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Government of the Peoples' republic of Bangladesh
&
UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)
Country: Bangladesh

PROJECT DOCUMENT

Project Title: Expanding the Protected Area System to incorporate Important Aquatic Ecosystems
UNDAF Outcome(s)/ Indicator(s): Outcome 5.2: By 2016, vulnerable populations benefit from natural resource management (NRM); environmental governance and low- emission green development; *Indicator: Number of new government policies, strategies or plans formulated in support of sustainable use of natural resources*
UNDP Strategic Plan Primary Outcome: Sustainable human development is embedded substantively in development debate and action at all levels
Expected CPAP Outcome(s) /Output/Indicator(s): Output 5.2.1: Communities and local and National authorities are better able to conserve biodiversity and manage natural resources in a pro-poor and Sustainable manner.
Executing Entity/ Implementing Partner: Ministry of Environment and Forests
Implementing Entity/ Responsible Partner: Bangladesh Forest Department
Brief description: The Sundarbans represents the rich tapestry of biodiversity of Bangladesh. It supports one of the last remaining populations of the Ganges and the Irrawaddy dolphins and holds the key for their long-term survival on a global level. However, they are under increasing threat due to unsustainable fishery; increasing maritime traffic; vessel collision; unplanned economic development; poaching; land-use change; climate change etc. In order to ensure the long-term conservation of these cetaceans, it is imperative to consolidate their key habitats, while also taking into account development imperatives, livelihoods and impacts of climate change. However, there are several barriers that prevent this – primarily inadequate capacities at the level of government and communities. This project strives to address these and to augment the conservation prospects of the region through: (i) knowledge generation and dissemination that improves decision making related to the management of aquatic habitats, (ii) new and additional areas to be managed as protected areas and buffer areas identified, notified and capacities developed for improved management effectiveness of conservation, (iii) support to the implementation of Management Plans of new PAs and buffer areas, (iv) monitoring and evaluation framework and replication strategy developed for effective aquatic PA management specifically for the Sundarbans and other aquatic ecosystems in the country, (v) community based resource management plan prepared, capacities developed and financial support extended for operationalizing sustainable fishing practices and conservation of aquatic biodiversity, and (vi) strategies for alternate income generation and livelihood diversification developed and implemented leading to reduced dependence on natural resources.

Programme Period: 2014-2019 **Atlas Award ID:** 00083742 **Atlas Project ID:** 00092054 **PIMS:** 4620 **Start date:** 2015 **End Date:** 2019 **Management Arrangements:** NIM	**Total budget:**	**US$ 10,126,484**
	Total allocated resources	
	• **GEF**	US$ 1,626,484
	Partner-managed	
	o **Government**	US$ 3,000,000
	o **UNDP-managed**	US$ 5,500,000

Agreed by (Government of Bangladesh: Economic Relations Division):

NAME SIGNATURE

Date/Month/Year 30/6/2015

Md. Ashadul Islam
Additional Secretary
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Ministry of Finance
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Agreed by (Implementing Party: Bangladesh Forest Department/MOEF):

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Date/Month/Year

Abdullah Al Mohsin Chowdhury
Additional Secretary
Ministry of Environment and Forests
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Date/Month/Year 30.06.2015

Pauline Tamesis
Country Director
UNDP-Bangladesh

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ACRONYMS

BARI	Bangladesh Agricultural Research Institute
BDT	Bangladesh Taka
BECA	Bangladesh Environment Conservation Act
BFRI	Bangladesh Forest Research Institute
BLRI	Bangladesh Livestock Research Institute
BMD	Bangladesh Meteorological Department
BNH	Bangladesh National Herbarium
BPATC	Bangladesh Public Administration Training Centre
BPC	Bangladesh Planning Commission
BRRI	Bangladesh Rice Research Institute
BWDB	Bangladesh Water Development Board
CHT	Chittagong Hill Tracts
CO	Country Office
CZP	Coastal Zone Policy
DAE	Department of Agricultural Extension
DFO	Divisional Forest Officer
DOE	Department of Environment
DMB	Disaster Management Bureau
ECA	Ecologically Critical Area
ECC	Environmental Clearance Certificate
ECNEC	Executive Committee of the National Economic Council
ECR	Environment Conservation Rules
EIA	Environmental Impact Assessment
ESRF	Eastern Sundarbans Reserve Forest
FD	Forest Department
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNI	Gross National Income
IUCN	International Union for Nature Conservation
LDC	Least Developed Countries

I. Situation Analysis

A: CONTEXT

National context

1. The People's Republic of Bangladesh, nestled between the Indo-Himalayas and Indo-Chinese sub-regions (between 20^0 and 27^0 N and 88^0 and 93^0 E), is the farthest downstream alluvial zone of three major river systems of the Himalayan Range – the Ganges, the Brahmaputra, and the Meghna. Of the country's total geographic area of 147,570 km^2, about 80% is comprised of one of the world's largest deltas (floodplains and wetlands networked over 300 rivers) bordered by India in the West, North and Northeast; by Myanmar in the Southeast and by the Bay of Bengal in the South.[1]

2. With a population of more than 160 million, Bangladesh supports one of the highest human densities (1,015/km^2) in the world.[2] Although fertility rates have declined in recent years, at the current growth rate (1.34% per annum), the population is projected to reach 220 million by 2040.[3] Around 75% of the population is rural and a significant proportion (around 35 million or 22%)[4] lives along the 710 km long coastal belt.[5] Over 98% of the people are Bengali and predominantly Bangla-speaking, the rest comprise mainly of indigenous tribes from the Chittagong Hill Tracts.[6]

3. Notwithstanding the notable strides made in economic and social development in recent decades[7], Bangladesh is still among the Least Developed Countries (LDCs). In the Human Development Index, it ranked 146 (out of 187 countries) in 2012.[8] During 2012-13, the Per Capita Gross National Income (GNI) was calculated as $923 whereas the Per Capita Net National Income (NNI) stood at $859.[9] An estimated 50 million people still live in poverty, including almost 18% living under extreme poverty.[10&11] Despite these challenges, the net primary-school enrollment has reached 94.7% and under-five childhood mortality has declined by 58% from 133 to 56 per 1,000 live birth in 1989-1993 and 2005-2009, and the country is on track to meet its United Nations Millennium Development Goals of 48 under-five deaths per 1,000 live births by 2015. Similarly, infant mortality rate has declined by 48% from 87 to 45 per 1,000 births over the same time period.[12] However, more than two-thirds of the rural population is landless or effectively landless (i.e. own less than 0.2 ha land). More than half of the country's population directly depends on natural resources for survival and well-being.[13]

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[1] GOB, 2010. Rio + Report on Sustainable Development
[2] BBS 2011: Population and Housing Census
[3] BBS 2011: Population and Housing Census
[4] World Bank. 2010: Country Assistance Strategy for the People's Republic of Bangladesh
[5] PDO-ICZMP, 2004: *Where Land Meets the Sea: A Profile of the Coastal Zone of Bangladesh*; and BBS,2001 Census
[6] Some 90% is Muslim, the rest being Hindu, Christian or Buddhist.
[7] Between 1980 and 2012, Bangladesh's life expectancy at birth increased by 14.0 years, mean years of schooling increased by 2.8 years, expected years of schooling increased by 3.7 years and GNI per capita increased by about 175 percent (UNDP, 2013. Human Development Report)
[8] UNDP, 2013: Human Development Report
[9] In 2010, Bangladesh was ranked third out of 95 countries in terms of greatest progress made in human development and for having doubled its Human Development Index (HDI) since 1980 (UNDP, 2010). Noteworthy development achievements include sustained and remarkably resilient economic growth over the last decade (on average 5.8% per annum growth in GDP); reductions in the poverty headcount ratio from nearly 48.9% in 2000 to 31.5% in 2010 and an estimated 26% in 2015 (2.5% lower than the MDG goal) and achieving gender parity in primary and secondary education at the national level (with regional variations). (Source: BBS Household Survey 2010; Bangladesh Poverty Assessment Report (World Bank, 2013))
[10] defined as severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information
[11] BBS Household Survey, 2010.
[12] http://www.cpc.unc.edu/measure/publications/tr-12-87
[13] MoEF/GoB, 2012; UNDP 2011; World Bank 2010.

8. Dynamic physiographic, climatic, and hydrologic conditions shape the alluvial delta of Bangladesh as well as the rich biodiversity it supports. This bounty of nature is exemplified by the country's diverse ecosystems ranging from the mangrove forests of the Sundarbans in the southwest; coastal and marine ecosystems in the far south; deep natural water basins called "haors" and "baors" in the northeast; arid areas in the upper mid-section; hill tracts in the southeast; and flat sandy or marshy deltas of the large rivers of the middle of the country extending south.[23] The country has 29 agro-ecological zones[24] and twenty five bio-ecological zones.[25] (Annexure 1 and 2 respectively). Although some 2.56 million ha or 17.8% of the country's total area is classified as forests[26], only around 11% is actually under tree cover. Another 20% is classified as 'other wooded land', which includes trees within homesteads and other agricultural tree crops.[27] Forest cover had declined by more than 90% over the past 100 years and per capita forest cover in Bangladesh is amongst the lowest in Asia.[28]

Biodiversity Significance

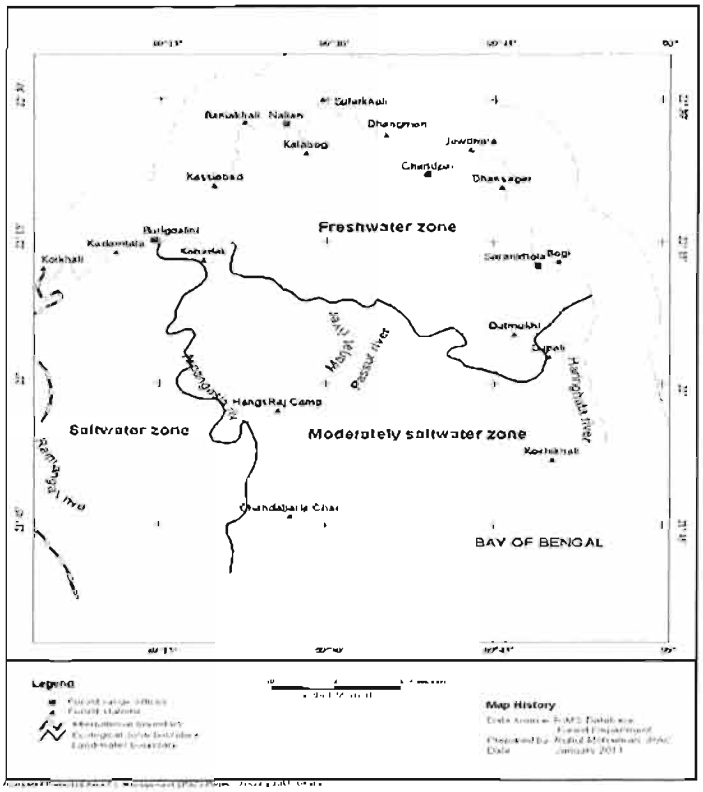
9. Bangladesh is home to over 125 globally threatened species (IUCN Red List) – including 21 Critically Endangered, 34 Endangered and 69 Vulnerable species. It supports Asia's last two remaining species of freshwater dolphins - the Endangered Ganges River Dolphin (*Platanista gangetica*), an obligate freshwater cetacean of the South Asian subcontinent; and the Vulnerable Irrawaddy Dolphin (*Orcaella brevirostris*), a facultative freshwater cetacean found in the estuaries and some large rivers of the Indo-Pacific.[29] The country has established a national system of protected areas to conserve some of its most significant biodiversity. It has, so far, designated 36 protected areas (See Annexure 3) comprising approximately of 2,654 km^2 or about 1.8 % of the country's geographical area. These protected areas (corresponding to Category IV of the IUCN Protected Area classification) cover around 11% of the area under the control of the Forest Department.[30]

10. Bangladesh's diversity of aquatic ecosystems includes Haors (seasonal wetlands that are formed in large depressions appended to rivers when discharge is high), mangrove forests, freshwater swamp forests, oxbow lakes, rivers, shallow coastal seas and a deep (900m+) submarine canyon called the Swatch-of-No-Ground. Natural mangroves cover an estimated 584,000 ha (representing 39.2% of all classified state-owned forest land) and mangrove plantations around 137,080 ha.[31] The Sundarbans, situated in the southwest of Bangladesh and shared with India, is the world's largest continuous mangrove forests, and it is listed as one of WWF's Global 200 Eco-regions.[32] Around 62% of the Sundarbans are in Bangladesh and the rest in India. The total area of the Sundarbans in Bangladesh is 6, 01,700 ha of which 411,230 ha[33] is covered by forests; the rest is under water (although this is variable according to seasonal discharge) in the form of rivers and creeks.[34]

11. The Sundarbans Reserved Forests (SRF) is one of the two RAMSAR sites in the country. Each year about 2.4 billion tons of sediments are transported through the Sundarbans[35],

[23] Ministry of Environment and Forests, 2010: Fourth National Report to Convention on Biological Diversity, Bangladesh
[24] GOB, 2010:Rio + Report on Sustainable Development
[25] IUCN Bangladesh in 2002
[26] ADB, 1995: Forestry Sector Master Plan 1995-2005
[27] FAO, 2010. Forest Resource Assessment, 2010
[28] MoEF/GoB, 2012
[29] Wildlife Conservation Society, Life Web Project
[30] Various publications of Government of Bangladesh.
[31] World Bank 2013
[32] http://wwf.panda.org/about_our_earth/ecoregions/ecoregion_list/ Accessed on 8 May 2014
[33] http://www.bforest.gov.bd/index.php/forest-category/mangrove-forests
[34] Various publications of GoB
[35] Poffenberger, M. (ed). 2000. Communities and forest management in South Asia IUCN, DFID and Asia Forest Network, Indonesia. 35-46pp.

Figure 1: Ecological Zones in the Sundarbans Reserved Forests



14. Dynamic erosion and accretion processes, which determine the physiographic character of the Sundarbans, are buffered by the relative stability provided by the mangrove forests.[40] These changes are further driven/shaped by a complex interaction of sea-level changes, sedimentation and neo-tectonic subsidence.[41] Together these have profoundly influenced the ecological processes, and the flora and fauna (both relict as well as nascent) in the Sundarbans. Sculptured through the ecological landscape of the Sundarbans are large human populations in fringe villages who depend on the forests and waterways for vital ecological services, and meeting subsistence and livelihoods needs.[42]

15. Some of the key ecosystem goods and service functions (both tangible and intangible) provisioned by the Sundarbans, which are highly relevant at local, regional and global scales, *inter alia* include: (1) entrapping sediment and land formation; (2) coastal protection against wave action and wind erosion; (3) protection of human lives and habitation from frequent & extreme storms and cyclones; (4) shelter and habitat for diverse life-forms; (5) nursery for fish and other aquatic life; (6) supplying oxygen; (7) nutrient cycling; (8) timber and small timber production; (9) supply of food, NTFPs and building materials; (10) carbon storage, sequestration and cycling; (11) opportunities for education, scientific research, recreation and ecotourism; and (12) act as vital migration corridor for anadromous species such the highly valued *hilsa* shad.[43] The Sundarbans also represents the largest single carbon sink in the

[40] Brian D. Smith and Elisabeth Fahmi Mansur, 2012. In Climate and Conservation landscape and seascape science, planning, and action Edited by Jodi A. Hilty, Charles C. Chester, and Molly S Cross Sundarbans Mangrove Forest, Asia
[41] Adam C. D. Barlow, 2008: The Sundarbans Tiger Adaptation, Population Status, And Conflict Management, A Thesis Submitted To The Faculty Of The Graduate School Of The University Of Minnesota
[42] MoEF, 2010: Integrated Resources Management Plan for the Sunderbans.
[43] Biswas et al. 2007, Islam and Peterson 2008

20. In addition the Sundarbans supports a rich avifauna with 315 species of birds recorded including 95 species of waterfowl, 38 species of raptors, and nine species of kingfishers.[53] The Brahminy kite (*Haliastur indus*) is widespread, particularly along the riverside while the white-bellied sea eagle (*Haliaeetus leucogaster)* is common near the coast. Among the waders and shorebirds, egrets, shanks, herons, plovers, curlews, gulls, and terns are particularly abundant. The Endangered masked finfoot (*Heliopais personata*) is also a resident species of the Sundarbans.

21. Around 400 species of fish, whose distribution is highly dependent on salinity gradients, have been catalogued in the Sundarbans. Crustaceans, such as crab, shrimp, prawns and lobster, comprise a substantial proportion of the overall aquatic biomass.[54] Among a diverse array of terrestrial invertebrates, the giant honey bee (*Apis dorsata*) is of particular economic importance[55] and represents an important livelihood component of the local communities of the Sundarbans. The coast of the Sundarbans is a breeding ground for threatened marine turtles including the Olive Ridley turtle *(Lepidochelys olivacea*) and Green turtle (*Chelonia mydas).* A total of 145 fish and 33 crustacean species were recorded during ecological investigations of freshwater dolphin hotspot and non-hotspot segments in 2010. Among these fishes, 67 were found in both hotspot and non-hotspot segments, 46 were found only in hotspots and 32 were found only in non-hotspot segments. Among the crustacean species, 23 were found in both segment types, whereas seven were found only in hotspots and three were found only in non-hotspot segments.[56]

22. As the largest forests in the country, and with extensive aquatic and marine components, the SRF represents a significant storehouse of floral biodiversity. Forests in the Sundarbans are highly variable in size and combinations, forming a mosaic pattern of vegetation; mangroves occur both in single-species patches and in a mix of a few species in various proportions. [57] A botanical exploration in the area was carried out by Prain in 1903. Since then, there have been considerable changes in the taxa and flora reported.[58] An assessment made during late 1990s reported 245 genera and 334 species of plants.[59] The Sundarbans flora has an abundance of *Heritiera fomes, Excoecaria agallocha, Ceriops decandra, Sonneratia apetala and Nypa fruticans*. While most mangroves in other parts of the world are characterized by members of the Families Rhizophoraceae, Avicenneaceae or Laganculariaceae, those of Bangladesh are dominated by Sterculiaceae and Euphorbiaceae.[60] A survey conducted by IUCN Bangladesh in 2003 listed 108 non-tree plant species including 17 orchids, 21 fern and fern allies, six algae and 16 lichens in the Sundarbans. Of the reported 66 species of "mangroves" in the SRF, 25 have been identified as 'true mangroves'[61], while the others are considered as 'mangrove associates'.[62]

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[53] From various reports.
[54] Islam, M. S. and M Haque 2004. The mangrove-based coastal and nearshore fisheries of Bangladesh: ecology, exploitation and management. Reviews in Fish Biology and Fisheries 14, 153-180.
[55] Gopal, B. and M. Chauhan 2006. Biodiversity and its conservation in the Sundarban Mangrove Ecosystem. Aquatic Sciences-Research Across Boundaries 68, 338-354
[56] WCS/BCDP 2014. *Research on freshwater dolphin ecology and human activities in three wildlife sanctuaries in the Eastern Sundarbans mangrove forest*, Bangladesh. Background document prepared by the Wildlife Conservation Society's Bangladesh Cetacean Diversity Project. Khulna, Bangladesh.
[57] MoEF. 2010: Integrated Resources Management Plan for the Sunderbans
[58] Khatun and Alam 1987
[59] IFMP. 1998. *Integrated Forest Management Plan.* Forest Department, Dhaka, Bangladesh.
[60] Hussain and Acharya 1994
[61] Out of 60 species of true mangrove globally
[62] Siddiqi, N.A. 2001. Mangrove forestry in Bangladesh. Institute of Forestry and Environmental Sciences (IFES). University of Chittagong. Chittagong. 201 p.

Dudhmukhi during the post-monsoon season. No Irrawaddy dolphin calves were observed in the sanctuaries.[65]

Administrative and governance context:

26. Administratively, Bangladesh is divided into seven Divisions, which are further divided into 64 *Zillas* or Districts. Rural areas have another two-tier administrative system below the District level, *viz.*, *Upazillas* (Sub-districts) and *Union Parishads*. The latter are further sub-divided into electoral wards. City Corporations administer the ten largest cities while other urban areas have *Pourashavas* or Municipalities.[66] All administrative tiers below the Division level have elected *Parishads* or Councils including some reserved seats for women. On average *Upazila* and *Union Parishads* generally cover around 260,000 and 27,000 people, respectively.[67]

27. One and a half centuries ago, the Sundarbans was substantially larger in extent. With the advent of the British Rule, the 'hostile' and 'formidable' Sundarbans was declared as a Reserve Forest (1875-76) under the Act VII of 1865 and was entrusted to the Forest Department for administering it. In recent times, despite the small patches lost to cultivation along the fringes or the appearance of new islands in the south, the extent of the Bangladesh Sundarbans has remained mostly unchanged except for a reduction of about 3,000 hectares between 1985 and 1995 due to shifts in the bordering rivers.[68] Lying between Latitude 21'38 and 22'29 N and Longitude 89'02 and 89'53 E, the SRF of Bangladesh falls within the administrative districts of Satkhira in the west, Khulna in the middle and Bagerhat in the east.

28. The Sundarbans Reserve Forest is managed by the Bangladesh Forest Department. From a forest administration point of view, SRF lies in one Circle divided into two Divisions (Sundarbans East and Sundarbans West), four Forest Ranges and 55 compartments. The three dolphin sanctuaries fall under the Sundarbans East Division, which is headed by a Divisional Forest Officer. The Sundarbans East Division has two Range offices - Chandpai and Sarankhola - headed by Range Officers. There are 77 permanent posts in this area under the Forest Department including five sanctuary centers, 16 stations, and 53 patrol posts (29 in the ESRF and 24 in the WSRF).

29. In addition to the three wildlife sanctuaries that were declared as UNESCO World Heritage Sites, the ten-kilometer periphery of the SRF has been declared as Ecologically Critical Area (ECA) under the Bangladesh Environment Conservation Act of 1995. The ECA intend act as a buffer area also. Further, as mentioned above, in 2012, the Government of Bangladesh notified three more protected areas *viz.*, Chandpai, Dhangmari and Dudhmukhi Wildlife Sanctuaries in the river channels in the Sundarbans, bringing the total extent of protected areas to almost 1,400 km^2 or 23% of SRF. Jurisdictional details of these three Wildlife Sanctuaries for freshwater dolphins, the core focus of this project are given at Annexure 6.

30. The current governance arrangements in SRF include a moratorium on timber extraction (since 2002); whereas fishing, recreation and harvesting of Non Timber Forest Products (NTFPs) are regulated through permits. Extraction, including fishing, is prohibited in wildlife sanctuaries and designated river channels (18 streams/*khals*). In the last two decades, land use

[65] WCS/BCDP 2014. *Research on freshwater dolphin ecology and human activities in three wildlife sanctuaries in the Eastern Sundarbans mangrove forest*, Bangladesh. Background document prepared by the Wildlife Conservation Society's Bangladesh Cetacean Diversity Project, Khulna, Bangladesh.
[66] There are currently nearly 500 *Upazillas*, 4,500 Unions and over 300 *Pourashavas*.
[67] Commonwealth Local Government Forum. 2013.
[68] 4TH National Report to CBD

primary school; 13% went to secondary school but did not complete their education; 1% completed secondary school; and only one fisher completed a higher education certificate). Among school-age children (4-16 years), 75% were enrolled in schools with the remaining having left due to poverty (15%), marriage (7%) and lack of interest or merit (3%). Most of the boys reportedly left schools due to poverty (83%) while girls due to marriage (57%).

34. The average monthly income among the fishermen was 3,744 BDT[79] of which 74% came from fisheries and the rest from non-fishery activities.[80] While about 48% had some secondary occupation[81], only 24% of their income was derived from it. Interestingly, only 4% of their secondary occupations involved harvesting resources from the Sundarbans. A few womenfolk (16%) earned additional income through animal husbandry, bawali, manual labor, fishing, handicrafts, poultry, and tea vending, and tailoring. The fishers use a variety of fishing gears that include: Cast net, Crab line, Crab trap, Creek net, Drag net, Drifting gill net, Fixed floating gill net, Long line, Hook & rod, Long-shore net, Otter fishing, Set-bag net, Post-larvae box net, Post-larvae hand drag net, Post-larvae hand push net, Post-larvae pole net and Post-larvae set-bag net. Of these, gillnets and set-bag nets are the most commonly used gears in the wildlife sanctuaries. Species that are particularly overexploited include the commercially valuable giant tiger prawn or bagda chingri *(Penaeus monodon)*, pangas catfish *(Pangasius pangasius)*, *hilsa* shad or *ilish* (*Tenualosa ilisha)*, gray eel-catfish or *kainmagur* (*Plotosus canius)* and giant mud crabs (*Scylla serratta)*.[82&83]

35. About 77% of the fishermen, used to engage in fishing year-round and 60% of the head fishermen owned boats, mostly non-mechanized. However, only 33% of the fishers owned land (averaging about one tenth of an acre), with 66% of those owning land using it exclusively for their homestead and a few owning additional land for agriculture, aquaculture or poultry. About half (47%) of the fishing operations were conducted by single fisherman, while the others required a crew of 2-4. Of the crew, 82% were paid shares of the catch, whereas the others paid the crew a salary or had family members working without a wage. Permits issued by the Forest Department for fishing trips generally last for a week coinciding with spring tides. Expenses for fishing permit averaged 431 BDT per fishing boat though the official amount was reported to be only 145 BDT. The fishermen generally have to pay to pirates who extort money from them. Most of the fishers live in poor housing conditions - *katcha* buildings (temporary huts made of mud, bamboo, and Nypa palm thatching with a dirt floor) and *pacca* buildings (permanent homes made of bricks or tin sheets). Many live on khas (government land) and on channel embankments.

36. Around 39% of fisherfolk were associated with 30 different NGOs, clubs and societies for loans (95%) and education (5%). Most fishers (58%) sold their catch for a fixed price to either fish depots (54%), fish collectors (31%), money lenders (8%), directly to consumers (4%), or to fish or shrimp farms (3%). Only 9% of their fish catch was reportedly consumed by the fishermen and their families.

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[79] The monetary conversion of Bangladesh Taka or BDT to the US$ is variable but at the time of the study it was about 1 US$ = 80 BDT.
[80] Their monthly income varied according to season with an average of 4,443 BDT (84% from fisheries) in the monsoon, 3,968 BDT (77% from fisheries) in the pre-monsoon, 3,565 BDT (74% from fisheries) in the winter, and 3,000 BDT (62% from fisheries) in the post-monsoon.
[81] Secondary occupations included day labor (61%), agriculture (21%), wood/palm frond (golpata) cutting or bawali (4%), rickshaw pulling (8%), fish selling (4%), other small businesses such as shop keeping or tailoring (3%), and producing handicrafts (1%).
[82] Huda, M.S. 2003. Preliminary report on the analysis of data collected during the fish stock assessment. Technical Report No.27.Sundarbans Biodiversity Conservation Project, Khulna, Bangladesh pp158.
[83] Hoq, M.E., Islam, M.N., Kamal, M. and Wahab, M.A. 2003. Fisheries structure and management implications in Sundarbans mangrove reserve forest, Bangladesh. Indian J. Fish ,50 (2): 243-249

Table 2: International conventions and treaties related to aquatic ecosystems signed by Bangladesh

Convention/ Treaty	Year effective
Convention Relating to the Preservation of Fauna and Flora in their Natural State	1936
International Plant Protection Convention (1951)	1952
International Convention for the Prevention of Pollution of the Sea by Oil (1954)	1974
The Antarctic Treaty (Washington, 1959)	1998
Ramsar Convention on Wetlands of International Importance (Ramsar, 1971)	1982
Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)	1978
Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973)	1976
Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979)	1982
Convention on the Conservation of Antarctic Marine Living Resources (Canberra, 1980)	1985
United Nations Convention on the Law of the Sea (Montego Bay, 1982)	1995
Convention on Control of Trans-boundary Movements of Hazardous Wastes & Disposal (1989)	1992
Protocol on Environmental Protection to the Antarctica Treaty (Madrid, 1991)	1998
United Nations Framework Convention on Climate Change (Rio de Janeiro,1992)	1994
Convention on Biological Diversity (Rio de Janeiro, 1992)	1994
Agreement relating to the Implementation of Part XI of the UNCLOS 1982 (1994)	1996
Protocol to the United Nations Convention on Climate Change (Kyoto,1997)	2005

42. There are a number of national policies, legislation and approaches taken by the government which provide provisions for biodiversity conservation and natural resources management in the country that have a bearing on the present GEF project in the Sundarbans. These *inter alia* are the: National Environment Policy, 1992; National Forest Policy, 1994; National Energy Policy, 1996; National Fisheries Development Policy, 1998; National Water Policy, 1999; National Agriculture Policy, 1999; Land Use Policy, 2001; Coastal Zone Policy, 2005; Bangladesh Wildlife (Preservation) (Amendment) Act, 2012; Bangladesh Forest Act, 1978 and subsequent amendments; Bangladesh Environment Conservation Act, 1995 and Environment Conservation Rules 1997; Playfield, Open Space, Park and Natural Water Reservoir Conservation Act, 2000; Flood Action Plan, 1990; Forestry Master Plan, 1996; National Biodiversity Strategy and Action Plan (NBSAP); National Conservation Strategy (NCS); National Environment Management Action Plan (NEMAP); and Sustainable Environment Management Programme (SEMP). Key attributes of these legal and policy framework are given in the Annexure 7.

43. The governance of natural resources in Bangladesh takes place under diverse institutional arrangements. This section provides a brief overview of these institutional arrangements while a more specific analysis in the context of the project is given in the Section on Stakeholder Analysis. The **National Economic Council** (NEC) is the highest policy making and programme/project approving institution in the country, which is headed by the Prime Minister. The Executive Committee of the National Economic Council (ECNEC), headed by the Finance Minister, reviews the plans and programmes sent by various ministries and endorse them.

44. The **Ministry of Environment and Forests** (MoEF) is entrusted with the overall responsibility for the environment sector and the national focal point of all MEAs. The MoEF works with other ministries to ensure that environmental concerns are given due priority in their development programmes/projects. The implementing organs of MoEF are the Department of Environment (DOE) and the Forest Department (FD). While the DOE has wide ranging responsibilities from enforcement of environmental laws and codes in addition to conducting Environmental Impact Assessments (EIAs) of public and private sector projects, the FD is a specialized body of the MoEF dealing with the management of forest reserves,

B: Threats, Root Causes and Impacts

49. In spite of the legal, policy and institutional arrangements in place as described earlier, the Sundarbans' ecosystems in general and the three protected areas (established for protecting the Ganges and the Irrawaddy dolphins) in particular are facing increasing threats. Like many other resource-rich regions of the world, the Sundarbans has been subjected to over-exploitation and a rapidly deteriorating resource-base. Livelihood and economic production activities taking place in and around these protected areas have adversely impacted the ecological richness of the area.[90] Furthermore, serious alterations are occurring to the ecological attributes of the region due to sea-level rise and upstream water abstraction resulting in incursion of marine waters and increased sedimentation.[91] During the project preparation phase, a threat-scape evaluation was undertaken in consultation with stakeholders and experts. This evaluation drew heavily on information in published and unpublished literature. The outcomes of this evaluation (threats, root causes and impacts) are given below.

Threat to biodiversity from unsustainable fishing

50. The Sundarbans is a unique spawning environment for many marine fish and crustacean species. Waterways of the mangrove forests support 27 families and 53 species of pelagic fishes, 49 families and 124 species of demersal fishes, 5 families and 24 species of shrimps, three families and seven species of crabs, two species of gastropods, six species of pelecypods, eight species of locust lobsters, and one family and three species of turtles.[92] During the last decade, fisheries production has reportedly declined by 23% in the Sundarbans,[93] including in the project landscape[94] where fishing is among the most important economic and livelihood activities.

51. Fisheries in the Sundarbans have almost certainly surpassed the threshold of sustainability, and accidental killing by getting entangled in fishing gears is the most immediate direct threat to the survival of the threatened freshwater cetaceans. Over all, the threat to biodiversity from fishing in the project area stems from (1) overfishing of edible fish and crustaceans, and use of destructive fishing gears and practices including poison and small-mesh gill nets; (2) entanglement of dolphins in fishing gear particularly large-mesh gillnets but also in small-mesh gillnets, long lines, and set bag nets; and (3) the enormous by-catch of fish fingerlings and non-target crustacean post-larvae in extremely fine-mesh mosquito nets used to catch marine shrimp or freshwater prawn post-larvae for stocking aquaculture ponds. For a more detailed understanding of these threats, it is necessary to consider the type of gear used, intensity of their use, catch per unit effort etc.

Overharvesting of fishery stock & continued use of destructive methods:

[90] MoEF. 2010: Integrated Resources Management Plan for the Sundarbans

[91] Smith et al 2011 –Smith, B D., Braulik, G., Strindberg, S , Mansur, R. Diyan, M A,A. and Ahmed, B. 2009. Habitat selection of freshwater cetaceans and the potential effects of declining freshwater flows and sea-level rise in waterways of the Sundarbans mangrove forest, Bangladesh. *Aquatic Conservation: Marine and Freshwater Ecosystems*. 19(2):209- 225.

[92] IUCN, 1994: Mangroves of Sundarbans; Vol.2.

[93] Shah, M.S., Huq, K.A., Rahman, B.S.M., 2010: Study on the conservation and management of fisheries resources of the Sundarbans; Integrated Protected Area Co-management, Bangladesh

[94] Consultation with communities

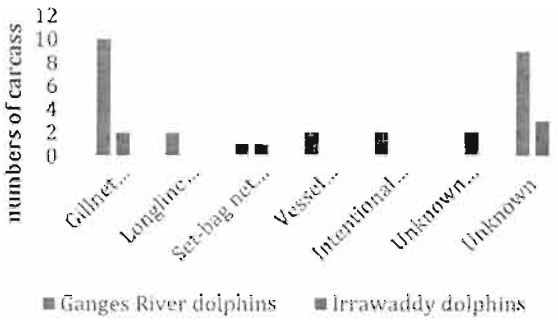
(Dh=Dhangmari, Ch=Chandpai, and Du=Dudhmukhi)

Fishing Gear	Winter			Pre-monsoon			Monsoon			Post-monsoon		
	Dh	Ch	Du	Dh	Ch	Du	Dh	Ch	Du	Dh	Ch	Du
Crab line	0.6	0.3	1.8	0	0	0	0	0	0	0	0.2	0
Cast net	1	0.1	0	2.1	0	0	1	0	0	0.4	0.1	0
Drifting gill net	0	0	0	0	0	0	0	0	0	2.5	0.2	0
Drag net	0	0	0	0	0	0	0.3	0	0	0	0	0
Longline	0.1	0	0.3	0.3	0.1	0	0	0	0	0	0.2	0.9
Long shore net	1	0	0	1	0	0	0	0.2	0	0.4	0.3	2.9
PL box net	0	0.2	0	0.7	0	0	15.9	0	0	0	0	0
PL hand drag net	0	0.2	0	2.2	2.2	0	0	12.4	0	0	0	0
PL set-bag net	2 8	12.3	0	30	40	0	44.6	41.2	0	0	0	0
Set-bag net	1.3	5	0	3.2	0.1	0	0	0.1	0	3.8	1.3	0
Seine Net	0	0	0.3	0	0	0	0	0	0	0	0	0

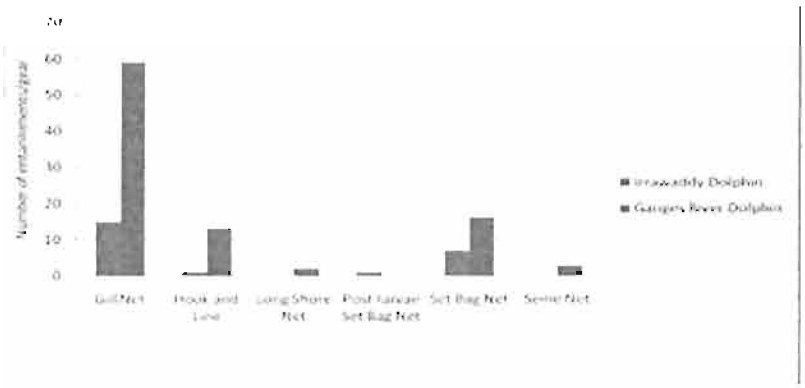
55. The ecological impacts of fishing in the three new wildlife sanctuaries was calculated according to a composite impact score based on the types of gears and their density. The scores revealed that the Chandpai and Dhangmari are highly vulnerable (30 times greater) in terms of depletion of fisheries and the potential for dolphin entanglements, compared to Dudhmukhi. The composite impact score was highest in Dhangmari during the monsoon season. The impact of fishing gear was much higher in hotspot versus non-hotspot segments except during the monsoon season. During the winter and pre-monsoon seasons, there was 94% greater disturbance from fisheries in hotspots compared to non-hotspots.[106]

56. Fish and crustacean catch per hour for various fishing gears in the six dolphin hotspots that comprise the Dhangmari, Chandpai and Dudhmukhi Wildlife Sanctuaries and six randomly chosen non-hotspot segments were also low when assessed in 2010/2011 with catches significantly less for set-bag nets (720 versus 2,693 gm/hour, respectively) and long-shore nets (337 versus 777 gm/hour, respectively) in hotspot segments versus non-hotspot segments; almost certainly due to the much higher fishing pressures in the hotspots that comprise the three wildlife sanctuaries for freshwater dolphins. Similarly the economic value of the catch to the fishermen was also low with a maximum of 200 BDT/hour earned using drifting gillnets in non-hotspot segments and less than 50 BDT/hour earned using most other gears, with particularly low amounts earned especially in hotspot segments. [107] A comparison of the fish and crustacean catch per hour using various fishing gears in the six dolphin hotspots (Sanctuary area) and six non-hotspot segments is given in Table 4 below.

[106] WCS/BCDP 2014. *Research on freshwater dolphin ecology and human activities in three wildlife sanctuaries in the Eastern Sundarbans mangrove forest*, Bangladesh. Background document prepared by the Wildlife Conservation Society's Bangladesh Cetacean Diversity Project, Khulna, Bangladesh.
[107] Ibid



59. A survey conducted in 2010 among fishers, Forest Department staff and some key informants about dolphin entanglements documented 117 reports of fatalities. Among these entanglements, 79% and 21% were of Ganges River and Irrawaddy dolphins respectively. While gillnets were reportedly responsible for 63% of the entanglements; set-bag nets accounted for 20%; long lines for 12%; with seine-nets, long-shore-nets and post-larvae (PL) set-bag nets accounting for the remaining 5%. See the Graph below.



60. Fishers are generally unaware of entangled dolphins until it is already dead or, if found alive, they may be scared or lack the knowledge to safely release the animal, or allow it to die due to its value for oil and meat.[110] Fishery regulations are inconsistently applied due to inadequate knowledge and capacities among government agencies for monitoring and enforcement.[111]

Reckless handling of incidental by-catch:

61. By-catch of fish fingerlings and non-target crustacean fry in Post-Larvae (PL) collection nets is a major cause for the declining fish and crustacean populations in the Sundarbans.[112&113] Meanwhile, the illegal collection of shrimp and prawn PL[114] continues to be a compelling

[110] Rashid, S. M. A.; A. W. Akonda; & Bashir Ahmed. 2011. Assessment of South Asian River Dolphin Population at the Padma - Jamuna River Confluence Surrounding the District of Pabna. Report prepared by Centre for Advanced Research in Natural Resources & Management (CARINAM) for Wetland Biodiversity Rehabilitation Project, Department of Fisheries, Government of Bangladesh and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH German International Cooperation, Dhaka. iii+54 pp.
[111] Final Report: 3BAS-USDA Program in Agricultural and Life Sciences
[112] Department of Fisheries (DoF). 2002. Balancing resource conservation with livelihood protection for shrimp fry collectors: an integrated approach to managing coastal resources. Department of Fisheries, Ministry of Fisheries and Livestock, Dhaka, Bangladesh. Pp 14.
[113] Ahmed, N., Troell, M., Allison, E. H. and Muir, J. F. 2010. Prawn post-larvae fishing in coastal Bangladesh: Challenges for sustainable livelihoods. Marine Policy 34: 218–227.
[114] Ibid.

vessels, the largest number were used for tourism (58%) and smallest for patrolling (6%) by the Navy, Coast Guard and Forest Department. The average speed of cargo vessels and oil tankers in the hotspot segments that compose the new wildlife sanctuaries was 13.3 km/h.

Table 5: Number of vessels according to types recorded in six hotspot (Hot) and six non-hotspot (Non) segments during four seasons.

Name of Vessel	Use of vessels	Dry		Pre monsoon		Monsoon		Post monsoon		Total	
		Hot	Non	Hot	Non	Hot	Non	Hot	Non	Hot	Non
Mechanized covered wooden boat	Tourism	401	4	185	4	65	3	96	7	747	18
Mechanized open wooden boat	Fishing	170	7	97	4	68	15	79	5	414	31
Mechanized fiber glass boat or jali used for tourism	Tourism	145	0	23	0	26	0	39	0	233	0
Mechanized covered metal tourism vessel for inland waters	Tourism	75	10	13	3	6	0	11	4	105	17
Mechanized open metal cargo vessel	Commercial	42	0	41	2	8	0	12	0	103	2
Mechanized covered metal cargo vessel for inland water	Commercial	24	0	11	1	14	0	12	1	61	2
Bangladesh Coast Guard ship	Patrol	27	0	6	1	4	3	2	3	39	7
Mechanized sea going wooden fishing vessel for inland water	Fishing	14	3	5	1	7	5	6	0	32	9
Bangladesh Navy ship	Patrol	8	1	6	0	8	0	12	0	34	1
Mechanized sea going metal cargo vessel under national or international flag	Commercial	13	0	6	0	2	0	2	0	23	0
Speed boat	Patrol	5	0	3	1	2	2	3	4	13	7
Port authority pilot boat	Patrol	2	0	5	0	2	0	5	0	14	0
Mechanized covered metal forest department boat	Patrol	1	0	0	1	0	0	0	0	1	1
Mechanized sea going wooden cargo vessel	Commercial	2	0	0	0	0	0	0	0	2	0
Metal barge pulling by tug boat	Commercial	0	0	0	0	1	0	1	0	2	0
Mechanized covered metal pulling boat	Commercial	0	0	0	0	1	0	1	0	2	0
Mechanized sea going metal fishing vessel	Fishing	0	0	0	0	0	0	1	0	1	0
Total number of vessels		929	25	401	18	214	28	282	24	1826	95
Vessels/day		77.4	2.1	33.4	1.5	17.8	2.3	23.4	2.0	38	2
% of total number		48.4	1.3	20.9	0.9	11.1	1.5	14.7	1.2	95	5

66. Increasing maritime traffic poses serious threat to the dolphins and the ecology of the project site such as: a) vessels collide with freshwater dolphins resulting in fatal injuries; b) commercial vessels cause erosion of the river bank due to their high wake; c) pollution from ships degrade habitats and reduce fish and crustacean production and recruitment; and d)

distributory of the Ganges. Freshwater is abstracted from the Ganges basin by an extensive network of more than 50 high dams and barrages (low-gated dams), as well as lost to evaporation from reservoirs, open canals and seepage.[125] The most significant of dams affecting freshwater flow to the Sundarbans is the Farakka Barrage in India which diverts flow from the Ganges to the Hooghly River to reduce sedimentation in Calcutta Port. In short, the rapid industrialization in the upstream will have significant impacts on the ecology of the Sundarbans, including on the three sanctuaries for freshwater dolphins, unless effective redressal measures are put in place.

Threats to biodiversity from poaching

71. There are reports of poaching involving dolphins and consumption of meat. During a boat-based dolphin exhibition (organized by WCS) visiting villages in proximity to the wildlife sanctuaries for Freshwater dolphins in 2012, there were 52 reports of dolphin mortalities of which 40 included information on trade or consumption. Dolphin meat was reported to sell for 50-300 BDT/ kilogram at local markets or directly from the fishers. During 2013, there were 71 reports of dolphin mortalities of which 38 included trade or consumption information with prices varied between 100-700 BDT per kilogram. During 2014, 112 reports about dolphin mortalities were received of which 67 included trade or consumption. Dolphin oil was reportedly sold for 400-500 BDT per liter while the meat sold for 20-200 BDT per kilogram. Two incidences of intentional killings were also reported in 2014 and one incident in both 2013 and 2014. Almost all other mortalities were reported as incidental catches in fishing gear or the cause of death unknown.

72. The locations of dolphin trade and consumption were mostly confined to a relatively small geographical area along the Passur River between Chandpai and Khulna which includes two of the wildlife sanctuaries for freshwater dolphins.[126]Information from local villagers indicates an increasing use of dolphin products. If market develops for these products, it will induce the villagers for more directed hunts.

Threats to biodiversity from climate change

73. One of the early manifestations of climate change in the Sundarbans is sea level rise. In 2007, the IPCC predicted that one meter rise in sea level will result in the loss of 2,500 km^2 of mangrove forests in Asia, with Bangladesh losing the most. [127] It has been estimated that a 28 centimeter rise above 2000 sea levels, which is at the low end of the global estimates of projected rise by 2090, would result in significant loss of the mangrove forests in the Bangladesh Sundarbans.[128&129&130] A study by SMRC analyzing 22 years of historical tidal data at three coastal stations[131] revealed that, due to tectonic subsidence, the loss of land in Bangladesh resulting from sea-level rise is many fold higher than the mean rate of global loss.

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[125] Smith, B.D., Sinha, R K., Zhou, K., Chaudhry, A A , Renjun, L , Wang, D , Ahmed, B., Haque, A K.M. Aminul, Sapkota, K and Mohan, R.S.L. 2000 Register of water development projects affecting Asian river cetaceans Pages 22-39 *In* R.R. Reeves, B.D. Smith and T. Kasuya (eds.), *Biology and Conservation of Freshwater Cetaceans in Asia*, IUCN Occasional Papers Series No 23 Gland, Switzerland.

[126] WCS/BCDP 2014. *Educational outreach, training and consultations in the three wildlife sanctuaries for freshwater dolphins in the Sundarbans, Bangladesh*. Background document prepared by the Wildlife Conservation Society's Bangladesh Cetacean Diversity Project, Khulna, Bangladesh.

[127] IPCC (2007), Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007, M L Parry, O.F. Canziani, J.P. Palutikof, P.J van der Linden and C.E Hanson (eds), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

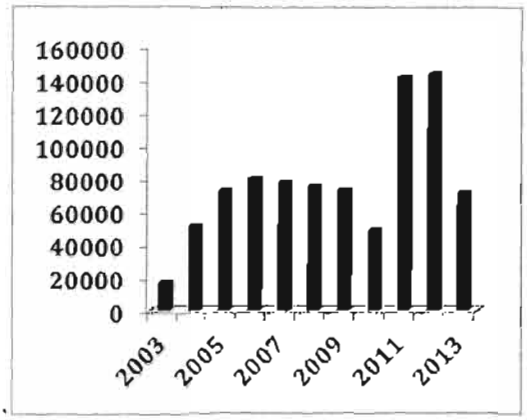
[128] Loucks, Colby, Shannon Barber-Meyer, Md Abdullah Abraham Hossain, Adam Barlow, Ruhul Mohaiman Chowdhury 2010. Sea-level rise and tigers: predicted impacts to Bangladesh's mangroves. *Climate Change* 98 291-98.

[129] Intergovernmental Panel on Climate Change (IPCC) 2007. Climate Change 2007: The Physical Basis, Summary for Policy Makers Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. World Meteorological Organization and United Nations Environmental Program. (Available from http://www.ipcc.ch/SPM2feb07.pdf)

[130] Rahmstorf S. 2007. A semi-empirical approach to projecting future sea level rise. Science 315: 368–370.

[131] MoEF, 2005

landscape.[135] By and large, the boat owners and tour operators are conservation conscious and consider dolphins central to their business.[136]



78. Trajectory of tourism development can have differential impacts on the ecology and economy of the region. Responsible, community based nature tourism can offer significant income-earning opportunities for the local people who are otherwise dependent on fisheries for livelihoods. On the contrary, unplanned/irresponsible tourism could put further strain on the fragile ecological fabric of the Sundarbans due to overdevelopment and intensive use of habitats like mangroves, creeks, river channels etc. Irresponsible tourism development and reckless tourist behavior can also disturb dolphins and other wild fauna which are already under stress due to a multitude of factors described above. Unplanned tourism will also have severe social implications including the marginalization and dislocation of local people, unequal distribution of benefits, cultural contamination etc.

79. In addition there are additional potential threats to biodiversity in the project landscape – not serious at present but likely to increase if the present trend continues. Use of high quantities of fertilizers and pesticides in agriculture, aquaculture, household wastes (including untreated sewage) from urban areas and industrial discharges cause pollution of water channels. Though not reported on a massive scale, invasive alien species, such as water hyacinth (*Eichhornia crassipes*), can pose a serious threat in future as these species have already established in many other wetlands and river channels.

C. Baseline Analysis

Baseline projects/ programmes:

Investment from national government

80. The Government of Bangladesh invests around 120 million dollars annually through the Ministry of Environment and Forests for effective environmental management and biodiversity conservation in the country. Of this, Forest Department receives around 43 million dollars annually from the Ministry's national budget allocation. Almost half of the fund that the

[135] Forest Department
[136] WCS/BCDP 2014. *Educational outreach, training and consultations in the three wildlife sanctuaries for freshwater dolphins in the Sundarbans, Bangladesh*. Background document prepared by the Wildlife Conservation Society's Bangladesh Cetacean Diversity Project, Khulna, Bangladesh.

Strengthening Regional Cooperation for Wildlife Protection (SRCWP) Project on natural resources and biodiversity conservation in various ecosystems, Sustainable effort to ensure access to safe drinking water and sanitation in southwest Bangladesh (SIMAVI); Sundarbans Environmental and Livelihood Security (SEALS) Project etc. These programmes form the baseline for the present GEF project.

D. Long-term Solution and Barriers to Achieving the Solution

83. The unique aquatic habitats of the Ganges and the Irrawaddy dolphins in the Sundarbans are under increasing threat due to overharvesting of aquatic species (fish and other prey species of dolphins); adoption of highly destructive fishing practices (e.g. gill nets, poison fishing, mosquito nets etc.); reckless handling of incidental by-catch; entanglements of dolphins in the fishing gear; increasing maritime traffic (disrupting the biology of dolphins, wake action causing coastal erosion, sedimentation of pools preferred by dolphins, mortality due to collision with vessels, discharge of pollutants etc.); unplanned development in the upstream such as barrages, industrial establishments, flood diversion systems and roads (freshwater abstraction, diminished freshwater influx); commercial tourism operations (increased cruise through the water channels; exposing unused habitats etc.); habitat destruction and land-use change (conversion to agriculture, aquaculture, settlements etc.); pollution and spread of invasive alien species. Siltation and loss of river channels and small pools cause loss of connectivity between river channels, blocking migration paths of fish and dolphin species. Climate change compounds these problems.

84. Establishment of three new protected areas in 2012 is a significant first step towards the conservation of dolphins in the Sundarbans. However, these protected areas alone cannot ensure the long-term survival of dolphins and their habitats given the complex nature and scale of threats mentioned above. In order to improve the conservation prospects of the dolphin habitats in the Sundarbans, long-term solutions need to be anchored in several key areas such as: establishing a robust database about the preferred hotspots outside the present protected area network; improving the management effectiveness and informed decision making in the three new dolphin sanctuaries; intensive capacity building of Forest Department staff; phasing out destructive fishing practices in the dolphin hotspots; promotion of alternate and viable livelihoods (value added fishery-based products, nature-based tourism, alternate income generating activities etc.) for local communities in order to wean them away from destructive resource use practices; and creating regional and national level institutional mechanisms for cross-sectoral dialogue and action that promotes integrated approaches for aquatic ecosystem management. In short, the long-term solution to be pursued for the sustainable management of the globally significant aquatic biodiversity of Bangladesh would include consolidating the key habitats of aquatic biodiversity particularly that of the Cetaceans, while also taking into account development imperatives, need for sustaining livelihoods and also addressing retrogressive factors including the anticipated impacts of climate change with active support and involvement of government, local communities, NGOs and partners. There are, however, a couple of barriers to realizing this long-term solution.

Barrier 1: Limited government capacities to mitigate threats to globally important aquatic habitats and species

however, there is perceptible disconnect between the objectives of conservation, economic development and livelihood aspirations in the region. As has been described in the Threats section, there are several threats to the globally significant biological diversity of the region. Some of these threats emanate from outside the premises of the protected areas. For instance, developmental programmes in the upstream have significant impacts on the conservation prospects of the project landscape. However, development planning in the upper catchments seldom considers their potential impacts on downstream biodiversity. Similarly, fishery activities rarely take into account the impacts of depletion of fishery resources on cetacean diversity. In short, as of now, sustainable resource use is not a common denominating factor except for the conservation sector. Better sectoral coordination would have helped in maximizing synergies, minimizing adverse impacts, and reconciling competing objectives.

90. At present, the conservation sector (Forest Department) has limited or no institutional opportunities to engage with such developmental planning. Furthermore, these developmental sectors do not also have any inbuilt or externally stimulated mechanisms for internalizing the elements of biodiversity conservation into their developmental processes. In the absence of such opportunities/ mechanisms, the effectiveness of management of protected areas created for dolphins becomes ineffective/ even a non-starter. Absence of robust data is also a serious constraint in effectively articulating a case for mainstreaming biodiversity conservation in developmental processes in the region.

Barrier 2: Local stakeholders, especially local communities have limited incentives and capacities to support aquatic biodiversity conservation

91. As has been dealt in detail in the Threats section, unsustainable resource use (overharvesting, destructive practices etc.) by local fishers is one of the key drivers of resource depletion in the project landscape. Given the high population pressure and prevailing socio-economic backwardness in the Sundarbans, conservation efforts are unlikely to succeed without strong support and endorsement from local community. At a fundamental level, the key barrier to effectively integrating conservation considerations into the economic and livelihood activities of local fishers is their apparent inability to move out of the vicious spiral of 'diminishing natural stock-prevailing poverty – deepening resource depletion'. During the project preparation phase, it was observed that most fishers are aware of the harmful nature of overharvesting of fishery stock. However, extreme economic backwardness, offer them no margins for economic sacrifices for the sake of conservation.

92. Other barriers on this account include inadequate technical know-how about alternate, less destructive fishing gear and fishing practices. At the same time, even when such knowhow is made available, in the baseline scenario, the fishers lack adequate economic incentives to shift away from the current destructive fishing gears (e.g. mosquito nets) and malign practices (poison fishing) to more benign and sustainable options. The fishers also have weak capacity to access new economic opportunities (both existing and emerging – e.g. Tourism, value added fish products etc.) and develop alternative income generating opportunities over traditional sources of livelihood (fishing) that are rapidly becoming unviable as a result of resource degradation. While there are some interventions (both government and donor driven) to help economically disadvantaged communities, there is need to deepen this engagement through community driven resource management systems. However, such a resource governance system that promote options for sustainable fisheries; avoid destructive fishing practices; provide better market access; and promote alternate income generating activities is non-existent

	captain's sighting network, providing guidance for dolphin-watching within tourism programmes, including input from tourism operators into PA management plans.
Local social service, conservation NGOs	Local NGOs will be involved, as appropriate, to provide information to communities on aquatic conservation, sustainable fisheries management, and strategies to cope with climate change and declining freshwater flows – local NGOs including Prodipan, CARINAM, Rupantar, and Coastal Development Partnership. They may also be involved in community mobilization and awareness raising activities and in conflict mitigation. Since some of these NGOs are involved in promoting sustainable livelihoods, the project will partner with them to strengthen appropriate actions and to ensure that the NGO promoted activities are compatible with conservation actions being promoted by this project.
International conservation organizations	Several international conservation organizations have been active partners in conservation actions in Bangladesh. For example, WCS has been providing support through capacity building, research and monitoring, educational outreach, and the development of management plans for aquatic conservation. Other international conservation organizations active in Bangladesh include IUCN, WWF, and CARE International etc. Such organizations will have a strong role under Component 1, where a partnership has been envisioned to strengthen national and regional capacities to manage threatened aquatic species by exchanges of information, knowledge, expertise and experiences. Additionally, specific organizations may be used for implementing certain aspects of the project – such as to support PA management planning, capacity development etc. Some of the organizations will also provide co-finance to this project.

II: Strategy

A. PROJECT RATIONALE, POLICY CONFORMITY AND DESIGN PRINCIPLES

Project Rationale

96. The Government of Bangladesh is requesting GEF support to put in place an enabling management framework for strengthening the biodiversity conservation prospects of the aquatic environment of the Sundarbans - particularly the key habitats of the Ganges and the Irrawaddy Dolphins. As already described in the Situation Analysis section, the biodiversity of the Sundarbans is highly globally significant for its unique attributes. More specifically, the project landscape supports one of the last remaining and viable populations of the Ganges and the Irrawaddy dolphins across the world. As such, if effective conservation actions are supported, the project landscape would hold the key for ensuring the long-term survival of these two species on a global level. The project landscape is also highly vulnerable in the context of climate change and the two cetacean species targeted by the project have high indicator values in understanding and monitoring the impacts of climate change.

97. Further the project area also has considerable national and local significance as it provisions vital ecosystem services, sustains human livelihoods (primarily through fisheries) and supports economic activities (e.g. ecotourism). Notwithstanding such high ecological, economic and livelihood significance, there is clear evidence that the region's natural resources have been increasingly subjected to over-exploitation. In the classical case of "the tragedy of the commons", the poor and marginalized communities (primarily fishers) are compelled to deepen their dependence on diminishing natural stock and the degraded resources further impoverish their resilience. The threatened status of cetaceans is an indicator of this declining prospect of biological diversity in the Sundarbans. As an apex predator in the waterways of the Sundarbans, the conservation of cetaceans represents not only safeguarding them from the impending threats of extinction; but also restoring/ maintaining the ecological health of the aquatic environments of the Sundarbans. However, it is only through reviving the integrity of already degraded ecosystems and more importantly through the prudent use of natural resources that local communities will be able to reinstate their resilience and improve their social and economic welfare that will ultimately reflect in the improved conservation prospects of the

avoid or minimize adverse impacts on biological diversity. The project also supports Article 12: Research on targeted priority issues related to biodiversity of the Sundarbans and provides training in technical and managerial areas and linking exchange of information. Article 13: which stresses education and awareness will also be a key element in the project.

102. This project will also contribute to achieving the CBD's Aichi targets. In particular, it will promote better understanding of aquatic and wetland biodiversity, which will directly contribute to Aichi Target 1 - "By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably." Furthermore, the project will directly support Target 11 - "By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes", Target 5 - "By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced" and Target 6 - "By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits." The project also addresses key elements of the Programme of Work on Protected Areas, including: 1.2 - To integrate protected areas into broader land- and seascapes and sectors so as to maintain ecological structure and function; 1.4 -To substantially improve site-based protected area planning and management; and 1.5 - To prevent and mitigate the negative impacts of key threats to protected areas. Over all, the project is in line with the above mentioned decisions of CBD COP and shall further strengthen the national efforts on the conservation of aquatic biodiversity.

B. Project Goal, Objective, Outcomes and Outputs/Activities

103. The long-term goal to which the project will contribute is the sustainable management of the globally significant aquatic biodiversity of Bangladesh. This the project will achieve by consolidating the key habitats of the Sundarbans particularly that of cetaceans, while also taking into account development imperatives and need for sustaining livelihoods. The project will also address retrogressive factors including climate change. The immediate objective of the project is to build capacity to effectively manage the existing protected areas established for dolphin conservation and also expand their operational coverage while still meeting the livelihood aspirations of local communities especially the fishers. The project will further build on the baseline initiatives in the region. The project objective will be realized through the following Outcomes and Outputs.

Outcome 1: **Important aquatic ecosystems of the Sundarbans supporting the globally threatened species of cetaceans conserved.**

104. This outcome focuses on the transformative changes that need to be made in terms of planning and execution framework to address existing and emerging threats to biodiversity in the project landscape. It will put in place a robust knowledge management and effective implementation system congruent with conservation needs. Knowledge generation and dissemination of will be improved leading to informed and better decision making related to

surrounding waters to dolphin/fisheries protection efforts; (9) studying the potential for sorting live fish fingerlings and non-target crustaceans from the catch of saltwater shrimp and freshwater prawn PL collection nets, including field trials with local fishers; (10) assessing the feasibility of using fixed acoustic detection devises to monitor freshwater dolphin abundance and occupancy; (11) assessing the potential of sustainable fishery livelihoods and technological options/ innovations in fishing gear for conservation-friendly fisheries; (12) economics and market mechanisms (value addition and end-user markets) for enterprises based on natural resources; (13) carrying capacity assessment for planning responsible tourism (including costs and distribution of benefits etc.); (14) assessing the vulnerability of the Sundarbans' habitats to climate change (short, medium and long-term)– at species and ecosystem levels, and also on local livelihoods; (15) the long-term impacts and challenges of excessive use of chemical fertilizers and pesticides in aquaculture; (16) ecosystem alterations due to upland developments and water abstraction; (17) feasibility of adopting GIS mapping tools to inform physical development and placement of infrastructure across the landscape; and (18) protocols for the periodic monitoring of natural resources including participatory resource monitoring systems.

106. While above research activities were identified as vital, considering the limited funds available with the project, it wouldn't be realistic to support all these research themes. The project can support undertaking priority research topics (e.g. the status and distribution of cetaceans in the whole of the Sundarbans including identifying additional dolphin hotspots and high priority areas particulalry that of Irrawaddy dolphins in the western Sundarbans), while other research programmes will be conducted in partnership with universities and other institutions as part of own programmes, collaborative efforts or student dissertation works. Keeping this in mind, in the initial phases of the project, a thorough research prioritization exercise will be undertaken on key research gaps, with inputs from research institutions/ academia/ NGO partners etc. This will help the project to collect, collate and synthesize the existing knowledge (both formal and customary) to support narrow down on critical knowledge gaps. This information will help prioritize research to be supported under the project while also helping identify co-financing partners for conducting additional research.

107. This Output will also support effective outreach and knowledge dissemination for translating the research knowledge into user-friendly information for field practitioners, policy makers and local communities. In order to integrate conservation considerations in the activities of economic sectors, *biodiversity-friendly sectoral guidelines* will be prepared for key sectors such as Fisheries, Tourism, Maritime traffic, Industrial Development and aquaculture. These guidelines shall critically assess the existing land-use and development practices in and around the project area and will provide a plan for how existing practices/ operations of different sectors can be made more compatible with the conservation needs.

108. A review of the existing national and international "best management practices" on minimizing adverse impacts on biodiversity for each sector shall be undertaken. Accordingly, appropriate ecologically viable, economically feasible and socially acceptable measures will be identified and adapted. Extensive consultation with various stakeholders is envisaged in the formulation of biodiversity-friendly sectoral guidelines as this is crucial to ensure necessary ownership of various agencies/ sectors for whom the guidelines are targeted.

109. *Shushuk mela,* an innovative outreach programme (initiated under the BCD project by the WCS), is an annual, month-long, vessel-based, interactive, educational outreach exhibition,

water therein (paragraph) (p) of Article 2). Such sanctuaries shall equate to IUCN Protected Areas Management Category IV (Habitat/Species Management Area).

115. *Delineation of buffer zones:* This output also will support declaration of buffer areas (at least 50,000 ha) in and around the protected areas (both existing and proposed) that will provide further buffer against direct threats to the biodiversity of the protected areas. Mostly, these buffer areas will be nested within the SRF which is a part of Bangladesh's permanent national forest estate. The core of these buffer areas will equate to IUCN Category VI Protected Area with provisions for the sustainable use of natural resources. Although these forests in Bangladesh are not legally considered as protected areas, such forests are expected to continue to be under strong government protection. This output will finance the design of buffer areas and preparation of buffer area management plans, in order to ensure that they adequately take into account landscape-wide conservation considerations of connectivity, resource use, resource allocation and make appropriate provision for their sustainability. The buffer area management plans will be designed to facilitate joint conservation work across the PAs on various aspects of biodiversity conservation.

116. *Capacity development among conservation and economic sector staff*: This output will support building capacities of conservation and other economic sector staff in sustainable natural resources management. To start with, there is a felt need to develop appropriate management capacities of the Khulna Forest Division (the focal point of the project) in aquatic biodiversity conservation planning and implementation. This will be accomplished through innovative and interactive training programs that will include professional training opportunities and sustained mentoring support. Priority areas for trainings include the use of MIST software (a user-friendly spatial management information system designed to service PA management), and participatory techniques to work with local communities and other stakeholders, enforcement (e.g. surveillance techniques and successful prosecution), monitoring protocols (e.g. trends in freshwater dolphins and other aquatic fauna and on documenting threats in the protected areas), and community outreach (e.g. pparticipatory governance systems for effective resource management in collaboration with local communities). Additional topics for trainings shall include: (a) PA and buffer area management planning; (b) habitat improvement techniques with focus on aquatic biodiversity; (c) legal framework on environmental protection ; (d) business planning (financial planning, budgeting); (e) project management (including operational planning); (f) conservation of mangroves, water channels, aquatic ecosystems; etc.

117. Capacity development among economic sectors (fisheries, tourism, maritime, industries and aquaculture) will be anchored through the familiarization of the biodiversity-friendly sectoral guidelines developed for each of these sectors. In furtherance of this, under this output, detailed training curriculum will be developed. The presence of research institutions, universities, other educational and training institutes and NGOs (both national and international) will be utilized towards this. Inadvertently, it is also presumed that this will lead to the development of necessary local capacities within local agencies and institutions on aquatic biodiversity conservation. Apart from imparting training on biodiversity-friendly sectoral guidelines, the training content for economic sectors will cover the following areas (though specifics may vary from sector to sector): appreciation of global biodiversity significance of the Sundarbans and cetaceans; impacts of current fishing practices on biodiversity and the long-term sustainability of the fisheries sector; ecosystem approach to fisheries management; monitoring, regulation and surveillance of fishing activity; methods for

National Aquatic Conservation Plan linking wetland management with Critical Area management. This group will periodically assess and review the overall status of aquatic biodiversity conservation in the country and suggest appropriate actions and advisories (including policy processes) to the national government.

121. Second, under "the Wildlife (Preservation and Protection) Act, 2012, the Forest Department is the lead government agency for protected area management in Bangladesh. That means, management of the PAs and buffer areas in the project landscape will be led by the Wildlife and Nature Conservation Circle of the Forest Department, and the Reserve Forest management will continue to be under the Forest Management Circle. The project will support joint work between these two units within the Forest Department (in Khulna Circle) to effectively work together to implement and promote aquatic biodiversity conservation in the Sundarbans.

122. As already mentioned, majority of the issues threatening the conservation prospects of the project landscape are multi-sectoral in nature. However, at present, there are no formal arrangements/ institutional mechanisms at the regional level, wherein various sectors/ actors operating in the region can come together and discuss and initiate joint action to resolve such issues. This is a major stumbling block. The project will, therefore, support establishing a Regional Cross-Sectoral Stakeholder Committee under the chairmanship of the Conservator of Forests in charge of the Khulna Circle. Key department officials at the district/ local level will be represented in this Committee (including forests, fisheries, tourism, ports and maritime traffic, agriculture/ horticulture, industries). The Committee shall also have representation from private sector, NGOs (national and international), local communities and other key stakeholders in the region. It shall meet at least twice a year to consider ways to: (i) improve coordination and information sharing among the sectors related the implementation of the biodiversity-friendly sectoral guidelines developed under Output 1.1; (ii) ensure that technical expertise from each department/ sector is made available to the process of implementation of biodiversity-friendly sectoral guidelines; (iii) identify potential jurisdictional overlaps and conflicts in safeguarding the concerns of conservation and recommend strategies for addressing these; and (iv) coordinate sector support provided at the community/ local level to maximize synergies. Finally, this outcome shall also develop a replication strategy for piloting similar conservation approaches in other aquatic areas of the country including upstream policy engagements.

Outcome 2: Community-based ecosystems management systems in place to support aquatic biodiversity conservation

123. This outcome will support strengthening community capacities for managing aquatic ecosystems. This will be achieved through: a) developing a Community Based Resource Management Plan (CBRMP) that will explicitly provide for community level resource management prescriptions (particularly that of fisheries); and b) providing limited implementation support (as demonstration units) for the CBRMP and other resource-based and alternate income generating activities. Further, community institutions will be developed/ revitalized (such as CMCs) for the effective implementation of the CBRMP. The project will promote a strong participatory and consultative approach to ensure that partnerships are strengthened amongst local communities, government agencies, NGO's and other projects working on sustainable development initiatives in the project landscape. As is the case of other capacity development efforts, assistance of local/ regional research/ training institutions, NGOs

the project landscape and the project will re-vitalize the CMCs for implementing the CBRMP. Monitoring groups will be formed among the local communities and participants will be trained in collecting data on change realized as a result of project interventions. Communities will also be trained on habitat restoration techniques, participatory resource appraisal, clean-up of wastes such as discarded fishing nets, other types of maintenance activities within the dolphin sanctuaries, monitoring of dolphin entanglements and other potential illegal activities etc.

Output 2.2 Strategies for alternate income generation and livelihood diversification developed and implemented leading to reduced dependence on natural resources.

128. This output will support identification and implementation of select alternate income generating and livelihoods diversification activities so that local communities meet part of their economic needs from supplementary sources and thereby reduce their excessive dependence on natural resources particularly the fishery stock. Preparation and implementation of alternate income generation and livelihood diversification strategies in the project area shall be carried out in association with the Social Service NGOs operating the area. Through extensive stakeholder and expert consultations, small business plans will be prepared either at the level of resource-user group or at the level of the community/ village/ CMCs.

129. Some of the indicative activities that can be supported under this output include fishery based livelihoods such as fish net/trap making/repair; cage culture for commercially valuable fish and crabs; pond culture for fish and crab; fish feed production; integrated shrimp-rice cultivation; drying/smoking fish; integrated homestead farming; betel leaf cultivation; etc. Agriculture/Horticulture/Animal Husbandry based livelihoods include nypa palm cultivation; tree and horticultural nursery; homestead plantations of medicinal species; mushroom cultivation; frog/snail/rabbit farming; poultry/duck rearing; suck-cum-fish culture in family ponds; pigeon farming; cow rearing (beef fattening, milk cow rearing) etc. Other livelihood options that can be developed based on processing natural resources are cultivating and processing nypa palm, producing molasses, mats, thatching, and fans; mat/basket weaving with grasses/reeds; broom making from palm leaves and coconut leaf stems; producing honey and wax products; producing coconut by-products (e.g., mattresses, ropes, jewelry, buttons, oil, show pieces); water hyacinth collecting, processing and marketing (e.g., fire sticks [alternative to fire wood or tushkaht], building materials (e.g., pressboard), fiber/paper, animal feed, and fertilizer); organic toiletries and beauty products (e.g., reusable sanitary pads, coconut hair oil, mud packs, herbal facial packs); bio-fuel production from 'waste' materials for local motorized transport (e.g. from water hyacinths, rice husks, invasive plants or weeds); food processing, preservation, and marketing. Livelihood opportunities also lie in the tourism sector such as producing organic food for tourist vessels (e.g., grains, vegetables, meats/poultry, sweets); village home stays; cultural presentation groups (songs, dance, theater); guide/information services; day trips with fisher folk; dolphin watching tours; bird watching tours; sport fishing trips; selling souvenirs and curios; selling provisions for visitors; operation of public toilet facilities; operation of watchtowers near dolphin hotspots; operation of guest house/restaurant/tea house etc. Small enterprises or cottage industries such as tailoring/dress making; knitting; embroidery; block printing; produce and market products from waste/recycled materials; cement-block making (embankments, buildings); bicycle/motorbike/boat engine maintenance/repair; book binding; local transport operations can also be explored under this output.

the much needed alterations in the management approach to secure the long-term survival of the cetaceans. Broadly, the GEF investment aims at triggering a change in resource governance in the target project area and generate the following global, national and local benefits: a) establishing a robust database about the preferred dolphin hotspots outside the present protected area network; b) expanding the coverage of protected areas/ buffer areas for dolphin conservation (by around 100,000 ha); c) improving the management effectiveness and informed decision making in the new dolphin sanctuaries; d) intensive capacity building of Forest Department and other economic sector staff; e) preparation of biodiversity-friendly sectoral guidelines for key development sectors; f) preparation of Community Based Resource Management Plan (CBRMP); g) phasing out destructive fishing practices in the dolphin hotspots; h) promotion of alternate and viable livelihoods (value added fishery-based products, nature-based tourism, alternate income generating activities etc.) for local communities in order to wean them away from destructive resource use practices; and i) creating national and regional level institutional mechanisms (National Technical Group on Aquatic Conservation and Regional Cross-Sectoral Stakeholder Committee) for cross-sectoral dialogue and action that promotes integrated approaches for aquatic ecosystem management.

133. The above-mentioned GEF alternative is expected to lead to the sustainable management of the globally significant aquatic biodiversity of Bangladesh that would include consolidating the key habitats in the Sundarbans particularly that of the Cetaceans, while also taking into account development imperatives, need for sustaining livelihoods and also addressing retrogressive factors including the anticipated impacts of climate change with active support and involvement of government, local communities, NGOs and partners. The baseline projects in the project area comprise mostly of programmes of government, bilateral/ multi-lateral donors institutions relevant to biodiversity, poverty reduction and natural resource use. GEF funding will incrementally leverage new skills, practices and technologies through building capacities across identified stakeholders. GEF financing will provide additional assistance for cross-cutting capacity development and knowledge management that will fill a critical gap in the existing baseline project to enable the replication and scaling up of integrated approaches for biodiversity conservation. The IC matrix details the baseline expenditures, and the incremental cost of realizing each outcome, as well as how the incremental costs are to be shared by the GEF and different government departments. (Incremental Cost Matrix is in Annexure 8).

134. More specifically, the most important direct global benefit the project will deliver include conservation of globally important habitats (including new protected areas, buffer areas) totaling around 100,000 ha in the Sundarbans of Bangladesh, that houses globally threatened populations of the last two remaining freshwater dolphin species. Through this project Bangladesh will ensure that it is a global safety net for preventing the extinction of the two threatened, iconic aquatic species as well as other globally threatened species. The areas identified to create protected areas have significant global populations of these species. In addition to protection of breeding populations of the two globally threatened cetacean species, the project will also benefit other aquatic species including the Critically Endangered river terrapin (*Batagur baska*), Endangered masked finfoot (*Heliopais personatus*), Vulnerable small-clawed otter (*Aonyx cinerea*), and the estuarine crocodile (*Crocodylus porosus*). The Sundarban mangroves are also important bird areas (IBA), which host populations of *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Haliaeetus leucoryphus, Heliopais personata, Eurynorhynchus pygmeus,* and *Rynchops albicollis* [139]and conservation

[139] http://www.birdlife.org/datazone/userfiles/file/IBAs/AsiaCntryPDFs/Bangladesh.pdf

F. Country Ownership: Country Eligibility and Country Driven-ness

138. The project is consistent with the GEF5's *BD Strategic Objective 1: Improve sustainability of PA systems.* In line with this SO, and especially through its Outcome 1, the project will fill a major gap in national PA system by expanding the PA estate by establishing new PAs and buffer areas to conserve globally important aquatic biodiversity. These will conserve a host of globally important species, particularly critical populations of globally threatened Irrawaddy and Ganges river dolphins. Bangladesh is the only country in the world where both these species are found in large numbers, which provide a safety net for these species' survival against possible extinction threats. The project will assist the Forest Department to effectively manage these new PAs, which will be nested within a wider conservation management of the Sundarbans Reserve Forest. The project will ensure that there is strong support and involvement of local communities, and other stakeholders' in these protected areas and buffer area management, so that their long term integrity and sustainability are ensured.

139. This project is fully aligned with Bangladesh's Sixth Five Year Plan (2011-2015). The Plan, which serves as the primary development agenda for the country, has prioritized several environmental management actions including wetland management. It notes that "the government is very keen to see the change in (the) management paradigm and to consolidate the co-management system not only in the Tanguar Haor but also for overall wetland management in Bangladesh". It has further stressed that "watershed management, wetland conservation etc. will be initiated in new (protected) areas and also will be intensified in the (existing protected) areas for better conservation of nature in the country during the plan period." The project is also well aligned with the objectives of the National Biodiversity Strategy and Action Plan for Bangladesh (August 2004), which aims to (1) conserve and restore the biodiversity of the country; and (2) maintain and improve ecosystem integrity. The project further responds to the Bangladesh Biodiversity National Assessment and Programme of Action 2020 (BPA 2020) –especially Project 7 – "Community based conservation and management for aquatic species like Ganges River and Irrawaddy dolphin." The project document has also considered the National Capacity Self-Assessment carried out in Bangladesh in 2007.

140. Bangladesh is fully committed to meet its obligations under the MEAs and the proposed project is intended to facilitate an important step towards developing the capacities for an effective national environmental management framework. Bangladesh ratified the Convention on Biological Diversity on 3 May 1994; the Convention to Combat Desertification on 26 January 1996; and the Framework Convention on Climate Change on 16 February 1994. In addition to the three Rio Conventions, Bangladesh has also acceded to or ratified several other international treaties and protocols that call for the protection and sustainable use of natural resources. These MEAs include: Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES); Ramsar Convention on Wetlands of International Importance; Convention on Migratory Species (CMS) etc.

G. Sustainability and Replicability

Sustainability

141. *Ecological sustainability:* The project will support long-term conservation of the globally significant biodiversity in the Sundarbans. The project will augment the conservation prospects of the biodiversity of the project area through the following key measures: (i) knowledge

145. There are various aspects of project design that facilitate replication. The project will strengthen the enabling environment for biodiversity conservation in the Sundarbans. The project will undertake research studies to address key knowledge gaps on the biodiversity values of the region (Outputs 1.1), which will be made available to wider audience. Similarly, the lessons learned from project implementation will also be made easily accessible through the knowledge management system. Moreover, the project's training efforts will be associated and internalized within training institutions/ NGOs/ Universities so that these can become an accessible resource to other aquatic areas where there is interest in replicating the project approach. Training programs will be accompanied by handbooks/ manuals/ compendiums. Further, during the latter phase of the project, efforts will be made to replicate the project approach in other aquatic habitats in the country through the National Technical Group on Aquatic Conservation constituted under the project.

III: Strategic Results Framework

Project Strategy	Indicator	Baseline	Targets[140]	Means of verification	Risks and Assumptions
The long-term goal to which the project will contribute is the sustainable management of the globally significant aquatic biodiversity of Bangladesh by consolidating the key habitats of the Sundarbans particularly that of Cetaceans, while also taking into account development imperatives, need for sustaining livelihoods and also addressing retrogressive factors including the anticipated impacts of climate change with active support and involvement of government, local communities, NGOs and partners.					
Immediate Objective: To build capacity to manage the existing protected areas established for dolphin conservation and also expand their operational coverage (new protected areas and buffer areas) while still meeting the livelihood aspirations of local communities especially the fishers.	Extent of aquatic environment of the Sundarbans brought under effective conservation planning and management framework	0 ha	102,000 ha	Mid-term and Final Technical Evaluation	The population dynamics of flora and fauna may depend on various extraneous factors over which project may have little control.
	Population status of the following critical species remain stable or increases: Ganges freshwater dolphin Irrawaddy dolphin	 225 451	Remain stable or increase by project end	Monitoring reports, Population estimation reports, Publications of Forest Department Research and Monitoring Reports	
Outcome 1: Important aquatic ecosystems of the Sundarbans supporting the globally threatened species of cetaceans conserved	Improved management effectiveness PAs as measured and recorded by Management Effectiveness Tracking Tool (METT)	46 out of 300	Increase in METT scores (at least around 70 out of 300) by 30 percent by year 5	METT scorecard prepared annually. Independent mid-term and final evaluations	Government agencies may not show adequate interest required for bringing in the necessary transformative change in the conservation prospects of the project landscape.
	Biodiversity-friendly Sectoral Guidelines prepared and implemented leading to effective integration of biodiversity considerations into economic sector practices	0	At least five Sectoral Guidelines (Fisheries, Tourism, Maritime traffic, industrial development and Aquaculture prepared and adopted.	Approved documents Mid-term and Final Evaluations	

[140] The time frame for realizing project targets is project end (2019), unless otherwise specified.

Project Strategy	Indicator	Baseline	Targets[140]	Means of verification	Risks and Assumptions
	Improvement in Systemic Level Indicators of Capacity Development Scorecard (Annex 19)	SYSTEMIC LEVEL: 1. Capacity to conceptualize and formulate policies, legislations, strategies, programme (B/L 20%, Tgt. 30%); 2. Capacity to implement policies, legislation, strategies and programmes (25%, 30%); 3. Capacity to engage and build consensus among all stakeholders (15%, 25%); 4. Capacity to mobilize information and knowledge (20%, 30%); 5. Capacity to monitor, evaluate and report and learn at the sector and project levels. (100%, 20%)		Mid-term and Final Evaluation	and capacity building and Trained staff may not continue in current roles
Outcome 2: Community-based ecosystems management systems in place to support aquatic biodiversity conservation.	Number of fishers in the project area using sustainable fishing gear as evidenced by mesh size	0	30% of fishers follow the mesh size norms set up by the project by project end	Documents of Forest Departments Research Reports Mid-term and Final Evaluations	The livelihood activities supported under the project may not add significantly to income opportunities of local people so that the dependency on natural resources is reduced.
	Amount of resources flowing to local communities annually from	0	USD 0.1 million by year 5 (target value to be re-	Records of Forest Departments, CMCs	

IV: Total budget and Work plan

Award ID:	00083742	Project ID:	00092054
Award Title:	Expanding the Protected Area System to Incorporate Important Aquatic Ecosystems		
Business Unit	BDG10		
Project Title:	Expanding the Protected Area System to Incorporate Important Aquatic Ecosystems		
PIMS no.:	4620		
Implementing Partner (Executing Agency)/ Responsible partner	MoEF/ FD		

GEF Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	Atlas Budget Description	Total	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Budget Note
Outcome 1: Important aquatic ecosystems of the Sundarbans supporting the globally threatened species of cetaceans conserved.	FD	62000	GEF	71300	Local consultants	135,700	14,570	30,597	32,054	33,511	24,968	1
				71200	International Consultants	35,000	3,500	7,350	7,700	8,050	8,400	2
				72100	Contractual Services-Companies	527,000	52,700	110,670	115,940	121,210	126,480	3
				71600	Travel	40,000	8,000	8,000	8,000	8,000	8,000	4
				75700	Learning Cost	40,000	8,000	8,000	8,000	8,000	8,000	5
				71400	Contractual Services Individual	48,000	9,600	9,600	9,600	9,600	9,600	14
				72200	Equipment & Furniture	15,000	1,500	3,150	3,300	3,450	3,600	6
				74200	Audio-visual and printing production costs	40,000	8,000	8,000	8,000	8,000	8,000	7
				72500	Office Supplies	20,000	4,000	4,000	4,000	4,000	4,000	5
Total Outcome 1						**900,700**	**109,870**	**189,367**	**196,594**	**203,821**	**201, 048**	
Outcome 2: Community-based ecosystems management to support aquatic biodiversity conservation.	FD	62000	GEF	71300	Local consultants	15,000	1,500	3,150	3,300	3,450	3,600	8
				72100	Contractual Services-Companies	615,000	61,500	129,150	135,300	141,450	147,600	9
				71600	Travel	5,000	500	1,050	1,100	1,150	1,200	10
				74500	Miscellaneous	5,000	500	1,050	1,100	1,150	1,200	11
				74200	Audio-visual and printing production costs	5,000	500	1,050	1,100	1,150	1,200	12
TOTAL OUTCOME 2						**645,000**	**64,500**	**135,450**	**141,900**	**148,350**	**154,800**	
Project Management Cost	FD	62000	GEF	71400	Contractual Services Individual	72,400	14,480	14,480	14,480	14,480	14,480	13
				74599	UNDP DPC	8,384	1,593	2,424	1,823	1,272	1,272	16
TOTAL PROJECT MANAGEMENT						**80,784**	**16,073**	**16,904**	**16,303**	**15,752**	**15,752**	
TOTAL GEF ALLOCATION						**1,626,484**	**190,443**	**341,721**	**354,797**	**367,923**	**371,600**	

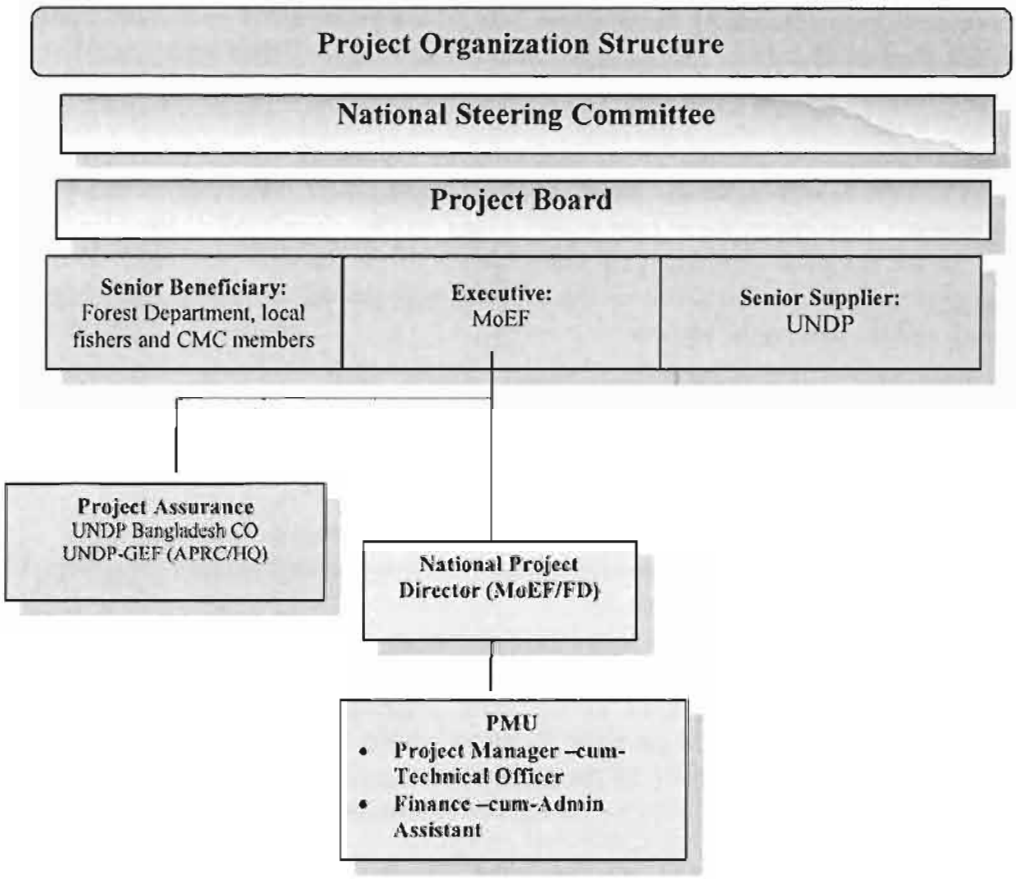
OUTCOME	OUTPUT NUMBER	OUTPUT	BUDGET (GEF resources, USD)
Outcome 1: Important aquatic ecosystems of the Sundarbans supporting the globally threatened species of cetaceans conserved	Output 1.1	Knowledge generation and dissemination system improves decision making related to the management of aquatic habitats and sustainable use of resources in the protected areas and buffer zones	284,500
	Output 1.2	New and additional areas to be managed as Protected Areas and buffer areas identified, notified and capacities developed among conservation and economic sector staff for strengthening the management effectiveness of biodiversity conservation efforts.	100,000
	Output 1.3	Support to the implementation of Management Plans of new PAs and buffer areas to address existing and emerging threats to aquatic biodiversity particularly the cetaceans	420,000
	Output 1.4	Monitoring and evaluation framework and replication strategy developed for effective aquatic PA management specifically for the Sundarbans and other aquatic ecosystems across country	96,200
Sub-total Outcome 1			**900,700**
Outcome 2: Community-based ecosystems management to support aquatic biodiversity conservation.	Output 2.1	Community based fishery management plan prepared, capacities developed and financial support extended for operationalizing sustainable fishing practices and conservation of aquatic biodiversity	325,000
	Output 2.2	Strategies for alternate income generation and livelihood diversification developed and implemented leading to reduced dependence on natural resources.	320,000
Sub-total Outcome 2			**645,000**
Sub Total PMC			**80,784**
GRAND TOTAL			**1,626,484**

V. MANAGEMENT ARRANGEMENTS

Project executive and implementing partner (GoB):

146. The project will be executed according to UNDP's National Implementation Modality (NIM), as per the NIM project management implementation guidelines agreed by UNDP and the Government of Bangladesh.

Project Organogram, Management Structure and Responsibilities



147. **Implementing Partner (IP):** At the national level, the Ministry of Environment and Forest (MoEF), will act as the Implementing Partner (Project Executive) of the project. Based on the standard NIM procedures, the MoEF will be responsible for the overall project and reporting to UNDP Bangladesh Country Office. The MoEF will establish a Project Management Unit (PMU) in Dhaka with a full time Project Manager –cum- Technical Officer and a Finance-cum-Admin Assistant. The Project Executive (MoEF) will appoint the Chief Conservator of the Forests as the National Project Director (NPD), given the strategic importance of the project. The NPD will be supported by the PMU.

148. **Responsible Party (RP).**The MoEF will designate the Department of Forest (DF), within the MoEF, as a responsible party to implement the project. The DF is best placed to carry out activities related to the project as they are the main focal agency for natural resources management in the region. As per the standard UNDP modality, the FD, as an RP, will be

Environment, Bangladesh Metrological Department, Department of Disaster Management, Bangladesh Coast Guard, Mongla Port Authority and relevant district administrations). The NPSC can co-opt members as deemed necessary.

Responsibilities

- Establish policies to define the functions, responsibilities, and delegation of powers for the implementing agencies and the Project Management Unit;
- Provide overall guidance on budget management and project activities;
- Facilitate coordination of project activities across institutions;
- Review project activities, and their adherence to the work plan set forth in the project document;
- Take decisions on the issues brought to its notice by cooperating agencies, departments, institutions, and UNDP;
- Provide advice and guidance on efficient and timely execution of the project;
- Initiate remedial action to remove impediments in the progress of project activities that were not envisaged earlier.

155. **Specific Responsibilities of Executive** (as part of the above responsibilities for the Project Board)

- Ensure that there is a coherent project organisation structure and logical set of plans
- Set tolerances in the Annual Work Plan and other plans as required for the Project Manager-cum-Technical Officer
- Monitor and control the progress of the project at a strategic level
- Ensure that risks are being tracked and mitigated as effectively as possible
- Brief Outcome Board and relevant stakeholders about project progress
- Organise and chair Project Board meetings
- The Executive is responsible for overall assurance of the project as described below. If the project warrants it, the Executive may delegate some responsibility for the project assurance functions.

156. **Specific Responsibilities of Senior Supplier** (as part of the above responsibilities for the Project Board)

- Make sure that progress towards the outputs remains consistent from the supplier perspective
- Promote and maintain focus on the expected project output(s) from the point of view of supplier management
- Ensure that the supplier resources required for the project are made available
- Contribute supplier opinions on Project Board decisions on whether to implement recommendations on proposed changes
- Arbitrate on, and ensure resolution of, any supplier priority or resource conflicts

The supplier assurance role responsibilities are to:

- Advise on the selection of strategy, design and methods to carry out project activities
- Ensure that any standards defined for the project are met and used to good effect
- Monitor potential changes and their impact on the quality of deliverables from a supplier perspective
- Monitor any risks in the implementation aspects of the project

support services to the IP, and recover the actual direct and indirect costs incurred by the MCO in delivering such services:

- Payments, disbursements and other financial transactions
- Recruitment of staff, project personnel, and consultants
- Procurement of services and equipment, including disposals
- Organization of training activities, conferences, and workshops, including fellowships
- Travel authorization, Government clearances ticketing, and travel arrangements
- Shipment, custom clearance, and vehicle registration.

161. The estimate for UNDP Country Office Support Services will be validated and recorded in a Letter of Agreement annexed to the project document.

Intellectual property rights

162. These will be retained by the employing organization of the personnel who develops intellectual products, either Government or UN/UNDP in accordance with respectively national and UN/UNDP policies and procedures.

- Other ATLAS logs can be used to monitor issues, lessons learned etc.. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually:

Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

- The APR/PIR includes, but is not limited to, reporting on the following:
- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR

Periodic Monitoring through site visits:

168. UNDP CO and the UNDP GEF region based staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Mid-term of project cycle

169. The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation expected to be in May 2015. The Mid-Term Review will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document.

170. The Terms of Reference for this Mid-term review will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC).

End of Project

171. An independent Terminal Evaluation will take place three months prior to the final PB meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term review, if any such correction took place). The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The Terminal Evaluation should also provide

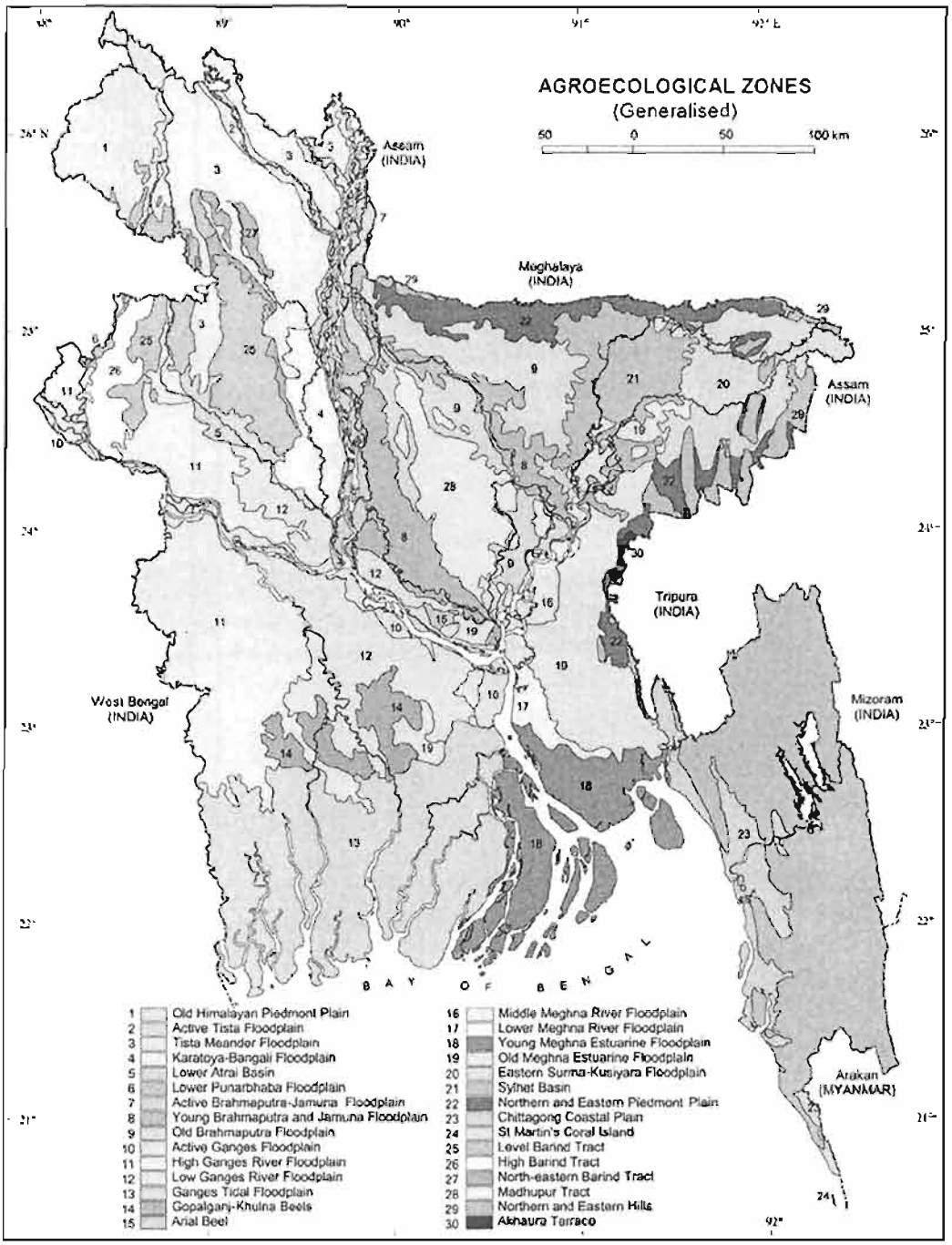
Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
output and implementation	▪ PMU ▪ Implementation teams	Work Plan's preparation.	the definition of annual work plans
ARR/PIR	▪ Project Manager- cum-Technical Officer ▪ PMU ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually
Periodic status/ progress reports	▪ Project Manager- cum-Technical Officer ▪ and team	None	Quarterly
Mid-term Evaluation	▪ Project Manager- cum-Technical Officer ▪ PMU ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: $22,000	At the mid-point of project implementation.
Terminal Evaluation	▪ Project Manager- cum-Technical Officer ▪ PMU ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost : $32,200	At least three months before the end of project implementation
Synthesis of major achievements & Lessons learned report	▪ Project Team ▪ UNDP CO ▪ FD ▪ CMCs ▪ UNDP-GEF RCU	$5,000	
Audit	▪ UNDP CO ▪ Project Manager-cum-Technical Officer ▪ PMU	None	Yearly
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly for UNDP CO; as required by UNDP RCU
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US$ 64,200 (+/- 5% of total budget)	

Legal Context

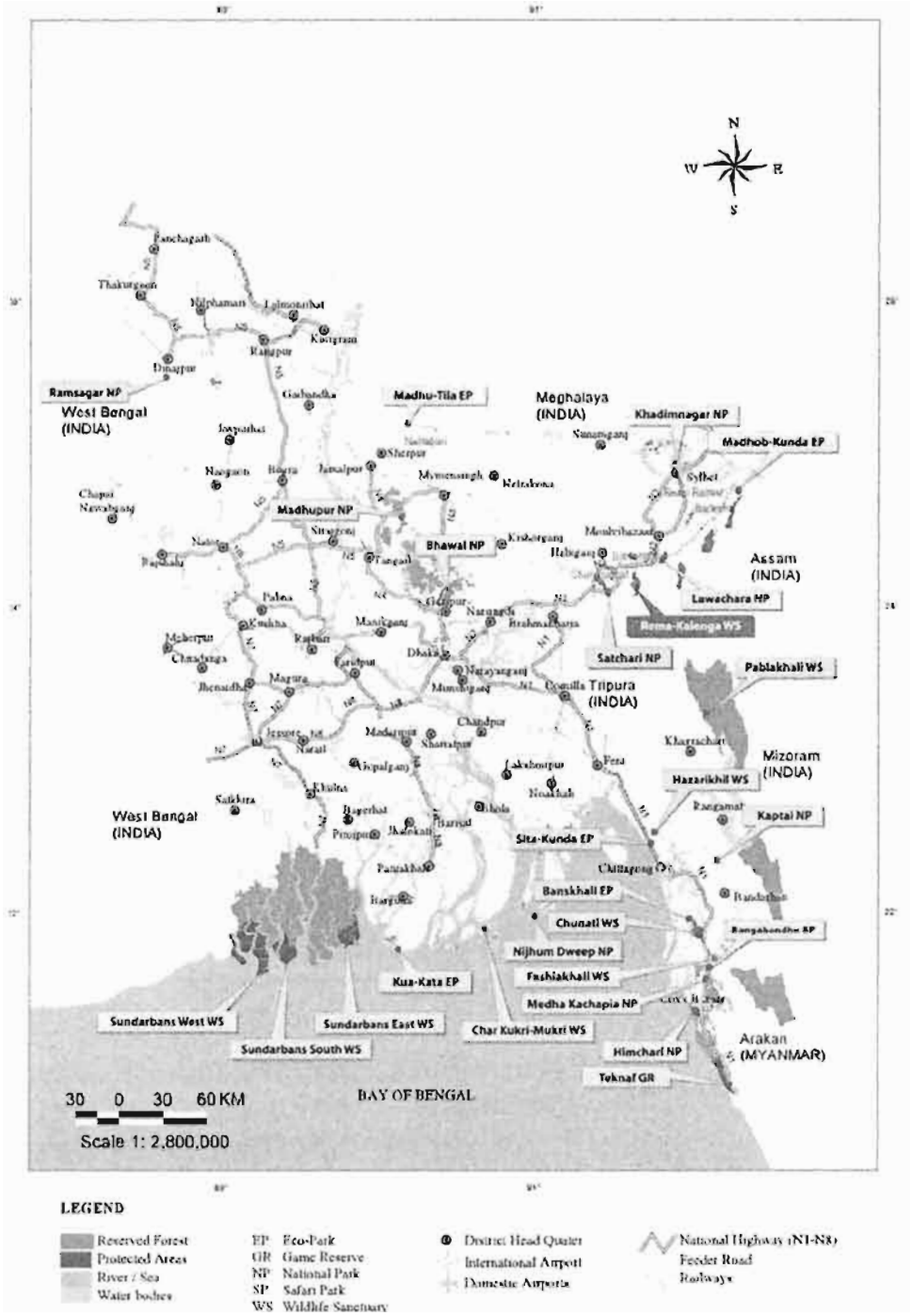
175. The project document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the

ANNEXES

ANNEX 1 - AGRO-ECOLOGICAL ZONES OF BANGLADESH



ANNEX 3 - PROTECTED AREAS OF BANGLADESH



ANNEX 5 - FLORA OF THE SUNDARBANS

Scientific Name	Family	Vernacular Name	Type of Plant
Acanthus ilcifolius	Acanthacea	Hargoza	Scrambling, woody, thorny herb
Acrostichum aureum	Pteridiaceae	Hodo, tiger fern	Gregarious fern
Aegialitis rotundifolia	Plumbaginaceae	Dhalchaka	Small tree
Aegiceras corniculatum	Myrsinaceae	Khalisha, Khalshi	Shrub or small tree
Amoora cucullata	Meliaceae	Amur	Small tree
Avicennia alba/marina	Avincenniaceae	Morcha baen/sada baen	Small tree
Avicennia officinalis	Avincenniaceae	Baen	Tree
Barringtonia racemosa	Barringtoniaceae	Kumb, kumba, kumbi	Small tree
Blumea sp.	Compositae	Baria gash, bon gash	Aromatic herb
Brownlowia tersa	Tiliaceae	Sundri lota, lota shundri	Scandent shrub
Bruguiera gymnorrhiza	Rhizoporaceae	Kankra	Tree
Caesalpinia crista	Leguminosae	Kutum katta	Scandant, armed shrub
Cerbera manghas	Apocynaceae	Dagor	Small tree
Ceriops decandra	Rhizoporaceae	Goran	Shrub or small tree, usually coppices
Clerodendrum inerme	Verbenaceae	Sitka, sitki	Scandent, armed shrub
Cynometra ramiflora	Leguminosae	Shingra	Shrub
Cyperus javanicus	Cyperaceae	Kucha, kusha	Grass -like herb (sedge)
Dalbergia Candenalensis	Leguminosae	Chanda lota	Scrambling climber
Dalbergia spinosa	Leguminosae	Chanda katta	Scandent, armed shrub
Dendrophthoe Falcata	Loranthaceae	Porgassa	Woody parasite in tree crowns
Derris trifoliata	Leguminosae	Gila lota, kali lota	Climber
Diospryros peregrina	Ebenaceae	Gaen	Tree
Drypetes sp.	Euphorbiaceae	Achet	Scandent shrub
Eriochloa procera	Gramineae	Nol gash	Grass
Eugenia fruticosa	Myrtaceae	Bon jam, jam gach	Small tree
Excoecaria agallocha	Euphorbiaceae	Gewa	Tree
Excoecaria indica	Euphorbiaceae	Batla, batul	Small tree
Ficus sp.	Moraceae	Jir	Tree with aerial roots
Flagellaria indica	Flagellariaceae	Abetaa	Climber
Flueggia virosa	Euphorbiaceae	Sitka, sitki	Scandent shrub
Heritiera fomes	Sterculiaceae	Sundri	Tree
Hibiscus Tiliaceous	Malvaceae	Bhola	Shrub
Hoya sp.	Asclepiadaceae	Agusha	Climber
Imperata cylindrica	Gramineae		Grass
Intsia bijuga	Leguminosae	Bhaela, bharal	Small tree
ipomoea pes-caprae	Convulvulaceae		Succulent, prostrate herb
Ixora sp.	Rubiaceae	Bon bokul	Small tree
Kandelia candel	Rhizoporaceae	Gura, gurae, gural	Small tree
Leea aequata	Leeaceae		Shrub
Lepisanthes rubiginosa	Sapindaceae	Bon lichu	Tree
L.ap?.Nov.aff.rubiginosa	Sapindaceae		Shrub

ANNEX 6 - JURISDICTIONAL DETAILS OF THE THREE NEW DOLPHIN SANCTUARIES

Name of the Wildlife Sanctuary	District	Upazilla	Forest Range	Station	Compa rt-ments	River/ Khal Area (Ha)	Comments/ Sanctuary Boundary
Chandpai	Bagerhat	Mongla	Chandpa i	Chandpai	27 & 28	560.00 (12 km)	Reserve Forest: in the north Joymonirgul/ Chandpai Checkpost Mrigamari Khal bounded by Pussur River; south to Andermanik Khal opp. Mirgamari PP through Jhongra PP to Nandabala PP; east from Pussur River (east bank) - Joymonirgul/Mirgamari Khal and west to Pussur River bank (Comp.30).
Dhangmari	Khulna	Dacope	Chandpa i	Dhangmari	31	340.00 (15 km)	Reserve Forest: northern boundary of SRF in the north
Dudmukhi	Bagerhat	Sarankhola	Sarankh ola	Dudmukhi Patrol Post & Suputi	2 & 3	170.00 (5 km)	Reserve Forest: In the north from east bank of Betmor river to Bhola River west bank (Comp.2) to east bank of Betmor river in Comp.1 - south from Dudmukhi Patrol Post opposite confluence of Betmor river & Boro Sheola Khal to confluence of Bhola river and Boro Sheola Khal; east from confluence of Bhola River and Boro Sheola Khal and west Betmor River bank (east of Comp.12A)
Total						1070.00 (32 km)	

Working experience with Government institutions;
Experience in working with NGOs and civil society, and with participatory approaches;
Proficiency in English and computer literacy.

II. Financial-cum- Administrative Assistant (FAA)

Duration: Full-time during the life of the project
Location: Dhaka/ Khulna
Duties and responsibilities:

FAA shall assist the NPD/PM in the overall administrative and financial matters of the project.
FAA shall be responsible for all administrative (contractual, organizational and logistical) and accounting (disbursements, record-keeping, cash management) matters under the project;
S/he will be responsible for preparing periodic financial statements and compiling the annual project activities and achievement of planned project outputs;
FAA shall provide general administrative and financial support to the project so as to ensure the smooth running of the project management unit; provide logistical support to the project staff and consultants in conducting different project activities;
FAA shall monitor the budget expenditures by preparing payment documents, and compiling financial reports; maintain the project's disbursement ledger and journal; keep files with project documents, expert reports; control the usage of non expendable equipment (record keeping, drawing up regular inventories);
FAA shall draft and finalize correspondence of administrative nature; arrange duty travel; fax, post and e-mail transmissions, and co-ordinate appointments;
FAA shall also perform any other administrative/financial duties as requested by the NPD/PM and organize and coordinate the procurement of services and goods under the project.

Qualifications and skills:

University degree preferably in account keeping;
Fluency in written and spoken English and local language;
Outstanding time-management, organizational and inter-personal skills;
At least 5-year experience in office administration, preferably with externally aided projects;
Excellent computer literacy.

Roles and responsibilities of consultants providing technical expertise under the project

Output	Name of the position	National/ international	Period	Task
Output 1.1: Knowledge generation and dissemination system improves decision making related to the management of aquatic habitats and sustainable use	Research Gap Analysis specialist	National	4 weeks	Research gap Analysis Specialist shall conduct an assessment of existing research gaps in the Sundarbans and propose priority research studies to be carried out.
Output 1.1 : Knowledge generation and dissemination system improves decision making related to the management of aquatic habitats	Specialists for identifying dolphin hotspots	National	125 weeks	Undertake extensive inventory and prospecting of Dolphin Hotspots in the Sundarbans and other aquatic ecosystems in the country.

Output	Name of the position	National/ international	Period	Task
other aquatic ecosystems across country				
Output 1.4: Monitoring and evaluation framework and replication strategy developed for effective aquatic PA management specifically for the Sundarbans and other aquatic ecosystems across country	National specialist for independent mid-term evaluation of project.	National	4 weeks	National specialist assists international specialist for independent mid-term evaluation.
Output 1.4: Monitoring and evaluation framework and replication strategy developed for effective aquatic PA management specifically for the Sundarbans and other aquatic ecosystems across country.	International specialist for independent final evaluation.	International	6 weeks	International specialist shall lead independent final evaluation of project.
Output 1.4: Monitoring and evaluation framework and replication strategy developed for effective aquatic PA management specifically for the Sundarbans and other aquatic ecosystems across country	National specialist for independent final evaluation.	National	6 weeks	National specialist assists international specialist for independent final evaluation.
Output 2.1: Community based fishery management plan prepared, capacities developed and financial support extended for operationalizing sustainable fishing practices and conservation of aquatic biodiversity	Preparation of the Community Based Resource Management Plan	National	30 weeks	To prepare the Community Based Resource Management Plan
Project Management	Project Manager-cum-Technical Officer	National	10 months	Project Manager shall perform the overall coordination of the project.

ANNEX 8 – CO FINANCE LETTERS

Government of the People's Republic of Bangladesh
Forest Department
Office of the Chief Conservator of Forests
Ban Bhaban, Agargaon, Sher-e-Bangla Nagar, Dhaka -1207

Memo No. 22.01.0000.007.14.2184 Date: 31 August, 2014

To
Mr. Neal Walker
UNDP Resident Representative for Bangladesh
19th Floor, IDB Bhavan
E-8/A Begum Sharani, Sher-e-Bangla Nagar
Dhaka, Bangladesh

Subject: Collaboration between UNDP-GEF Project on "Expanding the Protected Area System to Incorporate Important Aquatic Ecosystems" and Forest Departments on-going initiatives on protected area management

Dear Mr. Walker,

Forest Department (FD) of Ministry of Environment and Forests (MoEF) Government of Bangladesh is implementing a number of projects targeted to conserve forest protected areas, enhance biodiversity conservation and increase forest coverage through participatory planning and monitoring. Forest Department's implemented projects are in line with the National Biodiversity Strategy and Action Plan 2004, National Environmental Policy 1992, National Forest Policy 1994, National Land Use Policy 2001, Coastal Zone Policy 2005, Bangladesh Sixth Five Year Plan (FY 2011 – 2015), Bangladesh Delta Plan 2100 and Bangladesh Climate Change Strategy and Action Plan 2009.

Proposed Expanding the Protected Area System to Incorporate Important Aquatic Ecosystems project was envisioned to be a complementary project of FD's on-going projects with special emphasis on building capacity to manage the existing protected areas established for dolphin conservation and also expand their operational coverage by creating new protected areas and buffer areas while still meeting the livelihood aspirations of local communities especially the fishers in the Sundarbans.

We believe that the UNDP-GEF project will bring added value and increase the protected area coverage of the country, in particular the aquatic protected areas. In addition, the project will also play a critical role in conserving cetacean diversity of the country and establish community-based ecosystems management to support aquatic biodiversity conservation.

We are pleased to confirm USD 3 million as co-financing for the UNDP-GEF project including participatory management, livelihood support, capacity building, project management costs (staff time, office space in Dhaka and district offices and logistics).

We look forward to close collaboration of these two projects to ensure sustainable management of protected areas in Bangladesh.

Sincerely yours,
31.8.2014
Md. Yunos Ali
Chief Conservator of Forest
Forest Department

reduce their dependence on fishery stock or to take up other professions so as to ensure sustainability of resources envisaged in the project.

C. Next Steps

The project design is fully conscious of these 'temporary shock' to a few fishers. In order to avoid such temporary negative impacts on beneficiaries of the project, project design incorporates several safeguards. Firstly, it doesn't advocate forced exclusion of human activities in dolphin hotspots. Rather, it promotes a humane enforcement system coupled with providing resource based and alternate income generation activities (for fisher-folk) that the project will be able to implement to mitigate any impacts arising. Other long-term social and environmental impacts arising from the project implementation are expected to be positive and beneficial. For instance, improved ecological health of the project landscape inadvertently means improved economic opportunities for the fishers in the long-term. The project design has incorporated full consideration of social and environmental issues so that there are limited negative impacts and maximization of positive impacts. The potential social and environmental impacts will be determined as accurately as possible through extensive socio-economic and ecological survey during the course of project implementation and will be made available for review during mid-term and final evaluation.

D. Sign Off

Project Manager	**Date**
PAC	**Date**
Programme Manager	**Date** 30 July 2014

TABLE 3. 1 EXAMPLES OF UPSTREAM PLANNING PROCESSES WITH POTENTIAL DOWNSTREAM ENVIRONMENTAL AND SOCIAL IMPACTS	
1 Support for the elaboration or revision of **global- level** strategies, policies, plans, and programmes.	N/A
2 Support for the elaboration or revision of **regional-level** strategies, policies and plans, and programmes.	N/A
3Support for the elaboration or revisionof**national-level**strategies, policies, plans and programmes.	N/A
4 Support for the elaboration or revision of **sub-national/local-level** strategies, polices, plans and programmes.	The project has **potential** social impacts.

QUESTION 4:

Does the proposed project include the implementation of *downstream* activities that potentially pose environmental and social impacts or are vulnerable to environmental and social change?

✓ **NO**

TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT		
1.	**Biodiversity and Natural Resources**	
1.1	Would the proposed project result in the conversion or degradation of modified habitat, natural habitat or critical habitat?	No
1.2	Are any development activities proposed within a legally protected area (e.g. natural reserve, national park) for the protection or conservation of biodiversity?	No
1.3	Would the proposed project pose a risk of introducing invasive alien species?	No
1.4	Does the project involve natural forest harvesting or plantation development without an independent forest certification system for sustainable forest management?	No
1.5	Does the project involve the production and harvesting of fish populations or other aquatic species without an accepted system of independent certification to ensure sustainability?	No

TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT	
4.3 Is the proposed project likely to directly or indirectly increase social inequalities now or in the future?	No
4.4 Will the proposed project have variable impacts on women and men, different ethnic groups, social classes?	No
4.5 Have there been challenges in engaging women and other certain key groups of stakeholders in the project design process?	No
4.6 Will the project have specific human rights implications for vulnerable groups?	No
5. Demographics	
5.1 Is the project likely to result in a substantial influx of people into the affected community(ies)?	No
5.2 Would the proposed project result in substantial voluntary or involuntary resettlement of populations?	No
5.3 Would the proposed project lead to significant population density increase which could affect the environmental and social sustainability of the project?	No
6. Culture	
6.1 Is the project likely to significantly affect the cultural traditions of affected communities, including gender-based roles?	No
6.2 Will the proposed project result in physical interventions (during construction or implementation) that would affect areas that have known physical or cultural significance to indigenous groups and other communities with settled recognized cultural claims?	No
6.3 Would the proposed project produce a physical "splintering" of a community?	No
7. Health and Safety	
7.1 Would the proposed project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
7.2 Will the project result in increased health risks as a result of a change in living and working conditions?In particular, will it have the potential to lead to an increase in HIV/AIDS infection?	No
7.3 Will the proposed project require additional health services including testing?	No
8. Socio-Economics	

Annex 10 - Capacity Development Score Card

This scorecard has been adapted specifically as a tool to measure success in terms of developing capacity to integrate biodiversity conservation considerations in the context of economic sectors. While, the tool is conceptually based on the UNDP Capacity Development Scorecard, it is different in its substantive focus and the indicators. Table 1 tries to be as objective as possible in its selection of indicators. Each indicator is scored from 0 (worst) to 3 (best), with an explanation of what each score represents for the particular indicator. The tool then estimates the baseline situation/ score for each indicator (cell marked in yellow). Tables 2 through 4 provide a quantitative summary of the total possible scores, baseline scores, and baseline score as a percentage of the total possible score. Baselines have been moderated/ adapted and target scores have been fixed based on discussions with stakeholders and after assessing current capacities and the possible interventions of the project.
In assigning scores, the term "economic sector activities" is assumed to include the following: fishing, aquaculture, tourism, maritime traffic, manufacturing units, and subsistence livelihoods. "Economic sector institutions" covers all institutions that play some role in planning and management of the economic sector activities (sectors as defined above) in the project landscape. During the project preparation phase, the Capacity Scorecard has been applied at a generic level to all economic sectors/ actors operating in the region. However, during the 1st 6 months of project implementation, it will be applied separately to different sectors.

Table 1: Scorecard

Strategic Area of Support	Capacity Level	Indicator	Scores							
			Worst (Score 0)		Marginal (Score 1)		Satisfactory (Score 2)		Best (Score 3)	
1. Capacity to conceptualize and formulate policies, legislations, strategies and programmes	Systemic	There is a strong and clear legal mandate for integrating biodiversity into economic sector activities	There is no legal framework for biodiversity integrating into production sector activities		There is a partial legal framework for biodiversity integration into economic sector activities, but it has many inadequacies	1	There is a reasonable legal framework for biodiversity integration but it has a few weaknesses and gaps		There is a strong and clear legal mandate for biodiversity integration into economic sector activities	
1. Capacity to conceptualize and formulate policies, legislations, strategies and programmes	Institutional	There is a multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into economic sector	There is no multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into production sector activities.	0	There is a multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into production sector activities but there is no clear strategy to this end		There is a multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into production sector activities, and there is an initial strategy to this end		There is a multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into production sector activities, and there is a regularly updated strategy developed through	

Strategic Area of Support	Capacity Level	Indicator	Scores: Worst (Score 0)		Marginal (Score 1)		Satisfactory (Score 2)		Best (Score 3)	
2. Capacity to implement policies, legislation, strategies and programmes	Institutional	Economic sector institutions in the project landscape are able to mobilize sufficient funding, and human and material resources to effectively implement the biodiversity mainstreaming mandate	Economic sector institutions typically are severely under-funded and have no capacity to mobilize sufficient resources		Economic sector institutions have some funding and are able to mobilize some human and material resources but not enough to effectively implement their biodiversity mainstreaming mandate	1	Economic sector institutions have reasonable capacity to mobilize funding or other resources but not always in sufficient quantities for effective implementation of their biodiversity mainstreaming mandate		Economic sector institutions are able to adequately mobilize sufficient quantity of funding, human and material resources to effectively implement their biodiversity mainstreaming mandate	
2. Capacity to implement policies, legislation, strategies and programmes	Individual	Human resources in economic sector institutions in the project landscape are well qualified and motivated to mainstream biodiversity concerns into sectoral plans	Human resources (HR) are poorly qualified and unmotivated		HR qualification is spotty, with some well qualified, but many only poorly and in general unmotivated		HR in general reasonably qualified, but many lack in motivation, or those that are motivated are not sufficiently qualified.	2	Human resources are well qualified and motivated	
2. Capacity to implement policies, legislation, strategies and programmes	Individual	There are appropriate systems of training, mentoring, and learning in place to maintain a continuous flow of new staff with the capacity to mainstream biodiversity	No mechanisms exist		Some mechanisms exist but unable to develop enough and unable to provide the full range of skills needed	1	Mechanisms generally exist to develop skilled professionals, but either not enough of them or unable to cover the full range of skills required		There are mechanisms for developing adequate numbers of the full range of highly skilled professionals able to mainstream biodiversity in territorial plans	
3. Capacity to engage and build consensus among all stakeholders	Systemic	Conservation of biodiversity and its mainstreaming has the political commitment they require	There is no political will at all, or worse, the prevailing political will runs counter to the interests of biodiversity		Some political will exists, but is not strong enough to make a difference		Reasonable political will exists, but is not always strong enough to fully support biodiversity mainstreaming	2	There are very high levels of political will to support biodiversity mainstreaming	

Strategic Area of Support	Capacity Level	Indicator	Scores							
			Worst (Score 0)		Marginal (Score 1)		Satisfactory (Score 2)		Best (Score 3)	
evaluate, report and learn		Committee monitors the state of biodiversity mainstreaming in the project landscape			not in the wider public and restricted to specialized circles		going on but issues that particularly magnify the conflict between economic activities and biodiversity considerations are not discussed		dialogue about the state of biodiversity mainstreaming	
5. Capacity to monitor, evaluate, report and learn	Institutional	Economic sector institutions have effective internal mechanisms for monitoring, evaluation, reporting and learning on biodiversity integration	There are no mechanisms for monitoring, evaluation, reporting or learning		There are some mechanisms for monitoring, evaluation, reporting and learning but they are limited and weak	1	Reasonable mechanisms for monitoring, evaluation, reporting and learning are in place but are not as strong or comprehensive as they could be		Institutions have effective internal mechanisms for monitoring, evaluation, reporting and learning	

Table 2: Quantitative summary of Total Possible Scores

Strategic Areas of Support	Total Possible Scores		
	Systemic	Institutional	Individual
1. Capacity to conceptualize and formulate policies, legislations, strategies and programme	3	3	-
2. Capacity to implement policies, legislation, strategies and programmes	6	9	6
3. Capacity to engage and build consensus among all stakeholders	6	3	-
4. Capacity to mobilize information and knowledge	3	-	3
5. Capacity to monitor, evaluate and report and learn at the sector and project levels	3	3	-
Total	**21**	**18**	**9**
Note: "-" means no indicator was selected for that level.			

Annex 11-

STANDARD LETTER OF AGREEMENT BETWEEN UNDP AND THE GOVERNMENT OF BANGLADESH (FOREST DEPARTMENT, ENVIORNMENT, MINISTRY OF ENVIORNMENT AND FORESTS (MOEF)

FOR THE PROVISION OF SUPPORT SERVICES

Under project "Expanding the Protected Area System to incorporate Important Aquatic Ecosystems"

1. Reference is made to consultations between officials of the Government: BANGLADESH FOREST DEPARTMENT, MINISTRY OF ENVIORNMENT AND FORESTS (MOEF) (hereinafter referred to as "the Government") and officials of UNDP in Bangladesh with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated in the relevant programme support document or project document, as described below.

2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.

3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the programme/project:
(a) Identification and/or recruitment of project and programme personnel;
(b) Identification and facilitation of training activities;
(c) Procurement of goods and services;
(d) Financial support services

4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the programme support document or project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a programme or project, the annex to the

Attachment

DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES

1. Reference is made to consultations between FOREST DEPARTMENT OF ENVIORNMENT, MINISTRY OF ENVIORNMENT AND FORESTS (MOEF), the institution designated by the Government of Bangladesh and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed project Integrating Community-based Adaptation into Afforestation and Reforestation Programmes in Bangladesh.

2. In accordance with the provisions of the letter of agreement signed on ---------- and the project document, the UNDP country office shall provide support services for the Project as described below.

3. Support services to be provided:

Support services (insert description)	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1.Preparation of Vendor Profile	2015-2019		As per UPL
2.Staff HR Benefits	2015-2019		As per UPL
3.Recurrent Personal Management Services	2015-2019		As per UPL
4. Consultant Recruitment	2015-2019		As per UPL
5.Renew IDs	2015-2019		As per UPL
6.Travel/Ticket request	2015-2019		As per UPL
7.Procurement	2015-2019		As per UPL

Total=8,384

Annex 12

United Nations Development Programme
জাতিসংঘ উন্নয়ন কর্মসূচী

Empowered lives.
Resilient nations.

Ref: CCED/PD/2014

31 August 2014

Dear Ms. Dinu,

Subject: Co-financing support to GEF supported "Expanding the Protected Area System to Incorporate Important Aquatic Ecosystems" (GEFSec ID: 5099)

This is to confirm the support of the UNDP Bangladesh Country Office to the above mentioned GEF project implemented by the Forest Department, Ministry of Environment and Forest, Government of Bangladesh. We confirm USD 5.5 million as co-financing through the following UNDP project in support to the GEF/LDCF project:

1. CHT Watershed Management Activity (CHTWMA) – USD 5.5 million

CHTWMA project objectives are in line with the GEF supported project and in particular will contribute towards achieving the project objectives: protection of critical protected areas ensuring biodiversity conservation and sustainable and participatory management of protected areas to ensure long-term sustainability.

We look forward to collaboration and coordination of the above mentioned project to enhance biodiversity conservation and protected area management in Bangladesh.

Yours sincerely

Pauline Tamesis
Country Director

Ms Adriana Dinu
Officer-in-Charge and Deputy Executive Coordinator
New York, USA

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