

Bay health : Source to sea

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THE Bay of Bengal is one of the world's 64 large marine ecosystems. It is bounded by seven countries viz. Bangladesh, India, Indonesia, Malaysia, Myanmar, Sri Lanka and Thailand. The Bay of Bengal covers the southern part of Bangladesh. It occupies an area of 2,173,000 km² with an average depth of 2600 meters and 1600 km. width. The Bay receives large inflows of freshwater and sediment from rivers whose discharges heavily influence the dynamics of the ecosystem, particularly the coastal waters in the north tip of the Bay. The Bay and its resources are indifferent to man-made boundaries, but are sensitive to man-made influences. About one-quarter of the world's population live in the littoral countries of

the Bay of Bengal, with approximately 400 million in its catchment areas, subsisting at or below the poverty level. More than two million people make a living by fishing in the coastal and offshore waters of the Bay where the marine fish catch has increased four-fold in the last three decades to four million tons. The assimilative capacity of the Bay of Bengal is unknown and current anthropogenic effects on the quality of coastal waters of the countries are believed to be mainly local.

Bangladesh's coast is hydrologically aggressive and prone to extreme cataclysms with eventual vulnerabilities to the hard core poor. The country's coastal land has been estimated as 47 thousand km² with population at 33 million which in same terms more or less represent one-third and one-fourth respectively of the

national totals. The poverty rate in the coastal zone is 53 per cent as against 48 per cent for the whole of Bangladesh. The coastal community mainly depends on marine fisheries and agriculture for subsistence. The coastal water is spread over 166,000 km². Untreated effluents from industries and cities in coastal regions contaminate large areas of the Bay of Bengal, with obvious trans-border impacts on marine life and fisheries. Borne by water of rivers and canals, the industrial waste of factories founded beside rivers and canals, chemical fertilizer used in agriculture and the waste from the sewerage of towns and cities end up in the Bay of Bengal. Dry docks to facilitate repair and maintenance of vessels and oil exploration with offshore drilling unit also pollute coastal waters.

The oil discharged from the above mentioned sources and the waste of different other sources destroy fish, aquatic plants and other aquatic organisms living in the sea. Out of the 720 industrial units in Chittagong on the south-east only 20 per cent treat their effluents before disposal. In Khulna on the south-west, 300 large industrial units discharge 10 million gallons of liquid wastes each year that enter into nation's coastal waters. They harm the agricultural and forest resources and the recreational spots along the coastal lands of Bangladesh. The potential beach is continuously being trespassed which also appears to be a threat to aesthetic aspect.

About 500,000 fishers are engaged in deep sea fish catch and estimated 2.6 million workers are involved in the fish processing industries. Besides, 400,000 labours are engaged in shrimp fry catch. Fisheries production had significantly risen from 640 tons in 1972 to 14,000 tons in 1982 with an increasing trend. Roughly 80 trawlers, 21,830 mechanised boats and large number of small country boats are in use for fishing. A recent study of trawl fisheries off the coast found a more than 40 percent reduction in the catch and nearly two-thirds decline in the catch rate during the past decade. In addition to these, approximately 1300 cargo ships and boats ply in the coastal waters. Each year approximately 1500 ocean going vessels including 40 oil tankers anchor at Bangladesh ports. As many as 2500 registered vessels including the tankers and hundreds of unregistered small mechanised boats ply in the inland waters.

Oil spills from these sources are a major threat to marine resources. Approximately 400,000 tons a year is spilled into the Bay of Bengal of which 6,000 tons is contributed by Bangladesh. Spillage of crude oil residue and wastewater effluent from land based refineries amount to about 50,000 tons per year. Bangladesh annually imports around 1.20 million tons of crude oil and 0.5 million tons of refined oil. Major portions of this oil are transported to inland areas of Bangladesh through smaller tankers. Crude or refined oil is transferred at outer anchorage from big tankers to lighter tankers because of the draught restriction in nation's port. During this transfer process certain portion of oil leaks into the sea.

The ship scrapping industry started in the country in 1971 and ballooned since 1980 with a huge involvement of resources. Currently over 1.5 million tons of scrapped iron are produced by scrapping more than 80 ships per year in 30 yards.

The coastline extending from Faujderhat to Kumira at Shittakundu stretched over 30 km. is being used for ship scrapping. The ships for scrapping are not properly cleaned before beaching. Oil from broken ships or other oil related wastes pollute the sea. Burnt oil,

oil mixed bilge and other wastes are dumped into sea and rivers from these ships.

Agricultural run-off also contributes to Bay pollution. An estimated 1800 tons of pesticides enter the Bay of Bengal annually and increased use of pesticides has resulted in contamination of marine species. In Bangladesh fertilizer consumption in farming has risen by more than 300 per cent between 1975-1995 and pesticides use has increased fourfold since 1977. The depletion of mangroves in estuaries and bays, forged in part by shrimp breeding in coastal swamps, threatens such important natural processes as soil binding, nutrient recycling, and the prevention of soil erosion and silt accretion.

Climate change in tropical Asia is projected to have significant impacts on marine ecosystems, water resources, and agriculture; apart from its implications for human health. Studies suggest an annual increase of 0.7°C and 1° C respectively in annual mean maximum and minimum surface air temperatures over land regions of the Indian subcontinent in the 2040s compared to the temperatures in the 1980s. Further, this projected warming is likely to be lower than that over the adjoining ocean, which could lead to a decline in mean summer monsoon rainfall of about 0.5 mm/day over the region. The problem of climate change necessitates a coordinated policy response from the South Asian countries.

With a one-meter relative sea level rise, 17.5 percent of the country will be inundated, displacing 13 million people, about 11 percent of the population. The Sundarbans, the largest mangrove forest in the world, would probably be destroyed. This unique habitat for plant and animal species is already threatened by salt intrusion, partly because of the upstream withdrawal of common rivers. Coastal aquaculture would be overwhelmed and, coastal islands, home to many thousands of people and important areas of biological diversity for both plants and animals, would totally disappear. The severity of erosion is exemplified by the offshore island Sandwip that has been downsized by 170 km² at the end of 90's from 640 km² in 1776.

The World Summit on Sustainable Development in September, 2002 at Johannesburg announced the rollout of major oceans initiative offering a new approach to the management of coastal-marine eco-systems. The National Oceanic and Atmospheric Administration (NOAA) defined this initiative as a large-scale partnership involving regional, national, and local governments, as well as non-governmental organisations and private corporations. The object is to connect watersheds with the coastal regions. This inclusive approach looks beyond coast to address the myriad of inland activities that degrade coastal environments and impact marine

resources: the coastal water health.

Trans-boundary movement of hazardous wastes is emerging as a critical issue, which countries in this region have not been able to adequately address. Although seven out of nine countries in South Asia have signed the Basle Convention, the region lacks a common approach to the import of hazardous wastes. The impact of trans-boundary issues is as yet uncertain, but it is clear that the institutional and regulatory capacity of the countries in this region for surveillance on the import of hazardous wastes is limited and requires to be addressed more in an integrated manner. The need for integrated and co-ordinated management of the nation's coastal and near-shore living marine resources has been given cognisance by the

Government of Bangladesh. The issues are:

- & Pollution from land-based sources is a major problem, especially in the near-shore environment

- & Sea-based sources of pollution are oil spills from tanker traffic and fishing vessels, and from oil exploration and production

- & The coast and estuaries are under increasing stress due to habitat loss and degradation with certain species being already or are becoming endangered

- Among the institutional mechanisms for regional cooperation on the environment, the most significant one is SACEP (South Asia Cooperative Environment Programme), established in 1982 under the aegis of the United Nations. The SACEP is responsible for the implementation of

a regional project resulting from the SAARC meeting of environmental ministers held in Malé, Maldives, in October 1997. The Male Declaration enunciated a need for a regional environmental action plan and adopted a common position on climate change. The absence, however, of a formal affiliation with SAARC probably limits SACEP's ability to mobilise resources and to implement regional actions. The government's immediate concern is the health safety of our Bay upon which depends nation's existence.

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