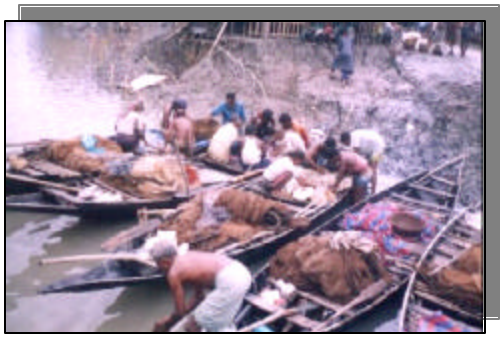
Conservation of Coastal Wetland in perspective of Industrial Shrimp Farming



(A position paper of CDP)

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Introduction

Environmental Characteristics.

Though Bangladesh is a small country in area, it can be divided into several regions or zones for their difference in natural features and characteristics from other regions of the country. One such region is the South-West Coastal Region comprising the districts of Bagerhat, Khulna and Satkhira, together with the southern portion of Jessore district and the Sundarbans. The major portion of the land is low-lying, subject to tidal inundation twice a day. The homesteads, orchards, community institutions such as schools and places of worship, and roads are situated on artificially raised lands by digging ponds and ditches. As such, the entire Southwest Coastal Region comes under the definition of wetlands according to the Ramsar Convention, which says, ***"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 metres",*** including such ***"transitional terrestrial water system where the water table is usually at or near the surface of the land or the land is covered by shallow water"***

Traditional Use of Local Resources

The people used to cultivate only one crop of rice during the rainy season. After the surface salinity is washed away by the monsoon rains that start in June, the farmers used to build temporary low earthen dykes to prevent the intrusion of brackish tidal water, and similar temporary wooden sluices to drain off surplus rain water. They planted many different varieties of Indigenous, flood tolerant and salinity tolerant rice, according to the suitability in the respective sub-eco-zones. After the harvest, the dykes and sluices were dismantled, and the tides were allowed free play in the low-lying rice fields. Cattle used to graze on the stubbles and salinity tolerant grasses that grew in the fields which were now open to sunshine. People also used to fish in the low-lying tidal flats.

The Sundarban forest alone drops about 3.5 million tons of detritus every year. This detritus is carried off by the tides to the far corners of the tidal flood plains. The detritus decomposes in the water and is turned into nutritious organic food for fish and other aquatic life forms, as well as excellent organic fertilizer. The tides also carry a large amount of silt, as the rivers that form the delta system are believed to bring about 23 billion tons of soil sediments from upstream. A large portion of this floating sediment remains afloat in the turbulent coastal waters, and is carried inland by the tides. When the tides reach their highest, the water flow is stilled, and the silt, along with the decomposed organic matter, are deposited on the tidal flood plains. This process simultaneously accomplishes two things, namely, renewal of the land with the organic fertilizer along with the droppings of the cattle that graze on it, and compensates for the natural subsidence which is common to all loose delta soils throughout the world.

The abundance of natural organic food in the waters of the region bring shoals of hundreds of species of fish, crustaceans and other aquatic fauna into the inland waters. In fact, most of the economically important species of fish and crustaceans spend a significant portion of their lives in these waters, and it used to be considered as one of the best natural feeding and breeding grounds for aquatic fauna. The poor families used to fish in the tidal flood plains during the dry months of the year, as in spite of the land being privately owned, during the dry months of the year, they were treated as common land for grazing and fishing. So, with plenty of rice and fish, there was no shortage of food and nutrition in the region.

The Coastal Embankment Project

During the decade of the 1960's, the then government, faced with the necessity of producing more food grains to feed the growing population, decided to transform this one-crop region into perennial farmland capable of producing crops throughout the year. Accordingly, they implemented the Coastal Embankment Project (CEP), enclosing all the land in the coastal region within 90 polders. Out of these 90 polders, 37 are in the Southwest Coastal Region, enclosed within 1566 km of high embankments, provided with 282 permanent sluices. But the designers of the project had not taken into consideration the influence of the tides on the region.

For about a decade and a half, the embankments served their purpose well, enabling the farmers to produce multiple crops of rice. As the period coincided with the introduction of High Yielding Varieties of rice which heralded the "Green Revolution", the farmers were doubly benefited. But most of the benefits went to a handful of big and medium landowners, as 80% of the land belonged to about 20% of the population. The remaining 80% of the people were poor and marginal farmers who did not have access to bank credit for the costly inputs such as chemical fertilizer and pesticides, which were essential for HYV rice.

The tides having been denied access to the flood plains within the polders, now deposited the silt on the river beds. The flood plains were denied both the natural fertilizer and the silt deposits which compensated for the subsidence, and thus gradually began to lose fertility as well as altitude from mean sea level. On the other hand, the river beds gradually began to rise, and by the early part of the 1980's silted up the exits of the sluices, creating drainage congestion, which finally took the form of permanent water-logging. The water-logging had begun from the upstream areas of the Coastal Embankment Project area.

As most of the land belonged to the rich and medium farmers, they were able to adopt alternative means of income generation through business, and being better educated, by taking up jobs in the urban centres. The people who suffered as a result of the water-logging, and consequent loss of productivity of the land, were the poor and marginal farmers, share-croppers, landless agricultural labourers, petty traders in local produce, boatmen and other carriers of agricultural produce etc., who formed 80% of the population. Many males migrated to urban centres in search of employment, with or without their families. The families that remained were mostly female-headed, which fell into destitution.

Shrimp Cultivation: How it started

However, a few brave souls among small landowners (0.50 to 2 acres), experimented with fish cultivation in their water-logged fields by building low earthen embankments around them. They used to grow local varieties of fish and fresh water prawns. As the population continued to increase, commodity prices were also on the rise. As such, the fish farmers were better off than those who were totally dependent on agriculture. Then the world market for shrimp began to expand, and monoculture of fresh water GOLDA shrimp replaced the polyculture of fish and prawns. In the fresh water areas, almost all the actors in this enterprise were local people, either as owners of their own lands, or lessees of land in their own villages.

The profitability of commercial cultivation of shrimp motivated a number of urban entrepreneurs to engage in shrimp farming. But the fresh water areas in the northern areas of this coastal region were already under small scale fresh water prawn cultivation. Some of the urban investors tried to lease large areas of land from absentee landowners, but the resultant social conflicts, in which several people were killed and hundreds injured, discouraged them.

Industrial Shrimp Cultivation in Brackish water areas

The situation was different in the brackish water areas to the south of the fresh water areas. The owners of large land holdings were already living in the urban areas, and leasing their lands to share-croppers. Their affluence had enabled them to arm their sons and daughters with higher education, enabling them to obtain employment in government or other private enterprises. When the would be shrimp farmers approached them to lease their lands *en-bloc*, they were only too glad to accommodate. This would free them from the trouble of dealing with a host of small share-croppers, including the supervision of harvesting, threshing and the division of the crop, as well as subsequent storage or sale of their share.

But the lack of any land use policy, and any shrimp policy of the government, led to misuse of the ad-hoc rules that governed leasing of land for shrimp cultivation. In a beel (low lying land) surrounded on all sides by high land (homesteads, orchards, roads, etc.), all the land usually did not belong to a single landowner. The lessee would have leased only a portion of the land from a big absentee landowner. The other small land owners were either coerced or forced into leasing out their lands to the new entrepreneur. Even if a few of the small holders refused to cooperate, they had no recourse than to comply, because the new lessee would flood the land with brackish water, in which rice could not be grown.

Reduction of Agriculture, Male Out-migration,
Disruption in family life, female-headed families,

Thus large numbers of people who had depended on agriculture for their livelihoods became unemployed.

Many males migrated to urban centres, some of them with their families, settling in dirty, congested slums in the towns and cities, and getting hold of whatever work they could manage to obtain. But many of them, unable to feed or clothe their families, abandoned them, throwing the abandoned female-headed families into destitution. These female headed families became highly vulnerable to various forms of harassment, including rape and trafficking of women and children.

Shrimp fry Collection

The abandoned, female-headed families that were located near rivers and creeks took up the newly opened occupation of shrimp fry collection from the rivers and creeks in the Sundarbans and its Impact zone. This fry or post-larvae, are an essential input for the brackish water BAGDA shrimp farms, because nobody has so far cared to establish any hatcheries in this region. Eventually, as the shrimp cultivation area expanded and the demand for post-larvae grew steadily, more than a hundred thousand people became engaged in this occupation.

Shrimp and Bio-diversity

The collectors of post-larvae of Golda prawns and Bagda shrimps use fine mesh nylon nets for collecting the fry or post-larvae floating on the water. They used to stand knee-deep or even hip-deep in the rivers. On coming ashore, they selected the fry or post-larvae they wanted, and threw the rest on the river bank. In this manner, billions of fry of other varieties of fish and other species were destroyed, negatively affecting the aquatic bio-diversity as well as fish stocks in the region. Many species became locally extinct, and fish catches by professional fisherfolk began to dwindle.

Otters, crabs and frogs in the region have been destroyed, as they eat up the shrimp fry. Migratory birds, which used to visit those areas every winter, no longer come there, as there are no longer any trees and shrubs which used to provide them with a temporary, seasonal habitat, and enough food. The guards engaged by the shrimp farmers shoot them down or trap them for sale. Now these birds no longer come to those areas. Even local birds have disappeared from the area, as their habitat has been destroyed.

Shrimp fry collection and Children's Education.

The children of the post-larvae collecting families, or at least most of them, used to go to school. But now , constrained to collect shrimp fry along with their elders in order to earn sufficient money for the maintenance of the family, they do not find time to attend schools regularly. As each tide cycle takes about 12 hours and 25 minutes, tides do not occur at the same time every day. As a result, school-going children who also collect shrimp fry simply drop out of school. Thus they grow up as a generation of illiterate, unskilled manual labourers, unfit for the development of a modern economy.

Shrimp and Environment, Shrimp and Mangrove

(Environmental Degradation, Salinity, Destruction of vegetation, lack of Nutrition)

When the large scale shrimp farmers enclosed their leased lands within low earthen embankments, they also enclosed all the drainage canals and depressions which had true wetland characteristics. The Shrimp farmers have denied access to the state-owned canals and wetlands located within the shrimp enclosures, to fish in those areas. Thus poor people have lost access to local nutritional resources. They destroyed all the aquatic vegetation, because, according to their narrow, profit-oriented perspective, these were mere "water-weeds". Thus the wetland environment within the shrimp enclosures have been destroyed.

The tides that used to cover the land twice every day before the embankments were built, stayed on the land only for a few hours at a time, and then receded. But after the shrimp cultivation began, saline or brackish water remains stagnant (or renewed occasionally with fresh supplies from the nearby rivers and canals). The brackish water seeps down into the underground aquifers, and the water in them becomes saline. Now the shallow tube-wells in these shrimp areas produce only brackish water, which is unfit for drinking, cooking or washing clothes. People have to go long distances to where there are deep tube-wells, to fetch potable water. This entails walking a distance of 5-10 km per day, curtailing the time for any productive employment.

The salinity has also seeped into the soil in the adjacent areas, killing off all vegetation. Poor people cannot afford to buy fruits, vegetables or fish. They used to depend for these forms of nutrition on home-grown fruits and vegetables, as well as milk, meat and eggs, from home-grown cattle and poultry. But the killing off of all vegetation, has driven away all the worms and insects that the poultry used to feed on. Wild birds also feed on fruits, seeds and insects. But this saline desertification has denied them these sources of food. Now no birds can be seen in the shrimp areas, which look like desolate wastes of brackish water.

Impact on the Sundarbans

The excessive salinity caused both by the Coastal Embankment and the Industrial shrimp cultivation has also affected the Sundarbans, the largest single tract of mangrove ecosystem that exists in the world today.

Mangroves thrive in a delicate balance of fresh and saline water, and when this balance is disrupted, one form or other of negative impacts is the result. In the western 40% of the Sundarbans which lies in India,

sufficient fresh water is available through the river Hooghly, which gets more than 50% of the fresh water available at the Farakka barrage on the Ganges, just 11 miles upstream of the Bangladesh border. The most eastern part, watered by the numerous branches of the Gorai river which takes off from the Ganges in Bangladesh, is also relatively healthy But the central portion which gets no fresh water at all or very little of it during the 7 dry months of the year has been seriously affected by the excessive salinity. Industrial effluents from the Khulna-Jessore industrial belt, as well as pollution created by the ocean-going ships calling at the Mongla port (which is only 3-4 km from the Sundarban) have also impacted negatively, both on the region as a whole, as well as on the Sundarbans.

The top-dying of the Sundari and other related species of mangrove flora is generally attributed to the excessive salinity and pollution of land and water. The shrimp cultivation itself creates pollution by the use of shrimp feed which contains antibiotics, as well as by the exchange of water in the shrimp enclosures containing shrimp excreta. The Coastal Embankment Project, as well as the embankments of the shrimp enclosures have reduced the tidal prism drastically and imprisoned the rivers of the coastal region within their beds. As a result, the river beds as well as parts of the Sundarbans have also been silted up. Large areas of the Sundarbans have been raised by this form of sedimentation to higher than maximum high water level, and the new vegetation that are growing in those areas have a mainland character. They are not mangroves, as those areas have lost their suitability for mangrove flora.

Thousands of poor people, who had lost their occupations through the twin curses of water-logging and shrimp cultivation, have joined the ranks of manual labourers engaged in extraction of the forest resources of the Sundarbans. As the forest area in Bangladesh is far below the optimum requirement, the demand for forest produce is ever on the increase, which is met by such enlargement of the work force. This kind of over-extraction has nearly denuded the Sundarban, and the government has been constrained to take up a US $ 77 million project named "Sundarban Bio-diversity Conservation Project". The project is financed partly by a loan from the Asian Development Bank, partly with grants from the Government of the Netherlands and the Global Environment Facility (GEF), and partly by the Government of Bangladesh.

Role of CDP and its partner NGOs.

Immediately after the publication of the Inception Report of the Sundarban Bio-diversity Conservation Project in early 2000, CDP formed a Coalition of NGOs, Civil Society leaders, leaders of professional associations, interested Academics and Journalists, named "Citizens' Forum for Conserving the Bio-diversity of the Sundarbans".

CDP has also met with the project authorities under the umbrella of Association of Development Agencies in Bangladesh (ADAB) and held several discussions with them. We have raised questions to which the Project authorities have failed to provide a satisfactory answer. Although the project has provision for training and motivating the existing forest personnel, almost all the people who had answered the ADAB questionnaire during an appraisal in 1998 had stated that the person most responsible for the deterioration of the Sundarban is the forester! The project authorities do not take into consideration the external factors impacting negatively on the forest, such as shrimp cultivation, reduction in fresh water flows from the upstream, etc.

The project has, however, provisions for providing micro-credit to the people inhabiting the "Impact Zone" of the Sundarbans, that is, within 20 km of the perimeter of the forest. But they have not specified as to how that micro-credit may be used. The concerned NGOs and others apprehend that the credit may be utilised to finance extraction of forest resources, which will only aggravate the situation. The usual avenues for investment of micro-credit, such as cattle and poultry rearing and fattening, vegetable gardening, tree nurseries, social afforestation, etc. are impossible in the saline environment that industrial shrimp culture has created. No suggestion has been offered in respect of other alternative occupations.

As such, in the present circumstances, the most that CDP and its partner NGOs can do is limited to creation of awareness locally, among the inhabitants of the Impact Zone, the importance of protecting, preserving and developing that great national asset, which is also a World Heritage site. The awareness campaign is not limited to the Impact Zone. CDP is also persevering to generate public awareness and interest among opinion leaders in society about the importance of conserving the Sundarbans

CDP's partner NGOs in the Impact Zone are also conducting Non-formal Primary Education centres for children, Adult Education centres and skill development training in handicrafts, tailoring and similar small scale occupations as alternative means of employment. But the large numbers of people who need such support and the limited means at the disposal of the NGOs are obstacles that we have to overcome.

Another alternative, which will also require capital infusion in the shape of large scale micro-credit, is to transform some of the abandoned shrimp farms for the cultivation of Meley (Ciperus) a marsh grass, the stems of which are used for making floor mats. These mats, which are called "madur", is a household item in almost all the households in the country, and has a great demand. This marsh grass used to grow very profusely in the brackish as well as fresh water wetlands in this coastal region, but in most places, it has become locally extinct due to the spread of shrimp cultivation. At present, these reeds have to be collected from the Sundarbans, which involves permits and royalties. This has caused a rise in prices of the raw material for mats as well as the mats. Thus these mats, known as the "poor man's bedding" have become a luxury item. Various kinds of mats and other articles woven out of the split reeds also used to have an export market, but the shortage of the essential natural raw material has caused great damage to that source of export earnings. The shortage of this raw material has also thrown thousands of women mat weavers into unemployment.

On the other hand, the cultivation of meley has proved to be more profitable than rice cultivation in this brackish water region. CDP had conducted a two-year Research programme on meley with the cooperation of The Grameen Trust, and has published the research findings in a report (in Bangla). Meley grows in 30 – 50 cm deep water. Therefore fish can also thrive in meley farms and thus the cultivator's profit can be doubled or trebled. Fish and Meley are complementary to each other. Meley cultivation will conserve the environment and also enable thousands to be productively employed, thus reducing poverty in the region.

The role of CDP and its partner NGOs can be summarised as under :

a) Advocacy at National level for formulation of an appropriate Shrimp Policy.
b) Awareness Campaign by CDP and its partners at all levels of Society.
c) Research and Development for identifying Alternative Land Use Methodologies.
d) Environmental Education Campaign is being planned.
e) Efforts are being made to include Environmental Curriculum in Schools.
f) Developing Training Module for Training of Teachers for Environmental Education in Schools.
g) Seminars and Workshops.

The strong point of this Coalition is that CDP's partner NGOs work at Grassroots level, and are close to the common people in rural as well as urban areas. But we have also certain limitations, such as :

a) Lack of experience in Environmental Education.
b) Lack of Training facilities in Environmental Education.
c) Need for Capacity Building.

A list of CDP's partner NGOs in the Citizens' Forum for Conservation of Bio-diversity in the Sundarbans is given below :

1) SHADE Bangladesh, Kazi Nazrul Islam Road, Bagerhat. Executive Director : Swapan Kumar Basu
2) AOSED, 31 Basupara Main Road, Khulna. Executive Director : Mr. Shamim Arifeen,
3) Muktir Alo, 33/39 Mirzapur Road, Khulna. Executive Director, Abul Hasan Bakul.
4) LoCOS, 18 Rokunuddin Sarak, Mistripara, Khulna. Executive Director : Debprasad Sarkar.
5) GOTI, 126 Bagmara Main Road, Khulna. Secretary : Shaikh Altaf Hossain.

6) Let Us Progress, Village & P.O. Hathiardanga, Koyra, Khulna. Executive Director : Debabrata Sarkar.
7) BRIC, Nesaruddin Road, North Deana, Daulatpur, Khulna. Executive Director : Wahidul Islam.
8) Gana Unnayan Sangstha (SUS), Munshiganj,P.O.Kadamtala, Shyamnagar, Satkhira. Executive Director : Director.
9) Agradoot Club, Rayenda Badal Chattar, Sarankhola, Bagerhat. Executive Director : Md. Ayub Ali.
10) Runner Daridra Bimochan Kendro, Bailey Bridge Approach Road, Morrelganj, Bagerhat. Executive Director : Advocate Habibur Rahman..
11) Unnayan Jowtha Udyog, Lakshmikati, P.O.Hularhat, Dist. Pirojpur. Exec.Director : Md. Moshiur Rahman.
12) Provati, Betagram, Maguraghona, Dumuria, Khulna. Executive Director : Moral Abdul Mannan.
13) SIDO, West Baniakhamar Primary School, Khulna. Executive Director : Jahangir Alam Jiko.
14) LORD, Road No. 8, Sonadanga Res. Area, Khulna. Executive Director : Md. Lutfar Rahman.
15) SAIKAT, Morichal, Hularhat-8501, Pirojpur. Executive Director : Md. Habibur Rahman.
16) Eso Gori Bangladesh (EGB), North Saralia, Morrelganj, Bagerhat. Contact :Chief Executive :
17) Panguchi Theatre, Near Nobboi Roshi Proshika, Morrelganj, Bagerhat. Contact : Secretary.

International Advocacy .

This advocacy by CDP is not limited to the local and national arenas. CDP is also intending to launch an International campaign to “Save the Sundarbans” in association with several national and international organisations. They include The Mangrove Action Project of USA, the Environmental Justice Foundation of London, United Kingdom, The Swallows of Sweden, the Small Fishers Federation of Sri Lanka, Nijera Kori, a national NGO based in Dhaka, a few India-based NGOs that have expressed their interest, and CDP’s own network partners in the Khulna region. CDP is to be the local Secretariat for the International Network, and Ashraf-ul-Alam Tutu, Coordinator of CDP, will be the Member-Secretary.

CDP also sends articles and news items on Environment and the Sundarbans to the Mangrove Action Project (MAP), which are regularly published in the Late Friday Newsletter of MAP. CDP has also installed one web site, namely www.cdpbd.org The Resource Centre has been improved and modernised with the preparation of a computerised database and systematic enlistment, numbering and shelving of all resource materials, with the support and cooperation of CARE Bangladesh GOLDA Project.

All NGOs working in the region, Academics, Journalists Development workers, Environmental activists, and interested members of the Civil Society shall have access to this Resource Centre. Information Resource will also be made available to locally elected government bodies, if needed. In order to ensure the sustainability of the Resource Centre, a system of membership is being developed.

CDP has also been awarded membership of the Communication and Education Committee (CEC) of the International Union for Conservation of Nature (IUCN), which has its headquarters at Gland, Switzerland.