

Marine Environment Pollution: Challenges and Opportunities in South Asian Seas Region



South Asia Co-operative Environment Programme
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FOREWORD

The South Asia sub-region includes the countries of Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Among them Bangladesh, India, Pakistan, Maldives and Sri Lanka share the Indian Ocean, constituting the South Asian Seas (SAS) region. The region is highly vulnerable to the impact of marine pollution. Oil and chemical pollution, marine litters, ballast water, nutrient pollution from industries, chemical loading from agricultural activities, sewage and solid waste are the main sources of marine pollution in South Asian Seas Region. According to the World Economic Forum world's oceans may have more plastic debris than fish by the year 2050. South Asian Seas Region hosts the main shipping route starting from Middle East to Far East Asia and about 25% of the global crude oil is transported through this region.

SACEP in coordination with its member countries are taking appropriate measures to overcome the marine and coastal environmental pollution challenges in this region. South Asian Seas Programme under the umbrella of SACEP offers regional platform and is working on need based actions for protection and sustainable management of marine environment. These activities include preparation of regional action plans, regional policy, coral reef taskforce, capacity development, awareness raising and experience sharing among the member countries.

This report aims at highlighting the marine environment challenges and opportunities and the way forward and is primarily based on the information shared by the participants from the SASP member countries during various consultative meeting and workshops, besides information collected from the studies done by SACEP in the SAS region.

We are confident that this report has reflected the key marine environment challenges, opportunities and listed appropriate need based actions undertaken by the SACEP and SASP member states for sustainable management of marine environment in the South Asian Seas region. This report will help in information sharing and serve as a repository and reference tools for the policy and planning professionals, researchers, academia and public at large.



Dr. Muhammad Khurshid
Director General, SACEP

ACKNOWLEDGEMENT

On behalf of the South Asian Seas Programme, I would like to express my profound gratitude and deep regards to all of the participants from South Asian Seas (SAS) member countries for attending various regional workshops related to marine environment. We are indeed thankful to all the collaborators and donor agencies (UNEP, IMO, Noard, FAO, ESCAP, ICRI, BOBLME) for their much needed and continuous technical and financial support for implementing the regional policies and action plans in South Asian Seas Region.

We are confident that our joint efforts will help the SASP member countries in protecting and managing marine resources on sustainable basis. The support provided by the staff of SACEP and SASP is greatly appreciated.



Dr. Muhammad Khurshid
Director General, SACEP

Acronyms

BOBLME	Bay of Bengal Large Marine Ecosystem
BWM	Ballast Water Management
CSGA	Communication System for Generation Awareness
CSPO	Communication System for Partner Organization
FAO	Food and Agriculture Organization
GC	Governing Council
GPA	Global Programme of Action
ICRI	International Coral Reef Initiative
IMM	Inter-governmental Meeting of Ministers
IMO	International Maritime Organization
INMS	International Nitrogen Management System
LBS	Land Based Sources
MCBS	Marine and Coastal Biodiversity Strategy
MCPA	Marine and Coastal Protected Area
MEPA	Marine Environment Protection Authority
NBSAP	National Biodiversity Strategic Action Plan
NGO	Non-Government Organization
Noard	Norwegian Agency for Development Cooperation
PMSA	Pakistan Maritime Security Agency
SAARC	South Asian Association for Regional Cooperation
SACEP	South Asia Co-operative Environment Programme
SACRTF	South Asia Coral Reef Task Force
SAS	South Asian Seas
SASP	South Asian Seas Programme
SASAP	South Asian Seas Action Plan
SDG	Sustainable Development Goals
UNEP	United Nations Environment Programme
UN-ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
USA	United States of America

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1. Introduction:

Marine resources are of immense importance to humanity as marine goods and services provide trillions of dollars annually through seafood, navigation, tourism, trade, sports and livelihoods. It is argued that due to the enormity of the marine resources, the future breadbasket will lie in the oceans. South Asian Seas region which is blessed with a variety of resources is facing huge pressure of marine pollution from multiple sources. A lot has been written and talked about the marine environment pollution and challenges of the region, but much more is needed to engage countries of the region in capacity building and awareness. This short report attempts to analyze the marine environment pollution and future challenges and identify various need based actions taken by the South Asian Seas Programme (SASP). This report is not intended to provide an exhaustive account of the South Asian countries' efforts to address marine environment pollution. Instead, it highlights coordinated efforts at regional level with a focus on the initiatives by SACEP and SASP member countries.

Nations felt fortunate if their national boundaries were marked by bodies of water. Knowing that water is not the natural habitat of humans, the nations, particularly with marine boundaries, felt a sense of security because traversing the expanse of oceans would have been a daunting task. However, with the progress of civilization, floating vessels appeared on the watery expanses and advances in marine navigation and engineering transformed the vessels from wind dependent sailboats to steam propelled ships. This, in turn, changed the role of oceans from the daunting barriers to the routes for marine trade. Today, although the nations with expansive marine coast and harbours can be considered fortunate as they have easy access to global trade, but at the same time they are affected by marine environment pollution caused by marine and land based activities. Added to this, the implications of climate change for each coastal state vary significantly, and therefore each state requires independent assessment. With the assistance of the United Nations Environment Programme (UNEP), SACEP developed various environmental instruments and also helped improve their capacity in various marine environment areas.

The South Asian Seas Action Plan (SASAP) aiming at the Protection and Management of the marine environment in the South Asian Seas Region was adopted at a meeting of the plenipotentiaries in New Delhi, India on 24 March 1995 by the five South Asian maritime countries, Bangladesh, India, Maldives, Pakistan and Sri Lanka. The objective of SASAP is to protect and manage the marine environment and related coastal ecosystems of the South Asian Seas region, through the promotion of sustainable development. SASAP emphasizes the need for establishing a regional cooperative network of activities concerning concrete subjects of mutual interest for the SAS region. SACEP is working on the Regional Marine and Coastal Biodiversity Strategy (MCBS) for the South Asian Seas Region. The aim of the MCBS is to address the issues threatening marine biodiversity, by supporting the achievement of the Aichi Biodiversity Targets in marine and coastal habitats through strengthening implementation of and coherence of actions under National Biodiversity Strategies and Action Plans (NBSAP) for 2011–2020 periods.

2. Challenges:

Possessing diverse culture and landscape, South Asia is unique in terms of its population size and density. Almost all the five SASP member countries are trying to embark on ambitious economic development involving heavy infrastructure development. These activities may highly prospecting but can pose challenges to the marine environment. The South Asia with an average 344 peoples per square kilometer is the most densely populated region and host a quarter of the world population. Dhaka with a density of 44500 people per square kilometer followed by Mumbai with 31400 and Karachi with 2400 are the densely populated cities impacting marine environment either directly or indirectly. South Asia has got 5% of the world's land mass with 14% of the global arable land, 2.73%

of the world forest area and 4% of the world coast line. The coastal and marine habitats of South Asia are highly vulnerable to eutrophication from nutrient enrichment due to leakages from agriculture, aquaculture, sewage, industrial effluents, marine trade and transport. Some of the significant marine related challenges of South Asian are mentioned below:

2.1 Marine Biodiversity:

South Asia's coastal regions is richly endowed with ecological diversity as more than 8% of the world's mangroves forests are located in South Asia. The Sundarbans delta in Bangladesh is the world's largest continuous stretch of mangroves as well as the coral reefs of the Maldives, India, Sri Lanka, and mangroves of Pakistan-support thousands of floral and faunal species. This ecological richness, however, has been subjected to heavy pressure through over extraction of resources, enhanced pollution, and physical alterations in coastal ecosystems. Mangroves have been exploited for timber, fuel wood, and other purposes. Mangrove forests are facing increased pressure clearing it for agricultural activities and shrimp farming. Therefore, these ecosystems are facing serious threats and being rapidly degraded due to marine pollution, coastal development, unsustainable use of ecosystem services, over population of coastal areas, land-based pollution and habitat modification including climate change. Unless urgent regional response for the restoration and maintenance of healthy coastal and marine habitats and species is not ensured, marine biodiversity may face increased pressure.

2.2 Marine Ecosystem:

Marine ecosystem comprising of mangroves, coastal wetlands, and other coastal habitats also have been severely affected by various anthropogenic activities on land and in sea such as fresh water interceptions for irrigation, and dredging and re-suspension of contaminated silts. Oil and chemical pollution is increasingly threatening marine mammals, birds, turtle, coral reefs, often located in areas where large-scale petroleum industries, tourism, and fishing industries flourish. Most of the shallow water coral reef habitats of Sri Lanka, Maldives, and India are being severely damaged as a result of bleaching. The northern Indian Ocean is one of the 10 hotspots of the world's threatened coral reef areas. The mangrove ecosystem supports important coastal fisheries and provides direct sustenance to coastal communities from timber and other products. It is also endowed with rich biodiversity and wildlife. Numerous estuaries and backwaters found along the coasts provide a range of environmental conditions, serving as breeding grounds for commercially important fish and supporting high biological diversity. Most coastal regions (especially the west coast of India) are very productive, supporting rich fisheries, but are now threatened with excessive marine environment pollution and impact of global warming, sea level rise and reduced water flow from rivers at estuaries.

2.3 Coral Reef:

Coastal and marine ecosystems support rich species diversity in South Asia as the region has numerous estuaries, lagoons, mangrove forests, coral reefs, sea-grasses and coastal wetland that provide essential habitats for many rare and valuable species, which in turn provide vital goods and services to millions of people. Coral reefs are facing numerous threats due to natural and anthropogenic factors. SAS region is characterized by extensive river deltas and diverse marine and coastal habitats. South Asia is home to more than 250 species of coral species and over 1200 reef associated fish species. Maldives-Chagos-Lakshadweep Atolls is the largest atoll system in the world. Over 100 globally threatened species are recorded from coastal and marine habitats. South Asia has 19,210 km² of coral reef (Wilkinson, C. 2008) which is about 6% of the world's coral reefs. India has 5,790 km², (i.e., 2.04% of the global reef area), Maldives has 8,929 km², (i.e., 3.14 % of the global reef area), and Sri Lanka has got 680 km², (i.e., 0.24% of the global reef area) of coral reef areas. Bangladesh and

Map of Coral reefs in South Asia

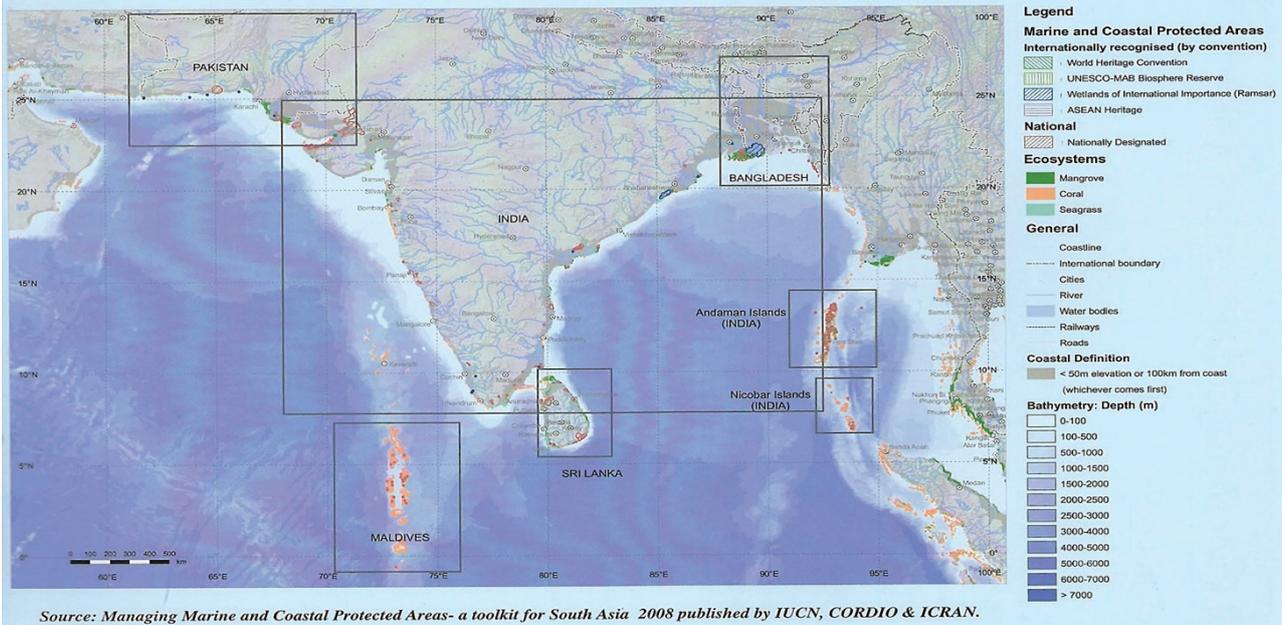


Fig: Coral reefs in South Asia

Pakistan also possesses small coral reef areas. The livelihoods of many reef dependent communities are at risk as the coastal resources are rapidly shrinking. Increasing demand and declining productivity of coastal bio-resources may make the issues more complex.

SAS region was ranked the lowest in the world in terms of declared marine and coastal protected areas in the 2003 United Nations list of protected areas. These valuable resources are threatened from various factors and despite current protection measures, degradation of coral reef resources continues. Consequently, nearly one third to half of coral reef resources of South Asia are now effectively dead and further 30 percent are threatened. In addition, the inclusion of essential coral reef habitat in Marine and Coastal Protected Areas (MCPA) provisions is minimal, making the Indian Ocean with its wealth of coral reef. Anthropogenic factors, such as unplanned human settlements, improper industrial and infrastructure growth. Over exploitation of coral reef resources have further aggravated the situation. The management and conservation of coral reefs is one of the most challenging tasks for conservationists and marine bio-resource managers in South Asia.

2.4 Coastal Development:

Major economic activities are concentrated in coastal areas in South Asia. Karachi, Mumbai, Colombo and Chittagong are the big cities located on the sea side of South Asian Seas Region. These include ports and harbours, fisheries and aquaculture, tourism, and rapidly expanding industrial activities. Agriculture forms a major part of the overall economic activities. In some areas, mining is also important, and although the production of oil and natural gas is limited, a significant volume of crude oil is transported by tankers through the region. Further offshore explorations and exploitation in Arabian Sea and Bay of Bengal is being implemented in deeper waters for Oil & Gas and Methane Gas hydrates and exploration of polymetallic nodules in the Indian Ocean.



Fig: Karachi and Mumbai city

2.5 Marine Pollution from Land Based Activities:



Fig: Land Based Pollution

Marine pollution from land-based sources (LBS) are posing increased pressure on the marine resources in South Asia. Although, national efforts are always aiming at protection of marine resources from land based activities, yet being more of being regional issues, it may require cooperative regional approaches for effective solutions. Unsustainable management of solid, sewage and industrial waste has led to dumping of untreated waste in open and water bodies which ultimately find its way to the marine water. Increase use of Nitrogen and Phosphorus fertilizer in agriculture has resulted in eutrophication of the marine ecosystem. The plastic and other litters are finding their way into marine environment as already reported by WWF that there are more plastic in sea than fish. Increased plastic and other solid material in marine environment is a real challenge to the marine resources.

2.6 Climate Change:

The island nation Maldives an exotic equatorial paradise is highly vulnerable to sea level rise. In Bangladesh, sea level rise is expected to impact over 13 million people with a 16% loss of national rice production and a substantial reduction in crop yields from rain fed agriculture. Additionally, dramatic changes in the land use patterns in South Asia has further compounded this problem. The mangrove forests of the Sundarbans in Bangladesh provides habitat for a large range of wildlife including Bengal tigers, Indian otters, spotted deer, estuarine crocodiles and marine lizards, could be destroyed by only a meter rise in sea level. In addition, loss of mangrove communities will result in major socio-economic impacts, due to its effects on fisheries and other industries (e.g. woodcutting) that rely on the Sundarbans.



Fig: Impact of Climate Change in SAS region

3. Response:

The SACEP member countries have developed adequate response strategies and action plans to control marine environment pollution. Almost all the SASP member countries have ratified the Paris Climate Agreement and adopted Sustainable Development Goals- SDG's (including SDG-14) and are developing plans for implementing them. At sub-regional level they are part of the SASP and are working collectively in support of SACEP, UNEP, IMO efforts on various marine environment issues.

3.1 Action Plan for South Asian Seas Region:



Fig: Sketch of South Asian Seas Region

The South Asian Seas Programme Action Plan for the Protection and Management of the Marine and Coastal Environment of the South Asian Seas was formally adopted at a Meeting of Plenipotentiaries at New Delhi, India on 24 March, 1995. The Action Plan applies to the marine and related coastal environment, including international marine waters in Bangladesh, India, Maldives, Pakistan and Sri Lanka. The objective of the Action Plan is to protect and manage the marine

environment and related coastal ecosystems of the region, including the promotion of sustainable development and sound management of regional marine and coastal resources. The Action Plan primarily addresses the Environmental Assessment, Environmental Management, Environmental Legislation, and Institutional and Financial Arrangements. In the area of environmental legislation, the Action Plan has made the following recommends:

- National Legislation and regulations be reviewed and expanded, updated or strengthened;
- As necessary, National Legislation related to marine and coastal resources be effectively enforced;
- National Legislation be harmonized where international uniformity is required;
- An up to date compilation of national laws be maintained; and
- International Agreements related to Protection of the Marine and Coastal Environments should be ratified and implemented.

3.1.1 Major SASP Activities:

According to the approved action plan, SASP has taken a number of need based actions/ initiatives for the protection and conservation of marine environment in the South Asian Seas Region. Major activities being undertaken are:

3.1.1.1 Regional Oil and Chemical Pollution Contingency Plan for South Asia:

The South Asian Seas region is situated in the middle of the super-busy east-west shipping route in the Indian Ocean, through which an estimated 60,000 ships pass every year, carrying two-thirds of the world's oil and half of all container shipments. A total of 525 million tons of crude oil pass through the region in a year, this accounts for about 25 per cent of total world movement of crude oil by sea. South Asia not only imports much of its own consumption of oil, but India, Maldives, Pakistan and Sri Lanka lie close to the main shipping route from the Middle East to the Far East.

Additional maritime oil spill risks arise from non-tanker shipping, carriage of refined products, offshore exploration and production operations and the transfer of oil cargoes at sea. Incidences of oil spill occurred in the past and there is every likelihood that such disasters may occur any time in the future. The oil spill disaster completely change the ocean ecology, destroy marine ecosystem, biodiversity, mangrove vegetation and the coastal community has to migrate to avoid inhaling polluted air. The economic consequences are far greater as the response and rehabilitation and the ports and shipping, fisheries activities, tourism etc. has to be completely closed for months during the rehabilitation period. Therefore, all out effects shall be made to minimize the chances of oil and chemical spill in the Indian Ocean besides engaging an enabling environment for its control.



Fig: Oil spill in Sundarbans region

SACEP and the International Maritime Organisation (IMO) jointly developed the national and regional South Asian Oil Spill Contingency Plans. The draft Regional Oil Spill Contingency Plan and other background documents were reviewed by the regional stakeholders in Colombo, Sri Lanka from 14 to 16 December 1999 followed by serious of consultation. The revised plan was finalized in consultation with the member countries followed by a final round of consultation in August 2016 at Male' Maldives. The purpose of the regional contingency plan is to establish a mechanism for mutual assistance, under which the national Authorities of Bangladesh, India, Maldives, Pakistan and Sri Lanka co-operate towards an integrated response to the marine pollution incidents either affecting or likely to affect the territorial sea, coasts and related interests of one or more of these countries, or to incidents beyond the available response capacity of the SAS member countries. The meeting identified the need for future training activities and develop a three-year programme of trainings and exercises to enhance regional capacity and national capacities for oil spill preparedness and response. The final version of the regional plan will be placed to the forthcoming SACEP Governing Council (GC) meeting for consideration and consent to implement the plan.

3.1.1.2 Ballast Water Management:

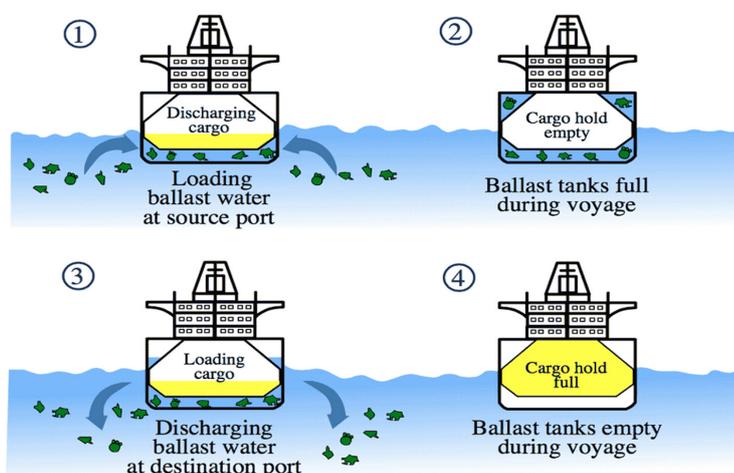


Fig: Sketch diagram of Ballast water discharge

South Asian Seas region lies within one of the busiest shipping lanes globally as it falls within the oil conveyor belt from the Gulf to East Asia. Therefore, ballast water can pose serious economic and ecological damage through introduction of invasive alien species to the coastal and marine waters. The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM) contains measures to prevent the potentially devastating effects of the spread of harmful aquatic organisms

carried by ships' ballast water. It requires all ships in international traffic to implement a Ballast Water and Sediments Management Plan, to carry a Ballast Water Record Book, and an international ballast water management certificate. All ships will have to undertake ballast water management procedures to a given standard. The BWM Convention was adopted on 13 February 2004 and is in advance stage of ratification.

SACEP in coordination and technical support from IMO has organized the South Asia Regional Ballast Water Management Strategy Development Meeting in Mumbai, India in May 2012 and it was decided that SACEP would provide institutional platform to support and finalize the Draft Regional BWM Strategy and to ensure coordination and execution of the Action Plan.

It was also agreed to establish a Regional Task Force to facilitate the process. This activity was presented and approved at the 5th IMM of SASP held in Islamabad in December 2013. SACEP and IMO organized a two-days regional workshop which was held in order to discuss the development of a Regional strategy for Ballast Water Management from 24 to 25 February 2014 in Colombo, Sri Lanka, which was attended by the focal points of all the SASP member countries. A work plan and implementable time frame was prepared and discussed by the focal points in the consultative workshop. One of the important decisions was to select a port in each country for a base line survey, biological data monitoring and risk assessment system. Another regional workshop is proposed to be held to formulate the Ballast Water Management Plan for SAS region in the future. For further information please visit the SACEP website at www.sacep.org

3.1.1.3 Marine Nutrient Pollution and Scoping Study:

SACEP together with the United Nations Environment Programme – Global Programme of Action (UNEP-GPA) and the Bay of Bengal Large Marine Ecosystem (BOBLME) Project jointly undertook “Controlling Nutrient Loading and eutrophication of Coastal Waters scoping study of the South Asian Seas Region”. The main objective was to diagnose the nutrient loading and analyze the situation

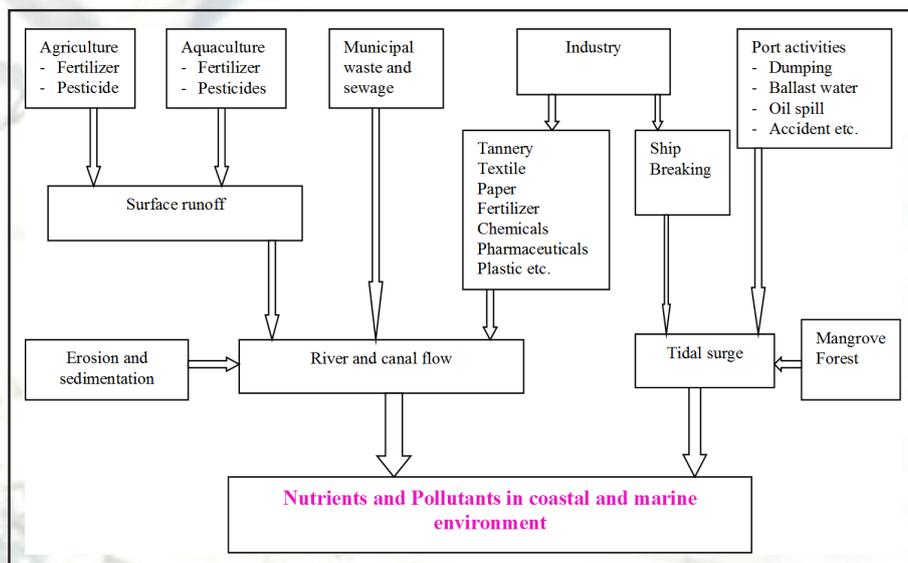


Fig: Nutrient Pollution in Coastal and Marine Environment

reducing and controlling nutrient loading into the coastal waters of the South Asian Seas Region through development of a regional action plan and policy framework.

The study covered the maritime countries of Bangladesh, India, Maldives, Pakistan and Sri Lanka and was validated in a workshop held in Colombo, Sri Lanka in May 2014 and is available at the SACEP website (www.sacep.org). The study report examined the problem of eutrophication of coastal waters for the maritime countries of South Asia. This report has given some directions to tackle the problem through framing specific policies/programs designed to recover and recycle nutrients as well as enhance nutrient use efficiencies. Such targets need simultaneous consideration of social, economic and environmental concerns that constitute sustainable development. The study considered the following policy options to combat nutrient pollution of aquatic, coastal and marine

environment in this region:

- Strict adherence to laws and policies related to coastal ecology.
- Effective river conservation program ensuring direct linkage to coastal habitat conservation.
- Develop quality standards for coastal waters including introduction of uniform standard for primary water quality criteria for the coastal waters.
- Managing pollution sources on land including capture and recycling of the nutrients emanating from agriculture, aquaculture, poultry and livestock farming etc. to minimize nutrient leakages throughout the food chain. They should be enforced and monitored periodically through a joint task force comprising relevant scientific, administrative and civil society stakeholders.
- Develop national and sub-regional policies for conservation, protection and sustainable development of oceanic and marine resources through a South Asian level intergovernmental working group/task force with governmental and civil society representatives. This may work within, or in consonance with the existing intergovernmental processes, including the UNEP-GPA, SAARC, and SACEP and other ongoing initiatives such as the BOBLME project etc. and build on them for stronger regional cooperation on nutrient management.

The study also provided the following important recommendations to combat nutrient pollution of aquatic, coastal and marine environment:

- Nutrients such as Nitrogen and Phosphorus that are necessary for food production should be retained or recycled as they become pollutants if lost to the environment. The existing policies and practices of agriculture/aquaculture, sanitation, industry and environment do not sufficiently emphasize nutrient efficiencies and sustainable nutrient management to prevent nutrient pollution and eutrophication of aquatic and coastal ecosystems
- The available quantitative information on nutrient losses from various human activities and their accumulation in the coastal zones of South Asia is very limited. This calls for detailed studies with actual long term measurements and simulation of nutrient pollution from source to sink (land to sea) for informed decision-making
- Systematic studies to quantify the sources, flows, fate and extent of current industrial, agricultural and municipal effluents and the nutrients they contribute to water bodies and their impacts on aquatic life, fishing as well as human health.
- Installation of information technology based effective mechanisms for exchange and sharing of data on the nutrient pollution status in different coastal regions of South Asia between various stakeholders including governments and non-governmental and interregional agencies.
- Capacity building for sustainable fishing and aquaculture with integrated resource management to protect them from environmental degradation including bottom trawling and dredging and encroachment on the livelihood rights of fishermen.

The study report is now finalized and its findings will be presented at the forthcoming 6th IMM-SASP meeting. As a follow up, SACEP is working with the International Nitrogen Management System (INMS) to implement some of the important actions identified in this report.

3.1.1.4 Marine and Coastal Biodiversity Strategy:

Marine and coastal ecosystems in South Asian Seas region is of paramount importance for the social and economic wellbeing of the region. This region hosts 12,000 km long coastline and the large marine area harbors some of the most extensive and diverse tropical marine ecosystems in the world. The region host rich biodiversity in coastal and marine ecosystems. Millions of people are involved with activities such as fishing, shrimp farming, tourism, shipping which are contributing to income, food security and the livelihoods.

In order to strengthen efforts aiming at updating the National Biodiversity Strategies and Action Plans, SASP together with UNEP have initiated an activity to develop a regional Marine and Coastal Biodiversity Strategy South Asia in partnership with various other stakeholders among member states. The aim of the MCBS is to provide a framework for coordination and collaboration between countries' National Biodiversity Strategic Action Plans; enhancing national and regional interventions for the achievement of the Aichi Biodiversity targets, particularly those addressing coastal and marine issues relevant to the region.

The final draft regional strategy report has been circulated among the member countries and a 2nd workshop will be scheduled for finalization of the report prior to its adoption at the 6th IMM of SACEP.



3.1.1.5 Coral Reef Management Task Force:

SACEP has established a South Asia Coral Reef Task Force (SACRTF) with a view to identify a Regional Communication Strategy for Coral Reef Management in South Asia. The need for a communication strategy was also felt for enhancing awareness and sensitizing stakeholders so that they can have their active participation in the management and conservation of coral reefs in South Asian region.



Fig: Coral reef in South Asian Seas

The overall objectives of SACRTF is to facilitate and coordinate management of coral reefs and associated ecosystems at a national level and to promote collaborative action at the regional level, encouraging trans-boundary responses to shared environmental

challenges and raising the political and public profile of coral reef related issues in the South Asian region. Two communication strategies were developed under SACRTF which include: 1. Communication System for Partner Organizations (CSPO) and 2. Communication System for Generating Awareness (CSGA). SACEP being a sub-regional coordinating agency of the South Asia Coral Reef Task Force and the concerned focal Ministry/Department in the respective country is the National Coordinating Agency. Civil society organization, local communities and other stakeholders including youth will be approached through the digital connection.

3.1.1.6 Commemoration of International Coastal Clean-up day:

The International Environment Calendar of the Coastal Cleaning celebrate Saturday of the 3rd week of September every year as the International Coastal Cleanup Day. Events are organized involving public sector, civil society and private sector stakeholders for the public awareness about the growing problems of debris accumulated in coastal areas. Litter such as plastic bottles and bags, soda cans



Fig: Coastal Clean-up programme

and broken glass are slow to degrade. Studies have shown that marine debris threatens over 265 different species of marine and coastal wildlife through entanglement, smothering, and interference with digestive systems. It is a problem that not only damages the marine and coastal ecosystems, but also affects the coastal tourism and public health. In 1986, the Ocean Conservancy, an NGO ran its first Coastal Cleanup event in Texas, USA and since then it became the coordinating agency for celebrating the International Coastal Clean-up. In the year 2010 it celebrated the 25 year of the International Coastal Cleanup Day. The International Coastal Cleanup engages people to remove trash and debris from the world's beaches and waterways, to identify the sources of debris and to change the behaviors that cause pollution.

Since 2006, SACEP in coordination with SAS member countries has been organizing and coordinating many activities to commemorate the Coastal Cleanup Day. During the last couple of years, SACEP is involved with Coast Guard of India, Pakistan Maritime Security Agency (PMSA) and Marine Environment Protection Authority (MEPA) of Government of Sri Lanka to carry out country wide beach cleanup programme to commemorate the 'International Coastal Clean-up Day'. In line with the international commitments and the initiatives by the government of India, Pakistan and Sri Lanka, other SASP member countries are also being approached by SACEP to facilitate and initiate country wide coastal clean-up activities in the 3rd week of September, each year.

3.1.1.7 Adaptation of SDG-14:

SACEP member countries have adopted SDG-14 for the protection and sustainable management of marine environment in South Asia. SACEP is working to develop data base using the Sustainable Development Indicators and support capacity development in SAS member countries. SACEP has not

only developed a matrix on the basis of existing activities but is supporting SASP member countries to implement SDG-14 in this region.

3.1.1.8 Capacity Building and Awareness:



Fig: Regional meeting

The SASP member countries are facing capacity and awareness problems for addressing the marine environment pollution issues. SACEP is supporting member states in capacity development and awareness raising through various regional training, workshop/seminar, experience sharing. SACEP is also assisting member states to formulate sectoral national policy and plans for marine environment protection. SACEP is using its weekly newsletter for awareness and information sharing besides web-based response mechanisms in the event of marine disaster.

4. Conclusion:

Marine environment has got more challenges in South Asia if not attended adequately, they may undermine the available marine resource opportunities. Vulnerable components of the marine ecosystems, such as marine mammals, sea turtles, corals, and important fisheries are being damaged by over-exploitation, illegal, unreported and unregulated fishing, destructive fishing practices, invasive alien species and marine pollution, especially from land-based sources. Increased sea temperatures, sea-level rise and ocean acidification caused by climate change also pose serious threats to marine biodiversity, coastal and island communities and national economies. SACEP member countries do have some kind of response mechanisms for the protection of marine environment from various sources of pollution, but due to lack of capacity and resources, the SACEP member countries are not able to adequately address the issues. At sub-regional level SACEP and SASP is working to engage the member countries for capacity development, enhanced coordination and awareness raising. In order to ensure protecting and sustainable management of marine environment at national and sub-regional level in South Asia, the SAS member countries are working individually as well as in partnership to address the challenges through joint efforts involving global partners.

5. Way forward and recommendations:

In view of the situation analysis and the fact that protection of the marine environment from various sources of pollution is essential for sustainable development, SASP member countries will have to pursue innovative and inclusive policy and plans for the protection of marine environment. There are many areas where national government can intervene with the coordination of SACEP and other partners to protect the marine environment. Adaptation of SDGs by the SACEP member countries and ratification of the Paris Climate Agreement offer new and potential opportunities to be exploited in the interest of the SAS region and SASP member countries. Marine litters, un-planned human settlements, dumping of untreated solid and sewage waste, industries, coastal and marine development are the important areas for future intervention in this region. There is a need to develop regional guidelines to exploration and management of marine mammal, coral reef protection, and sustainable marine biodiversity. As climate change exacerbates all other challenges faced by the marine ecosystem, the SAS member countries has to attend this issue as the number one challenge and threat to marine environment.



South Asian Seas Region



Marine Environment Pollution: Challenges and Opportunities



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