, vol. IV, No. 2, 1996.
13. National Planning Commission/World Conservation Union, 1996b. Sector Action Plans (forestry, industry, water resources), Nepal Environmental Policy and Action Plan, Phase II, final report, National Conservation Strategy Implementation Project.
14. National Zoological Gardens Act, 1982 No.41 applies to the National Zoological Gardens, the public aquarium the Zoo farm at Ratmalana and the elephant orphanage and Pinnawela, .Rambukkana. This statute IS largely intended to regulate the behavior of visitors to the Zoo and contains no provisions on access to genetic resources.
15. Olivier, R.C.D. (1979). Wildlife conservation and Management in Bangladesh. UNDP/FAO Project No. BGD/72/005. Forest Research Institute, Chittagong.
16. Rahman, S. (1983). Country monograph on institutional and legislative framework on environment, Bangladesh. UN/ESCAP and Government of Bangladesh
17. Rahman, S.A. and Akonda, A.W. (1987). Bangladesh national conservation strategy: wildlife and protected areas. Department of Forestry, Ministry of Agriculture and Forestry, Dhaka. Unpublished report.
18. Rahman, S.A. and Akonda, A.W. (1987). Bangladesh national conservation strategy: wildlife and protected areas. Department of Forestry, Ministry of Agriculture and Forestry, Dhaka.
19. Sarker, N.M. and Fazlul Huq, A.K.M. (1985). Protected areas of Bangladesh. In: Thorsell, J.W. (Ed.), Conserving Asia's natural heritage. IUCN, Gland, Switzerland.
20. Report of the Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (New Delhi: Department of Science and Technology, 15 September 1980).
21. World Bank (1996) India‟s Environment: taking stock of plans, programs and priorities. South Asia Regional Office.

Subject Related Journals for further reference:

1. Asian and Pacific Journal of Environmental Law
2. Environmental Policy and Law
3. Environment and Planning Law Journal
4. Indian Journal of Environmental Law
5. Yale Journal of Environmental Law
6. ADB Journal of International Law
7. Indian Journal of International Law