



Coastal and Wetland Biodiversity Management in Cox's Bazar and Hakaluki Haor - An Overview of Ecosystem Approach for Biodiversity Conservation in Bangladesh under UNDP-GEF

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ABSTRACT

The coastal and wetland area of Bangladesh is endowed with rich and diverse genetic resources of flora and fauna because of its climate and fertility of land. Major areas of concern are the conservation and development of natural resources which are under pressure from increasing population pressure leading to degradation of ecosystem, habitat and natural environment and endangering the life and property at the time of cyclones and storm surges and flash flood. Species richness of flora and fauna is greatly diminished in Bangladesh. Many species are now extinct in the country and many more species are listed as threatened or endangered. The major factors include for the losses of biodiversity are: Population pressure natural hazard, overexploitation of biological resources, deforestation, destruction of habitat, land use change and conflicts, agriculture and industrial pollution, flood control related activities etc.

In recent years Bangladesh has demonstrated increased determination and commitment to address the challenges of ensuring sustainable use and conservation of its natural resources, including its biodiversity..A major current challenge is to ensure the effective implementation of Environmental Conservation Act, 95 which includes a key provision providing the Department of Environment (DOE) with broad powers of conservation of ecosystems that it determines to be Ecologically Critical areas (ECAs). In this context of formulating the present UNDP-GEF Project: BGD/99/G31- Coastal and Biodiversity Management in Cox's Bazar and Hakaluki Haor, Bangladesh has taken the crucial step of nominating the first six ECAs under the PRIF Study of this project at first phase and within the country's highly significant coastal, marine and wetland ecosystems.

INTRODUCTION

Bangladesh possesses rich and diverse genetic resources of flora and fauna because of its climate and fertility of land. It has more than 5000 species of flowering plants (Angiosperms) and 1500 species of fauna and remarkable number of which exists in the coastal and fresh water wetland ecosystems.

Species richness of flora and fauna is greatly diminished in Bangladesh. Many species are now extinct in the country and many more species are listed as threatened or endangered. The major factors include for the losses of biodiversity are: (i) population pressure, (ii) natural hazard (cyclone, tidal surge, flood etc.) (iii) Overexploitation of biological resources, (iv) deforestation, (v) destruction of habitat, (vi) land use change and conflicts (vii) agriculture and industrial pollution, (viii) flood control related activities causing destruction of wetlands, (ix) shifting cultivation in the hills etc.

OVERALL OBJECTIVE OF THE PROJECT

The overall objective of the project is to establish an innovative system for management of Ecologically Critical Areas (ECAs) in Bangladesh that will have a significant and positive impact on the long-term viability of the country's important biodiversity resources.

IMMEDIATE OBJECTIVES OF THE PROJECT

1. will ensure the conservation and sustainable use of globally significant wetland biodiversity at the Cox's Bazar sites through their management as ECAs.
2. will ensure the conservation of globally and sustainable use of significant wetland biodiversity at the Hakaluki Haor site through its management as an ECA.
3. will support efforts by the DoE to institutionalize the concept of ECA management using the experience gained through the above demonstration sites.

PROJECT SITES

The GEF preparatory project: BGD/94/G41-Coastal and Wetland Biodiversity Management Project (MOEF, DOE and UNDP, 1997; DOE and MOEF, 1997) implemented by Department of Environment, MOEF has carefully selected the following two sites of distinct importance of their biodiversity particularly their avifaunal, aquatic and plant biodiversity. The project sites include i) Coastal Wetland sites (Cox's Bazar-Teknaf Peninsula/ Teknaf Sea Beach, St. Martin's Island and Sonadia Island, ii) Fresh Water Wetland site (Hakaluki Haor).

Coastal Wetland Sites (Cox's Bazar—Teknaf Peninsula Coastal Zone, St. Martin's Island and Sonadia Island)



The Cox's Bazar site lies at the extreme southeastern corner of Bangladesh on the border with Myanmar. The site consists of three component areas: (i) the western, coastal zone of Teknaf Peninsula (10,465 ha in area), which is a long, narrow and forested peninsula separating the Bay of Bengal from the estuary of the Naaf River and neighboring Myanmar; (ii) St. Martin's Island (590 ha), a sedimentary continental island located 10 km south of Teknaf Peninsula, and; (iii) Sonadia Island (4,924 ha), a barrier island a few km north of Teknaf Peninsula. The coastal island habitats represent the site's 'focal area' and total approximately 16,000 ha. An additional 20,000 ha, consisting of degraded but still biodiversity-rich upland forest on Teknaf Peninsula, will be considered as the 'buffer zone.'



Threats to Biodiversity at Project Sites



Major threats to biodiversity at Coastal Wetland Sites (Cox's Bazar)	Teknaf Peninsula	St. Martin's Island	Sonadia Island
Over harvesting			
Excessive cutting of mangrove			
Excessive cutting of sand dune vegetation			
Illegal harvesting of turtles and turtle eggs			
Removal of corals			
Large-scale marine invertebrate (shell) collection			
Destructive fishing methods			
Hunting of shorebirds			
Degradation and loss of habitats			
Beach compaction by vehicles			
Degradation of mangrove habitats due to grazing			
Degradation of sand dune habitats due to grazing			
Conversion of habitats to aqua culture			
Conversion of habitats to agriculture			
Conversion of habitats to salt pans tourism and small-scale industry			
Pollution and land degradation from agrochemicals			
Pollution and land degradation boat discharges			
Pollution and land degradation from tourism and small industries			
Coastal erosion and coral damage due to shell and boulder removal			
Destruction of sand dunes			

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Fresh Water Wetland Sites (Hakaluki Haor)



This site contains about 47 major *haors* and more than 6,000 *beels*, or freshwater lakes, nearly half of which are seasonal. At least nine of the region's wetland sites meet one or more of the Ramsar criteria for wetlands of international significance.



During the dry season, the *beels* cover an area of approximately 4,400 ha. However, during the rainy season, the entire area floods, and the *beels* are united as one large lake, or *haor*, with an area of approximately 18,000 ha. This makes it the largest *haor* in Bangladesh. Hakaluki Haor is a highly significant site for a wide variety of waterfowl, particularly *Anatidae*. It is important for wintering migratory shorebirds and as a mother fishery.





Major threats to biodiversity at Fresh Water Wetland Sites (Hakaluki Haor)
Loss of reedland and swamp forest areas due to conversion for agriculture;
Reduction in surface area and depth of mother fisheries and other aquatic habitats (beels), due to sedimentation, drainage and river diversion for irrigation;
Degradation of reedland and grassland habitats due to overgrazing within the haor,
Minor risk of degradation of aquatic habitat due to agro-chemical pollution from tea estates.
Loss of reproductive capacity of fishery due to inappropriate fishing practices;
Loss of genetic diversity due to increasingly intensive tillage of high-yield varieties (HYV) of rice;
Unsustainable levels of fuelwood collection;
Over-harvesting of amphibians, including turtles and frogs; and
Reduced bird populations due to hunting.

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OBJECTIVE VIS-A-VIS OUTPUTS	
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1. TO ENSURE THE CONSERVATION AND SUSTAINABLE USE OF GLOBALLY SIGNIFICANT WETLAND BIODIVERSITY AT THE COX'S BAZAR SITES THROUGH THEIR MANAGEMENT AS ECAS	<ul style="list-style-type: none"> Utilizing existing legal mechanisms, legal protection is established for ecologically critical areas (ECAs) An effective field-level management system is operated and maintained Village Conservation Groups and a Local ECA Committee are established to ensure local participation and inter-sectoral coordination for conservation Ecological information concerning critical ecosystems at Cox's Bazar site is available to and used by managers A management plan covering conservation and sustainable use of Cox's Bazar ECA is developed and implemented Alternative sustainable livelihood and sustainable use strategies are developed and implemented An integrated pest management programme is implemented
2. TO ENSURE THE CONSERVATION AND SUSTAINABLE USE OF GLOBALLY SIGNIFICANT WETLAND BIODIVERSITY AT HAKALUKI HAOR THROUGH MANAGEMENT AS AN ECA	<ul style="list-style-type: none"> Utilizing existing legal mechanisms, legal protection is established for Ecologically Critical Areas (ECAs) <ul style="list-style-type: none"> DoE operates and maintains an effective field-level ECA management system Village Conservation Groups (VCGs) and a Local ECA Committee are established to ensure local participation and inter-coordination for conservation In cooperation with local NGOs, Ecological information concerning critical ecosystems at the Hakaluki Haor site is available to and used by regional and national-level managers A management plan covering conservation and sustainable use of Hakaluki Haor ECA is developed and implemented Alternative sustainable livelihoods and sustainable use strategies are developed and implemented An integrated pest management programme is implemented
3. TO SUPPORT EFFORTS BY THE DOE TO INSTITUTIONALIZE THE CONCEPT OF ECA MANAGEMENT USING THE EXPERIENCE GAINED THROUGH THE ABOVE DEMONSTRATION SITES	<ul style="list-style-type: none"> Ensuring that legal mechanisms at national level are able to support operationalization of ECA concept Policy formulation and analysis concerning ECAs is based on an appropriate integration of economic and social factors Strengthening capacity for management of ECAs Awareness





Table 2: Globally Threatened Wildlife Species at Project Sites and Their Distributions

GENUS	Species	Common English Name	Telnafr	Sonadia	St. Martin Island	Hakaluki haor
<i>Aythya</i>	<i>baeri</i>	Baer's Pochard				•
<i>Cairina</i>	<i>scutulata</i>	White-winged Duck				•
<i>Eurynorhynchus</i>	<i>pygmeus</i>	Spoonbill Sandpiper	•	•		
<i>Limnodromus</i>	<i>semiplotus</i>	Asian Dowitcher	•	•	•	
<i>Tringa</i>	<i>gutifer</i>	Nordmann's Greenshank	•	•	•	•
<i>Ardea</i>	<i>insignis</i>	White-bellied Heron				•
<i>Leptoptilos</i>	<i>javanicus</i>	Lesser Adjutant	•			•
<i>Alcedo</i>	<i>hercules</i>	Blyth's Kingfisher				•
<i>Aegypius</i>	<i>monachus</i>	Cinereous Vulture				•
<i>Aquila</i>	<i>helica</i>	Imperial Eagle				•
<i>Haliaeetus</i>	<i>leucorhynchus</i>	Pallas's Sea-eagle				•
<i>Falco</i>	<i>naumanni</i>	Lesser Kestrel				•
<i>Francolinus</i>	<i>gularis</i>	Swamp Francolin				•
<i>Pardalipicus</i>	<i>manipurensis</i>	Manipur Bush-guail				•
<i>Pelecanus</i>	<i>crispus</i>	Dalmatian Pelican				•
<i>Pelecanus</i>	<i>philippensis</i>	Spot-billed Pelican				•
<i>Vulpes</i>	<i>bengalensis</i>	Bengal Fox	•			•
<i>Pseudocorvus</i>	<i>viverrinus</i>	Fishing Cat	•			•
<i>Lutra</i>	<i>perspicillata</i>	Smooth-coated otter	•			•
<i>Sousa</i>	<i>chinensis</i>	Indo-pacific Hump-backed Dolphin			•	
<i>Neophocaena</i>	<i>phocaenoides</i>	Finless Porpoise	•		•	
<i>Platanista</i>	<i>gangetica</i>	Ganges River Dolphin	•			•
<i>Caprolagus</i>	<i>hispidus</i>	Hispid Hare	•			•
<i>Varanus</i>	<i>flavescens</i>	Yellow Monitor	•			•
<i>Python</i>	<i>molurus</i>	Indian Python				•
<i>Caretta</i>	<i>caretta</i>	Loggerhead	•	•	•	
<i>Chelonia</i>	<i>mydas</i>	Green Turtle	•	•	•	
<i>Eretmochelys</i>	<i>imbricata</i>	Hawksbill Turtle	•	•	•	
<i>Lepidochelys</i>	<i>olivacea</i>	Olive Ridley	•	•	•	
<i>Geoclemmys</i>	<i>hamiltonii</i>	Black Pond Turtle				•
<i>Kachuga</i>	<i>syhetensis</i>	Assam Roofed Turtle				•

APPROACH FOR PARTICIPATION OF PEOPLE IN THE IMPLEMENTATION PHASE

Peoples' involvement is highly crucial in the implementation phase without which the conservation effort is unlikely to achieve any fruitful result. Again, involvement of people will yield better results (to attain sustainability) if their involvement is also ensured in the planning/design phase and in the monitoring and evaluation phase beyond implementation phase. Biodiversity conservation projects that are supported through the development and active participation of local community have a greater chance of survival, because the supply of benefits is dependent on the long-term success of the project.

The aim of the project is to generate a strong sense of commitment to biodiversity conservation amongst local communities, giving them ownership over management of wild resources. Such commitment will be integral to the achievement of stable conservation in the long term.

CONCLUSION

The involvement of local people in the implementation phase have to be initiated with (following the awareness raising programme) building up a network of volunteers and establish a local conservation centre. Then comes development of the site (local) management plan that will be made using a participatory planning methodology.

This management plan will be based on input from local and other resource users, supported by needed technical and policy/ regulatory inputs from technical experts, govt. representatives etc. The management plan could include provision for local organization, training, technology transfer, credit agreements between local organization and government agencies, government action, identification of possible structural measure and so on.

The next step is implementation of the management plan on a trial basis. and the monitoring activities will be don on participatory basis.

