

# The southwest coastal region : Problems and potentials

ANWAR FIROZE

ONE of the criteria for delimiting a coastal zone is the extent of tidal penetration. According to that criterion, the Southwest Coastal Region can be considered as comprising the districts of Khulna, Bagerhat, Satkhira, the southern portion of Jessore district and the Sundarban mangrove forest on the seaward side of these districts.

Though Bangladesh is a small country in area, it can still be divided into several regions on the basis of environmental and ecological characteristics. The southwest coastal zone is one such region with unique natural features and a highly sensitive and fragile environment. Situated on the mouth of the Ganges Delta, land formation in this region is still in process.

Most of the land in this region, over 70 per cent, is low lying, being less than one metre above mean sea level and below high tide level. Before the coastal embankments were built in the 1960's, the entire low lying rice fields used to be inundated twice daily by the diurnal tides, which came in through the numerous creeks and estuaries in the Sundarbans. The annual 3.5 million tons of forest detritus decomposed in the water and transformed into nutritious organic food for all species of aquatic life. As a result, the rivers, creeks, canals and estuaries, as well as the tidal flood plains, used to be one of the best natural feeding and breeding grounds for all forms of aquatic life.

The tides carried large quantities of suspended sediments,

which used to be deposited on the tidal flood plains when the flow came to a stand-still at high tide as silt. As the silt was mixed with the decomposed forest detritus, this silt, in addition to enriching the soil, also compensated for the subsidence of the soil, which is natural to all loose delta soil throughout the world.

When the first rains of the monsoon washed away the surface salinity in June, the farmers used to build low earthen dikes to prevent the incursion of tides into the low

Coastal Embankment Project (CEP) during the 1960's, under which 4000 km of high embankments were built to enclose the entire tidal flood plains in the coastal areas within 90 polders. Out of this, the 1566 km of embankments and 282 sluices were built in the Southwest region alone, to enclose the land in 37 polders. The declared purpose of the project was to protect the lives and properties of the inhabitants from the tidal surges that accompanied cyclones that surged in from the

new areas. The lack of access for the tides also prevented the silt from being deposited on the flood plains, resulting in their continued subsidence. On the other hand, at the height of the tide when the flow became still, the silt was deposited on the riverbeds, raising their levels to higher than the land within the embankments, and blocking the exits of the sluices. This caused at first a drainage congestion during the monsoon, which later turned into permanent water-logging. By 1990, the water-logging that had

areas and had additional occupations either in service or in trade, the urban entrepreneurs were easily able to persuade them to lease their lands *en bloc* to them for shrimp cultivation. The landowners also found it more convenient to lease their lands to one or two persons instead of dealing with a horde of small share-croppers who used to cultivate their lands.

Social and environmental impacts of industrial shrimp culture. As agricultural lands were turned into shrimp polders, the share-croppers and landless wage labourers found themselves losing their livelihoods, and began movements to resist the introduction of shrimp in their areas. This more often than not resulted in violence. During the last two decades, more than 150 people have been killed and thousands injured in shrimp related violence. Thousands of court cases were also initiated by the shrimp lords, most of them false, to harass the leaders of the anti-shrimp movements. Hundreds of such cases are still pending.

Environmentally also brackish water shrimp cultivation on an industrial scale has wrought huge environmental degradation in the region. It is true that prior to the implementation of the CEP, the flood plains were inundated by brackish tidewater twice a day. But that water remained on the land only for a couple of hours at a time. But the shrimp polders held saline water for months together, and the salinity seeped into the soil, and the aquifers became saline. The salinity also percolated by cellular action into the soil adjacent to the shrimp polders, and spread soil salinity.

**Effects on bio-diversity and the Sundarbans:** This salinity killed off all vegetation. After nearly twenty years of brackish water shrimp culture, these areas present a dismal picture of devastation. All trees, grasses, bushes and shrubs have died. Wild and domestic fruits have disappeared, and insects have lost their habitats. The birds, which feed on fruits and insects of all kinds cannot find either food, or shelter branches to build their nests. As a result, birds have also disappeared. Other local animals like frogs and others have also been killed off by the shrimp farmers, as they feed on nursing shrimp. Even migratory birds that come to Bangladesh from Siberia in the winter do not find any place to nest. Moreover, as most of them are different species of waterfowl, the guards of the shrimp farms have orders to hunt them down. So they have also stopped coming to this area.

The effluents of the shrimp farms contain quite a lot of harmful materials, such as the excreta of shrimp, un-consumed shrimp feed, antibiotics used to protect the shrimp from virus attacks and herbicides used to kill weeds in the shrimp enclosures. These flow down to the Sundarban and pollute the forest, causing harm to bio-diversity in the forest. Already, millions of tons of Sundri wood have been damaged due to the "top-dying" disease, which is believed to be caused by excessive salinity and pollution.

**ATDP II and SSOQ certification programme:** Recently, however, a thin ray of light is visible in this dark horizon. The Government of Bangladesh is supporting a private sector initiative for Shrimp Seal of Quality (SSOQ) Certification, based on the industry's adherence to International Conventions on Environment, Human Rights and Labour Rights, to make Bangladeshi shrimp acceptable to developed country markets. The shrimp produced in farms, traded in depots and processed in plants not certified by the SSOQ will not be exported. If this programme is strictly implemented with the voluntary collaboration of all shrimp farmers, hatcheries, trading depots and processing plants, there is a possibility of Human and Labour Rights in the shrimp sector to improve, and the environmental degradation caused by shrimp not increase in area and intensity. And if the recommendations for restoration of damaged shrimp farms (made unfit for cultivating shrimp due to virus attacks and unfit for rice by salinity) made by the Environmental Justice Foundation of London, UK, are implemented, these lands may be replanted with mangroves.

Anwar Firoze is Document Development Officer of Upokulio Unnayan Shahojogy, known in English as Coastal Development Partnership, a networking, research and advocacy NGO, Khulna.

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lands, and similar temporary wooden sluices to drain off the surplus rain water, and cultivated numerous indigenous varieties of flood tolerant and salinity tolerant rice. After the harvest, the dikes and sluices were dismantled, and the tides were free to inundate the flood plains during the dry months of the year. The farmers grazed their cattle and caught fish in the flood plains during the spring and early summer months. Thus, with an abundance of rice and fish, there was no shortage of food or nutrition.

**The coastal embankment project of the 1960's:** Faced with the need to provide food for the fast growing population, the then government of East Pakistan implemented the

Bay of Bengal. The CEP transformed the entire region into a perennial fresh water agricultural land, which benefited the local population. The farmers were able to cultivate two or even three crops of rice a year. As the period coincided with the advent of High Yielding Varieties (HYV) of rice, they were able to raise bumper crops. Even the share-croppers and land-less agricultural workers found year round employment. But this period of prosperity was short-lived.

**The adverse impacts of the coastal embankment project:** The construction of embankments constructed the tidal prism. This resulted in the tides surging farther inland, thus bringing salinity to

started in the early 1980's had covered more than 100,000 hectares in the upstream fresh-water regions of the CEP area, as well as the edges of the brackish water areas.

The water-logging put an end to almost all agricultural activities. In addition to the low-lying rice lands, homesteads and even roads were submerged by stagnant water. Waste disposal was a very serious problem, and people were constrained to relieve themselves in the stagnant water, which became polluted and spread diseases like diarrhoea, typhoid, dysentery and other water-borne diseases.

**Social and environmental effects of water-logging:** The water-logging rotted the roots of trees, and within a few years, all the trees were dead. As no grazing land was left and agriculture was reduced to a minimum (in areas where the water dried up during the dry months of the year), cattle also disappeared from the area. There was no dry space for homestead vegetable gardens or to rear poultry and ducks. The poor, who depended on such homegrown nutrition as fruits, vegetables, eggs and milk, increasingly became victims of malnourishment. Women and children were the worst sufferers.

As hundreds of thousands of people became unemployed as a result of the water-logging, especially the poor and marginal farmers, share-croppers, petty traders in agricultural produce, agricultural daily wage labourers, boatmen and others engaged in petty service trades, all lost their traditional occupations. Many males migrated to urban areas, with or without their families in search of employment. The female-headed families that were left behind were rendered destitute, and became vulnerable to various forms of social and economic deprivation. Social crimes increased and women and children became victims of various forms of harassment, including trafficking and rape.

**Introduction of shrimp:** Cultivation of shrimps and prawns in homestead ponds along with other varieties of fish, has been an age-old economic initiative and practiced in Bangladesh through centuries. The farmers, especially smallholders, used to cultivate even brackish water shrimps in their rice fields.

However, the period of expansion of water-logging of the embankment areas coincided with an increase in international demand for frozen shrimp and prawns. As the major portion of the water-logged areas were in the freshwater zone, some small farmers in that area began to experiment with growing freshwater prawn (known locally as GOLDA) in their water-logged fields by building low embankments around their small holdings. The demand for shrimp went on increasing, and the inhabitants found shrimp more profitable than rice. But the landless were not so fortunate. As prawn/shrimp cultivation demands much less labour than rice, there was practically no employment available.

**Brackish water industrial shrimp culture:** As the demand for shrimp went on increasing, urban entrepreneurs were encouraged to establish large scale shrimp farms. As lands were no longer available in the freshwater areas, and the few attempts to lease land from big landowners resulted in violence and even deaths, they turned their attention to the brackish water areas to the south (downstream) of the water-logged areas, to grow brackish water shrimp (locally known as Bagda).

As most of the owners of large land holdings resided in the urban