South Asian Seas Region

Contents

1 About

1.1 Overview

The South Asian Seas (SAS) region includes some of the most diverse, extensive and least disturbed reef areas and atolls of the Indian Ocean. Of the 22 countries containing the world's major mangrove areas, the People's Republic of Bangladesh and Republic of India rank 12th and 14th respectively. The coastal and marine resources of this region are important both economically and ecologically, however, the SAS region is faced with environmental problems such as expanding human populations, oil transport across the Arabian Sea, heavy use of agricultural and industrial chemicals, harmful fishing practices and ill-planned land use. Added to this the effects of climate change and sea level rise pose significant threats. The Republic of Maldives, a collection of vulnerable coral islands that barely rises over two metres above sea level, could become uninhabitable within 50 years.

To address these critical problems, the South Asian Seas Action Plan (SASAP) was adopted in March 1995 and is supported by People's Republic of Bangladesh, Republic of India, the Republic of Maldives, Islamic Republic of Pakistan and Democratic Socialist Republic of Sri Lanka. The overall objective of the SASAP is to protect and manage the marine environment and related coastal ecosystems of the region in an environmentally sound and sustainable manner. The South Asia Cooperative Environment Programme (SACEP) is acting as the Action Plan secretariat.

SASAP focuses on Integrated Coastal Zone Management (ICZM), oil-spill contingency planning, human resource development and the environmental effects of land-based activities. Although there is no regional convention yet, SASAP follows existing global environmental and maritime conventions and considers Law of the Sea as its umbrella convention.

One of SASAPs priorities focuses on National Action Plans and pilot programmes to implement the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). Another immediate priority is environmental assessment and monitoring, including the data collection and management that this entails. In the future SASAPs ultimate goal is will be to set up Regional Activity Centres in each of the participating countries, each dealing the action plan priorities.

1.2 Key Dates

1980	The countries of South Asia and UNEP-RAOP held an Inter Governmental Expert Group Meeting in March, Bangalore, Republic of India to discuss the advantages of working cooperatively for the conservation of natural resources.
1981	A Ministerial level Meeting held in Colombo Democratic Socialist Republic of Sri Lanka, approved the Colombo Declaration and the Articles of Association for the initiation of The South Asian Cooperative Environment Programme (SACEP). SACEP member states requested a Regional Seas Programme for the South Asian Region at UNEP's 9th Governing Council Meeting.
1982	9 February SACEP became a legal entity.
1983	The first Governing Council Meeting of SACEP approved the 15-priority subject areas identified by the SACEP/UNEP/UNDP mission to be implement as projects and programmes. UNEP's 11th Governing Council designated the South Asian Seas as the 9th member of the UNEP's Regional Seas programme and SACEP was requested to function as the Secretariat for implementing the South Asian Seas Programme.
1984	First National Focal Point Meeting for the Development of an Action Plan for the region, March, Bangkok. The five maritime nations of SACEP committed themselves to the development of an action plan to protect and manage the marine environment of the South Asian Seas Region.
1986	Meeting of Experts of the SAS Region, December, Bagkok.
1987	Second National Focal Point Meeting for the Development of an Action Plan for the region, December, Bangkok.
1990	Meeting of Legal and Technical Experts, February, Bangkok.
1993	ESCAP/UNEP/SACEP Workshop on Management Strategies for the Protection of the Coastal and Marine Environment for the SAS Region, December, Colombo.
1994	ESCAP/UNEP/SACEP Intergovernmental Meeting on Capacity in Coastal and Marine Environment for the SAS Region, May, New Delhi.
1994	Third National Focal Points Meeting for the Development of the Action Plan, November, Colombo.
1995	Fourth National Focal Points Meeting for the Development of the Action Plan, and Meeting of Plenipotentiaries of the Member States, March, New Delhi.
1997	The South Asian Seas Action Plan came into force in January, when the Government of People's Republic of Bangladesh ratified the Final Act.
1999	The first Intergovernmental Meetings of Ministers was held on the 26 March 1999 in Muree, Islamic Republic of Islamic Republic of Pakistan.
2002	The second Intergovernmental Meetings of Ministers was held on 1st July, 2002 in Colombo, Democratic Socialist Republic of Sri Lanka.
2003	3rd Special Session of the Governing Council of SACEP held on 4-6 November, Colombo, Democratic Socialist Republic of Sri Lanka.

1.3 Geographic and General Information

Region: Seas Asian Seas
Participating States: People's Republic of Bangladesh, Republic of India, Republic of Maldives, Islamic Republic of Pakistan and Democratic Socialist Republic of Sri Lanka
Total Population: Approximately 1,360 million (2001)
Length of Coastline: Approximately 10610 km (CIA 2002)
GIWA Regions: Subregion 52: Arabian Sea and Subregion 53: Bay of Bengal
Large marine Ecosystems: LME #32: Arabian Sea and LME #34: Bay of Bengal
For more information on the Participating states http://www.iczm-sa.org/

1.3.1 Oceanographic Information

The South Asian Seas region is surrounded by the central Republic of Indian Ocean. The Republic of Indian land mass forms a major physical division between the Arabian Sea and the Bay of Bengal (Wells *et al* 2003). Oceanographically, the Bay of Bengal maintains a clockwise circulation of major currents during both the Northeast and Southwest monsoons. The circulation in the Arabian Sea reverses, with surface water masses circulating counter-clockwise in the Northeast monsoon (November-April, when the North Equatorial Current flows west) and clockwise in the Southwest monsoon (May-October when the surface current flows eastward and splits to form clockwise currents in the Arabian Sea and the Bay of Bengal) (Wells *et al 2003*).

Evaporation exceeds precipitation and runoff in the Arabian Sea, leading to the formation of high salinity water masses, which flow south. In comparison the Bay of Bengal has low salinity due to high runoff and precipitation; in the Southwest monsoon, maximum salinity is found at depths of about 500 meters, as high salinity water moves into the Bay from the Republic of Indian Ocean (Wells *et al* 2003).

The coastline surrounding the Bay of Bengal is heavily influenced by the monsoons. Tropical storms also have a major impact, particularly the northern part (Wells *et al* 2003).

1.3.2 Coastal Geography and Geology

The Bay of Bengal has largely soft substrates off the mainland, due to the extensive river discharge, which are overlain by shallow, turbid waters. The People's Republic of Bangladesh has a particularly low-lying, shallow accreting coastline and is unique in the region in that the influence of the sea is felt for a long distance inland (Wells *et al* 2003). It is characterized by a vast deltaic network, an enormous discharge of sediment-laden water and numerous offshore sand and mud bars (Wells *et al* 2003).

The west coast of the Republic of India is exposed with heavy surf, rocky shores and headlands, whilst the east coast is shelving and low lying with beaches, deltas, lagoons and marshes (Wells *et al* 2003).

The Republic of Maldives, the Chagos Archipelago, and the island chains belonging to the Republic of India (Laccadives, Andamans and Nicobars) are archipelagic. The Republic of Maldives, the *Chagos Archipelago and Laccadives are composed entirely of atolls and form the Laccadive-Chagos chain, which extends southward from the Republic of India to the central Indian Ocean. In contrast, the Andaman and Nicobar Islands are high volcanic islands, arising from a submerged mountain chain, which follows a southward extension of the continental shelf (Wells *et al* 2003).

The coast of Islamic Republic of Pakistan forms the northern boundary of the Arabian Sea, where oceanographic influences dominate over those of the continent, which is essentially a sub-tropical dessert. The Indus discharges some 200 cubic kilometres of water and 450 million tones of suspended sediment annually. This creates the Indus Cone, a 2, 500 meters 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 (Biodiversity Action Plan, 2000).

* Chagos is not part of the SAS

1.3.3 Ecosystem Diversity

1.3.3.1 Coral

All three major reef types (atoll, fringing and barrier) occur, and the region includes some of the most diverse, extensive and least disturbed reef areas of the Indian Ocean (Wells *et al* 2003).

In the north, reef growth is inhibited by massive freshwater and sedimentary inputs from the Indus, Ganges and other rivers and in the Northwest by cold upwelling as well (Wells *et al* 2003). The People's Republic of Bangladesh has almost no reef development due to the high turbidity and soft substrates present (Wells *et al* 2003).

The mainland coast of Republic of India has two widely separated areas containing reefs: the Gulf of Kutch in the northwest, which has some of the most northerly reefs in the world; Palk Bay; and the Gulf of Mannar in the southeast (Wells *et al* 2003). There are patches of reef growth on the west coast. The Andamans, Nicobars and Laccadives have extensive reefs (Wells *et al* 2003).

Democratic Socialist Republic of Sri Lanka has extensive areas of coral around the coast, mainly close to the shore. Reefs are found in various localities such as fringing reefs at Hikkaduwa and Trincomalee and other localities in the south and east, and offshore reefs in the north such as Bar Reef and the south such as the Basses Reefs (reputed to be among the most spectacular and undisturbed in Democratic Socialist Republic of Sri Lanka) (Wells *et al* 2003). Fringing reefs are also found in the north along the Gulf of Mannar and off the Jaffna Peninsula, and on several places on the east coast. The main reef areas in Myanmar are in the Mergui Archipelago (Wells *et al* 2003).

The Republic of Maldives are comprised one of the most complex reef systems in the world. Several of the atolls have unusual ring-shaped reefs (faroes) in the lagoons, each with its own sandy lagoon and rim of living corals. The atoll lagoons also have numerous knolls and patch reefs (Wells *et al* 2003). The Chagos Archipelago has the largest

expanse of undisturbed reef in the Indian Ocean, as well as some of the most diverse. Blenheim Reef is notable for its large algal ridge, and the Great Chagos Bank is the world's largest atoll in terms of area (Wells *et al* 2003). In the Laccadives-Chagos chain, a trend of increasing coral diversity has been recorded, from the Laccadives to the Republic of Maldives to the Chagos Archipelago (Wells *et al* 2003).

For further Information refer to:

Rajasuriya, Arjan; Venkataraman K; Muley E.V; Zajor Hussein and Cattermoul Ben (2002): Status of Coral Reefs in south Asia: Banglaesh, Republic of India, Republic of Maldives and Democratic Socialist Republic of Sri Lanka. In Clive Wilkinson (eds) Status of the Coral Reefs of the World; 2002. pp 101-121.
http://www.aims.gov.au/pages/research/coral-bleaching/scr2002/pdf/scr2002-06.pdf
UNEP-WCMC (2001): World Atlas of Coral Reefs, Chpater 8: Central Republic of Indian Ocean. Pp 212-231
UNEP/IUCN. 1988. *Coral Reefs of the World. Volume 2; Indian Ocean, Red Sea and Gulf.* UNEP Regional Seas Directories and Bibliographies. IUCN, Gland, Switzerland/UNEP, Nairobi, Kenya.

1.3.3.2 Mangrove Forests

Of the 22 countries containing the world's major mangrove areas, People's Republic of Bangladesh and Republic of India rank 12th and 14th respectively (Wells *et al* 2003). Distribution of mangroves is a mirror image of that for coral reefs. The major mangrove areas are in the north, supporting over 500,000 hectares (Wells *et al* 2003). Extensive stands are also found along the northern coastline of Myanmar (517,000 ha) (Wells *et al* 2003). Total estimates for the Republic of India range from about 100,000 to 700,000 ha. The most important area is the Sundarbans making up the single largest contiguous block of mangrove forest in the world. Good stands are also found in the Kaveri and Godavari Deltas, in Bhitarkanita and the Gulf of Kutch (52,500 ha), and the Andamans and Nicobars (115,200 ha) (Wells *et al* 2003). Mangroves are less developed in Democratic Socialist Republic of Sri Lanka (10,000-12,000 ha) with 60 percent of the mangroves in the country found on the northwest coast in the Puttalam Lagoon and the Dutch and Portugal Bay areas. The Republic of Maldives has a few small stands, with very low diversity. About 12 genera of mangroves are found within the region (compared with 13 in the Indo-Pacific). Indian mangroves are most diverse with 45 mangrove species and associates; Democratic Socialist Republic of Sri Lanka has 28 mangrove species and associates, People's Republic of Bangladesh 27 and Republic of Maldives about five. The total floral diversity of the Sundarbans amounts to some 330 species (Wells *et al* 2003).

Four species of Mangroves have been recorded from Islamic Republic of Pakistan. Around 1,300 sq km of mangrove forests are found along the Indus delta and it is considered as one the largest arid zone mangrove forests in the world.

1.3.3.3 Seagrass Beds

Along much of the western coast of India seagrass beds are uncommon, due to the degree of exposure and turbidity of these waters (Wells *et al* 2003). There are some seagrass beds in the Laccadives. Large seagrass beds are present in southern India in Palk Bay and the Gulf of Mannar and in the numerous estuaries and embayments of Democratic Socialist Republic of Sri Lanka (Wells *et al* 2003). In Democratic Socialist Republic of Sri Lanka seagrasses cover an area far in excess of that covered by mangroves and coral reefs, and probably make the largest contribution to the primary production of inshore waters (Wells *et al* 2003). There is little evidence for the existence of major seagrass beds off the coast of the People's Republic of Bangladesh and there are only small areas of seagrass in the Republic of Maldives (Wells *et al* 2003).

Please also refer to
UNEP-WCMC (2003): World Atlas of Seagrasses. Pp 101-108

1.3.3.4 Other Wetlands

Wetlands are one of the dominant ecosystems in this region, due to the presence of the large deltas of the Ganges, Brahmaputra and Irrawaddy rivers which dominate the head of the Bay of Bengal, the delta in the People's Republic of Bangladesh comprising the largest such system in the world. The People's Republic of Bangladesh has the greatest area of coastal wetlands in the region (2.5 million ha of tidally inundated land) (Wells *et al* 2003). Floodplains and coastal mangrove swamps cover almost one third of the country. The Republic of India has about 3,900,000 ha of estuarine wetlands (Wells *et al* 2003). There are also extensive tidal wetlands in Democratic Socialist Republic of Sri Lanka, which has an estimated 80,000 ha of estuaries and deep lagoons and 40,000 ha of shallow lagoons, tidal flats and mangroves. Numerous seasonal lagoons form during the wet season and are important for fisheries, salt production and wildlife habitat (Wells *et al* 2003).

1.3.3.5 Beaches, Dunes and Cliffs

The People's Republic of Bangladesh is notable for its 145 km stretch of beach from Cox's Bazar to the tip of the Teknaf Peninsula, and there are numerous sandy beaches on the islands of the atoll chains (Wells *et al* 2003). Democratic Socialist Republic of Sri Lanka has about 11,800 ha of beaches and spits extending over 300 km of coast, and sand dunes covering an area of 7,606 ha (Wells *et al* 2003). Sand dunes are present on some of the more exposed parts of the coast of northern Burma and on the south-facing coasts of the islets making up Adam's Bridge, which extends from Democratic Socialist Republic of Sri Lanka to Republic of India (Wells *et al* 2003).

Rocky shores are absent from the Republic of Maldives, Laccadives, Chagos Archipelago, east coast of Republic of India and People's Republic of Bangladesh. Small areas of rocky coastline are found in Democratic Socialist Republic of Sri Lanka and more extensive areas on the west coast of Republic of India and in the Andaman and Nicobar Islands (Wells *et al* 2003).

1.3.3.6 Open Ocean

The Swatch of No Ground is a deep canyon, which runs across the continental shelf off People's Republic of Bangladesh (Wells *et al* 2003). The Burma Trench is another deep canyon in the Bay of Bengal (Wells *et al* 2003). Upwellings occur off Orissa (northeast India), the Andamans and the west coast of Democratic Socialist Republic of Sri Lanka during the northeast monsoon (Wells *et al* 2003).

1.3.4 Species Diversity

1.3.4.1 Algae and Invertebrates

About 174 species of algae have been recorded from Sri Lankan waters, 285 species from the Republic of Maldives and 624 species from Republic of India. Several species are exploited commercially on a large scale in the region, particularly in Republic of India and Democratic Socialist Republic of Sri Lanka (Wells *et al* 2003). There is a high diversity of invertebrates within the region (Wells *et al* 2003).

1.3.4.2 Fish

Fish diversity is expected to be high particularly in regions where there are reefs. Over 1,200 species of fish have been recorded from the reefs and surrounding ocean of the Republic of Maldives (Wells *et al* 2003). However, the Chagos* Archipelago has a relatively low fish diversity (compared with that for corals and mollusks), perhaps because algal diversity and abundance is also low (Wells *et al* 2003). The pygmy angelfish *Centropyge flavipectoralis* is thought to be endemic to the Democratic Socialist Republic of Sri Lanka (Wells *et al* 2003).

* Chagos Archipelago is not included with the South Asian Seas Action Plan

1.3.4.3 Marine Turtles

Five species of marine turtle are found in the Indian Ocean along with a number of globally and regionally important nesting sites. The Green turtle (*Chelonia mydas*) nests off the Gulf of Kutch and Saurashtra Peninsula in India and on uninhabited islands in Laccadives, Republic of Maldives and the Chagos Archipelago (Wells *et al* 2003). The Hawksbill (*Eretmochelys imbricata*) has the largest population of regional importance in the Andamans, particularly South Reef and North Brother, the species may nest in the Chagos Archipelago and on uninhabited islands in the Republic of Maldives (Wells *et al* 2003). The Olive Ridley (*Lepidochelys olivacea*) is the most common species in the People's Republic of Bangladesh, Republic of India and the Democratic Socialist Republic of Sri Lanka with about 300,000-500,000 nests in Orissa on two important nesting beaches. There are many other nesting sites on the mainland coast, for example, Sundarbans, Andamans, Nicobar, Laccadives and several thousand nest in southwest Sri Lanka at several sites (Wells *et al* 2003). The Leatherback (*Dermochelys coriacea*) is Uncommon, but main populations occur in Andamans and Nicobars, with a

small population in the Democratic Socialist Republic of Sri Lanka (Wells *et al* 2003). The Loggerhead (*Caretta caretta*) is rarely seen in the region.

1.3.4.4 *Birds*

There are a number of globally threatened coastal wetland species such as the Spot-billed Pelican (*Pelecanus phillipensis)* and the Lesser Adjutant (*Leptoptilos javanicus)* (Wells *et al* 2003). Important coastal areas for birds include the Gulf of Kutch, Chilka Lake, Coringa Wildlife Sanctuary, the Sundarbans and several areas in Democratic Socialist Republic of the (Wells *et al* 2003). The Sundarbans are an important staging and wintering area for gulls and terns. Many of the atoll islands in the Laccadives-Chagos chain may have seabird colonies (Wells *et al* 2003).

1.3.4.5 Mammals

There is a possibility of small independent stocks of baleen whales in the northern Indian Ocean (Wells *et al* 2003). There are a large number of small cetaceans found in the region for example the river dolphins of the Ganges and Irrawaddy, the humpback dolphin (*Sousa chinensis*) and the spotted dolphin (*Stenella attenuata)* (Wells *et al* 2003). The distribution of the dugong extends over most of the region, however have rapidly decreased in numbers (Wells *et al* 2003). The most important area for this species in the region is the Gulf of Mannar and Palk Bay in Republic of India and in the north of the Democratic Socialist Republic of Sri Lanka (Wells *et al* 2003).

For further information on Dugongs refer to: UNEP/DEWARS.02-1(2002): Dugong; Status Report and Action Plans for Countries and Territories. Chapter 3: Republic of India and Democratic Socialist Republic of Sri Lanka.

1.3.5 Information on Participating States

1.3.5.1 Democratic Socialist Republic of Sri Lanka

Total Population: 18.8 million (HDR 2001)
GDP per capita (PPP US$): 3,180 (HDR 2001)
Total Sea Area:
contiguous zone: 24 NM
territorial sea: 12 NM
exclusive economic zone: 200 NM
continental shelf: 200 NM or to the edge of the continental margin
Length of Coastline: 1,340 km (CIA 2002) its 1,585 km according to Coastal 2000, the existing coastal policy document of the country
Marine Protected Areas:

- Hikkaduwa Marine Sanctuary National Park
- Kokkilai Lagoon Sanctuary
- Bar Reef Marine Sanctuary
- Ruhuna (Yala) National Park

Other coastal areas include:

- Pigeon Island Sanctuary National Park
- Wilpattu National Park
- Chundikkulam Sanctuary
- Trincomalee Naval Headworks Sanctuary
- Great Sober Island Sanctuary
- Madhu Road Sanctuary
- Seruvila-Allai Sanctuary
- Yala East National Park
- Bundala Sanctuary
- Kalametiya Kalapuwa Sanctuary
- Honduwa Island

Proposed New MPAs:

- Puttalam Lagoon, Dutch Bay and Portugal Bay areas
- Negombo Lagoon
- Jaffna Peninsula and Lagoon area
- Palk Bay and Gulf of Mannar
- Basses Reef
- Rekawa Lagoon

(Wells *et al* 2003)

1.3.5.2 Islamic Republic of Pakistan

Total Population: 146.3 million (HDR 2001)
GDP per capita (PPP US$): 1,890 (HDR 2001)
Total Sea Area:
contiguous zone: 24 NM
territorial sea: 12 NM (22,820 sq km)
continental shelf: 200 NM or to the edge of the continental margin
exclusive economic zone: 200 NM (196,600 sq. km)
Length of Coastline: 1,046 km
Marine Protected Areas
MPAs are present in Islamic Republic of Pakistan.
For more information refer to: http://www.macp-pk.org/bap.pdf

1.3.5.3 Republic of Maldives

Total Population: 0.3 million (HDR 2001)
GDP per capita (PPP US$): 4,798 (HDR 2001)
Total Sea Area:
measured from claimed archipelagic baselines
territorial sea: 12 NM
exclusive economic zone: 200 NM
contiguous zone: 24 NM
Length of Coastline: 644 km (CIA 2003)
Marine Protected Areas
Under the **Environment Protection and Preservation Act of 1993**, the Moldavian Government in 1995 declared 14 sites as marine protected areas. These sites cover an

area of 12.55 sq. km and constitute about 0.08% of the atoll ecosystems. In addition, a number of islands of ecological significance such as seabird roosting and nesting sites are under active consideration for protection. The Government is currently looking at the possibilities of extending marine protected areas and establishing terrestrial protected areas across the archipelago. Potential sites have been already identified, including islands, wetlands, natural heritage sites and other habitats that are of significance importance.

1.3.5.4 Republic of India

Total Population: 1,033.4 million (HDR 2001)
GDP per capita (PPP US$): 2,840 (HDR 2001)
Total Sea Area:
contiguous zone: 24 NM
territorial sea: 12 NM
continental shelf: 200 NM or to the edge of the continental margin
exclusive economic zone: 200 NM
Length of Coastline: 7,000 km (CIA 2002)
Marine Protected Areas

- Gulf of Kutch Marine Sanctuary and Marine National Park (two areas
- Malvan Sanctuary
- Chorao Island Wildlife Sanctuary
- Pichavaram Forest Reserve
- Pulicat Lake Sanctuary
- Gulf of Mannar National Park
- Chilka Lake Wildlife Sanctuary; Ramsar site
- Sundarbans National Park.
- Bhitar kanika Wildlife Sanctuary

Other coastal areas include:

- Phansad Wildlife Sanctuary; mangroves.
- Point Calimere Wildlife Sanctuary
- Coringa Sanctuary
- Krishna Reserved Forest; mangroves
- Mahanadi Delta crocodile conservation area
- Gahirmatha Wildlife Sanctuary

Andaman and Nicobar Islands

- Wandur Marine National Park

Other coastal areas include:

- Saddle Peak National Park
- North, Middle and South Button Island National Park
- Barren I. Sanctuary
- Battimalv I. Sanctuary (Nicobars)
- Interview I. Sanctuary
- South Reef I. Sanctuary
- Megapode I. Sanctuary (Nicobars)
- Narcondam I. Sanctuary: mangroves
- North Reef I. Sanctuary
- La Touche I. Sanctuary

- Saltwater Crocodile Sanctuary
- South Sentinel I. Sanctuary
- Tillongchang I. Sanctuary

Proposed New MPAs:

- Gulf of Khambhat Wildlife Sactuary
- Kundapar Wildlife Sanctuary and estuaries of Karnataka coast
- Chilka Lake Wildlife Sanctuary Extension
- Point Calimere National Park
- Kazhiveli Wildlife Sanctuary
- Sundarbans
- Lakshadweep Archipelago (Laccadives
- Andaman and Nicobar Islands

(Wells *et al* 2003)

1.3.5.5 People's Republic of Bangladesh

Total Population: 140.9 million (HDR 2001)
GDP per capita (PPP US$): 1,610 (HDR 2001)
Total Sea Area:
contiguous zone: 18 NM
territorial sea: 12 NM
continental shelf: up to the outer limits of the continental margin
exclusive economic zone: 200 NM
Length of Coastline: 580 km (CIA 2002)
Marine Protected Areas

- Sundarbans Forest Reserve, east Wildlife Sanctuary, south Wildlife Sanctuary and west Wildlife Sanctuary
- Char Kukri-Mukri Forest Reserve and Wildlife Sanctu
- Teknaf Game Reserve and Himchari National P

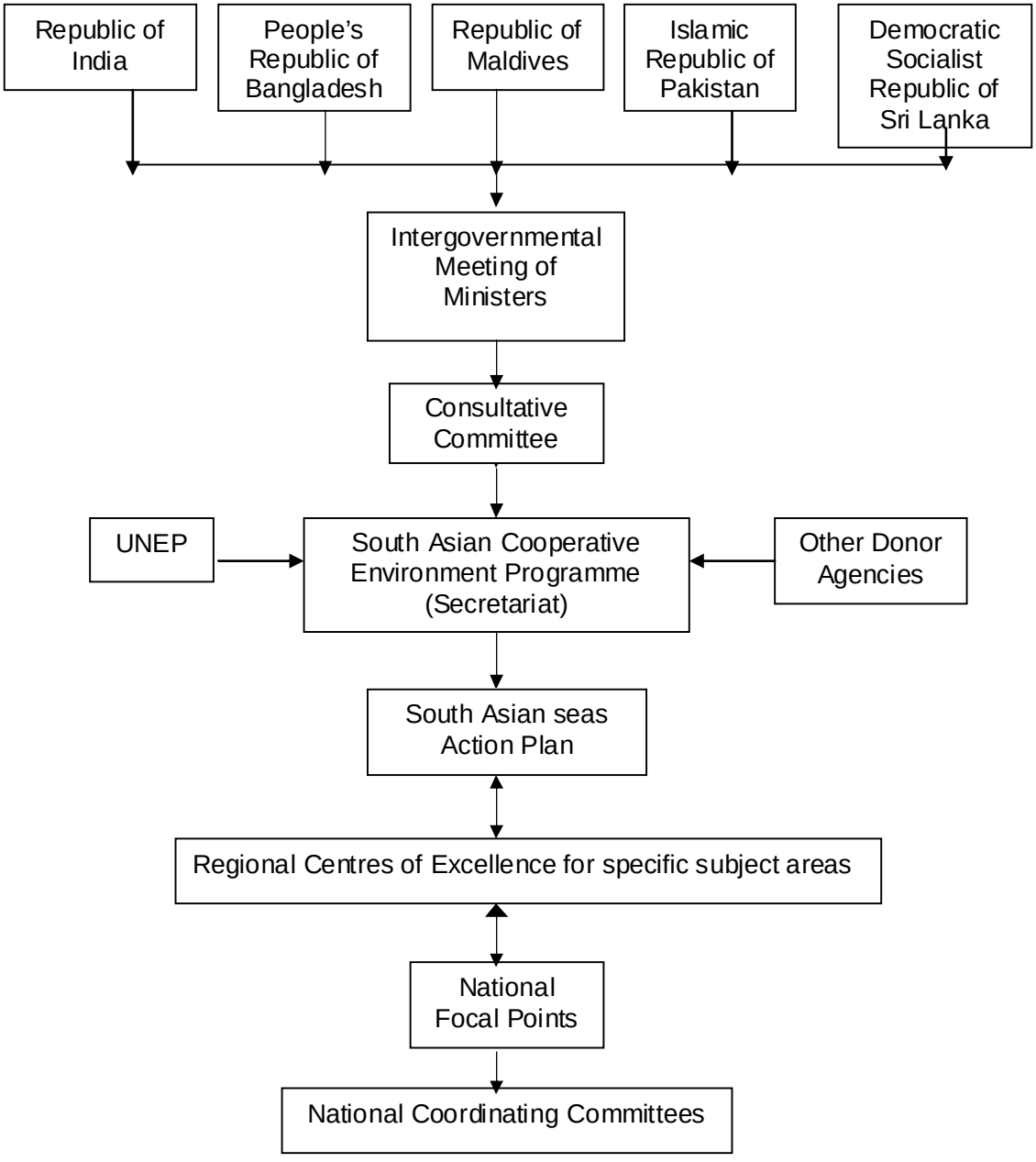
Proposed New MPAs:

- The Sundarbans
- Naaf Estuary islands (and adjacent areas including Teknaf Peninsula and Chakaria Sundarbans)
- Jinjiradwip and surrounding marine areas

(Wells *et al* 2003)

1.4 Organization

1.4.1 Institutional Structure



1.4.2 Intergovernmental Ministerial Body

Intergovernmental Meetings of Ministers meet once every two years. The first Intergovernmental Meetings of Ministers was held on the 26 March 1999 in Muree,

Islamic Republic of Islamic Republic of Pakistan and the 2nd IMM was held in 1st July 2002 in Colombo, Democratic Socialist Republic of Sri Lanka.

Chairperson: Hon Rukman Senanayake of the Chairperson of the 2nd IMM
Contact:
Hon. A.H.M Fawzie
Minister of Environment & Natural Resources (Govt. of Democratic Socialist Republic of Sri Lanka)
Battaramulla
Democratic Socialist Republic of Sri Lanka
Tel: (941) 866617
Fax: (9410 866613
e-mail: moef@sri.lanka.net

Date and place of next meeting: 2nd Quarter 2004

1.4.3 The Consultative Committee

The Consultative Committee (CC) consists of representatives of the diplomatic missions of the member countries resident in Colombo and the representatives of the Focal Point of the Democratic Socialist Republic of Sri Lanka. The main function is to provide the South Asian seas Secretariat with policy guidance on the implementation of decisions taken at the meeting of ministers (SAS 2001). From January 1999 to May 2002 eight CC Meeting were held and after August 2002 to January 2004, seven joint SACEP/SAS CC meeting have been held.

Composition

Republic of India	Mr. V. Ashok Minister/Economic and Commercial High Commission of Republic of India 36-38, Galle Road Colombo 03 Democratic Socialist Republic of Sri Lanka
People's Republic of Bangladesh	Mr. Ashud Ahmed Counsellor High Commission for the People's Republic of Bangladesh, Colombo, Democratic Socialist Republic of Sri Lanka
Democratic Socialist Republic of Sri Lanka	Mr. Thosapala Hewage / Secretary Ministry of Environment and Natural Resources 82 Rajamalwatta Road Samapathpaya , Battaramulla, Democratic Socialist Republic of Sri Lanka
Republic of Maldives	H.E. Mrs. Raashida Yoosuf High Commissioner High Commission of the Republic of Republic of Maldives 23, Kaviratne Place Colombo 6 Democratic Socialist Republic of Sri Lanka
Islamic Republic of Pakistan	Mr. Tanveer A. Khaskheli Acting High Commissioner High Commission of the Islamic Republic of Islamic Republic of Pakistan 211, De Saram Place, Colombo 10 Democratic Socialist Republic of Sri Lanka

1.4.4 The Coordinating Unit/Secretariat

South Asia Co-operative Environment Programme (SACEP)

SACEP acts as the secretariat for the South Asian Seas Action Plan and that aims to promote and support the protection, management and enhancement of the environment, of South Asia, individually, collectively and cooperatively. The main function of the Secretariat is to ensure the harmonious and integrated evolution and the implementation of the Action Plan in close coordination with the IMM, CC and the National Focal Points. The Director General of SACEP has been designated as the Head of the SAS Secretariat and is entrusted with the responsibility of enhancing its capacity to meet the above requirements.

Year established: 1982
Co-ordinator: Prasantha Dias Abeyegunawardene

Headquarters with contacts
Prasantha Dias Abeyegunawardene
Interim Co-ordinator

South Asian Seas Progarmme
10 Anderson Road
Colombo 5
Democratic Socialist Republic of Sri Lanka
Tel: (941) 596 442
Fax (941) 589 369
e-mail: pd_sacep@eureka.lk or pandasas@hotmail.com
Website: http://www.sacep.org

1.4.5 National Focal Points

People's Republic of Bangladesh	Mr. Syed Tanveer Hussain, Secretary, Ministry of Environment & Forest People's Republic of Bangladesh Secretariat, Dhaka.
Republic of India	Dr. Harsh K. Gupta, Secretary, Department of Ocean Development, Magasagar Bhawan, Block 12, C.G.O. Complex, Lodhi Road,New Delhi
Republic of Maldives	The Director General, Ministry of Home Affairs, Housing & Environment, Male.
Islamic Republic of Pakistan	Secretary, Ministry of Environment, Local Government and Rural Development, 7th Floor, UBL Building, Jinnah Avenue, Blue Area, Islamabad.
Democratic Socialist Republic of Sri Lanka	Mr. Dharmasena Dissanayake, Secretary, Ministry of Forestry & Natural Resources, Sampathpaya, Battaramulla.

1.5 Financial Arrangements

1.5.1 Trust Fund

South Asian Seas Trust Fund (SASTF)

SASTF is administered by the Director General of SACEP. All participating states contribute to the SASTF on an annual basis, according to the same ratio's in the SAARC Scale of Assessment agreed upon by SAARC member states (maximum of 35% & a minimum of 5%). This will meet the institutional costs of the Secretariat. With reference to ***funds required for the implementation of projects*** identified under the Action Plan, the financial contribution by the member states will be on project basis and the countries involved in a particular project will contribute on a mutually agreed basis.

1.5.2 Other Funding Agencies

The South Asia Co-operative Environment Programme (SACEP) also receives two other sources such as the hosting and support facilities provided by the Government of Democratic Socialist Republic of Sri Lanka as the host of the secretariat. Financial

contributions in support of implementation of the Action Plan may also come from donor agencies in support of projects:
Multilateral - UNEP, UNDP, ADB, NORAD, IMO, GEF, ESCAP;
Bilateral - NORAD, SIDA and the Netherlands Government.

1.6 Partners

The main collaborators so far has been mainly the UN affiliated organizations such as IMO, GPA etc, the concerned focal points of the Member governments, the Great Barrier Reef Marine Park Authority, NORAD and organizations such as ICRAN, ICRI, GCRMN & CORDIO with respect to Coral Reef Activities. Future collaboration is expected with the Norwegian Water Institute (NIVA), European Union and GEF POP's Unit in Nairobi.

Fields of Cooperation	Partners
Integrated Coastal Zone Management	**NORAD/ Great Barrier Reef Marine Park Authority** Government Agency **Activity:** Assisted in the development of a Training Course a Training Course in Integrated Management of Coastal and Marine Protected Areas and the conduct of the 1st Training Course in 1997
	NORAD Government Agency **Activity:** Financial assistance in the development of a Training Course a Training Course in Integrated Management of Coastal and Marine Protected Areas and the conduct of the 1st Training Course in 1997
Oil Spill Contingency Planning & Capacity Building, MARPOL 73/78 and Port Reception Facilities	**International Maritime Organization (IMO)** UN Affiliated Body **Activity:** Assistance in the formulation of a Regional Oil Spill Contingency Plan for South Asia, implementation of MARPOL 73/78, Development of Regional Capacity in Oil Spill Combating and development of Port Reception Facilities. Up to end of 2003, around 120 participants have been trained to comply with MARPOL 73/78 and OPRC Conventions.

Coral Reef Activities	**Global Coral Reef Management Network (GCRMN)** Intergovernmental Agency **Activity:** SACEPs involvement in GCRMN has been through the attendance and assistance in meetings and workshops. SACEP played an active role in the formation of the Democratic Socialist Republic of Sri Lankan Coral Reef Forum in 2002.
	International Coral Reef Initiative (ICRI) Intergovernmental Agency **Activity:** SACEP by virtue of being the Secretariat for the implementation of the South Asian Seas Action Plan was one of the pioneer members of ICRI and has assisted ICRI in co-ordinating all ICRI programmes and activities in the region including participation at ICRI CPC Meetings and ITMEMS I & II Symposia
	International Coral Reef Action Network (ICRAN) The ICRAN expansion to the South Asian region was announced at the WSSD in 2002 and was endorsed at the Special Session of the Governing Council of SACEP in January 2003. The consultancy for development of ICRAN proposals for the South Asian Seas region has been finalised. Presently ICRAN and SACEP is jointly producing a status report on coral reef management in the region and a proposal for improved site-based coral reef management..
	Coral Reef Degradation in the Indian Ocean (CORDIO) SACEP provided the host facilities for the CORDIO-South Asia coordinator from 1999. SACEP is in the process of finalizing a CORDIO funded project titled "Alternative Livelihoods Through Income Diversification: As Management Option for Sustainable Coral Reef and Associated Ecosystem Management in Democratic Socialist Republic of Sri Lanka
GPA related activities	**GPA Office, The Hague** UN Body **Activity:** Assistance in the formulation and development of National & Regional activities pertaining to the implementation of the GPA Programme in South Asia and conduct of workshops.

	Department of Ocean Development Republic of Indian Government **Activity:** Assistance in the conduct of the UNEP/SAS ICARM Workshop in Chennai. April 2003
	Coast Conservation Department Government of Democratic Socialist Republic of Sri Lanka Activity - Pilot Project for ICARM in South Asia: Attanagalu Oya, Democratic Socialist Republic of Sri Lanka
	Global International Water Assessment (GIWA) UN Body **Activity:** Co-host and participation in the GIWA process for the Sub-region 53, Bay of Bengal
Protection of the Marine and Coastal Environment from Land-Based Activities (also GPA)	**Norwegian Institute for Water Research (NIVA)** Norwegian Government **Activity:** Development of a Project on Development of Harmonised National Environmental Quality Criteria for Seawater for the South Asian Seas
General	**Global Oceans Observation System (GOOS)** UN - IOC **Activity:** Participation at GOOS Meetings and the setting up of Indian Ocean Global Observation System (IO-GOOS)
	World Conservation Monitoring Centre (WCMC) UNEP **Activity:** Discussions on the possible collaboration in the area of Data Provision, Data Enhancement, Provision of new data and development of training capacities in the region
	Bay of Bengal Large Marine Ecosystem Project Discussion on possible collaboration is on going.
	Indian Ocean - South East Asia Marine Turtle Memorandum of Understanding ((IOSEA) A project on Marine Turtle Conservation and Integrated Management of Marine Turtles and their Habitats in the South Asian Seas Region is being developed in association with IOSEA Secretariat.

(Regional Seas 2003)

1.6.1 Other International Agreements and Actors within the Region

South Asia Association for Regional Cooperation (SAARC)

SAARC aims to accelerate the process of economic and social development in Member States, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. http://www.saarc-sec.org/

Bay of Bengal Intergovernmental Organization (BOBP)

BOBP is an Inter-Governmental Organisation mandated to enhance cooperation among member countries, other countries and organisations in the region and provide technical and management advisory services for sustainable coastal fisheries development and management in the Bay of Bengal region. http://www.bobpigo.org/

Indian Ocean Marine Affairs Cooperation (IOMAC)

IOMAC is an ocean management movement initiated by countries of the region, joined by extra-regional user states. IOMAC was founded on the concept of integrating relevant management disciplines in mandated fields, as well as integrating relevant national, regional, and global institutional elements in the regional management framework.

People's Republic of Bangladesh, Republic of India Myanmar Democratic Socialist Republic of Sri Lanka Thailand Economic Cooperation (BIMSTEC-EC)

BIMSTEC-EC was set up to foster socio-economic cooperation amongst Bangladesh, Thailand, India and Sri Lanka http://www.bimstec.org/

Indian Ocean-South East Asian Marine Turtle Memorandum of Understanding

The Memorandum puts in place a framework through which States of the Indian Ocean and South-East Asia region, as well as other concerned States, can work together to conserve and replenish depleted marine turtle populations for which they share responsibility. The Conservation and Management Plan, containing 24 programmes and 105 specific activities, focuses on reducing threats, conserving critical habitat, exchanging scientific data, increasing public awareness and participation, promoting regional cooperation, and seeking resources for implementation. http://www.ioseaturtles.org/

Agreement for the Establishment of the Indian Ocean Tuna Commission (IOTC)

The objective of the IOTC is to promote cooperation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered by this Agreement and encouraging sustainable development of fisheries based on such stocks (GIWA 2001).

UN Economic and Social Commission for Asia and the Pacific (ESCAP)

Within the Water Resources Programme under its Environment and Natural Resources Development Division, the UN ESCAP organizes seminars and workshops on various

issues relating to water resources, including: Water resources assessment; Integrated water resources development and management; Protection of water resources, water quality and aquatic ecosystems; River basin development and management; Promotion of infrastructure development and investment for drinking water supply and sanitation; Water pricing and promotion of private investment in the water sector; Water demand management, water saving and economic use of water; and Mitigation of water-related natural disasters, particularly flood loss reduction (GIWA 2001).

UNEP Regional Office for Asia and the Pacific (ROAP)

Working closely with the Division of Regional Co-operation and Representation in UNEP's Nairobi-based headquarters and ROAP looks to adopt global environmental policy to regional priorities and needs. It acts as a catalyst, co-ordinator, facilitater and mobilizer of resources. It puts particular emphasis on building partnerships with regional and sub-regional intergovernmental fora, other UN agencies, national governments, NGOs, the private sector, academic and research institutions, and civil society, and the media (GIWA 2001)

Asian Development Bank (ADB)

The ADB, a multilateral development finance institution, was founded in 1966 by 31 member governments to promote the social and economic progress of the Asia-Pacific region. It now has 58 member countries - 42 from within the region and 16 non-regional. ADB gives special attention to the needs of the smaller or less-developed countries, and to regional, subregional, and national projects and programs. Promoting sustainable development and environmental protection is a key strategic development objective of the Bank. To fulfil this objective, the Bank (i) reviews the environmental impacts of its projects, programs, and policies; (ii) encourages DMC governments and executing agencies to incorporate environmental protection measures in their project design and implementation procedures, and provides technical assistance for this purpose; (iii) promotes projects and programs that will protect, rehabilitate, and enhance the environment and the quality of life; and (iv) trains Bank and DMC staff in, and provides documentation on, environmental aspects of economic development. The Asian Development Fund (ADF) is the concessional lending window of the Bank (GIWA 2001). www.adb.org/

Global Environment Facility (GEF)

Some GEF projects within the South Asian Seas region are as follows:

- UNDP - GEF - Biodiversity: Conservation and Sustainable Use of Biodiversity Associated with Coral Reefs in the Republic of Maldives
- UNDP - GEF - Biodiversity: Protection and Management of Islamic Republic of Pakistan Wetlands
- UNDP - GEF - Biodiversity: Coastal and Wetland Biodiversity Management at Cox's Bazar and Hakakuki Haor
- World Bank - GEF - Biodiversity: Aquatic Biodiversity Conservation, People's Republic of Bangladesh

- World Bank/Asian Development Bank (ADB) - GEF - Biodiversity: Biodiversity Conservation in the Sundarbans Reserved Forest, People's Republic of Bangladesh
- UNDP - GEF - Biodiversity: Conservation and Sustainable Use of the Gulf of Mannar Biosphere Reserve's Coastal Biodiversity, Republic of India
- World Bank - GEF - International Waters: Preparation of a Transboundary Diagnostic Analysis and Preliminary Framework Strategic Action Programme for the Bay of Bengal Large Marine Ecosystem
- UNDP - GEF - Biodiversity: Management of Coral Reef Ecosystem of Andaman and Nicobar Islands, Republic of India

GEF Website http://www.gefweb.org/.
(GIWA 2001)

International Centre for Living Aquatic Resources Management (ICLARM)

An international research organization "devoted to improving the productivity, management and conservation of aquatic resources for the benefit of users and consumers in developing countries". ICLARM is one of the research centres of CGIAR, Consultative Group on International Agricultural Research. See, for example, Caribbean Marine Protected Areas Project: The Role of Marine Protected Areas in Fisheries Management and Biodiversity Conservation in Coral Reef Ecosystems. ICLARM, in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and other partners, and with support from the European Commission, has also developed FishBase, a global information system on fishes for research scientists, fisheries managers, zoologists and many more. FishBase contains full information on 23,500 species. Furthermore, ICLARM has developed similar systems on coral reefs and their resources (ReefBase) and management of fish stocks in Asia (TrawlBase) (GIWA 2001).

Website: http://www.cgiar.org/iclarm/

South Asian Forum on Environmental Cooperation between the Government and the Private Sector

The Forum is designed to promote: increased dialogue between Government and Private sector on environment and development on a national level; increased cooperation between Governments and private sectors of South Asian Countries to exchange information; Promotion of South-South exchange of environmental technology and management; Strengthening programme synergy and coordination among UN and other organizations in the field of environment in South Asia on a regional level; and strengthen networking with private sector institutions outside the region on a global scale, formulating South Asian inputs to 2000 Ministerial Conference on Environment and Development in Asia and the Pacific, to be held in Japan in September, 2000 (GIWA 2001).

Website: http://www.teriin.org/events/docs/envco.htm

The Bay of Bengal and the Arabian Sea are Large Marine Ecosystems (LME)

A LME is a "region of ocean space encompassing coastal areas from river basins and estuaries to the seaward boundary of continental shelves and the seaward margins of coastal current systems. It is a relatively large region characterized by distinct bathymetry, hydrography, productivity, and trophically dependent populations" (GIWA 2001).

International Coral Reef Initiative (ICRI)

An environmental partnership that brings stakeholders together with the objective of sustainable use and conservation of coral reefs for future generations. ICRI is an informal mechanism that allows representatives of over 80 developing countries with coral reefs to sit in equal partnership with major donor countries and development banks, international environmental and development agencies, scientific associations, the private sector and NGOs to decide on the best strategies to conserve the world's coral reef resources (GIWA).

Website: http://www.environnement.gouv.fr/icri/index.html

Coral Health and Monitoring Programme, NOOA

The mission of the NOOA Coral Health and Monitoring Program is to provide services to help improve and sustain coral reef health throughout the world. Long term goals: Establish an international network of coral reef researchers for the purpose of sharing knowledge and information on coral health and monitoring. Provide near real-time data products derived from satellite images and monitoring stations at coral reef areas. Provide a data repository for historical data collected from coral reef areas. Add to the general fund of coral reef knowledge (GIWA 2001).

Website: http://coral.aoml.noaa.gov/index.html

For further information on International Partnerships, Programmes and Initiatives link to the SACEP website http://www.sacep.org/other.html, the GIWA website http://www.giwa.net or the GEF project database http://www.gefonline.org/home.cfm. International Water Management Institute: http://www.iwmi.cgiar.org/

2 Our Work

2.1 Programme Strategy

Link to Regional Seas Strategic Directions 2004-2007, downloadable document: to come

2.2 Action Plan

South Asian Seas Action Plan (SASAP)

Year adopted: Meeting of Plenipotentiaries on 24th March 1995

Year entered into force: February 1997 when the Government of People's Republic of Bangladesh ratified the final Act (SACEP, 2003)
Participating Countries: People's Republic of Bangladesh, Republic of India, Republic of Maldives, Islamic Republic of Pakistan and Democratic Socialist Republic of Sri Lanka

The overall objective of the SASAP is to protect and manage the marine environment and related coastal ecosystems of the region in an environmentally sound and sustainable manner. The objective is to be achieved through:

- Establishing and enhancing consultations and technical cooperation among states of the region;
- Emphasizing the economic and social importance of the resources of the marine and coastal environment; and
- Establishing a regional cooperative network of activities concerning concrete subjects/priorities of mutual interest for the whole region.

The SASAP identified the areas where priority activities need o be developed under the Action Plan. The priority activities are in the four specific areas:

- Integrated Coastal Zone Management;
- Development and Implementation of National and Regional Oil Spill Contingency Plan;
- Human Resources Development through Strengthening Regional Centres of Excellence; and
- Protection of the Marine and Coastal Environment from Land Based Activities.

(SAS 2001)

For the full text of the Action Plan link to www.sacep.org/sas

2.3 Convention

No Convention as of yet.
The Law of the Sea is considered as the umbrella convention.

2.4 Issues and Threats

2.4.1 Habitat Destruction

Coral bleaching in mid 1998 adversely affected a large proportion of coral reefs in the region. Extensive damage to reefs was reported in the Republic of India, the Republic of Maldives and the Democratic Socialist Republic of Sri Lanka (GEO 2002). The mangroves of the region have great economic value and have been heavily utilized. About 50 percent of Republic of India's mangroves had been destroyed since 1963. Both in western and southern Republic of India, and throughout the Bay of Bengal, much of

the originally extensive mangrove stands have been removed (Wells *et al* 2003). Sea grasses are also under threat, about 5 percent of the seagrass beds of the Indian Ocean had been destroyed by dredging or infilling (Wells *et al* 2003).

For further information refer to:
UNEP (1985) Management and conservation of renewable marine resources in the Indian Ocean region: Overview. UNEP Regional Seas Reports and Studies No. 60.
GEO (2002) Global Environment Outlook 3. UNEP. Earthscan publications Ltd, London
SACEP www.sacep.org.
Biodiversity Action Plan (2000). Biodiversity Action Plan for Islamic Republic of Pakistan. A Framework for Conserving our Natural Wealth. Government of Islamic Republic of Pakistan/WWF/IUCN

2.4.2 Species Loss

There are five species of marine turtle found in the region and all considered to be at risk in most countries. These are the green (*Chelonia mydas*), the hawksbill (*Eretmochelys imbricata*), the loggerhead (*Caretta caretta*), the leatherback (*Dermochelys coriacea*) and the olive Ridley (*Lepidochelys olivacea*) (Wells *et al* 2003). There are a large number of small cetaceans and many of which are harvested either intentionally or incidentally (Wells *et al* 2003). The most threatened species are the river dolphins of the Ganges and Irrawaddy (Wells *et al* 2003). The humpback dolphin (*Sousa chinensis*) and the spotted dolphin (*Stenella attenuata)* are found in the Indian Ocean and are considered at risk. The distribution of the latter appears to be closely correlated with mangroves (Wells *et al* 2003). The distribution of the dugong extends over most of the region, however have rapidly decreased in numbers (Wells *et al* 2003). A number of coastal wetland species of birds are also threatened such as the Spot-billed Pelican (*Pelecanus phillipensis)* and the Lesser Adjutant (*Leptoptilos javanicus)* (Wells *et al* 2003).

For further information refer to:
UNEP (1985) Management and conservation of renewable marine resources in the Indian Ocean region: Overview. UNEP Regional Seas Reports and Studies No. 60.
GEO (2002) Global Environment Outlook 3. UNEP. Earthscan publications Ltd, London
SACEP www.sacep.org.
Biodiversity Action Plan (2000). Biodiversity Action Plan for Islamic Republic of Pakistan. A Framework for Conserving our Natural Wealth. Government of Islamic Republic of Pakistan/WWF/IUCN

2.4.3 Exploitation of Resources

Fish production and aquaculture are practiced extensively in the region. Overexploitation of fish stocks and poor aquaculture practices are of concern in the People's Republic of Bangladesh, Republic of India, Islamic Republic of Pakistan and the Democratic Socialist Republic of Sri Lanka (GEO 2002). Tuna fisheries are important in Sri Lanka and the Republic of Maldives and both countries export reef fish for the aquarium trade (Wells *et al* 2003). Many invertebrates are harvested and are of high economic importance in the region. There is evidence that some mollusks and crustaceans have

been overexploited, and species such as the coconut crab, horseshoe crabs, and certain mollusks are of conservation concern (Wells *et al* 2003). In the Republic of India, prawn farms have been constructed in low lying coastal areas, depriving impoverished farmers of agricultural land, causing salinisation of groundwater in coastal villages and polluting waterways with excess nutrients (GEO 2002). The Republic of India, Republic of Maldives and Sri Lanka have developed legislation to address these problems (GEO 2002)

For further information refer to:
UNEP (1985) Management and conservation of renewable marine resources in the Indian Ocean region: Overview. UNEP Regional Seas Reports and Studies No. 60.
GEO (2002) Global Environment Outlook 3. UNEP. Earthscan publications Ltd, London
SACEP www.sacep.org.

2.4.4 Pollution

Coastal and marine water pollution has increased throughout the region, mainly due to direct discharges from rivers, increased surface run-off and drainage from land-based urban, industrial and agricultural activities and oil spills and other contaminants from shipping (GEO 2002). The enhanced use of agrochemicals on land and discharge into seawater is common. 1,800 tonnes of pesticides enter the Bay of Bengal every year (GEO 2002). Shellfish and finfish resources have been contaminated by increasing pesticide pollution (GEO 2000). Offshore mineral exploration and production activities are further sources of pollutants. The main route of marine transport of oil from the Gulf is across the Arabian Sea and accidental oil spills have been frequently reported along these routes (GEO 2000). The shipping of oil coupled with increasing emphasis on offshore oil exploration makes the northern Republic of Indian Ocean extremely vulnerable to oil pollution (GEO 2002). Oil spills cause severe pollution in ports in the People's Republic of Bangladesh and Islamic Republic of Pakistan (GEO 2002).). Some 28,000 tons of crude oil spilled into the sea, polluting ports, outer ports and beaches when the *Tasman Spirit* ran aground at low tide close to Karachi, Pakistan on 28 July 2003 (WWF 2004). In addition the cleaning of oil tanks in and around ports has lead to frequent formation of tar balls on the southwestern beaches of Sri Lanka (GEO 2002

In Islamic Republic of Pakistan, industrial Pollution is particularly severe in the industrial center of Karachi, with a population of over 12 million of people. About 80% of the total wastewater remains untreated and is discharged into the sea through sewers and rivers, mainly the Lyari and Malir. Many creeks and coastal water in the Karachi area exhibit eutrophication due to high levels of organic pollution. In the Karachi harbour an estimated 90,000 tons of oil products from vessels and port terminals are dumped every year leading to sever pollution in the vicinity (Biodiversity Action Plan, 2000).

For further information refer to:
UNEP (1985) Management and conservation of renewable marine resources in the Republic of Indian Ocean region: Overview. UNEP Regional Seas Reports and Studies No. 60.
GEO (2002) Global Environment Outlook 3. UNEP. Earthscan publications Ltd, London
SACEP www.sacep.org.

2.4.5 Climate Change and Sea Level Rise

The effects of climate change and sea level rise pose significant threats to the region. As a result of global warming, the penetration of heat into the ocean leads to the thermal expansion of the water; this effect, coupled with the melting of glaciers and ice sheets, results in a rise in sea level. Sea-level rise will not be uniform globally but will vary with factors such as currents, winds, and tides—as well as with different rates of warming, the efficiency of ocean circulation, and regional and local atmospheric (e.g., tectonic and pressure) effects (IPCC 2004). It is estimated that sea level would rise, on average, about 5 mm/yr, within a range of uncertainty of 2–9 mm/yr (IPCC 2004). The Republic of Maldives for instance, a collection of vulnerable coral islands that barely rises over two metres above sea level, could become uninhabitable within 50 years.

For further information refer to the Intergovernmental Panel for Climate Change http://www.ipcc.ch/.

2.4.6 Tourism

Marine-based tourism is also increasing within the region. In Republic of Maldives, for instance, marine-based tourism now contributes more than 19 per cent of the country's GDP and 30 per cent of government revenue (GEO 2000). It has also caused environmental degradation, particularly through the construction of hotels, beach clubs and marinas involving infilling, dredging and the resuspension of contaminated silts (GEO 2000).

For further information refer to:
UNEP (1985) Management and conservation of renewable marine resources in the Indian Ocean region: Overview. UNEP Regional Seas Reports and Studies No. 60.
GEO (2002) Global Environment Outlook 3. UNEP. Earthscan publications Ltd, London
SACEP www.sacep.org.

2.5 Current Activities

2.5.1 Integrated Coastal Zone Management

The South Asian Seas Action Plan is involved in the preparation of coastal profiles, analysis and forecasting; the definition of goals and strategies; the formulation of integrated management plans and policies and the implementation of plans (SAS 2001).

2.5.1.1 Current Projects

EU Funded Project Asia Pro Eco
Cost ($): To be decided
Period: To be decided

Partners: EU & National Focal Points of Member Countries linking existing ICZM networks

Expected Outputs:

- ICZM policy
- coast erosion management
- capacity building

(Regional Seas 2003)

2.5.2 Oil Spill Contingency Plan

Development and Implementation of National and Regional Oil Spill Contingency Plan

The South Asian Seas Action Plan is involved in updating the South Asian Marine Pollution Emergency Plan; the assessment of infrastructure requirements and development of mechanisms to implement the plan; assist the legislation; prepare manpower development and training plans for monitoring; information collection and dissemination; and to prepare technical guidelines for member states (SAS 2001).

2.5.2.1 Proposed Activities For 2004-2005

- National OPRC Level 3 (Contingency Planning Workshop) Republic of Maldives
- National OPRC Level 3 (Contingency Planning Workshop, People's Republic of Bangladesh
- National MARPOL/Ship Recycling Workshop, People's Republic of Bangladesh
- Regional Workshop to Identify the Need for the Establishment of Reception Facilities in the vicinity of Ship Recycling Yards to receive Ship-generated Wastes
- Development of a Project Proposal related to Port Reception Facilities following a feasibility study of technical and operational aspects
- Regional Seminar/Workshop on Ratification and Implementation of the OPRC-HNS Protocol, the AFS Convention and identification and establishment of the PSSAs
- Globallast Programme – Development of South Asian Seas Plan

2.5.3 Human Resources Development

Human Resources Development through Strengthening Regional Centres of Excellence

The South Asian Seas Action Plan is involved in the development of research programmes and projects in empowerment of local communities; the development of guidelines for multi disciplinary research in ICZM based on implementing pilot project; training; institutional development; and capacity building (SAS 2001).

2.5.3.1 Current Activities

2.5.4 Land Based Activities

Protection of the Marine and Coastal Environment from Land Based Activities
The South Asian Seas Action Plan is involved in the monitoring of coastal and marine pollution; development of strategies for pollution control; introduction of cleaner production technologies; training; institutional development; and capacity building (SAS 2001).

2.5.4.1 Current Projects

Project on Development of Harmonized National Environmental Quality Criteria for Seawater for the South Asian Seas
Cost US ($): 1.2 Million
Period: Two years
Partners: Norwegian Institute for Water Research (NIVA) & National Focal Points of Member Countries
Objectives: Develop harmonized national environmental quality criteria for seawater as a management tool for promoting sustainable development and for ensuring adequate quality for uses of seawater resources in the region.

Expected Outputs:
- Status and needs identification:
- Institutional strengthening/capacity building:
- Harmonised environmental quality criteria for seawater:
- Program for environmental rehabilitation and management: and
- Programme for Environmental Rehabilitation and management.

Development of 2 GEF PDF Block B Proposals with GEF POP's Unit
Cost ($): To be decided
Period: To be decided
Partners: GEF"s POP's Unit, National Focal Points of Member Countries
Objectives: Reducing Pesticide Runoff to the Sooth Asian Seas
Reducing Reliance on Agricultural Pesticide Use in selected South Asian River Basins through Integrated Production and Pest Management, and a Community-based Pollution
Expected Outputs: Prevention System
(Regional Seas 2003).

Pilot Project for ICARM in South Asia: Attanagalu Oya, Democratic Socialist Republic of Sri Lanka
Cost ($): Phase 1: 25,000
Period: One year
Partners: UNEP-GPA, SACEP, and Coast Conservation Department of Government of Democratic Socialist Republic of Sri Lanka
Objectives: Establishment of Integrated Coastal Area and River basin Management (ICARM) in the Attanagalu Oya River Basin to ensure stability and the productivity of the aquatic systems, which in turn will be beneficial to socio-economic development of the area.

2.5.5 Coral Reef Management

An important development in coral reef conservation and management was the establishment of the Global Coral Reef Monitoring Network (GCRMN) for South Asia in 1997 by the International Coral Reef Initiative (ICRI) to facilitate monitoring, training and management of coral reefs (GEO 2002).

2.5.5.1 Current Projects

South Asian Regional Workshop on the Extension of ICRAN activities
Period: ASAP
Partners: ICRAN, UNEP-RS
Objectives: To bring the major stakeholders in the GCRMN existing process together to discuss the arrangements and to agree on the mode for smooth operation of the ICRAN supported South Asian Coral Reef Network.
Expected Outputs: Development of a Strategic Plan for the future for the South Asian Coral Reef Network

Coordinated Sustainable Management of Coral Reefs in the South Asia
Cost US ($): 59, 3000
Period: 3 years
Partners: Governments of Republic of India, Republic of Maldives, and Democratic Socialist Republic of Sri Lanka
ICRAN, GCRMN
Objectives: The current proposal is to undertake a coordinated approach to the management and monitoring of coral reefs and adjacent ecosystems in South Asia. An initial step to realizing this would be to establish a South Asia Coral Reef Unit (SACRU) within the offices of SACEP. The unit will be working as an information conduit between the stakeholders in the coral reefs of South Asia and the international policy makers and donors.

Pilot Projects as a follow up of ICARM Workshop in Chennai
Cost ($): To be decided
Period: To be decided
Partners: UNEP, GPA & National Focal Points of Member Countries

(Regional Seas 2003)

3 Publications

3.1 Regional Seas Reports and Studies

Link to: http://www.earthprint.com/show.htm??url=http://www.earthprint.com/cgi-bin/ncommerce3/CategoryDisplay?cgrfnbr=21240&cgmenbr=27973&CGRY_NUM=&next=1

3.2 Technical Reports

An Overview Of Socio-Economic Opportunities Related to the Protection of Coastal and Marine Environment from Land Based Sources of Pollution Particularly Urban and Domestic Sewage in the South Asian Region, 2000 (downloadable document http://www.gpa.unep.org/documents/sewage-docs.htm)

Cost-Benefit Analysis of the Proposed Sewer Network at Moratuwa/Ratmalana in Democratic Socialist Republic of Sri Lanka as a Measure to Protect Coastal Areas From Land-based Sources of Pollution, 2000 (downloadable document http://www.gpa.unep.org/documents/sewage-docs.htm)

National Action Plans for the Implementation of the GPA: Republic of India, Nepal, Islamic Republic of Pakistan and Democratic Socialist Republic of Sri Lanka

Executive Summary of Shrimp Aquaculture Policy Issues in South Asia (http://www.gpa.unep.org/documents/PADH-docs.htm)

Overview of Land Based Sources and Activities Affecting the Marine Environment in the South Asian Seas,2002

South Asian Regional Oil Spill Contingency Plan,2002

Democratic Socialist Republic of Sri Lanka National Report on Global Proramme of Action for the protection of marine environment from Land-based activities (in Print)

Alternative Livelihoods through income diversification: As a Management Option for Sustainable Coral Reef and Associated Ecosystem Management in Democratic Socialist Republic of Sri Lanka, 2004 (in preparation)

3.3 Meeting Reports

Report of the Regional Workshop on Strengthening Legal and Institutional Arrangements for Implementing Major Environmental Conventions in South Asia, 1997

South Asia Regional Consultation Workshop for the Protection of the Marine Environment from Land-based Activities, 28-30th April 2003, Colombo Democratic Socialist Republic of Sri Lanka (http://www.gpa.unep.org/documents/PADH-docs.htm)

UNEP/SAS Workshop on Integrated Coastal Area and River basin Management (ICARM), Chenni Republic of India, April 2003 – The report will be available soon

3.4 Website Links

South Asian Cooperative Environment Programme (**SACEP**) http://www.sacep.org.
People's Republic of Bangladesh
The Government of the People's Republic of Bangladesh http://www.People's Republic of Bangladesh.gov.bd/.
People's Republic of Bangladesh Water Development Board http://www.ffwc.net/.
People's Republic of Bangladesh centre for Advanced Studies http://www.bcas.net/.
People's Republic of Bangladesh Environment Network http://www.ben-center.org/.
Republic of India
Government of Republic of India, Ministry of Environment and Forests http://envfor.nic.in/.
Department of Ocean Development: http://dod.nic.in/
WWF Republic of India http://www.wwfRepublic of India.org/.
Republic of Indian Institute of Forest Management http://www.iifm.org/.
National Disaster Management. Government of Republic of India http://www.ndmRepublic of India.nic.in/.
Centre for Ecological Sciences http://www.ces.iisc.ernet.in/.
Environment, Protection and Training and Research Institute http://www.eptri.com/.
Islamic Republic of Pakistan
WWF Islamic Republic of Pakistan http://www.wwfpak.org/.
Government of Islamic Republic of Pakistan http://www.pak.gov.pk/.
National Environmental Consultancy http://www.nec.com.pk/static/index.html.
Democratic Socialist Republic of Sri Lanka
Government of Democratic Socialist Republic of Sri Lanka http://www.priu.gov.lk/.
National Science Foundation http://www.nsf.ac.lk/.

Link to SACEP National web links http://www.sacep.org/national.html.

3.5 Newsletter

SACEP Newsletters (will be soon available at www.sacep.org)
SACEP at a Glance, 2000

4 Calendar of Events

April/May 2004, Thimphu
SACEP 9th GC meeting

Date and venue to be confirmed
The 3rd Intergovernmental Ministerial Meeting of the South Asian Seas

5 Professionals

5.1 List of Technical Consultants

To come

5.2 List of Institutions

Link to Asian Regional Institutions http://www.sacep.org/asian.html.

6 Advertisements

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