

## Feature

## Wetland Resources and the Ecology of Bangladesh

by Helal Ahmed

**B**ANGLADESH possesses enormous areas of wetland and these are mainly rivers and streams, freshwater lakes and marshes including haors, baors and beels, water storage reservoirs, fish ponds, flooded cultivated fields and estuarine systems with extensive mangrove swamps. There are about 700 rivers and their tributaries in Bangladesh, the estimated total length of which is 24,140 km. An international convention adopted at Ramsar in Iran in 1971 defined wetlands as areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.

Wetlands are invaluable components of the environmental ecology, resource potential and biodiversity in Bangladesh. The important coastal and inland wetlands encompass the vast floodplain and delta system of the Ganges, Meghna and Brahmaputra rivers. The total area of wetlands in Bangladesh has been variously estimated at seven to eight million hectares or about 50 per cent of the total land surface. But these resources have suffered considerably from the impacts of a burgeoning human population. Bangladesh has demonstrated its concern for wetlands through the National Environmental Policy, convening a workshop on Wetlands and in signing the Ramsar Convention in May, 1992. The broad objectives of the Ramsar Convention are to stem the loss of wetlands and to ensure their conservation in view of their importance for ecological processes as well as for their rich flora and fauna.

## Wetland ecosystem

Globally, wetlands are amongst the most fertile and productive ecosystems and important breeding grounds for fisheries. They serve as a filtering system to clean up polluted water, protect coastlines from erosion and act as barriers against storm surges besides providing people with a wide range of staple food plants, grazing land and fuel. It is the dynamic interaction of the terrestrial and aquatic systems with people that make wetlands so environmentally valuable. Wetlands also provide

habitat for a rich variety of resident and migratory waterfowl. Their scenic beauty can support the development of tourism. Their resources play a significant role in other economic activities like extraction of reeds and harvesting of food plants and those of medicinal importance.

Wetlands in Bangladesh have great ecological, economic, commercial and socio-economic importance. They contain very rich components of biodiversity of local, national and regional significance. Among the estimated 5,000 species of flowering plants and 1,500 of vertebrates in the country, up to 300 plant species and some 400 vertebrate species are judged to be dependent on wetlands for all or a part of their life span. Wetlands also provide habitat for a variety of resident and

the Bay of Bengal. Some of this huge amount of silt is deposited on the shore in the Meghna estuary causing land accretion particularly in the southeast region of the country and forwarding of coastline towards the sea.

The environment and ecology of the coastal region is characterized by the unique geophysical phenomena, such as surges and waves, upland discharge and sedimentation, erosion and accretion and storms and cyclones. The high sediment load exerts basic influence on the coastline and helped by circulation systems results in a net accretion of 35 km of land per year and erosion of the north-western part.

## Forest status

The construction of flood control embankments, dams

ity also affects the growth of mangrove vegetation bringing about changes in species composition.

The recent increase in water and soil salinity has upset the natural equilibrium of the delicate ecological balance required for the healthy growth and existence of the rich flora and fauna.

Grazing by livestock retards new growth and can lead to significant depletion of coastal plant community in the newly accreted mangrove forest area. Rapid conversion of dry season pasture land into shrimp farming and overexploitation of forest produce further contribute to the adverse effect on the coastal ecosystem.

## Haor basin

In its original form, the haor basin comprising of floodplain of the Meghna tribu-

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migratory waterfowl, a significant member of endangered species of international interest, and a large number of commercially important ones. The inland capture fishery is based on the vast freshwater resources with some 270 species of fish and shellfish.

There is substantial basis for the view that the country's natural resources, especially the Sundarbans could support the development of richer tourism. Wetlands also support a significant range of other activities such as extraction of reed, harvesting of edible aquatic vegetation and their products, medicinal herbs, shells etc. Cultivation of rice is a major activity in and around the wetlands of Ganges-Brahmaputra floodplain and haor basin. During the dry season, domestic livestock are allowed to graze in the marshes and turfs. Of late, wetlands are also used as duckery.

## Geomorphological importance

Each year about 2.5 billion tons of sediment are transported by the major rivers of Bangladesh having a profound effect on the geomorphology of the floodplain and the coastal areas. But through gradual sedimentation, the basin became shallower leading to the formation of reeds and sedges. This resulted in providing enough food and shelter for fish and other aquatic fauna and attracted the migratory birds which, in their turn, added to the fertility of the water bodies by their excreta promoting rich growth of phytoplankton and macrophytes thus partly contributing to the process of eutrophication.

## Habitat of the migratory birds

The haor basin remains an internationally important wintering area for migratory waterfowl, principally ducks and shorebirds. Coastal wetlands support even larger number of migratory birds including some highly endangered species. There is an abundance of waterfowl and wetland-dependent birds occurring in the wetlands of haor basin.

A total of 125 species of waterfowl are known to have occurred in the basin of which 53 are resident breeding species or breeding summer visitors. Birds largely or wholly

inhabit the basin.

In an effort to make wetlands unattractive to poachers — who can earn up to \$100 per kilo — several countries have been experimenting with a policy of cutting off the horn.

Between 1984 and 1992, poachers killed 1,017 black rhinos in Zimbabwe. The government said most of the

dependent on wetland ecosystems are 30 species whereas other birds observed in wetlands or adjacent floodplain and dry land are 42 and 123 species respectively.

## Wetlands as fisheries

The rivers of Bangladesh are estimated to have 6,300,723 ha of floodplain. Of this the actual area recorded at the end of June 1985 was only 5,486,609 ha due to the drying up of a considerable area of seasonally inundated plains by flood protection measures.

The role of the inundated floodplain can be termed as central to the sustenance and continuation of the openwater fishery production system. Elimination and reduction of the functioning of these would naturally lead to the proportionate reduction in openwater fishery production as well as elimination of many species. Besides, the floodplain that remain inundated during the monsoon season, there are also beels which either retain water all the year or dry up fully during the peak of the dry season.

Another set of large waterbodies known as baors or oxbow lakes occur in the district of Jessor. Jhenaidah, Faridpur and Kushtia. A large man-made reservoir was created in Chittagong Hill Tracts known as Kaptai Lake, which covers an area of 68,800 ha. In addition, the country has nearly 1.3 million man-made ponds and reservoirs providing a total water area of 146,890 ha.

The coastline of the country bounded by the Bay of Bengal is approximately 480 km in length. The trawler fleet operating in the deep sea concentrating mainly on catching marine shrimps.

A total of 260 species of freshwater fish belonging to 55 families have been recorded in Bangladesh. About 56 species of prawns occur in fresh, estuarine and marine waters. The number of species of tortoises and turtles is about 25 in the marine water 475 species of fin fish are recorded. About 10 species of exotic fishes were introduced into Bangladesh until 1985.

Human action is constantly contributing to the decrease of wetland resources and affecting the ecology. The problem of degradation of wetlands need to be addressed urgently for the sake of sustainable development.

— BCAS Feature



Nairobi: Where the distribution of urban facilities are unequal.

But that is not so easy. 'When we launched programmes to educate the public under slogans like Garbage is Money or Lead is Dangerous, the response was appalling,' he says. 'In some cases people actually dropped paper wrappings right underneath the posters! But environmental self-awareness geared toward changing individual lifestyles will be a gradual experience.'

Thanks to KENGO and other Government and NGO work there is some recycling of paper and glass in Nairobi but the amount is limited. In fact, in recent months even garbage collection has been limited because of budgetary constraints in the Nairobi City Council. Another problem is the lack of technical skills to service new garbage collection trucks donated by the French Government.

For the Mukindas' part in helping the environment in Kenya, energy conservation is now a household practice. Elijah Munibe, who works as an executive at a Nairobi hospital, says conservation in the kitchen involves some improvisation. Rarely does the family use

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As the KENGO chief points out, the gains of the environmental movement in Kenya in the last decade tended to concentrate upon the rural areas where desertification and soil erosion problems were acute.

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