(উন্নয়ন সহযোগী জড়িত বিষয়ক পত্রটি ইংরেজীতে লেখা হয়েছে)

Government of the People's Republic of Bangladesh

Ministry of Finance

Economic Relations Division

UN-6 Section

www.erd.gov.bd

No. 09.00.0000.109.14. 005.21./29 Date: 20 October 2024

Subject: **The signed Project Document (ProDoc) of the project titled "Implementing Ecosystem-based Management in Ecologically Critical Areas in Bangladesh"**

The undersigned is directed to inform that the Project Document (ProDoc) of the project titled "Implementing Ecosystem-based Management in Ecologically Critical Areas in Bangladesh" was signed between Economic Relations Division (ERD), Ministry of Environment, Forest and Climate Change (MoEFCC) and United Nations Development Programme (UNDP).

02. The signed ProDoc is attached herewith for your kind information and necessary action.

Attached: **Signed ProDoc**

20.10.2024.

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Deputy Secretary
Phone: 9180909
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Distributions (not in order of seniority):

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2. Additional Secretary and wing Chief (FABA & ICT), Economic Relations Division.
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20.10.24

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Deputy Secretary

United Nations Development

Project title: Implementing Ecosystem-based Management in Ecologically Critical Areas in Bangladesh		
Country: Bangladesh	**National Executing Agency (NEA):** Department of Environment (DoE), Ministry of Environment, Forests and Climate Change (MoEFCC)	**Management Arrangements:** National Implementation Modality
UNSDCF/Country Program Outcome (2022-2026): Strategic Priority 3: Sustainable, Healthy and Resilient Environment **Outcome 3**: By 2026, ecosystems are healthier, and all people, in particular the most vulnerable and marginalized in both rural and urban settings, benefit from and contribute to a gender-responsive manner to a cleaner and more resilient environment, an enriched natural resource base, low carbon development, and are prosperous and more resilient to climate change, shocks and disasters.		
UNDP Country Programme Document 2022-2026: Output 2.2: Institutions have strengthened capacities to develop, manage and deliver policies, strategies, and actions to improve ecosystem health and manage dynamic risks, such as climate change, disasters, pandemics, and humanitarian crises.		
UNDP Social and Environmental Screening Category: Moderate Risk	**UNDP Gender Marker:** GEN 2	
Quantum Award ID number: 00107267	**Quantum Project ID number:** 00107598	
UNDP-GEF PIMS ID number: 5854	**GEF Project ID number:** 9913	
Planned start date: July 2024	**Planned end date:** June 2029	
Project duration in month: 60 months		
LPAC meeting date: 21 June 2020		
Expected date of Mid-Term Review (MTR): July 2027		
Expected Operational Closure Date: June 2029		
Brief project description: The project objective is to apply an ecosystem-based framework for managing Ecologically Critical Areas (ECAs)proposed Biodiversity Heritage Halda in Bangladesh to enhance the conservation of globally significant biodiversity and support local livelihoods. It is aimed at addressing the increased degradation of wetland habitats from unsustainable development and local community practices that is leading to biodiversity loss. This is attributed to expanding human settlements, agriculture, industrial installations and construction of road networks. In addition, pollution from the discharge of industrial wastes, agricultural chemicals and sewerage is also causing insurmountable damage to wetlands. Uncontrolled tourism, over exploitation of fisheries resources and climate change cause additional impacts on these fragile wetland systems. The project is thus aimed at addressing these multiple threats by harmonizing socio-economic development, sustainable management of land and water resources and biodiversity conservation through an integrated ecosystem-based management approach in Morjat Baor ECA and proposed Biodiversity Heritage Halda in Bangladesh. To achieve this, actions will be taken to strengthen capacity and coordinated planning at the national and sub-national levels on socio-economic development on the one hand as well as demonstrate sustainable fisheries, agriculture and natural resources management, biodiversity conservation and restoration and alternative livelihood initiatives, including from a gender perspective on the other. This project intends to remove barriers towards establishing an integrated collaborating management plan effectively operational at all levels of conservation action including planning, implementation, monitoring and assessment to drive adaptive management processes to restore and improve		

Ecologically Critical globally significant biodiversity in the Halda river in Chittagong and Morjat Baor – an oxbow-lake in Jhenaidah district.

This will be achieved through the three inter-related and mutually complementary components that are focussed at addressing existing barriers. The three components of the project are:

Component 1: Designing a financially viable ecosystem-based management framework for ECA and proposed biodiversity heritage Halda;

Component 2: Applying an ecosystem-based framework to effectively plan, finance and monitor compliance in target ECA and proposed biodiversity heritage Halda;

Component 3: Strengthening the institutional and technical capacity of the Department of Environment, Department of Fisheries, Forest Department and related implementing and monitoring sectors to put in place measures to address threats to ECAs and ensure responsible parties restore and maintain the integrity of ECA and proposed biodiversity heritage Halda.

FINANCING PLAN	
GEF Trust Fund	USD3,046,347
UNDP TRAC resources	USD 0
Cash co-financing to be administered by UNDP	USD 0
▪ **Total Budget administered by UNDP**	**USD 3,046,347**
PARALLEL CO-FINANCING (*all other co-financing that is not cash co-financing administered by UNDP*)	
UNDP	USD 500,000
Government	USD 10,000,000
▪ **Total co-financing**	**USD 10,500,000**
▪ **Grand-Total Project Financing (1) +(2)**	**USD 13,546,347**

SIGNATURES		
Signature: Md Shahriar Kader Siddiky Secretary Economic Relations Division Ministry of Finance Dhaka	**Agreed by Government**	**Date/Month/Year:** 17.10.2024
Signature: Dr Farhina Ahmed Secretary Ministry of Environment, Forest and Climate Change Bangladesh Secretariat, Dhaka	**Agreed by Sponsoring Ministry**	**Date/Month/Year:** 17 October 2024
Signature: Stefan Lillar Resident Representative UNDP Bangladesh	**Agreed by UNDP**	**Date/Month/Year:** 17/10/2024

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Acronyms and Abbreviations

ADB	Asian Development Bank
BDT	Bangladesh Taka
BPC	Bangladesh Planning Commission
BWDB	Bangladesh Water Development Board
CBA	Community-based approach
CCCI	Chittagong Chamber of Commerce & Industry
CO	Country Office (UNDP)
CREL	Climate Resilient Ecosystems and Livelihood Project
CSO	Civil Society Organization
DoE	Department of Environment
DO	Dissolved Oxygen
ECA	Ecologically Critical Area
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
FD	Forest Department
FSP	Full Sized Project
FPIC	Free, Prior and Informed Consent
GEB	Global Environmental Benefit
GEF	Global Environment Facility
GEFSEC	Global Environment Facility Secretariat
GIS	Geographical Information System
GOB	Government of Bangladesh
GRM	Grievance Redressal Mechanism
IAS	Invasive Alien Species
IUCN	International Union for the Conservation of Nature
MMCU	ECA Management, Monitoring and Compliance Unit
MMSE	Micro, Mini and Small Enterprises
MOA	Ministry of Agriculture
MoEFCC[1]	Ministry of Environment, Forests and Climate Change
MOFL	Ministry of Fisheries and Livestock
MOWR	Ministry of Water Resources
NBSAP	National Biodiversity Strategy and Action Plan
NEA	National Executing Agency
NGO	Non-Governmental Organization
NPD	National Project Director
NPM	National Project Manager
NTFP	Non-Timber Forest Product
PA(s)	Protected Area(s)
PES	Payment for Ecosystem Services
PIF	Project Identification Form (GEF)
PIR	Project Implementation Review (GEF)
PM	Project Manager (UNDP)

[1] Previously Ministry of Environment and Forests (MoEF)

PMU	Project Management Unit
PPG	Project Preparation Grant (GEF)
PSC	Project Steering Committee
PSMF	Protection of Sundarbans Mangrove Forest Project
RTA	Regional Technical Advisor (UNDP)
SAP	Scientific Advisory Panel
SDG	Sustainable Development Goal
SEA	Strategic Environmental Assessment
SESP	Social and Environmental Screening Procedure
SMCU	Standards, Monitoring and Compliance Unit
SSSI	UK's Sites of Special Scientific Interest
STA	Senior Technical Adviser
STAP	Scientific Technical Advisory Panel (GEF)
SUFAL	Sustainable Forest and Livelihood Project
TC	Technical Coordinator
UNDP	United Nations Development Program
UNDP	United Nations Development Program
UNDP-CO	UNDP Country Office
WFD	Water Framework Directive

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I. DEVELOPMENT CHALLENGE

Development context

- Biogeographically, Bangladesh is located at the cross roads of the Indo-Himalayan and Indo-Chinese sub-regions under the Oriental region. Thus, the country acts as an important mergining and sharing habitat, land bridge and biological corridors of the fauna and flora between these sub-regions. This strategic location makes Bangladesh as one of the most ecologically significant and biologically diverse landscapes in terms of migratory birds, stepping stones, staging grounds and flyways for wildlife movements of the region.[2] Consequently, a large number of plant and animal species traverses in widespread habitats and thereby help maintain a wide range of gene pool. Based on the wide variety of topogarphic, climatic, hydrological and other factors, the country is made up of 25 different bio-ecological zones and 30 different agro-ecological zones indiacting the rich biodiversity and ecosystem diversity. Bangladesh is a land of water bodies, with wetlands comprising over 50% of the territory, drained by the 700 tributaries of the Ganges, Brahmaputra and Megna rivers. They include some 6,300 *beels* (permanent and seasonal shallow lakes), 47 major *haors* (deeply flooded depressios) in the north-east, *baors* (oxbow lakes) and vast areas of seasonally flooded plains.[3] These inland water bodies are rich is species, such as freshwater fish (267 species), with larger lakes supporting well over 100 species (e.g. 141 in Tanguar Haor and 115 species in Hakaluki Haor)[4]. Coastal wetlands are also extensive and include part of the largest single tract of natural mangrove in the world: Sundarbans, a World Heritage site of which 60% (601,700 ha) is in Bangladesh and the rest in India.

- Despite, the high levels of biodiversity and variety of ecosystems, unsustainable development practices are leading to habitat degradation and forest, wetland and biodiversity loss. This has to be considered in the context of Bangladesh's population and economic pressures for industrialization, urbanization and expansion and intensification of production systems. Bangladesh is the world's eighth most populous country, estimated at 165 million in 2017 and the ninth most densely populated country with over 1,266 people km^{-2} (three times more densely populated than neighbouring India)[5]. Its annual population growth rate is reduced to 1.18%, comparable to India and Nepal, lower than Pakistan (2.03%) and higher than Myanmar (0.87%). Most significant is the increasing urbanisation of the population: Banglandesh was a rural society with only 10% of its population living in urban areas until the mid-1970s but today urbanisation exceeds 30% and is predicted to reach 50% by 2040. This trend is not just about growth within existing urban areas; it is also due to rural centres becoming urbanised[6]. Such urbanisation is exacerbating the degradation of Bangladesh's biodiversity and assocated ecosystem services that underpin the nation's water, energy and food security.

- Rural and urban populations are further threatened by climate change, particualrly those in coastal and plains regions. Some 70% of the country lies below 1 m above sea level; and a 2007

[2] *Fifth national Report to the Convention on Biological Diversity (2015)*

[3] *Ibid*

[4] *Fifth National Report of Bangladesh to the Convention on Biological Diversity (2015). Note that these findings are largely consistent with the Millennium Ecosystem Assessment (2005) and more recent Global Biodiversity Outlook 3, which identified five main direct drivers of biodiversity loss: habitat change, overexploitation or unsustainable use, invasive alien species, climate change and pollution.*

[5] *UN Population Division estimates (2017)*

[6] *7th Five Year Plan (2016-2020), General Economics Division, Planning Commission, Government of the People's Republic of Bangladesh.*

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study indicates that 46% of the population lives within a Low Elevation Coastal Zones (contiguous areas of coast less than 10 m above sea level). In terms of total numbers of people living within such zones, Bangladesh (with an estimated 62.5 million in 2007) ranks third after India (63.2 million) and China (143.9 million)[7]. Thus, due to a combination of its geography and high population density, Bangladesh is among those countries most vulnerable to climate change impacts of sea level rise.

- Associated with this scenario of a high density population, which is becoming increasingly urbanised and vulnerable to climate change impacts, are huge dependencies by rural communities on natural resources for their livelihoods. This results in widespread degradation of ecosystems through changes in land use and hydrological regimes (including saline intrusion impacts on soil fertility[8]), over-exploitation and pollution of aquatic, terrestrial, coastal and marine habitats and invasion by alien species, all of which may be accompanied by a loss of native species diversity.

- The project thus comes at a time when increasing destruction and degradation of wetland habitats from pollution, agricultural and infrastructure expansion and other economic activities. The project aims to address the negative impacts of unsustainable development practices in the increasing network of proposed biodiversity heritage Halda and Ecologically Critical Areas (ECAs) in Bangladesh, 13 of which have been designated over the last 20 years - all of them biodiversity-rich coastal or freshwater systems. It will take into account climate change adaptation needs and inclusive and equitable social and economic development for dependent communities, thereby contributing towards poverty alleviation, food security and sustainable agriculture and gender equality. The experiences and learning from the two pilot sites (Bangabandhu Biodiversity-Rich Heritage Halda River and Morjat Baor ECA) are expected to help facilitate replication of sustainable management approaches in other ECAs in the country.

- The project's intervention comes at a time of envisioned *acceleration of growth* and *empowerment of citizens*, which is the core theme of the *8th Five Year Plan for Bangladesh (2021-2025)*. This theme is enshrined within the context of climate-resilient, sustainable growth, with a focus on governance issues to enhance productivity and developing a knowledge-based economy. The Plan is being implemented by mobilizing private investment through Public-Private Partnerships and Foreign Direct Investment.

- The agenda for higher growth is coupled with measures to protect the environment, as the *Five Year Plan* is underpinned by the UN's Sustainable Development Goals and 2030 Agenda. A sustainable development pathway that is resilient to disaster and climate change, entails sustainable use of natural resources and that successfully manages the inevitable urbanization transition is a central theme of the Plan, alongside an overall strategy of inclusiveness that empowers every citizen to participate beneficially in the development process.A poverty/environment nexus that ensures environmental sustainability, community resilience and conservation of natural resources by mainstreaming environment, climate change and disaster risk management into development planning at local and central levels is also highlighted in the Plan, along with the need to improve overall environmental governance at every level of

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[7] *McGranahan, G., Balk, D. and B. Anderson, 2007. The rising tide: assessing the risks of climate change and human settlements in low elevation coastal zones. Environment & Urbanization 17 Vol 19(1): 17–37. Copyright © 2007 International Institute for Environment and Development (IIED)*

[8] *National Biodiversity Strategy and Action Plan of Bangladesh (2016-2021), DoE, Ministry of Environment and Forests, Dhaka. 119 pp.*

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operation. Within the environment sector, these themes translate into a number of goals and targets to which this project is closely aligned, notably:

- Promote zero discharge of industrial effluents.
- Urban wetlands are restored and protected in line with the Wetland[9] Conservation Act.
- At least 15% of the wetland in peak dry season is protected as aquatic sanctuary.
- Land zoning for sustainable land/water use is completed.
- Environmental, climate change and disaster risk reduction considerations are integrated into project design, budgetary allocations and implementation process.

- The *Five Year Plan* also calls for the following interventions that are key elements of the project:
  - A new approach to industrial pollution/waste management involving communities, local institutions, news media, law enforcement agencies and other relevant stakeholders to engage with the polluters;
  - Management of agrochemicals to avoid/reduce pollution of water bodies; and
  - A program of actions for ECAsand proposed Biodiversity Heritage Halda, including the creation of a knowledge center for ECAs and wetland management.

Key Threats to wetland biodiversity and ecosystem servcies

- The main direct threats to biodiversity in Bangladesh, all of which feature prominantly in the Department of Environment's (DoE) 2015 review of its work on ECAs since the late 1990s[10], are considered to be:

Wetland habitat degradation and fragmentation

1. Throughout Bangladesh wetlands are decreasing due to human settlement and agriculture, industrial installations and construction of road networks. Changes in land use patterns and associated construction of flood management infrastructures and clogging of waterways and encroachments are also degrading wetland habitats. Analysis of satellite images show that there has been a reduction of the area of wetlands by 73% within the period 1977 to 2010, with a concomittant increase of 24% of settlements and urban development areas, 2.5% increase in agricultural lands, along with an increase in fallow and bare land.[11] In the case of the Haida River straightening of the river for navigational purposes has reduced the overall length of the river from 123km to 81km, causing a significant loss of habitat for all the aquatic fauna and flora. In particular, this is problematic for the Indian carp, whose primary spawning habitat was the outside of the meander bends. The majority of this habitat is now lost, reducing the carrying capacity of the river and threatening the carp population. The river has also suffered a loss of its riparian wetlands and forestry due to the expansion of agriculture and municipal development. These habitats are critical for supporting the river's ecological health and providing resilience against flood, drought and climate change.

Pollution of terrestrial and aquatic ecosystems

- These ecosystems are polluted from discharge of effluents, dumping of waste, agro-chemicals, erosion of soil due to agricultural and construction activities and vehicle emissions. Mechanized fishing boats, trawlers, goods and human carriers/and ship breaking industries also release oil and other wastes into the rivers causing pollution. Air pollution due to unsuitable traffic and industrial machineries is a threat

[9] This is an error in the Plan and should read "Environment" Conservation Act.
[10] *Department of Environment, 2015. Community-based Ecosystem Conservation and Adaptation in Ecologically Critical Areas of Bangladesh: Responding to Nature and Climate Change. DoE, Ministry of Environment & Forests, Dhaka. 122 pp.*
[11] *CEGIS-WARPO (2012)*

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to plants and animals including insects responsible for pollination. Indiscriminate dumping of all forms of waste, both solid and liquid, is also a threat to aquatic and terrestrial habitats and organisms. The industrial effluents contain acids, heavy metals, ammonia and other substances that are directly thrown untreated into the water. Agrochemicals washed off from the adjacent agricultural land are causing serious algal growth in the wetland systems. Growth of algae in some places is so severe that it threatens the boar, raising the floor of the baor with accumulation of muddy and rotting plant residues and lowering the dissolved oxygen (DO) level, thereby hindering fish production and regularly causing mass fish mortality.

- Aquatic ecsystems are very susceptible to pollution and Halda River is a good example. Threatened by poor urban waste and agricultural management, it is decided to declare as a biodiversity heritage named "Bangabandhu Biodiversity-Rich Heritage Halda"by National Biodiversity Committee, constituted under the Bangladesh Biological Diversity Act 2017on account of its importance as an inland fishery and major gene bank for pure Indian carp, refuge for endangered species including Gangetic Dolphin, drinking water supply for 5 million people in Chittagong City and source of irrigation that sustains agriculture for 30% of river basin inhabitants. Growing industrialization within the catchment has resulted in: inefficient water withdrawal for agricultural activities; untreated chemical discharge from drainage of run-off from fertilizers, pesticides and insecticides; and increased sedimentation from soil erosion and sand mining. Untreated effluent from about 300 industrial units, which includes dye and tannery industries, brick fields, paper mills and numerous poultry farms situated along Halda and Karnaphully riverbanks, has resulted in water pollution of alarming levels.[12]

Over-exploitationand other unsustainable uses of natural resources, particularly in relation to fisheries

1. Over-exploitation of natural resources, like fishes, freshwater molluscs, corals, turtles and birds are a serious threat to biodiversity. In addition reed beds are significantly being reduced by over-harvesting for fuel and conversion to agricultural fields. Dewatering of key areas and repeated fish harvesting are very unsustainble fishing practices in wetlands. As a result, there is a subsequent reduction of fish diversity. In Tanguar Hoar, a once well-recognized migratory waterbirds wetland, hunting, trapping and killing of waterbirds has resulted in a rapid decrease in the number of waterbirds visiting the wetland. A recent study showed that over 100 riverine fishes are presently undre threat and 25 fish species have not been observed in the past 20 years indicating the possibility of their extinction from waterbodies in the country.[13]

Unplanned tourism

- Unplanned tourism, particularly in biodiversity hot-spots is becoming a major threat to biodiversity. In addition to unplanned and unmanaged tourism has resulted in increasing solid and plastic wastes that is destroying both terrestrial and wetland habitats.

Invasive alien species

- Invasive alien species, particularly with respect to the introduction of exotic species of fish since the 1950s, resulting in rivers and wetlands becoming colonised by highly invasive species that predate on or outcompete indigenous species. In the last decade alone, 24 exotic fish species have been introduced into the country. These invasive species are rapidly spreading over the wetlands posing a severe threat to native species. Several of the introduced species are highly carnivorous and predatory and consume

[12]*CDA (2008)*
[13]*Fish Museum and Biodiversity Center of Bangladesh Agricultural University (DOE 2015)*

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the smaller indigenous varieties. Several exotic species also compete with the indigenous species and gradually occupy their niches. The ecological, economic and biological consequences of the introduction of exotic fish species have not been adequatekly assessed. Some of the negative impacts of exotic speciues are: Tilapia is a prolific breeder and overwhelms the carrying capacity of the waterbody resulting in the stunting and decrease in the population of the smaller indigenous species. Common Carp destroy embankments and stir up bottom mud reducing the DO levels and destroy habitat of small indigenous species, while the Grass Carp and Silver Carp complete with the indigenous species for food and space. The African Magur is a voracious predator on small and medium fishes, while the Thai pangas feed on finfish, crustaceans, insects, periphyon and benthos. The Suckermouth catfish found in the floodplains all over the country feed on small crustaceans, small fish like loaches and freshwater eel. The Pirapatinga's natural diet is terrestrial plants, fruits, insects and crustaceans. All of these exotics thus are a big thraet to the indigenous species.[14]

- Aquatic weeds such as Water Hyacinth are the most hazardous and cost-intensive problem in most of the wetlands, including the baors. In the case of the Morjat Baor, up to 80% of the water surface of the boar is completely covered by Water Hyacinth. The main problem with this aquatic weed has been the reduction of baor's water depth due to accumulation of dead vegetation. The depth of the baor at various locations has been reduced by 50 to 75% during the period 1984 to 2018. This tremendous reduction of water depth is considerably reducing the fish production rate and the diversity of aquatic flora and fauna, let alone the local environmental impacts.

Climate change impacts

- Bangladesh is one of the most vulnerable countries to climate change with rising temperature, rainfall pattern, sea level rise and increasing frquency of extreme weather events (e.g., tidal surges, flooding, cyclones). Survival, breeding and life cycle of many species of wildlife, fishes and invertebrates depends upon temperature as well as flowering, pollination, seed formation, seed germination and plant growth. Consequently, chaning temperatues and shifting loss of seasons are a direct threat on biodiversity. The major negative impacts of climate change would be damage/destruction of wetland ecosystems and their biodiversity such as, loss or shift of breeding grounds of the Gangetic major carps in the Halda River; loss of Royal Bengal Tiger habitats in the Sundarbans; salinization of rice lands, freshwater aquaculture facilities and aquifers; water quality problem in wetlands, i.e., algal blooms, low dissolved oxygen and enhancement of toxins in seafood organisms (fish, prawn); and loss of tourism/recreational business (due to loss of biodiversity).[15] The positive impacts of climate change such as floods would reestablish the connection between rivers and shallow lakes/wetlands, disperse biota/seeds and enhance spawning and reproduction of native fishes.

- **Project conceptual model:** The complex interacting web of factors that threaten globally significant wetland biodiversity in Bangladesh is illustrated in a conceptual model in Figure 1. This indicates the key areas (indirect and direct factors) and the points where project intervention can contribute towards a reduction in the level of threats and therefore contribute towards the conservation of biological ecosystems and globally threatened species – and the integrity of the ecosystems they inhabit. The main project intervention strategies are shown as yellow hexagons in Figure 1. The main elements of these strategies are summarized in the Theory of Change diagram in the following section (Figure 2).

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[14] *Fifth national Report to the Convention on Biological Diversity (2015)*

[15] *Golam Kibria and A. K. Yousuf Haroon (2017). Climate Change Impacts on Wetlands of Bangladesh, its Biodiversity and Ecology and Actions and Programs to Reduce Risks*

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Baseline scenario and associated projects

- Nature conservation began in earnest in 1980 with the establishment of the country's first national parks and wildlife sanctuaries under the provisions of the Bangladesh Wildlife (Preservation) Order, 1973, subsequently replaced by the Bangladesh Wildlife (Conservation & Security) Act, 2012. Currently, there are 38 such protected areas managed by the Forest Department (17 national parks, 20 wildlife sanctuaries, 1 special biodiversity conservation area and 1 marine protected area), covering 10.6% (266,202 ha) of the forest estate, or 1.8% of the country's total land area and 173,800 ha of territorial waters. The total extent of marine protected areas is 243,600 ha, or 2.1% of territorial waters (118,813 sq. km). This includes a second marine protected area declared under the Marine Fisheries Ordinance, 1983 and managed by the Department of Fisheries, which is also repsonsible for 5 fish (hilsha) sanctuaries declared under the Protection and Conservation of Fish Act, 1950.

- More impetus to conserve the natural environment, improve environmental standards and control and mitigate environmental pollution was introduced with the passage of the Bangladesh Environment Conservation Act in 1995, including provisions for DoE to declare Ecologically Critical Areas in cases of sites under significant threat of degradation from over-exploitation, pollution and other such factors. Since the introduction of this Act and its subsequent amendment in 2010, 13 ECAs (total of 379,022 ha)[16] have been gazetted[17] (Annex 13). All of these are wetlands, some with a coastal-marine component and more than double the protected areas system to 4.4% of the country's total area. Tanguar Haor and Sundarbans are both Ramsar sites (Wetlands of International Importance) and the latter is also a World Heritage site of globally outstanding natural value. While the boundaries of Tanguar ECA and Ramsar site are complementary, those of Sundarbans ECA form a 10 km. wide peripheral zone (292,926 ha) designed to buffer the biodiversity and ecosystem values of the core World Heritage and Ramsar site. This network of ECAs is vital for the survival of flagship species, such as Irrawady and Gangetic dolphins, Bengal tiger, numerous migratory bird species and various fresh and brackish water fishery species, as well as the local and downstream communities dependent on its ecosystem.

- A visionary and time bound management plan emphasizing short, medium and long term programs is essential to develop for each ECA proposed Biodiversity Heritage Haldainvolving relevant experts from the relevant sectors. Considering the vulnerability of the ECA, immediate actions must be undertaken as per management action to stop further degradation. For the implementation of management actions, if donor funds are not available in time, Government should have commitment to implement the actions from the GOB fund on priority basis, otherwise declaration of ECA proposed Biodiversity Heritage Haldawill be questionable.

- Significant resources have been invested in ECAs over the past two decades to address many of these threats and some success has been achieved in reversing habitat degradation, species decline and impoverished local livelihoods in a number of ECAs. Much of this experience is well documented by DoE (2015), including the UNDP-GEF Coastal and Wetland Biodiversity Management Project (2003-2011) that was instrumental in designing and piloting the governance, planning and administrative infrastructure for the management ECAs, building on earlier experience from several projects that introduced community-based management approaches to wetlands management. A summary of project interventions and their target ECAs is provided in Table 1.

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16 The actual GIS area, including proposed expansions of c. 2,000 ha to Sonadia Island and 125 ha to Morjat Baor, is 384,529 ha).

[17]Department of Environment, 2015. Community-based Ecosystem Conservation and Adaptation in Ecologically Critical Areas of Bangladesh: Responding to Nature and Climate Change. DoE, Ministry of Environment & Forests, Dhaka. 122 pp.

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- Key points arising from this analysis of project specific interventions in ECAs and lessons learnt are:
  - ECAs are ecologically defined areas or ecosystems affected adversely by changes due to human activities, established under the Bangladesh Environment Conservation Act, 1995. Government declared 7 ECAs in 1999, 5 more in 2001-2009 and most recently 1 in 2014 (listed and mapped in Annex 13). Halda River (94 km stretch totalling 9400 ha), near Chittagong, is currently declared as biodiversity heritage named "Bangabandhu Biodiversity-Rich Heritage Halda"
  - Responsibility for ECAs is vested in DoE but operational governance structures exist only in Cox's Bazar-Teknaf Peninsular, Hakaluki Haor and Sonadia and St Martin's islands. In each of these ECAs, Village Conservation Groups report to ECA Management Coordination Committees created at union level (lowest unit of local government), which in turn report upwards to upazila (sub-district), district and national committees. Village Conservation Groups (VCGs) are registered as cooperative societies under the Department of Cooperatives, Ministry of Local Government, Rural Development & Cooperatives. This governance structure is incorporated in the 2016 ECA Management Rules, outlined in Annex 14.
  - The aforementioned achievements of UNDP-GEF CWBMP (2003-2011) were widely appreciated within government, as evident from its allocation of some US$ 1.9 million to consolidate and upscale this work in a follow-up project, CBA-ECA, that began in 2010 to maintain momentum[18]. However, it took until 2016 for the governance structure to be articulated and approved as ECA Management Rules. As mentioned above, the governance structure has been applied only to the four ECAs piloted under CWBMP and reference to to Table 1 shows that there has been little or no significant project intervention in any other ECAs except Tanguar Haor, due to its Ramsar status.

♣ Clearly, an effectively managed ECA network is still in its formative phase, with half[19] the number of ECAs having benefitted from one or more projects (Table 1). Further progress in restoring biodiversity and ecosystem services across the ECA network remains project dependent and resources/incentives are lacking even to upscale best practices and lessons learned. Other ongoing and planned projects are:

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[18]These and related details can be found in the 2012 UNDP-GEF Terminal Evaluation Report of CWBMP

19These ECAs are: Cox's Bazar-Teknaf Peninsular, Sundarbans (10 km landward periphery), St Martin's Island, Hakaluki Haor, Sonadia island, Tangaor Haor and part of Turag River. For further details see Table in Annex 1.

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Table 1: Chronological list of key projects, main interventions and their respective target ECAs*

KEY PROJECTS CONCERNED WITH ECAs [Period: Title, Agency, Funding Source]	SUMMARY DETAILS OF INTERVENTION	1 Cox's Bazar-Teknaf Peninsula	2 Sundarbans	3 St. Martin's Island	4 Hakaluki Haor	5 Sonadia Island	6 Tanguar Haor	7 Marjat Baor	8 Gulshan-Baridhara Lake	9 Buriganga	10 Turag	11 Sitalakhya / Shitalakhya	12 Balu including Tongi canal	13 Jaflong-Dawki
1998: *Management of Aquatic Ecosystem through Community Husbandry* (MACH) Department of Fisheries/USAID	Community-based management in part of Turag River: demonstrated restoration of productivity and functioning of large wetland ecosystem to enhance biodiversity and livelihoods.										■			
2000-2005: *Community-Based Haor and Floodplain Resource Management Project, IUCN Bangladesh, under Sustainable Environment Management Programme* (SEMP), Ministry of Environment & Forests (1998-2005)	Communities engaged in awareness raising, capacity building and creation of VCGs, alternative income generation, wise use of wetland resources, wetland restoration and protection, species conservation (e.g. dolphin, Pallas' Fish Eagle).				■									
2000-2006: *Empowerment of Coastal Fishing Communities for Livelihood Security Project* (ECFC), Department of Fisheries/FAO/UNDP	Positive qualitative and quantitative changes introduced to lives of poor coastal fishing communities marginalised from formal institutions. 250 village organisations (VOs) formed in 117 villages, empowering them collective organisation and knowledge to manage their livelihoods and depleted fishery resources in coastal areas. A most tangible impact was the generation of savings and utilisation of Micro-Capital Grants (MCG), with Taka 7 million saved by VOs during the project.	■		■										
2001-2007: *Community-Based Fisheries Management (CBFM-II) Project*, USAID	130 community-based organizations established to manage 116 water bodies in 22 districts, including part of Hakaluki Haor (Barlekha Upazila). Alternate income generating activities introduced to reduce dependence of natural capital; wetland sanctuaries established, resulting in increased fish production in 77% of 64 target water bodies.				■									
2003-2011: *Coastal and Wetland Biodiversity Management Project* (CWBMP), DoE/UNDP-GEF	Developed and applied an innovative system for the governance, planning and management of ECAs under provisions of the Bangladesh Environment Conservation Act, 1995, to ensure long-term viability of important wetland biodiversity. Village Conservation Groups and ECA Management Committees identified as means of addressing protection and management of ECAs. 72 VCGs formed in 4 ECAs to lead conservation activities. MCGs approach applied and delivered improved local livelihoods in CWBMP and its successor, CBA-ECA.	■		■	■	■								
2006-2015: *Community-Based Sustainable Management of Tanguar Haor Project, Ministry of Environment & Forests/Swiss Agency for Development and Coorperation* (SDC)	Three-phased project to perfect a co-management process for sustainably managing haor resources and support those living in this Ramsar Site. 73 Village Community-based Committeesformed, covering 77 of 88 villages, with 4,774 of 10,205 households engaged in co-management of ECA.						■							
2009–2012: *Integrated Protected Area Co-management* (IPAC), Bangladesh Forest Department/Department of Fisheries/USAID	Institutionalised an integrated protected area co-management system for sustainable natural resources management and biodiversity conservation: Hakaluki Haor and Teknaf Peninsula included to to reduce dependency of on natural resources.	■			■									
2010-2015: *Community –based Adaptation in ECAs through Biodiversity Conservation and Social Protection Project* (CBA-ECA), DoE/UNDP/EKN	Government allocated Tk 1,500 lakh (US$ 1.9 million) to consolidate and scale-up achievements realised under CWBMP, with additional support from the Bangladesh Climate Change Trust Fund (US$ 184,800) and Dutch Government.	■			■	■								
2013-ongoing: *Climate Resilient Ecosystems and Livelihoods Project* (CREL) DoE/USAID	CREL, built on the experiences and achievements of 3 USAID-funded projects (MACH, Nishorgo Support Project and IPAC),is aimed at building resilience among communities vulnerable to climate change risks through improving governance of biodiversity and natural resources, enhancing capacity and knowledge of stakeholders, and mainstreaming climate resilience across livelihoods and natural resource planning and management.	■	■		■	■								

*Source: *Community-based Ecosystem Conservation and Adaptation in Ecologically Critical Areas of Bangladesh.* A list and map of ECAs is provided in **Annex 13.**

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- Furthermore, management plans are not informed by the science and associated prescriptions necessary to restore an ECA to fa*vorable ecological condition*[20]and thereafter sustain such status; nor are ECA management bodiestechnically and numerically equipped to monitor and enforce compliance with management prescriptions.It is this technical inability to identify the salient biodiversity (and cultural) features and ecosystem services of an ECA, determine the prescriptions necessary to (restore and) sustain such features to favourable ecological condition and, therefter, monitor and enforce compliance with such prescriptions that is the root cause of ECAs' failure to benefit nature and people.

- **Ongoing projects associated with ECAs** include Climate Resilient Ecosystems and Livelihood (CREL), which is focused on building resilience among communities vulnerable to climate change risks through ecosystem planning and mangement, again targetting three of the original four ECAs selected for CWBMP (**Table 1**), as well as the Sundarbans ECA which provides a 10 km. width of buffer along the inland periphery of the core World Heritage property. Other ongoing and planned projects are:

  - GIZ *Managing the Sundarbans mangrove forests to conserve biodiversity and adapt to climate change* (2015-2019): executed by the Forest Department and focuses on protected areas management in collaboratiion with civil society and communities. Potential synergies include a knowledge management and interactive platform for information sharing and application of a harmonised approach to monitoring and evaluation[21].
  - The Government of Bangladesh through its Forest Department, currently investing lakh taka 15787.51 ($ 18.79 million) to protect the Sundarbans Reserved Forest under the Sundarban Surokkha project. It is aimed at enhancing management effectiveness through community-based approaches to conserve the mangrove forest and sustain local livelihoods.
  - Sustainable Forests & Livelihood (SUFAL) Project: Main objective of the project is to restore degraded forest ecosystems and conserve biodiversity through sustainable forest management practices. The Project aims to improve forest management and increase benefits for forest dependent communities in targeted sites by financing nearly 272,500 hectares of forest land that includes 79,000 hectares of forests on public and private lands, including about 22,000 hectares of coastal green belt across 147 Upazilas (sub-districts). This project is funded by World Bank (US$ 175 million) and developed by Forest Department. The project will directly benefit about 40,000 forest dependent households – with special emphasis on women and adolescent girls – by increasing their participation in forest management and access to diversified income generation options. In addition, about 180,000 people will benefit through involvement in collaborative forest management activities. The Bangladesh Forest Department will also receive support through training and skills development opportunities.
  - USAID /Bangladesh funded Protibesh project ($10m - $24.99m) aims to build the GOB's capacity to respond to a wide array of threats to biodiversity conservation in collaboration with civil society organizations and community stakeholders. It will also collaborate with and engage local partners in the effective management, protection and governance of critical forest and aquatic ecosystems while advancing economic incentives to further biodiversity conservation. This activity will target local communities in regions with key biodiversity areas, which could include the Sundarbans Reserve Forest in southwestern Bangladesh, the ecologically critical forest and wetland zones of northeastern

[20]The term 'favourable condition' is used in this proposal to refer to a site being adequately conserved and meeting its conservation objectives. Such an approach is used widely across Europe to monitor the status of sites designated for nature conservation purposes under national and European legislation. In the U.K., for example, the status of Sites of Special Scientific Interest (SSSIs) is monitored using a Common Standards Monitoring framework whereby the condition of each SSSI is assessed with respect to the site-specific conservation objectives for the interest feature(s) for which the site was notified. Improving favourable condition of SSSIs is part of the U.K.'s adaptation response to climate change (see: https://www.theccc.org.uk/wp-content/uploads/2015/06/ASC-2015-report-Natural-environment-chapter-dashboard1.pdf).

[21] https://www.giz.de/en/worldwide/37949.html

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Bangladesh and or other regions of the country with critical biodiversity. It will be implemented at the national level in collaboration with GOB ministries in Dhaka and at the local and regional level in partnership with units of local government, co-management organizations, regional organizations and other related entities. The activity could also involve upstream communities, cities and regional entitles as necessary to address specific threats (pollution, wildlife poaching, human settlement encroachment, etc.) to key biodiversity areas in a coordinated and holistic fashion.

- The GEF-funded Integrating Climate Change Adaptation into sustainable development pathways in Bangladesh (2017-2021) seeks to promote the application of adaptation options to vulnerable agro-ecological regions, population groups and sectors. In addition, the project entails improving climate information systems to guide climate resilient policy and decision-making and build institutional and planning capacities to integrate climate change adaptation in budgetary, planning and social protection programs at national and sub-national levels.

Long-term solution and barriers to be addressed.

- **The long-term solution sought by the project** is to further strengthen ECAs by developing and implementing an ecosystem-basedframework[22] to underpin their management, ensuring that it is adequately institutionalized and resourced through sustainable financing mechanisms and local support. Importantly, the biophysical and ecological conditions determined as being necessary to maintain the salient biodiversity features of an ECA will be specified in the framework and provide a basis for monitoring and compliance towards achieving such conditions. This will progressively help to achieve a paradigm shift towards ecosytem-based management of Morjat Baor ECA and Proposed Biodiversity Heritage Halda river. andThe Halda River has been chosen on account of the opportunity to engage with the private sector and to demonstrate how large-scale pollution of water bodies from industrial effluents can be addressed; and Morjat Baor ECA has been chosen for its small and contained size (oxbow lake), absence of previous project interventions **(Table 1)** and opportunity to explore co-management with the local communities to address water hyacinth infestation, siltation and euthrophication. These target sites are profiled in Annex 15.
- This approach should enable DoE to overcome previous difficulties associated with the issue of multiple land ownership in the ECAs. Rather than DoE try to take on the management of ECAs, it needs only to prescribe scientific management regimes necessary for maintaining or achieving their respective specified favorable ecological condition[23]. DoE will ensure monitoring the compliance of the land owner(s) or other responsible body or authority in meeting the prescribed condition. All of this needs to be set out in the ECA management plan and signed by the landowner(s) or responsible management authority.
- Such a framework will be mainstreamed across relevant government agencies, the private sector and civil society to safeguard wetland biodiversity, agrobiodiversity and production systems (i.e. agriculture and fisheries) from over-exploitation, infrastructural development, pollution, invasive alien species and other threats. Mainstreaming will be achieved largely through using the existing coordinating mechanism that has been successfully piloted in previous ECA projects, notably the GEF-financed

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[22]An ecosystem-based management framework for ECAs represents a multi-sector and multi-stakeholder integrated management approach that recognizes the full array of interactions within an ecosystem, including humans, rather than consider single issues, species, or ecosystem services in isolation. This approach intends to work across sectors and interests to manage species and habitats, economic activities, conflicting uses and the sustainability of resources within ECAs and allows for consideration of resource tradeoffs that help protect and sustain diverse and productive ecosystems and the services they provide.

[23]Favorable ecological condition is reached when each of a number of critical biotic and abiotic indicators selected by a technical advisory panel reach levels which are judged to allow full ecosystem functioning of the ECA

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CWBMP, Expanding the protected area system to incorporate aquatic Eco-System and more recently institutionalised under the 2016 ECA Management Rules (Annex 14).

- **Barriers that need to be overcome** to restore and maintain favorable ecological condition of the national network of ECAs, while enabling stakeholders to benefit from wetland ecosystem services, are:

Barrier 1: *An inadequate framework for effectively managing ECAs and biodiversity importance area and monitoring compliance by means of ecological criteria and standards to safeguard, restore and maintain their ecological integrity and functioning of the ECAs.*

- In Bangladesh, Morjat Baor ECA and proposed Biodiversity Heritage Halda represent a fairly new concept that is not well understood by most decision makers and is not yet fully recognized or integrated into policy making at the national or sub-national levels. While, rules have been recently developed and approved for ECAs and there is a clear agency responsibility for overseeing the planning and management of ECAs, it lacks the institutional "teeth" to ensure a coordinated and integrated approach for planning and management of ECAs based on ecosystem principles and practices. As a consequence, ECAs in Bangladesh suffers from a lack of integrated multi-sectoral and multi-stakeholder approaches that connect biodiversity conservation, ecosystem services and sustainable use as a means to manage these ECAs so that they continue to provide these benefits on a long-term sustainable basis. Conflicts between conservation and resource use within and amongst stakeholders and development sector persist regarding how to plan, manage and use the resources of these wetlands. Insufficient regulation and enforcement mechanisms and the lack of and commitment to enforcement of industrial standards to guide and control effluent discharges for industry and human settlements has also allowed for negative impacts on biodiversity and maintenance of ecosystem services and consequently on the livelihoods of communities that depend on these resources for their survival.
- In addition, while most ECAs have strong potentials to produce ecosystem services worth large economic returns, the majority of them are not in the form of marketable or physical resources. Given the present situation with regard to lack of application of economic valuation mechanisms for wetlands, it becomes extremely difficult to practically agree upon the economic value that ECAs adds to the society each year. As a consequence, obtaining sustainable financing for the management of ECAs is a major challenge, including in particular Inadequate funding from government and other agencies and lack of private sector interests in supporting more sustainable use of ECA resources.

Barrier 2*. Inadequate institutional and technical capacity to oversee restoration of Morjat Baor ECA and proposed Biodiversity Heritage Halda and enforce compliance to achieve favorable ecological condition*

- Although governance structures are mandated in the 2016 ECA Management Rules and Bangladesh Biological Diversity Act 2017as the delivery mechanism and being informed a centralized ECA monitoring and information system, there is limited institutional and technical capacity to apply such prescriptions to achieve favorable ecological conditions within the ECAs. In addition, there is limited capacity to understand and incorporate values of wetland ecosystems, their importance as repositories of biodiversity and suppliers of products and services that benefit local livelihoods and contribute to national security in terms of food, water and energy, in national and sub-national development planning. Lack of working partnership with communities (especially farmers and fishermen), other sectors of government (e.g., agriculture, fisheries, rural development, tourism, energy, water, etc.) and the private sector (commercial and industrial enterprises) is also part of this barrier, as there are multiple stakeholders having vested interests in the use of wetland resources. The Department of Environment's (DoE's) role is to share knowledge and best management practice guidance, but it also

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lacks capacity to advise, coordinate and monitor compliance, while leaving the implementation of ECA management plans to those owning or having tenure over the ECA. Underlying these difficulties is the lack of coordinating responsibilities and partnerships, including with the private sector to find appropriate and sustainable solutions to the effective management of the ECAs and the productive resources contained within them.

Barrier 3: *Weak community level mechanisms to incentivize conservation of biodiversity, promote sustainable natural resource utilization and monitor compliance*

- The ECAs consist of areas that are managed under various tenure regimes including government (owned by Ministry of Land through district and Upazila administrations, particularly in coastal areas), leased out land to private parties for 1-3 years by district of Upazila, normally for fishing purposes (in freshwater wetlands) and privately-owned lands (agricultural land and homesteads). A system of incentives is essential to encourage private or land tenure holders in critical spaces within the ECAs to contribute to providing stepping stones, or expand the pathways of target species while ensuring improvement in ecosystem services and resilience. Within private lands and other tenured areas, transforming land management practices through such mechanisms as conservation agreements need to be tested while certification systems can promote improved practices. In areas managed for agriculture, the promotion of environmentally friendly farming, improved water uses and conservation practices and agro-ecosystem technologies are important. While a number of these mechanisms exist, they have not been systematically applied at the ECA level in ways that will result in changes at the ecosystem level. Moreover, the ecological frameworks and tools are not in place to monitor compliance, with the result that conservation of the environment, improvement of environmental standards and control and mitigation of environmental pollution are likely to be unmet.

Barrier 4: *Limited awareness among the sector agencies, public and key industrial sectors on how to integrate ecosystem-based planning in ECAs/biodiversity importance area and lack of awareness amongst communities and public of risks posed by biodiversity and ecosystem losses*

- Despite awareness among sectors of the need for integrated ECA planning, there is no cross-sector vision for implementing planning and little capacity in the country to lead such planning. There is limited awareness among the key sector institutions on how to integrate planning and management of ECAs with their development priorities, so as to take into active consideration the biodiversity, natural resources and environmental factors that underpin sustainable management of the ECAs. Major sector agencies, including agriculture, fisheries, industry, housing and tourism plan and manage the use of resources within their individual sectoral interests and operations, but with little cross-sector integration. While the ECA rules articulate the need for ecosystem-based planning and management there is usually a lack of critical baseline data on the extent, location, condition and threats for many important ECA ecosystems and species. There is an urgent need for a strategy for acquiring and distributing data and building the institutional, technical, human and infrastructural capacity needed to support on-going biodiversity monitoring and decision-making. Consequently, it is not surprising that the country's knowledge base on biodiversity and natural resources and capacity for stewardship are particularly weak. Drivers of and vulnerabilities to, climate change is also little understood. Among the local community there is little understanding of the importance of biodiversity and natural systems in providing critical ecosystem service to dependents of these resources and the impact that wetland degradation could have on provisioning of such services. Industry remains largely unaware of the value of maintaining existing environmental conditions and of impacts that environmental degradation can

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bring to the local, regional and national economy. Bangladesh Biological Diversity Act 2017 has been enacted in 2017 towards conservation and sustainable use of Biological resources as welll asensuring fair and equtable sharing of Benefits arising out of utilization of genetic resources. A decision has been made in the National Biodiversity Committee headed by the Honorable Minister of the Ministry of Environment, Forest and Climate Change to declare the Halda River as the Bangabandhu Biodiversity Heritage Halda under the section 32 of the Act. Under the Act , government could take development project to conserve the heritage site and reduce the adverse impact of manmade interventions on the threated animals or biological resources.

Alignment with national and global priorities

- The project is aligned with global and national targets for biodiversity conservation and sustainable development. It contributes directly to the goal of the **GEF-6 Biodiversity Strategy** to: *maintain globally significant biodiversity and the ecosystem goods and services it provides to society, through contributing both to conserving biodiversity and maintaining habitats in protected areas and to its conservation and sustainable use in production landscapes and seascapes*. In particular, it addresses **Objective 4** of this Strategy to: *mainstream biodiversity conservation and sustainable use into production landscapes and seascapes and production sectors* and specifically contributes to **Program 9**: *Managing the Human-Biodiversity Interface*by virtue of targeting ECAs – inland freshwater and coastal wetlands that are ecologically important but critically impacted from human activities (refer Annex 16 for alignment with GEF 6 and Aichi Biodiversity Targets).

- It will contribute to the **2030 Agenda for Sustainable Development** and achievement of its goals, notably:

  Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss. The project will also take into account climate change adaptation needs (**SDG 13**);inclusive and equitable socio-economic development for dependent rural communities, thereby contributing towards poverty alleviation (**SDG 1**) and gender equality (**SDG 5**).It will contribute to improved food security, nutrition and more sustainable agriculture(**SDG 2**) and, as a consequence, good health and well-being (**SDG 3**).Availability and sustainable management of water and sanitation (**SDG 6**) will also be improved, much of which will be achieved thorugh partnerships (**SDG 17**).

- It also contributes directly to the delivery of at least half of the 20 **CBD Strategic Plan Goals and Associated Aichi Biodiversity Targets** (by 2020) and to most others in a more limited or incidental manner, details of which are summarized in Annex 4. Unsurprisingly, these Aichi Targets are reflected in the 20 targets identified in the **National Biodiversity Strategy & Action Plan (2016-2021)**, to which the project will contribute to at least half, noting in particular targets 14-15:

  (1) Greater awareness of the value of biodiversity and actively ensuring its sustainable use.
  (6) Stock assessment of aquatic biodiversity to support sustainable harvesting (avoid overfishing).
  (8) Assess impacts of pollution and excess nutrients on ecosystems to strengthen enforcement.
  (11) PAs or ECAs to account for 3% of the country's inland wetlands and coastal ecosystems.
  (12) Extinction of known threatened species prevented and their conservation status sustained.
  (14) Develop and implement restoration plans for degraded wetlands and rivers, taking into account the needs of vulnerable people and local communities.
  (15) Restore degraded ecosystems, especially forests and wetlands, to help address climate change.
  (18) Traditional knowledge, innovations and practices of communities/ethnic groups documented.

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(19) Agencies responsible for biodiversity to adopt modern IT (e.g., GIS, RS) and share via CHM.

(20) Financial resources mobilized to accelerate delivery of targets/activities of updated NBSAP.

(i) Nationally, the project is focused directly on the provisions of the **Bangladesh Environment Conservation Act, 1995(Amendment 2010)** that concern DoE's remit to declare and plan the management of ECAs and its mandate to control pollution. More specifically, it supports the application of the **ECA Management Rules**, enacted in 2016, which provide a governance structure for managing ECAs and address the need for alternatives to be provided for people dependent on ECAs for their livelihoods. Governance roles for a National ECA Committee, District and Upazila ECA committees, Union ECA Committee and Village Conservation Group are defined. Other provisions include management by public-private partnerships and constitution of ECA Management Fund for the ECAs. These new rules have been informed by over a decade of experience in establishing and managing ECAs and now is a timely opportunity to apply them in a holistic, integrated manner, while also piloting a public-private partnership or similar approach to extend such experience to the private sector and demonstrate how pollution arising from agriculture and industry can be addressed.

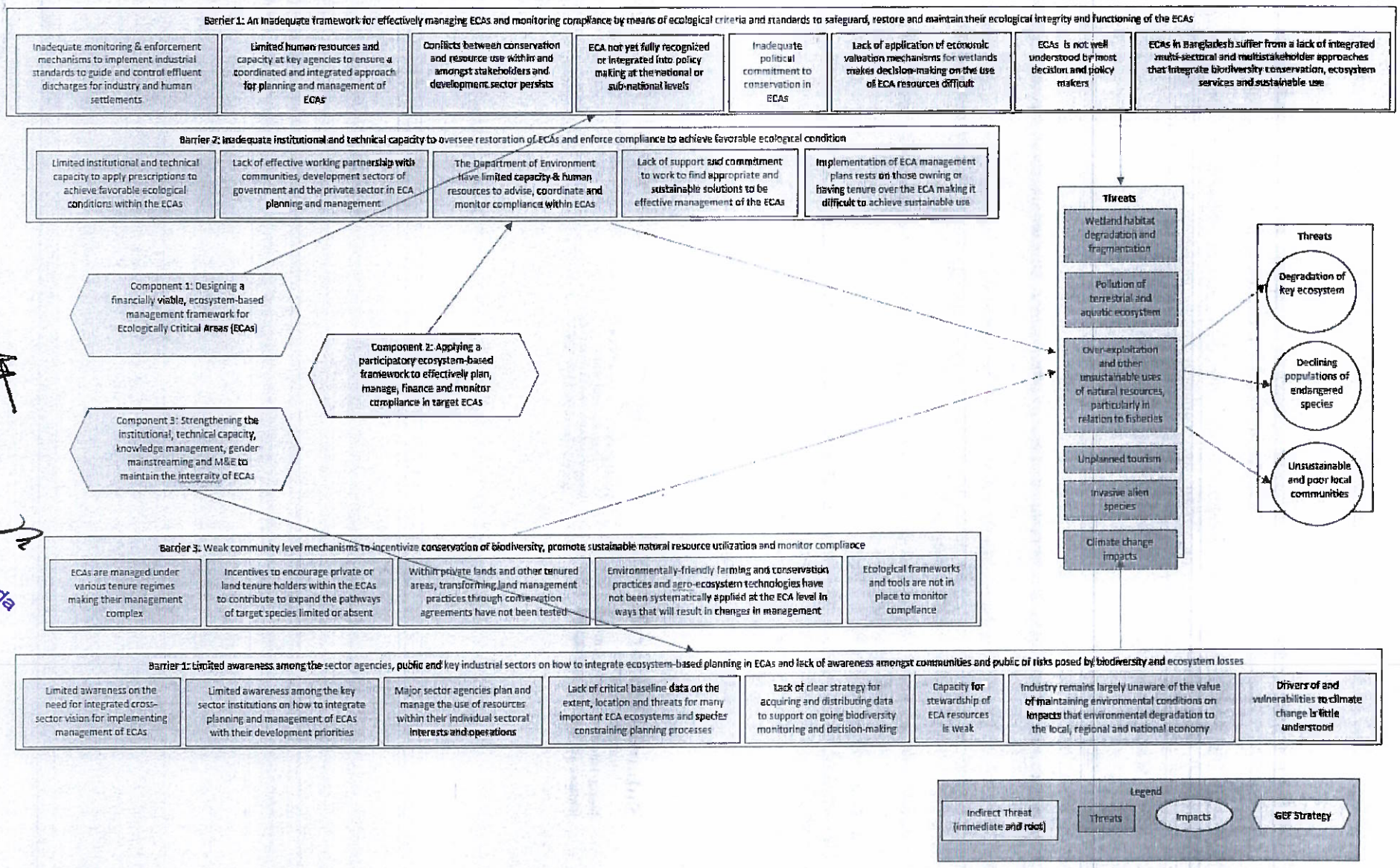
This project also is taking into account of implementation of the Bangladesh Biological Diversity Act enacted in 2017 towards conservation and sustainable use of Biological resources as welll as ensuring fair and equtable sharing of Benefits arising out of utilization of genetic resources. A decision has been made in the National Biodiversity Committee headed by the Honorable Minister of the Ministry of Environment, Forest and Climate Change to declare the Halda River as the Bangabandhu Biodiversity Heritage Halda under the section 32 of the Act. Under the Act , government could take development project to conserve the heritage site and reduce the adverse impact of manmade interventions on the threated animals or biological resources.

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Figure 1: Threats, root causes and barriers to the long-term solution and GEF strategies to address them



II. STRATEGY

♣ The **Project Objective** is: *to apply an ecosystem-based framework (or system)*[24] *for managing Ecologically Critical Areas in Bangladesh to enhance the conservation of globally significant biodiversity and support local livelihoods*. The intent is to operationalize an integrated management approach to safeguard wetland biodiversity, agro-biodiversity and its production systems (i.e., agriculture and fisheries) from over-exploitation, pollution, invasive alien species, climate impacts and other development threats. The project recognizes that these productive wetlands, which are important for conservation of species and ecosystems, underpin the lives and livelihoods of local communities and that implementation of such an integrated strategy is an integral part of achieving a balanced approach to development and community resource use that conserves wetland biodiversity. To achieve this objective, the GEF alternative aims to (i) take into account the interconnectivity of wetlands with the surrounding productive landscapes and their impacts on biodiversity, ecological processes and the functions of sector development and local community activities; (ii) ensure that relevant agencies and actors have adequate capacities to promote integrated ecosystem-based management approaches and tackle the threat to wetland biodiversity and resource management; and (iii) advocate science based approaches and use of traditional and good practice knowledge systems to restore degraded wetlands and prevent degradation of existing wetlands while promoting sustainable agricultural, fisheries and livelihood practices. The project builds on past experiences (e.g. Coastal and Wetland Management Project, Community-Based Fisheries Project, Nishargo Project and other past efforts to incorporate an ecosystem-based approach to planning and management of ECAs that recognizes the need for an integrated approach that takes into consideration the diverse needs and dependencies from the ECAs, that integrates (i) multi-sectoral and multi-sector coordination; (ii) strengthens institutional structures at national, district, Upazila and union levels' including Village Conservation Groups (VCGs); (iii) diversifying financing beyond the government to include the private sector (industry, housing, etc.); strengthen sustainable community resource use and livelihood improvements to enhance local incomes; (iv) capacity and skills development at all levels; and (v) monitoring and enforcement. All of these actions are essential to ensuring an integrated and multi-sector and multi-stakeholder approach to improved management of Morjat Baor ECA and proposed biodiversity heritage Halda, which the project design tries to address. The project will be implemented over a 5-year period based on the following principles:

- Promoting a holistic, multi-sectoral and integrated ecosystem-based management approach to resource governance to enhance ecosystem services and maintain ecological integrity of the wetland ecosystems and its constituent parts;
- Defining a set of national agreed standards for monitoring the achievement of favorable ecological conditions in Morjat Baor ECA and proposed Biodiversity Heritage Halda that is enforceable by appropriate legislative means;
- Supporting and implementing a participatory/consultative bottom-up planning and management approach for maintenance and restoration of favorable ecological conditions in Morjat Baor ECA and proposed Biodiversity Heritage Halda that focuses on national, district, upazila, union and local community priorities and decisions that integrate conservation, sustainable resource use, climate risk management and livelihood outcomes;
- Strengthening the role of communities, local institutions, community-based organizations and non-governmental organizations and increasing their potential for becoming agents of change in promoting maintenance and restoration of wetland conditions;
- Ensuring consultations with local communities and resource dependents before negotiating investments and restoration activities and ensuring that any displacement of incomes or access to resources are adequately compensated through alternative livelihood improvement plans;
- Enhancing capacities of communities, private landowners and private sector to restore and/or maintain the good

[24] An ecosystem-based management framework for ECAs represents a multi-sector and multi-stakeholder integrated management approach that recognizes the full array of interactions within an ecosystem, including humans, rather than consider single issues, species, or ecosystem services in isolation. This approach intends to work across sectors and interests to manage species and habitats, economic activities, conflicting uses and the sustainability of resources within ECAs and allows for consideration of resource tradeoffs that help protect and sustain diverse and productive ecosystems and the services they provide.

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condition of the wetland Morjat Baor ECA and proposed biodiversity heritage Halda;

- Strengthening the capacity of national planning and research agencies to support the proposed local initiatives with technical expertise, improved interagency coordination, information system, enforcement capacity, supporting networks for participatory planning and stronger mechanisms for implementation of plans;
- Ensuring that in its development and implementation, gender is mainstreamed so that the project contributes to equality and equity, through the creation of equitable opportunities and benefits for both women and men;
- Developing, promoting and ensuring an adaptive management approach for the proposed project that progressively identifies threats to biodiversity and wetland habitats and associated ecological, demographical, climatic, market, technological and economic challenges and provides support for iterative strategies to address them, monitoring and assessing the effectiveness of conservation measures and proposing new approaches as necessary; and
- Being selective in terms of identification of locations and nature of interventions to serve as demonstration models in the wetland landscapes and in addressing the nature of challenges that operate therein taking into considerations the existing institutional capacity and resource constraints.

♣ The Project strategy entails a sequencing of project activities that ensures that foundational activities are completed first, to the extent feasible, or in parallel, such as (i) establishing governance and coordinating mechanisms at the national and sub-national levels to facilitate the application of ecological framework (national set of standards); (ii) legislative and regulatory changes to ensure the effective enforcement of the ecological framework to ECAs/proposed Biodiversity Heritage Halda and ensure that penalties for non-compliance of responsible parties are applied; and (iii) capacity improvements developed to provide the necessary groundwork for later demonstration of ecosystem-based management framework in the two pilot ECA and proposed Biodiversity Heritage Halda and beyond (in Component 2). On-the ground interventions in target ECAs to achieve favorable ecological conditions in the two pilot ECAs will build on foundation activities established under Component 1 and subsequent documentation, dissemination of best practices for scaling up under Outcome 3 and feedback mechanisms to influence further policy and legislative changes, as appropriate. In order to ensure a clear, practical and cohesive implementation strategy at the target sites, the proposed project will introduce a structured planning and integrated framework for managing the Morjat Baor ECA and proposed Biodiversity Heritage Halda in Bangladesh. This framework will engender a two-pronged, mutually enforcing approach of (i) strengthening management structures for implementation and enforcement of the ecological framework in the selected Morjat Baor ECA and proposed Biodiversity Heritage Halda and (ii) demonstrating sustainable economic and livelihood initiatives for tackling the reduction of pressures and threats to wetland conditions and its attendant biodiversity and habitats while strengthening direct and indirect economic benefits. Targeted activities under both approaches will be implemented under a linked national and sub-national level coordinated planning and management umbrella platform, supported by updated legal and institutional mechanisms as well as the strengthened ECA-level planning and management mechanisms. Through this approach, on-the-ground initiatives in the pilot Morjat Baor ECA and proposed Biodiversity Heritage Halda will both be guided by and provide feedback loops into, enabling policy, legal, institutional and regulatory initiatives at the national level, while linking conservation-oriented actions with socio-economic, sectoral and livelihood-focused actions at the ECA proposed Biodiversity Heritage Halda level.

♣ In order to ensure that investment activities (Component 2) in the pilot Morjat Baor ECA and proposed Biodiversity Heritage Halda are strategically located to demonstrate tangible impacts and outcomes and avoid the ineffective spread of activities, the project will attempt to locate a suitable mix of project investments in the selected priority locations within the Morjat Baor ECA and proposed Biodiversity Heritage Halda, where tangible impacts on wetland biodiversity conservation and threat reduction can be demonstrated. The selection of priority locations will be based on specific criteria to determine areas that are most biologically significant for conservation and threat reduction and thus serve to ensure the long-term maintenance of the biological and ecological integrity of the ECAs themselves. The strategy of using priority locations as the basis for confining project on-the-ground investments is based on the premise that conservation of biodiversity within the priority locations and maintenance of critical species and ecosystem linkages will ensure that the results and best practices can be translated to other parts of the ECA

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proposed Biodiversity Heritage Halda as well. Using this strategy as the basis for project interventions will necessitate that all ecosystem restoration, sustainable agriculture and fisheries and sustainable livelihood and community and private sector related bio-friendly business solutions are developed and implemented in an integrated fashion within the priority locations themselves rather than be diffused throughout the pilot Morjat Baor ECA and proposed Biodiversity Heritage Halda (and/or implemented independent of each other) given the constraints of GEF resources, institutional capacity and timeframe of the project.

- A three-tiered evaluation process was employed to facilitate the identification of the priority locations within the ECA and biodiversity heritage. The first tier entails the use of biological criteria to identify the best "umbrella" sites within each pilot area, namely those sites that are representation of a suite of vulnerable species and habitats (based on species irreplaceability, habitat connectivity and ecological permanence and having representative bio-indicators). Once these important biological sites are identified, these were subjected to a second-tier evaluation in terms of threats (where there are clear and present dangers related to land-use changes and land use conflicts) and drivers of degradation. The third tier included the assessment of the demonstration potential and socio-economic aspects of the proposed priority locations in terms of resource use conflict reduction, enabling policy environment and potential trade-offs.

- The **Validation Workshop** was preceded by a national consultation workshop with key stakeholders hosted by MoEFCC in Dhaka on 28 July 2018, which concluded a 12-day Inception Mission by the project formulation (PPG) team of consultants that included field visits to four candidate demonstration sites for this project (Jaflong Dawki River, Hakaluki Haor, Halda River and Morjat Baor) and consultations with a total of 133 stakeholders. The mission schedule, summary of key findings and list of people consulted can be found in Annex 21. Local communities at four candidate target sites were consulted during the PPG, of which two (Halda River and Morjat Baor) had been identified previously in the PIF and Hakaluki Haor and Jaflong-Dawki had been tentatively added - given that Cox's Bazaar-Teknaf Pensinsular (listed in the PIF) was no longer an option because it had become a destination for Rohingya refugees fleeing from Myanmar. Consultations were limited to receiving feedback on the condition of these wetlands and on interventions that would be welcomed. This feedback informed the stakeholder consultation held on 28 July 2018, at which the National Executing Agency (Ministry of Environment, Forest and Climate Change) agreed to reduce the number of targets to two wetlands Morjat Baor ECA and proposed Biodiversity Heritage Halda in accord with the GEF Secretariat's comments on the PIF (refer to Annex 21). However, it will be important to consolidate the earlier consultation process during project inception. The details of the two sites, namely Halda River proposed biodiversity heritage and Morjat Baor ECA are provided in Annex 15. It was also concluded that a third site would be over-ambitious for this project, given the available resources and, more particularly, the scale of the challenges to be addressed at the two selected sites. However, as part of the project's mainstreaming agenda, all Morjat Baor ECA and Proposed Biodiversity Heritage Halda should be able to participate in the training programand monitoring system for the network. The proposed project strategy was endorsed at a **Validation Workshop** held in Dhaka on May 25 2019, attended by key National Government Partners, NGOs, Academic and Research Institutes and International Development Partners. Key observations are further detailed in **Annex 15.1**.

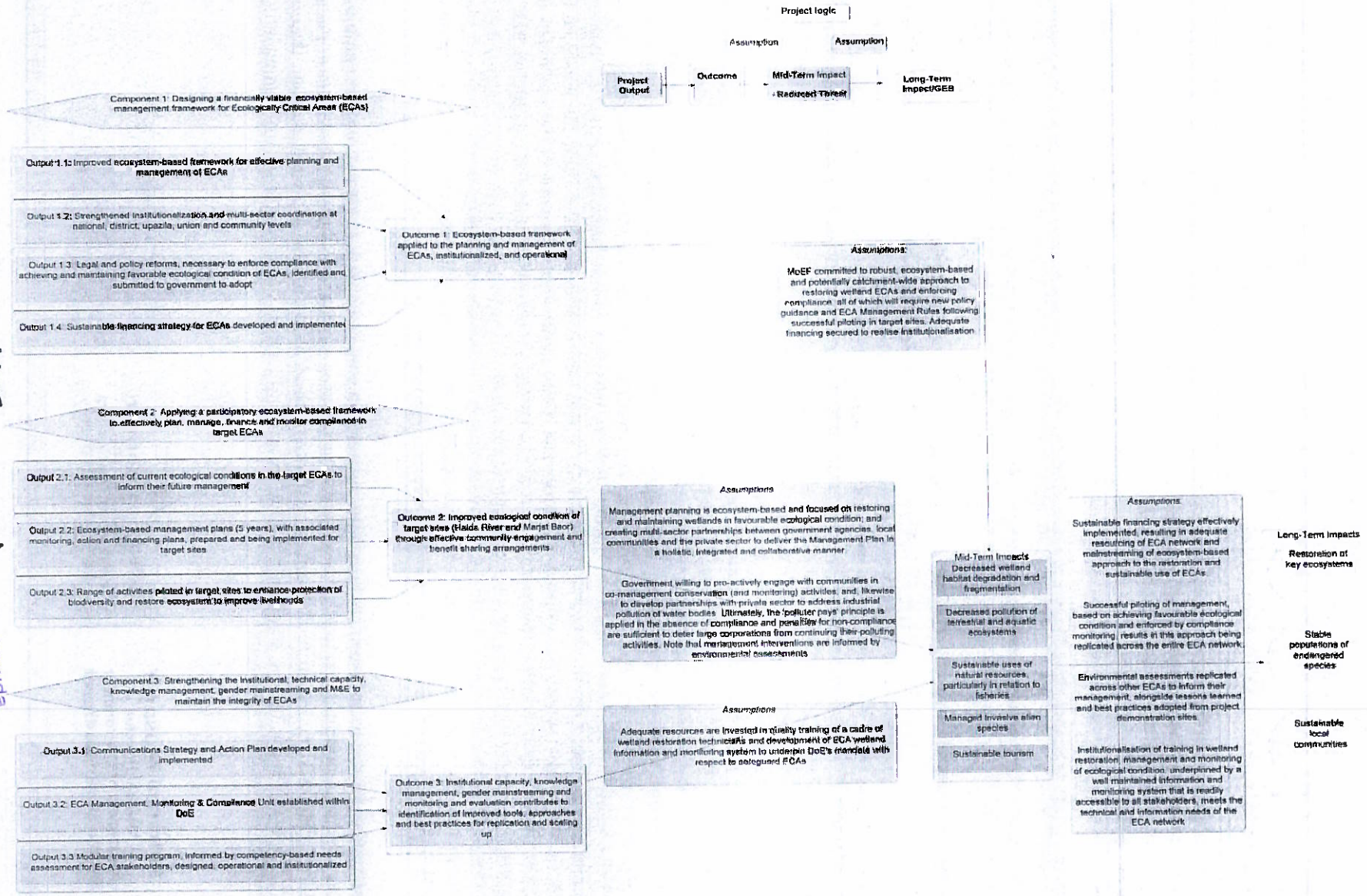
- The project objective will be achieved via three inter-related and complementary strategies (Project Components comprising Outcomes and Outputs) that focus on removing/reducing the four key barriers to accomplish the long-term solution (Figure 1) by means of intervention pathways shown in the theory of change diagram (**Figure 2**). Indicators and assumptions for the accomplishment of expected Outcomes under the respective Components are given in the Project Results Framework.

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Figure 2:Theory of Change, showing barriers, components, and respective outputs to address them and outcomes resulting in achievement of project objective,



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National socio-economic benefits

- As outlined in **Section II**, the conceptual design of the project and its more innovative elements resonate well with the core theme of the ***8th Five Year Plan of Bangladesh***: *Accelerating Growth, Empowering Citizens*. These include the project's focus on: consolidating and institutionalizing the governance of ECAs; engaging with the private sector for the first time to address industrial and agricultural pollution of wetlands; and underpinning the ECA network with web-based learning and a GIS that will include a reporting facility to document ECA condition (health) and compliance in managing the ecosystem. The overall socio-economic benefits of the project will be seen at the individual as well as collective community level which means that changes at the household level and also in economic groups such as VCGs, producer groups and cooperatives will be there in the following manner:

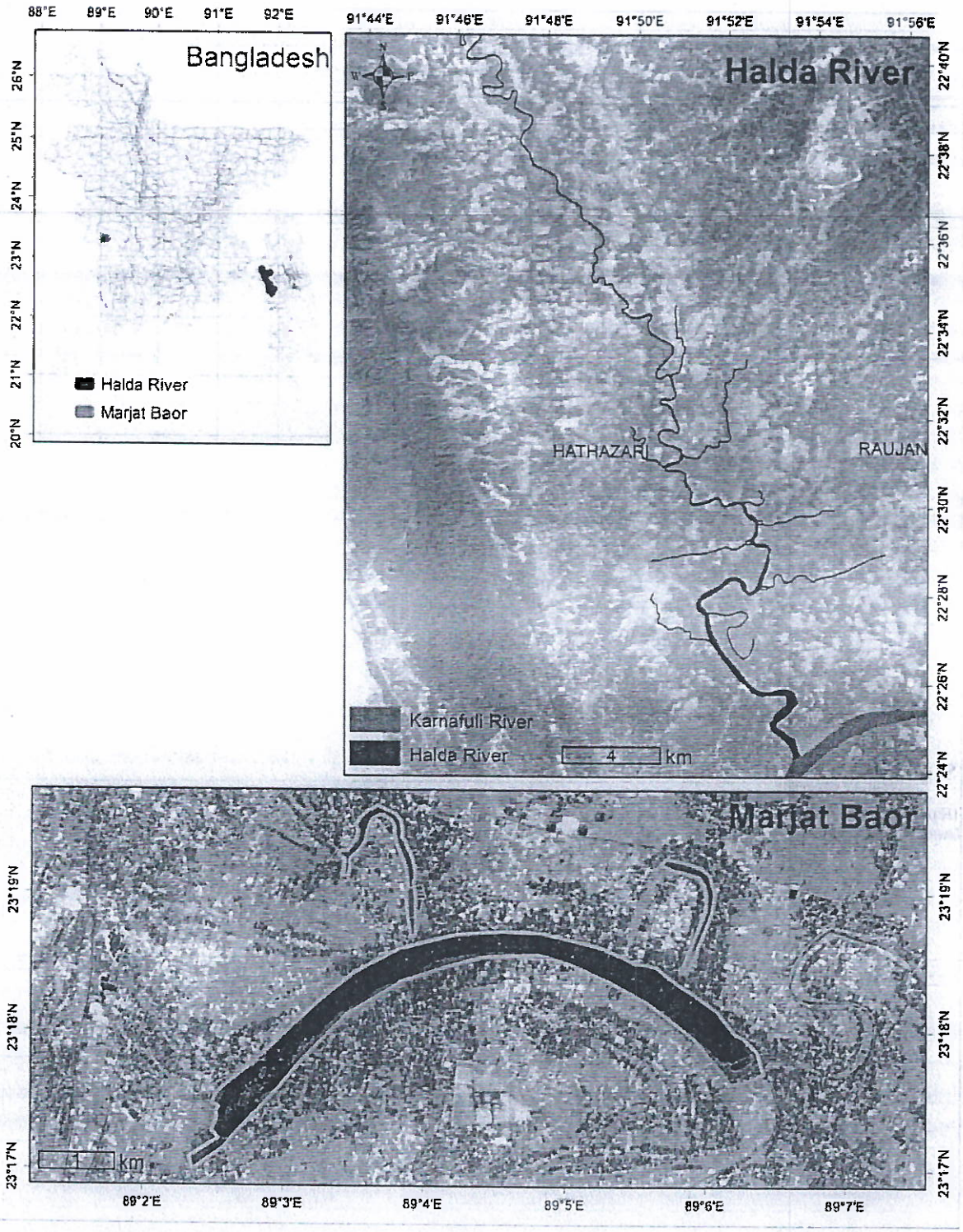
1. At least 1,000 persons in the pilot Morjat Baor ECA and proposed Biodiversity Heritage Halda will directly benefit through improved livelihoods and incomes, of which an estimated 30% will comprise of women;
2. Implementation of integrated ecosystem-based management approaches for ECAs will result in improved and sustainable fisheries, agriculture and other wetland resource use activities, agriculture and improved water quality that will collectively result in better conservation and livelihoods outcomes;
3. Improved access to basic goods and technical services, technology and improved agricultural, fisheries, livelihood and tourism practices - diversification and enhancement of livelihoods in wetland and non-wetland (e.g., agriculture) activities will ensure more livelihood options and better prices and income.
4. An increase in community incomes from sustainable wetland and livelihood activities of around 15% wherein around 30% of beneficiaries will be women;
5. The focus on addressing gender inequality wherein various initiatives such as technological interventions for drudgery reduction in livelihood and household-based activities, promotion of alternative livelihood options, participation of women in various local conservation committees are proposed. The project envisages more gender equality in context of sex ratio, decision making powers, ownership and control of wetland resources, reduction in drudgery as well as working hours of women and women leadership as well as participation; and
6. Stable or improved populations of key species in the Morjat Baor ECA and Proposed Biodiversity Heritage Halda.

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Figure 3: Map of Project ECA and biodiversity heritage



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III. RESULTS AND PARTNERSHIPS

- **Expected Results**

- The **Long-Term Impacts** of the Project Objective, sometimes referred to as *global environmental benefits* but generally realized post-project as in this case, will be:
  - A restored network of ECA proposed Biodiversity Heritage Halda wetlands maintained in favorable ecological condition, including associated endemic and/or threatened species; and
  - The improved well-being and resilience of their local communities.

1. **Global environmental benefits,** post-project will be improved management and compliance monitoring of 395,229 ha of inland freshwater bodies (lakes and rivers) and coastal and marine habitats in respect of GEF's replenishment target of 300 million hectares of improved management of landscapes and seascapes. The project's global benefit reflects the total area of Bangladesh's ECAs network (384,529 ha) plus the proposed Bangabandhu Biodiversity-rich Heritage Halda River of 10,700 ha (refer to Annex 13 for ECA statistics). This global benefit will be generated as a result of the project's intervention to introduce an ecosystem-based framework to the planning and management of Morjat Baor ECA and proposed Biodiversity Heritage Halda, whereby the determinants (criteria) of *favorable ecological condition* are identified and management regimes and targets are prescribed by DoE for the responsible authority/manager to implement. This will provide the basis upon which DoE will monitor compliance, using participatory monitoring processes involving CSOs, communities and academia, as appropriate, to augment its own official oversight. The **immediate global environmental benefit** during the lifetime of the project will be up to 11,025 ha of wetlands being targeted for achievement of favorable ecological conditions based on agreed national standards, which represents the total area of the two target existing ECA and biodiversity heritage. The key biodiversity values of the two pilot sites are:

   1. The Halda River is the single major source of Indian carp (*Labeo rohita)* eggs in Bangladesh and possibly in South Asia, being the major freshwater breeding ground and natural gene-bank of pure Indian carp
   2. It provides habitat for the endangered Ganges Dolphin (*Platanista gangetica*, EN) and several other endangered birds and habitat for a wide variety of endemic species.
   3. The river provides a wide range of habitats as it evolves from mountain streams to estuary and the resulting mix of river habitats, associated wetlands, forestry, mangrove and saltmarsh support a diverse array of locally and globally important species.
   4. Morjat Baor is famous for its diversity of over 100 species of freshwater fish species, including *Botia dario,* a nationally endangered fish species
   5. The lake is also very important habitat for bird species, such as the locally endangered little black cormorant (*Phalacrocorax sulcirostris*), Great White Egret (*Ardea alba*), kingfishers and other species. The abundant plant life also supports diverse and abundant communities of invertebrates, amphibians and reptiles.

- The GEF increment will be crucial to financing the interventions necessary to shift the current ecological baseline to more favorable condition in the two pilot sites, underpinned by legal and policy changes adopted under the country's ECA legislation via the ECA Management Rules of 2016 and Bangladesh Biolocial Diversity Act 2017, to enable its enforcement. Benefits to local livelihoods are likely to be very significant, particularly with regard to improved water quality along the Halda River and in Morjat Baor. The increment to be achieved from the additional GEF funds is summarized below in Table 2.

- While ECA projects have been subject to project interventions for 20+ years and, while their conservation status has improved to some extent in about half of them (others not having benefitted from such projects), they continue to be project dependent (i.e., sustainable solutions have yet to be realized). The fundamental issue is enforcement of the law, based on the "polluter pays" principle. To be able to enforce the law, the responsible authority (Department of Environment) needs to know: (i) the ecological status of the wetland (all ECAs are wetlands, to date) and whether or not that status is changing for better or worse under the existing management regime/lack of management scenario; (ii) the prior healthy status of the Morjat Baor ECA and proposed Biodiversity Heritage Halda before it became ecologically degraded, including the species and/or habitats for which it is nationally/globally important for biodiversity conservation and provision of ecosystem services; and (iii) the measures necessary to restore and/or maintain Morjat Baor ECA and proposed Biodiversity Heritage Halda to good ecological condition. Based on this

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knowledge, the DoE is then able to prescribe the management measures necessary for the wetland owner/manager/user to restore and/or maintain the good condition of the wetland. Having agreed the management prescriptions, which form the basis of the ECA management plan, DoE monitors the status of the wetland to ensure that its good condition is being maintained or attained within a specific timeframe. Such monitoring provides DoE with ability to track implementation of the management agreement and, if necessary, penalize the responsible party for non-compliance. In the case of 3rd parties polluting an ECA wetland, for example, such impacts will show up in the monitoring and polluters can be brought to justice once the DoE is able to identify the source of such pollution.

- Underpinning the monitoring, therefore, is a hydrological framework that provides a set of national standards for wetland ecosystems, based on physical (e.g., water clarity), chemical (e.g., levels of oxygen and pollutants such as nitrogen and phosphorus) and biological (e.g. algal mats, aquatic plants and animals) indicators that can be applied to individual Morjat Baor ECA and proposed Biodiversity Heritage Halda. It is this hydrological framework that needs to be developed and adopted under the county's ECA legislation via the ECA Management Rules (Component 1), applied to the two project sites by way of demonstration (Component 2) and institutionalized (Component 3). Thus, the project intends introducing a sound scientific approach to ECA management that can be applied across the ECA network in a consistent manner and used as a basis for enforcing compliance with the management measures prescribed by DoE in consultation and agreement with the wetland owner(s). Stakeholders, particularly local communities, need to be introduced to this science as part of the management planning process and their practical experience in managing their wetlands for agricultural, fishery and other purposes should be taken into account and contribute to design of management interventions. The management planning process should be envisaged as a meeting between scientist and practitioner, respectively bringing the technical knowledge and local experience together. A further dimension to this particular GEF-6 project is its engagement with the private sector, something not previously addressed in previous ECA projects but a necessary ingredient of a holistic approach to ECA management, given that the private sector is a significant polluter of some ECA wetlands. Hence the focus on Halda River, heavily polluted by industry and proposed as an ECA. The project's incremental value lies in demonstrating, using the selected Morjat Baor ECA and proposed Biodiversity Heritage Halda , the development of participatory ecosystem-based wetland resources management, enterprise based sustainable natural resource practices and sustainable livelihoods for local communities to improve the favorable ecological conditions, including while conservation of wetland biodiversity, maintaining habitat and ecosystem services and ameliorating climate change impacts.

Table 2: Summary of incremental cost rationale and global environmental benefits

Summary of **baseline scenario**	Summary of GEF scenario	**GEF increment by project end**
ECA network (Annex 1) comprises 13 wetlands established from 1999 under Bangladesh Conservation Act 1995; currently covers 384,529 ha25. ECA responsibility vested in DoE but land tenure often lies with third parties (e.g. Forest Department). ECA management to date is largely project dependent, of which there have been at least 9 multi-million-dollar investments since 1999 (Table 1). Most projects have focused on 4 ECAs where governance structure was successfully piloted by CWBMP in 2003-2011. Five ECAs, notified from 2009 onwards, have not benefitted from key projects. Limited financial resources and capacity continue to hinder mainstreaming and	Financially viable ecosystem-based management framework designed, mainstreamed across ECA network and institutionalized. Ecosystem-based framework applied to effectively plan, manage, finance and monitor compliance in target Morjat Baor ECA and proposed Biodiversity Heritage Halda. SEA approach deployed to engage key stakeholders in an open, holistic, transparent and participatory manner. Morjat Baor ECA and Proposed Biodiversity Heritage Halda engaged for first time with private	DoE enabled to resource ECA network in terms of adequate staffing with relevant competencies as result of developing and implementing a Sustainable Financing Strategy. Governance structure is fully institutionalized and mainstreamed across ECAs in wake of applying 2016 ECA Management Rules and Bangladesh Biological Diversity Act 2017 Ecosystem-based framework developed and applied to two Morjat Baor ECA and Proposed Biodiversity Heritage Halda, resulting in 11,025 ha of wetlands being managed in compliance with criteria that will result in *favorable ecological condition* being achievedin the long-term.

25 This is the revised area, based on more accurate GIS estimates of Sonadia Island and Morjat Baor ECAs. The legally notified total area amounts to 379,022 ha. Details are provided in Annex 13.

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Summary of baseline scenario	Summary of GEF scenario	GEF increment by project end
scaling up of project successes and best practices. *Status quo* is unsustainable: ECAs are not being maintained without continuing project investments; nor is there any robust, transparent mechanism to monitor *status quo* and ensure compliance with agreed interventions. ECA Management Rules finally approved in 2016 and Bangladesh Biological Diversity Act 2017underpinning institutionalization of a governance system represented at every government level from national to Union Council, are yet to be mainstreamed across all ECAs.	sector to address pollution of water from industrial effluents. Institutional and technical capacity of DoE strengthened to put in place measures to address threats to Morjat Baor ECA and proposed Biodiversity Heritage Halda and ensure that responsible parties restore and maintain ECA integrity and biodiversity heritage. Network-wide, transparent monitoring system established for Morjat Baor ECA and proposed Biodiversity Heritage Halda to track status of their ecological condition.	At least 50% of proposed Biodiversity Heritage Halda with management plans to that are aimed at achieving favorable environmental conditions on the longer-term Establish District Biodiversity Management Committee, Upazila Biodiversity management Committee , Municipal Biodiversity management committee and union Biodiversity management committee, biodiversity group and sub committees under the Bangladesh Biological Diversity act 2017; Establish District ECA committee, Upazila ECA committee , Union ECA committee and village conservation groups under the Ecologically Critical Area Management Rules 2016 rules in place in terms of permissible and prohibited activities; management plan approved for ecosystem-based management Provision of vital technical and other resources to support establishment of the new Bangabandhu Biodiversity Heritage Halda River. Local livelihoods benefit substantially from a range of ecosystem goods and services – to about 1,000 persons with average 15% increase in incomes. Information management system established for ECA network, which includes provisions for monitoring *favorable ecological condition* of ECAs, GIS and knowledge management. Improved quality of water in Halda River (by 10-15%) at defined locations (locations where project interventions are targeted) resulting from engaging with private sector specifically to address industrial effluent pollution and Morjat Boar through improved weed control and agricultural practices.
Global environmental benefits, additional to those generated from the introduction of an ecosystem-based management framework at the ECA system level, include the following specific ones in the target Morjat Baor ECA and proposed Biodiversity Heritage Halda: **Halda River:** Conservation of a pure gene bank of major Indian carps (e.g. *Catlacatla, Labeorohita, L. calbasu, Chirhinus chirhosus*) and a globally unique customary tradition of collecting the fertilized eggs from the spawning grounds as well as attaching on the significant protection of the Ganges dolphin (*Platanista gangetica*, EN). **Morjat Haor:** Conservation of Renowned local fish species (over 100 species) and locally endangered bird species, including little black cormorant (*Phalacrocorax sulcirostris*, LC), Great White Egret (*Ardea alba*, LC), kingfishers, etc.		

- The GEF funding requested by the Government of Bangladesh will be used to achieve the Project Objective through three inter-related **Component/Outcomes**, as described in **Section III**. Each Outcome is elaborated below, together with its respective outputs. The respective Objective and Outcome level indicators, with baselines and targets, are defined in the Results Framework (**Section VI**).

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Component 1: Designing a financially viable, Ecosystem-based Management framework/system for Morjat Baor Ecologically Critical Areas (ECAs) and proposed Biodiversity Heritage Halda.

Total Cost: **US$2,123,375**; GEF project grant requested: US$403,600; Co-financing: US$1,719,775

Baseline conditions (without GEF project):

- At the systematic level, Bangladesh's Ecological Critical Area (ECA) and Protected Area management under the Bangladesh Environment Conservation Act, 1995 that provide regulations on biodiversity conservation and natural resources management will continue to be ineffectively operationalized and be faced with institutional and administrative problems that will continue to cause harm to ecology and biodiversity of the declared Morjat Baor ECA and proposed Biodiversity Heritage Halda. While, the Government of Bangladesh adopted ECA Management Rules in 2016, to manage the ECAs, including the formation of a number of committees from local to national levels and also identified their structures and functions related to ECAs management and development in Bangladesh, these management committees remain largely non-functional. In addition, the ECA Management Rules will continue to lack a set of clear and generic national standards that can be applied to ECAs to monitor their ecological health and define appropriate management responses towards achievement of favorable ecological conditions. The ECA rules of 2016 calls for the establishment of an Ecology Management Fund to receive financial resources from inter alia the national budget; foreign individuals or governments, any international organization or institution; native individuals or authorities; and fees charged under the rules, however the rules and procedures for fund accumulation and disbursement of funds will likely be slow to be implemented thus delaying the establishment of a sustainable financing structure for the ECAs in the country.

- Without the GEF project, the ecosystem based ECA management approach will remain less formally recognized as an effective tool for management of the country's wetlands. Decision-making about development plans will continue to not adequately take into account the impacts of a variety of land use changes on the wetlands as well as means for enhancing favorable conditions in the Morjat Baor ECA and proposed Biodiversity Heritage Halda. Institutionally, while the Ministry of Environment, Forests and Climate Change (MoEFCC) will be the focal agency for overall ECA proposed Biodiversity Heritage Halda management, its staff will continue to need additional capacity for implementation of comprehensive integrated ecosystem-based management approaches at the ECA and heritage level. Without the GEF, MOEFCC will not be able to fully guarantee: (i) an effective multi-level integration between national, District, Upazila, Union and community levels in terms of maintaining and/or restoration of Morjat Baor ECA and proposed Biodiversity Heritage Halda to good ecological condition, (ii) an effective consultation between different institutional levels and sectors at the national and sub-national levels in support of management options for improving favorable ecological conditions within Morjat Baor ECA and proposed Biodiversity Heritage Halda; (iii) an enhanced capacity within DoE to track implementation of management agreements for achieving favorable ecological conditions and penalizing responsible parties for non-compliance; and (iv) an expanded national-level coordination mechanism and procedures to include District, Upazila and Union and sector representation. Consequently, without the GEF Project, there will continue to be an incomplete institutional framework for integrated ecosystem based ECA planning and management and enforcement of management measures for enhancing achievement of favorable ecological conditions within ECAs. As a consequence, the trend of degradation of natural systems might not be controlled or reversed, which might further deplete the quality and quantity of ecosystem services and increase rural poverty.

Alternative (with GEF project):

- Under this Outcome, the GEF increment will support the effective implementation of the ECA Management rules of 2016 by strengthening coordination, governance and regulatory arrangements for integrated ecosystem-based management of Morjat Baor ECA and proposed Biodiversity Heritage Halda. This will include establishing an institutional advisory mechanism to facilitate integrated ecosystem-based management of Morjat Baor ECA and proposed Biodiversity Heritage Halda in the country and in particular advise on design and application of national standards to wetlands to monitor achievement of favorable ecological conditions within the ECAs and biodiversity heritage. The proposed national coordination advisory mechanism will also provide guidance to DoE and wetland owners and users on necessary management prescriptions for restoring and maintaining favorable ecological conditions in the wetlands. The component will support the development of a set of minimum national ecological standards for Morjat Baor ECA and proposed Biodiversity Heritage Halda and mechanisms to ensure that these standards will be legally enforceable to guide responsible practices in these sectors while providing a practical strategy and financing plan for ECAs and biodiversity heritage in Bangladesh. At the same time the project will strengthen the capacity of environmental authorities to identify and develop new Morjat Baor ECA and proposed Biodiversity Heritage

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Halda, improve existing ones, including strengthening and application of environmental safeguards for management of impacts on biodiversity and ecosystems and maintenance of good environmental conditions in the Morjat Baor ECA and proposed Biodiversity Heritage Halda. The outcome would be a national advisory structure (supported by improved policies, legislation, best practices and other relevant tools) that promotes the application of agreed national standards for maintenance and restoration of wetlands, while taking cognizance of sustainable resource management, biodiversity conservation and biodiversity-friendly socio-economic planning and enforcement. It will also take into consideration climate change as well as strengthened capacity and skills within MOEFCC and national, district, Upazila and Union institutions, civil society and local communities to facilitate and support their ability to balance development and environmental needs at the ECA and biodiversity heritage level

- This Outcome would be achieved through four outputs, building on strong community consultations, which will contribute to achieving the overall goal of developing national frameworks for integrated ecosystem planning at the ECA and proposed Biodiversity Heritage Halda level and its management and participatory enforcement in Bangladesh to conserve biodiversity and in establishing capacity for planning, implementation and monitoring of conservation outcomes and threats.

Outcome 1: Ecosystem-based framework application to the planning and management of ECAs and biodiversity heritage institutionalized.

- Outcome 1.1 is focused on developing an ecological framework for maintenance and/or restoration of Morjat Baor ECA and proposed Biodiversity Heritage Halda to good environmental condition that is based on sound science directed at maintaining, or first restoring, their salient biodiversity features (genes, species and ecosystems) using a set of indicators and respective targets to monitor and, as necessary, enforce compliance. Underpinning the monitoring, will be a hydrological framework that provides a set of national standards for wetland ecosystems, based on physical (e.g., water clarity), chemical (e.g., levels of oxygen and pollutants such as nitrogen and phosphorus) and biological (e.g., algal mats, aquatic plants and animals) indicators that can be applied to individual project area. It is this hydrological framework that will be developed and adopted under the country's ECA legislation, via the ECA management rules (Component 1), applied to the two project sites by way of demonstration (Component 3) and institutionalized (Component 3).

Output 1.1: Improved ecosystem-based framework for effective planning and management of Morjat Baor ECA and proposed biodiversity heritage Halda.

- This Output is based on: defining the unique, special ecological features of each ECA and identifying the *favorable ecological conditions* necessary for their maintenance; and monitoring compliance using ecosystem-based indicators.
- The ecosystem-based framework will focus on wetlands, given that all current and proposed ECAs and biodiversity heritage are aquatic bodies and comprise a set of principles and suite of standard indicators for monitoring water quantity and quality and the ecological condition of salient features such as habitats and species. These indicators will be used for: (i) evaluating and tracking wetland health to assess whether or not that status is changing for better or worse under existing management regimes; (ii) understanding if prior healthy status of Morjat Baor ECA and proposed biodiversity heritage Halda before it became ecologically degraded, including the species and habitats for which it is nationally/globally important for biodiversity conservation and provision of ecosystem services; evaluating success of wetland restoration efforts; (iii) defining measures necessary to restore and/or maintain the ECA and biodiversity heritage in good ecological condition, including strengthening water quality standards for aquatic life support, drinking water supply, fish consumption and recreational activities and (iv) monitoring the effectiveness of mitigation/management measures in maintaining and restoring the health of the wetlands; and (v) certifying standards for discharge to wetlands or water bodies to enable enforcement. It will be accompanied by guidelines on how it should be applied in a consistent manner to individual ECA and biodiversity importance area; incorporated within their respective management and action/operational plans; and routinely monitored and reported, using the provisions of the ECA Management Rules 2016 to institutionalize the entire process within national and local government administrations, as elaborated in Annex 14.The guidance will also elaborate on the potential for partnership approaches, with different types of stakeholders (e.g. private sector, local communities) to monitor compliance with the prescribed management interventions necessary to achieve favorable ecological condition.
- An outline of what is envisaged for such a framework/system is provided in Annex 17, based on knowledge and experience gained from the application of the Water Framework Directive (WFD) throughout Europe. This is based on

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the principle that a healthy functioning ecosystem is reliant on a number of key components, all of which must be within healthy parameters in order for the waterbody as a whole to be in good health. These factors are agreed by government-appointed technical specialist panels and include wide suites of ecological (habitat quality, fish population, invertebrate population, plant and algae communities, hydrographs) and chemical (nutrients, oxygen, indicators of pollution such as heavy metals and pesticides) parameters, each of which are regularly assessed and graded Bad, Poor, Moderate, Good or High. Any score below Good is considered a failure. If a waterbody fails to reach the required standard for any of these criteria, then measures must be taken to address the failure within a set timeframe. The overall ecological status of the waterbody is determined by the lowest score of any of these variables, thereby acknowledging that an ecosystem is limited by the poorest of its contributing building blocks and ensuring that no factor can be overlooked if a site is to reach good ecological status. In addition to providing an action plan for improvement, the WFD also makes it illegal to cause ecological harm to waterbodies.

- The European WFD provides a useful, transferable framework for Bangladesh's ECAs, with a practical and legal framework for safeguarding and maximising their ecological health, while also delivering benefits for local communities whose livelihoods are often dependent on ECAs to a significant extent and declining. Importantly, the WFD recognises the role of communities and non-government bodies in determining and delivering targets. An example of how the WFD can be applied to a river is also provided in Annex 17, along with outline frameworks for Halda River and Morjat Baor for illustrative purposes.

- It will be necessary to set up a small (≤ 10 members) ECA and biodiversity heritage Technical Advisory Panel to oversee the design of this framework for defining and monitoring favorable ecological condition. This Panel, which will include a representative of the National ECA Committee, will initially serve the interests of the project. Over the longer term, it may be appropriate to continue its advisory role under the auspices of the National ECA Committee to which the proposed ECA and biodiversity heritage Management, Monitoring and Compliance Unit (MMCU) would report (refer to **Output 3.2**). The project will work closely with this Advisory Panel to develop the ecological framework, then piloted in the two project sites. Once piloted in Years 1-3, the framework will be mainstreamed across other ECAs and biodiversity heritage.

- **Activities** include the following tasks:
    1. Establish an ECA and biodiversity heritage Halda Technical Advisory Panel for the project, which is essentially an expert group on wetland restoration and management that is also multi-disciplinary and includes representatives from the National ECA Committee, DoE, fisheries, agriculture, forestry, Bangladesh Water Development Board, water resources, sewerage, academia (wetland ecology) and 1-2 leading national NGOs (no more than 10 members). This Panel will advise both PMU and the ECA and biodiversity heritage Management, Monitoring and Compliance Unit (MMCU) being established under Output 3.2, as well as the PSC, particularly with respect to the development of an ECA wetland monitoring and compliance system;
    2. Consultations and collaboration with all relevant sectors (including private sector, industry, etc.) and stakeholders (including NGOs and local communities) to arrive at a common vision for the ECA and biodiversity heritage and design a generic ecological framework for applying to individual ECA and biodiversity heritage and consult regularly with the project's Technical Advisory Panel;
    3. Apply the ecological framework to the identified biodiversity features in the project sites (Halda River and Morjat Baor) and identify a set of prescriptions for restoring them to favorable ecological condition;
    4. Document the ecosystem-based approach and provide guidelines for scaling up its application across ECAs network;
    5. Led by the PMU, Panel members will be encouraged to support the modular training program delivered under Output 3.3 by contributing to/reviewing a module on *ecosystem-based management of ECAs/biodiversity heritage and compliance monitoring* and then promoting such training among relevant parties within their respective sectors; and
    6. In Year 4-5 ecological framework/system developed for other ECA and biodiversity heritage.
    7. Training workshop for DoE and relevant stakeholders on ECA proposed Biodiversity Heritage Halda Management Plan and Guidelines.

Output 1.2: Strengthened institutionalization and multi-sector coordination at national, district, upazila, union and community levels.

(ii) This Output is based on applying and operationalizing the 2016 ECA Management Rules, Biodiversity Act 2017, etc

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with powers delegated to district authorities to oversee ECA/biodiversity heritage site planning, ecosystem-based management and compliance monitoring, as well as to facilitate partnerships with the private sector (e.g., industry, tourism) and communities (e.g., farmers, fishers, etc.).

(iii) The Project will initially work with the DoE and establish or re-invigorate ECA committees at the respective levels of local government administration (District, Upazila, Union Council and with the Village Conservation Groups in the two project sites, thereby ensuring that the 2016 ECA Management Rules (**Annex 14**) are fully applied. Priorities include addressing any land tenure issues and delegating authority for the management of the Morjat Baor ECA and proposed biodiversity heritage Halda to the district(s) in order to strengthen ownership at district and lower levels of local governance. It will also explore and develop opportunities for management with, for example: local communities to safeguard and/or monitor biodiversity (and socio-economic) interests; and the private sector to restore water and/or habitat quality and/or aquatic species viability.

(iv) Once governance is fully operational and institutionalized in the pilot sites and an ecosystem-based compliance monitoring system aligned with the respective ECA and biodiversity heritage management plan is in place (by mid-term), the emergent best practices in applying the 2016 ECA Management Rules will be mainstreamed across the ECA network under a combined training and coaching program in Component 3 (Output 3.3).

(v) In the case of Halda River, there is a definite opportunity to work with the private sector through the Chittagong Chamber of Commerce& Industry (CCCI)and establish a platform, such as a Halda River Impact Group, that will work collaboratively to reduce their impact on this river and its catchment through demonstrating operating practices, processes and management schemes that result in positive outcomes for both business and the aquatic environment. Background information, outcomes to date from discussions with CCCI and tentative initiative (s) are elaborated in **Annex 18.** District Biodiversity Management Committee, Upazila Biodiversity management Committee , Municipal Biodiversity management committee and union Biodiversity management committee, biodiversity group and sub-committee will be operational under the Bangladesh Biological Diversity act 2017.

(vi) Activities, some of which will need to be coordinated closely with ECA and biodiversity heritage management planning as outlined under Output 2.2[25], include the following tasks:

a. As per the decision of the National Biodiversity Committee, Halda River will be declared as Bangabandhu Biodiversity Heritage -, The assessment of current status of governance within the two project sites and, as appropriate, work with respective local government administrations to fully operationalize ECA and proposed Biodiversity Heritage Halda management based on ECA Management Rules 2016. This will include:
   - Modalities for working with various sectors and institutions that impact and influence ECAs and biodiversity heritage;
   - Modalities of working practices for ECA and proposed Biodiversity Heritage Halda committees at each of their respective levels of local administration, with roles, responsibilities and reporting requirements (templates) clearly defined;
   - Modalities of working practices for VCGs;
   - Modalities for working with the private sector in facilitating the maintenance and restoration of the ecological health of the Morjat Baor ECA and proposed Biodiversity Heritage Halda; and
   - Developing monitoring, financial accounting and accountability systems for each ECA proposed Biodiversity Heritage Halda committee level and VCGs.

b. Identify and follow up opportunities for co-operation in protecting, restoring and sustainably using the goods and services provided by the Morjat Baor ECA and proposed Biodiversity Heritage Halda, designing and putting in place the necessary agreements between National Executing Agency and other co-implementing agencies/stakeholders, including government, NGOs, communities and the private sector; and

c. Identify best practices and lessons learned to inform mainstreaming of the application of the 2016 ECA Management Rules and Biodiversity Act 2017 (Output 3.3).

Output 1.3: Strengthen monitoring, enforcement and compliance measures with achieving and maintaining favorable ecological condition of ECA and biodiversity heritage sites A review of current legal and policy provisions for applying ecosystem-based management to ECAs was undertaken and short, mid and long-term priorities for policy reform were identified (**Annex 18**). However, to enable DOE to monitor and enforce the agreed generic ecological framework to achieve favorable conditions in Morjat Baor ECA and proposed Biodiversity Heritage Halda would require that the ecological standards for monitoring status of wetlands and the ensuing requirement for

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maintenance and/or improvement of ecological conditions of the ECA and its monitoring and enforcement needs to be developed and adopted under the country's ECA legislation via the ECA Management Rules. Findings relevant to this Output include the following:

- Applying the 'polluter pays' principle to determine compensation from persons causing environmental harm or damage and for them to take corrective action measures.
- As required by the Environment Court Act, amended in 2010, the establishment of environmental courts at district levels in the project sites and defining their jurisdiction over offences and punishments.
- Applying the concept of common property rights with respect to natural resources does not exist in Bangladesh. Instead, rights of use are allocated exclusively to individuals in the case of khas land (government-owned fallow land) and cooperatives (waterbodies); and
- Ensuring transparency in document, reporting and public access to monitoring information.

1. **Activities** relating to the above findings from the Review (Annex 18) include the following:

- Establish a common framework for ecosystem-based approaches to wetland resource management in Morjat Baor ECA and proposed Biodiversity Heritage Halda that addresses such issues as access to resources, benefit-sharing mechanisms, information, justice and participation in decision-making processes;
- Establish a public-private partnership (PPP) framework (Annex 19) that identifies responsibilities and profit-sharing Establish protocols for public-private partnership arrangements that identifies responsibilities and profit-sharing mechanisms between partners that can be initially tested in the Halda River with CCCI; This PPP framework will also test a revenue generating conservation model.
- Develop and strengthen monitoring and enforcement measures on how to apply the 'polluter pays' principle with respect to preventing, reducing and controlling pollution, as well as addressing residual harm. These will be based on strengthening institutional and community participation in applying the enforcement measure applying a whole of government approach. Recommendations to strengthen enforcement and compliance measures; and
- Developing clear procedures for transparent sharing and access to monitoring information generated through the application of the national ecological standards for ECAs and biodiversity heritage

Output 1.4: Sustainable financing strategy for ECA and biodiversity heritage developed and implemented.

- This Output is based on context (i.e., benefits of functioning ecosystems or opportunity costs in the case of dysfunctional ecosystems), baseline funding, current and future financial needs, a suite of financial dis/incentives for third parties (private enterprises, landowners, farmers, fishers and others making use of ECA resources) and potential financing mechanisms.
- Inadequate sustainable financing is a key barrier to DoE fulfilling its mandate and delivering an effectively managed network of ECAs, particularly given their degraded condition and the need to first invest in their restoration. The Strategy will need to consider opportunities arising from the 8th Five Year Plan, with the MoEFCC budget set to double to 9.6 billion BGT by 2020 to ensure that at least core funding from government is sufficient to cover DoE's oversight of the ECA network (running costs), including compliance monitoring. The *Five-Year Plan* goes much further than core expenditures and calls for a new approach to industrial pollution and waste management, with zero discharge of industrial effluents, restoration of urban wetlands and protection of at least 15% of a wetland in peak dry season.
- Restoration costs, which are likely to exceed running costs many times over in the case of most ECAs, will need to be covered from a range of other sources, such as technical assistance projects (grants), low interest loans from multi-lateral banks, investments from the private sector and payments for ecosystem services (PES). While restoration is a one-time cost, it is usually a mid-/long-term investment. In the case of aquatic systems such as Halda River, for example, point sources of pollution such as industries and sewage works can be cleaned up within a few years but diffuse pollutants such as agrochemicals distributed throughout the river's catchment will take several decades to reduce to acceptable levels based on national and international standards for water quality. Such costs, however, are compensated by huge economic (and social) benefits.

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For example, Chittagong's public water supply from Halda River will not be subject to ever increasing costs to clean up, aquatic plant and animal life will become more diverse and, together with the water itself, safer for human and livestock consumption and so on. Thus, the Strategy will need to assess some of these costs and benefits in order to raise awareness of the net benefits of restoration initiatives in order to help secure the necessary financial investments.

- The Strategy will need to examine sectors other than just MoEFCC, such as Agriculture, Fisheries, Tourism, Mining and other polluting industries, Water Resources and Waste Management to identify linkages and potential opportunities for partnerships and investments.
- Recent national legislation provides for a variety of funding mechanisms that may also be relevant to this Strategy. These include the Ecology Management Fund that has yet to be established under the 2016 ECA Management Rules; Biodiversity Conservation Fund under the Bangladesh Biological Diversity Act 2017; Bangladesh Climate Change Trust Fund under the 2010 Climate Change Trust Fund Act; and the Disaster Management Fund under the 2012 Disaster Management Act. An obvious, key deliverable should be the establishment of the Ecology Management Fund.
- The Strategy will be both developed and implement during the project period, concluding with the inclusion of financing plans with the new management plans of the two project sites,
- **Activities** include the following tasks, based on a framework for the Strategy in Annex 19:

1. Define the first part of the scope of the Strategy in terms of identifying the resources and their sources necessary for the DoE to fulfill its remit, under the **2010 Amendment to the Bangladesh Environment Conservation Act, 1995**, to declare and plan the management of ECAs and to control pollution. This part of the Strategy will focus on the core role of DoE with respect to ECAs and biodiversity heritage, based on the assumption that management is delegated to the District authorities. Thus, DoE's core role is both technical, in terms of prescribing measures necessary to restore wetlands and maintain them in *favorable ecological condition* and monitoring their ecological status and one of enforcement to ensure compliance with targets agreed by the management authority. Applying the 'polluter pays' principle is also a key part of that role;
2. A second part of the Strategy will focus on identifying a suite of funding resources and mechanisms that can be deployed to restore Morjat Baor ECA and Proposed Biodiversity Heritage Halda to *favorable ecological condition*. Some of these will be selected and developed further for demonstrating in the two project sites; A third part of the Strategy will be an Action Plan that will prioritize actions for implementation during the project period. This should also provide guidance for the development of financing plans and strategies in ECA management plans, delivered gender Output 2.2; and

Facilitate the establishment of the Ecology Management Fund, in conjunction with other activities under Output 1.4.

Component 2: Applying a participatory ecosystem-based framework to effectively plan, manage, finance and monitor compliance in target ECA and proposed biodiversity heritage.

Total Cost: **US$8,273,965**; GEF project grant requested: US$2,152,464; Co-financing: US$ 6,121,501

Baseline conditions (without GEF project):

- While, around 397,021 hectares of wetlands (including its surrounding lands) have been declared as ECAs under the Bangladesh Environmental Conservation Act of 1995 (as 13 ECAs) these will likely continue to be managed with little recognition of their value as repositories of biodiversity and the contribution that they make to local livelihoods as well as the ecosystem services that they provide. Consequently, the monitoring of ECA conditions and enforcement of management responses to improve the ecological conditions of ECAs likely remain weak and at best marginal. In the absence of any effort to monitor and track ECA status and define favorable environmental conditions that are needed to maintain and sustain ECA services and functions, there is likelihood that ECAs will continue to degrade and lose its economic value. The lack of standards, incentives and enforcement for private sector engagement in ECA process, degradation from industrial wastes, pollution and household wastes will continue unabated. Designation of new other ECAs will come too late after heavy degradation of the habitats and there will be insufficient resources and capacity to properly manage the areas even after establishment. Given the limited

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financial resources, in absence of the GEF project, there will be slow progress in developing sustainable fisheries and agricultural management practices and alternative livelihoods, as well as introduction of effective standards and ecological parameters for management of ECAs.

Alternative (with GEF project):

- Under this outcome, the GEF increment intends to further strengthen ECAs and biodiversity importance area and develop and test an ecosystem-basedframework to underpin their management, initially piloting these in two sites and then expanding it to other ECAs in the country. Through this outcome, the intent is to ensure ECA and biodiversity heritage maintenance and/or restoration is adequately institutionalized and resourced through sustainable financing mechanisms, private sector partnerships and use of penalties accured for non-compliance. Importantly, the ecological conditions determined as being necessary to maintain (or first restore and then maintain) the salient biodiversity features of an ECA and biodiversity heritage will be specified in the framework and provide a basis for monitoring compliance towards achieving such conditions. It is this paradigm shift towards ecosytem-based management that the project will address, using ecological criteria as a basis for monitoring the status of Morjat Baor ECAs and proposed Biodiversity Heritage Halda and ensuring compliance towards favourable condition is progressively achieved. This approach should enable DoE to overcome previous difficulties associated with the multiple ownership of land that tends to prevail in Morjat Baor ECAs and proposed Biodiversity Heritage Halda. Rather than DoE try to take on management of ECAs, it need only prescribe the management regimes necessary for maintaining or achieving their respective favorable ecological condition and then monitor the compliance of the landowners in meeting the prescribed condition. All of this needs to be spelt out in the ECA and biodiversity heritage management plan and signed by the landowners or their tenants.

- Following the development and testing of an ecosystem based framework for the pilot ECA and biodiversity heritage, the project will attempt to support the mainstreaming of biodiversity and ecosystem services into district, upazila and union as well as sector actions and work with the private industry through a variety of measures including increased awareness, development of improved ecological standards and management plans for the ECAs and biodiversity heritage, improved management and protection of watersheds of Morjat Baor ECA and Proposed Biodiversity Heritage Halda and their riparian areas, reduction and management of pollution. These plans will, *inter alia*: (a) identify high biodiversity areas within Morjat Baor ECA and Proposed Biodiversity Heritage Halda to receive specific conservation focus; (b) identify gaps and measures to enhance ecological conditions of the ECA and biodiversity heritage, (c) prescribe appropriate practices and management measures (including environmentally-friendly fisheries and wetland resources harvesting practices and sustainable harvest rates and environmentally-friendly agricultural practices, including more efficient use of water, chemical control and use of biological alternatives, crop diversification, etc.) in Morjat Baor ECA and Proposed Biodiversity Heritage Halda avoiding, reducing and mitigating the impacts to biodiversity and vital ecosystem services; and (d) support improved biodiversity-friendly livelihoods and income generation activities through extension, training, value addition and marketing. This outcome will be achieved through the following three outputs, which will contribute to achieving the overall goal of expansion and impoved management of biological habitats and ecosystem functions within the pilot areas to serve as a model for application elsewherein the country

Outcome 2: Improved ecological condition of target sites (Halda River and Morjat Baor) through effective community engagement and benefit sharing arrangements

- Outcome 2 is a direct result of having applied the ecosystem-based framework developed under Component 1 to the project sites, implemented the prescribed restoration interventions and, through new monitoring procedures, demonstrated improvements in their ecological condition within the agreed timeframes. The Outcome reflects improved technical capacity in designing and implementing management interventions and increased compliance with ECA and biodiversity heritage legislation, regulations and management plans. The enhanced technical capacity will be realized through the implementation of parallel activities to generate the ecosystem-based framework (**Output 1.1**) and to establish a Management, Monitoring and Compliance Unit (MMCU) within DoE (**Output 3.1**).

Output 2.1: Assessment of current ecological conditions in the target ECA and proposed biodiversity heritage to inform future management

- Understanding the ecosystem(s) present within the target sites, in terms of their functioning and current condition, is critical both to inform their future management and to evaluate the services and goods that they generate in terms of their existing or potential values to communities and society as a whole. Such information is fundamental

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to ensuring that sound science underpins a collective vision unique to the site that is agreed among its stakeholders during the management planning process to maintain and/or restore favorable ecological conditions. This understanding of a common vision, shared by stakeholders, can then be transformed into a series of management objectives that address threats to the ecosystem(s) and sustain the goods and services provided by them.

- Preliminary environmental assessments undertaken for the PPG (Annex 20) confirm much of what is documented in the PIF, provide further insights to stakeholder perceptions in the case of Halda River and also provide a range of costed options for potential interventions by this project, of which a number have been selected under Outputs 2.2 and 2.3. While the analysis of stakeholder perceptions of the impacts on the provisioning, regulatory, cultural and supporting services of ecosystems highlights the vast majority as being negative and increasing but amidst such general trends are complexities. For example, the Rubber Dam is detrimental to Halda's ecosystem, both up and downstream – not least, due to reduced river flows. Upstream of the dam, however, over 80% of stakeholders perceive agricultural income to have increased due to improved water quality. Thus, checks and balances need to be maintained but the over-riding issue for Halda however is pollution: point source from industries, which can be addressed directly and more challenging diffuse pollutants that need catchment scale interventions.

- In the case of Morjat Baor, the impacts are extremely high with respect to nutrient enrichment, from agrochemicals and rotting aquatic vegetation and a 50% reduction in its depth from 40-45 ft. in 1984 to 10-20 ft. at present (**Annex 20**). The latter is due to sedimentation from soil erosion and rotting vegetation (almost entirely water hyacinth – an exotic invasive species. However, in contrast to Halda River, the scenario is much more contained and, therefore, more easily managed because the Baor is essentially an oxbow lake and there are just 15 communities dependent to greater or lesser extents on Morjat for their livelihoods. Those most dependent are the 150 fishers who live in five of these villages.

- Given that Morjat Baor is a relatively closed, contained system about which there is a basic ecological and socio-economic understanding, with range of intervention options assessed as part of the PPG (**Annex 20**), it is advocated that the GEF investment should focus on restoration, informed by monitoring the health of the aquatic system in response to such invention, rather than any further, more detailed environmental assessments. Halda River, on the other hand, is much more complex because the water is flowing through the proposed Biodiversity Heritage Halda and changing in quantity and quality as tributaries feed into the open system. What is required, therefore, is an assessment of the current ecological status and stressors damaging biota and ecosystem services delivery that is informed by a much more detailed understanding of the seasonal flow rates (measured by volume) and sediment, nutrient and heavy metal loads entering via these tributaries, as well as upstream, in order to cost-benefit different options andprioritise the interventions according to an agreed set of criteria of which some will reflect legal imperatives. Opportunities for PES (Payments for Ecosystem Services) will also be considered along the lines elaborated below.

- Activities include the following tasks:

    - Collate and review existing ecological, hydrological and socio-economic data, information and knowledge about the Bangabandhu Biodiversity Heritage Halda River with respect to its ecosystems, habitats and species and the status (condition), along with the goods and services that they provide in terms of tangible and intangible benefits to communities and others living in, working in or visiting the catchment. Scope the information collected to assess wetland conditions and the type of stressors (chemical, physical and biological) damaging biota and depleting ecosystem functions, using either one or more biological assemblages (e.g,. macro-invertebrates, vascular plants) in combination with habitat and chemistry data. This will enable the screening of the wetlands for signs of impairment and facilitate the development of management responses for maintaining and restoring ecological conditions in the target sites in Outputs 2.2 and 2.3.

    - Where possible identify opportunities for partners (other agencies, private sector, communities) to resource the monitoring in 'their patch'. Sampling methods, parameters and indicators should complement Output 1.1 and feed into Output 2.2 with respect to the development and application of ecological frameworks for monitoring compliance. Identify and evaluate potential private sector financing opportunities, particularly in relation to public water supplies for Chittagong City and the fisheries, for example.

    - Consult with the ECA and biodiversity heritage Technical Advisory Panel and, having secured approval for the monitoring program from the PSC, undertake a one-year pilot, review the findings and enhance the

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methodology as appropriate and complete the program. Design and implementation of this monitoring program will be supported by the ECA and biodiversity heritage MMCU and Project Technical Coordinator.

- Evaluate costs of restoration of degraded habitats and river water quality at the conclusion of the monitoring program and complete the ESIA.

Output 2.2: Ecosystem-based management plans (5 years), with associated monitoring, action, and financing plans, prepared and being implemented for target sites

- Approximately half of existing ECAs have management plans, mostly resulting from some of the project interventions listed in **Table 1**, but none is ecosystem-based using the favorable ecological condition approach promoted in this project. Neither of the two project sites has a prior nor existing management plan.
- The purpose of Output 2.2 is to develop a prototype management plan that is based on the salient biodiversity (ecosystems, habitats, species) features of the site, along with any cultural heritage and socio-economic interests of the local communities and society more widely. Having identified such features, it is necessary to assess the present condition of such features in terms of their ecological condition and prescribe management measures to restore or maintain the features, depending on whether or not they are in favorable condition. New information generated from the environmental assessment for Halda River (Output 2.1) should also be taken into account at this stage. **Progress towards favorable (or good) condition is reached when each of a number of critical biotic and abiotic indicators selected by a technical advisory panel reach levels which are judged to allow full ecosystem functioning of the ECA, that is then monitored regularly using a suite of indicators covering water and habitat quality and the status of key species** - at least annually in most cases and probably quarterly or monthly for some water quality measures. Such monitoring serves both to ensure compliance by the authority responsible for implementing the management plan of the wetland and to assess (and modify if necessary) the effectiveness of the intervention. Note that once the management plan has been agreed between stakeholders and approved by the DoE after endorsement by the ECA proposed Biodiversity Heritage Halda Technical Advisory Panel, any subsequent modifications to management prescriptions that relate to achieving or maintaining *favorable ecological condition* should be signed off by the relevant parties (i.e. DoE, ECA proposed Biodiversity Heritage Halda Technical Advisory Panel and the National Executing Agency) to ensure that a full record of interventions and any changes to them is available in the event of any compliance issues.
- Although the project may be perceived as having a "strong top-down' approach, given the fundamental importance of introducing a sound scientific approach to ECA and proposed biodiversity heritage management that can be applied across the ECA network in a consistent manner and used as a basis for enforcing compliance with the management measures prescribed by DoE in consultation and agreement with the wetland owner(s). Stakeholders, particularly local communities, need to be introduced to this science as part of the management planning process and their practical experience in managing their wetlands for agricultural, fishery and other purposes should be taken into account and contribute to design of management interventions. The management planning process should be envisaged as a meeting between scientist and practitioner, respectively bringing the technical knowledge and local experience together.
- A participatory planning process that enables all stakeholders and sectors (including private sector and industry) to engage in shaping the vision for the site and contributing to the delivery of their part of the agreed vision is fundamental to the success and effectiveness of any management plan. Management provisions are advocated, especially with respect to local communities and the private sector. Thus, the planning process needs to be transparent and trustworthy, with no hidden agendas. Hence, it is a good practice to engage an independent body of one or more persons, depending on the magnitude of the task, to facilitate the management planning process in parallel with having a small core group of technical experts informed by the experience of local community representatives to develop the management plan. The management planning process, which is likely to take one year, should be designed at the outset and shared with all stakeholders so that they know how and when to participate in the process and whom to contact for further information or input of their concerns. The project may be perceived as having a "strong top-down' approach, given the fundamental importance of introducing a sound scientific approach to ECA and proposed biodiversity heritage management that can be applied across the ECA network in a consistent manner and used as a basis for enforcing compliance with the management measures prescribed by DoE in consultation and agreement with the wetland owner(s). Stakeholders, particularly local communities, need to be introduced to this science as part of the management planning process and their practical

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experience in managing their wetlands for agricultural, fishery and other purposes should be taken into account and contribute to design of management interventions. The management planning process should be envisaged as a meeting between scientist and practitioner, respectively bringing the technical knowledge and local experience together.

- The management plan should be aligned with other planning documents pertinent to the wetland and take into account timescales, especially with regard to financial plans and budgets to maximize opportunities for synchrony and synergy. In general, 5 years is a good operational timescale for implementing a management plan and, if helpful, this can be designed as an action plan within a longer strategic timeframe of 10-20 years, given that significant improvements in water quality are likely to require several years in the case of point source pollutants and several decades in the case of diffuse pollutants at catchment scale. In other words, a 5-year management plan towards a 20-year strategic vision may be an appropriate approach.
- Thus, key elements of the management plan are the strategic vision (20 years is advocated) and a 5-year action plan towards that vision, in which specific budgeted actions and those responsible for their delivery are identified; accompanied by a monitoring plan that provides the basis for enforcing compliance with management prescriptions in the plan; a sustainable financing plan and strategy that identifies how the action plan will be financed and likely sources of additional resources to fund the gaps (especially in regard to costly restoration needs); and provisions for management including both local communities in conservation, monitoring and sustainable resource use activities and the private sector in restoring and maintaining water quality. The financing plan would be guided by the Sustainable Financing Strategy for Morjat Baor ECA and Proposed Biodiversity Heritage Halda (Output 1.4). The management plan should be completed within 18 months of this Project Document being signed, in order to leave adequate time (at least 3 years) for most (>80%) of the actions in the plan to have been initiated and at least 50% completed.
- Activities to be undertaken to achieve this output include:
    - Morjat Baor ECA and proposed Biodiversity Heritage Halda committees and VCGs will be established in synchrony under Output 1.2
    - To complement the initial assessment (Output 2.1), undertake a full pollution assessment of the project site to identify pollution types, key sources and gaps in enforcement or legislation. Set specific, measurable goals for water quality throughout the entire catchment. Note: This will be aligned with the 3-year monitoring program, described under Output 2.1, as a single exercise but the management planning should proceed using available data and not be delayed. It can subsequently be updated and revised as necessary in Year 4 or 5, in line with the findings from three years of data.
    - Procure an independent consultant (firm or NGO) to design and facilitate the management planning process and support two years of implementation. The management plan will build and be guided by the findings of the ESIA (Output 2.1) and pollution assessments study (Activity 2.2.2) and undertake a management planning process that would entail the following steps:

1. Identify stakeholders having vested interests in the project site and design a process for engaging them in the management planning process.
2. Establish a Stakeholder Forum, comprising representatives from all bodies with vested interests in the site (i.e., communities, government administrations and agencies, research institutes, colleges/universities, private sector, NGOs, other projects operating in the area) and hold a preliminary meeting to explain and consult on the process and support coordination efforts on the long-term.
3. Establish a small (≤10 persons comprising ≥ 30% female) management planning Task Force of experts and local advisers, mostly seconded from relevant government administrations and sector agencies (e.g., DoE, Fisheries, Agriculture, Water Resources, Waste Management, 1 male and 1 female Morjat Baor ECA and proposed Biodiversity Heritage Halda Committee representative at District and Upazila or Union Parishad levels), two VCG representatives (1 male/1 female). The Task Force is charged with delivering the management plan within 9 months of being set up; its members should commit to attending all meetings (full day) on a monthly or fortnightly basis as a pre-requisite to their appointment; and the consultant will be responsible to the Task Force to collating and drafting materials for the plan. The Task Force will consult with the Stakeholder Forum on a regular basis (at least three times is deemed necessary during the planning process – initial consultation

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on the vision and barriers/threats to achieving the vision, preliminary draft of management objectives to address the barriers/threats, final draft of management plan with action, monitoring and financing plans).

1. Apply the ecological monitoring framework developed for Morjat Baor ECA and Proposed Biodiversity Heritage Halda under **Output 1.1**[8] to the respective project sites, with technical assistance on restoration interventions provided by the ECA Management, Monitoring and Compliance Unit (refer to Output 3.2) and design a monitoring system to track compliance with measures agreed in management plan for achieving/maintaining 'favorable ecological condition' and the well-being of communities dependent on ECAs for their natural resources. *Guidance on applying an ecosystem-based framework to the project sites is provided in **Annex 6**, using experience from around the world and this should be adopted to address these threats and incorporated into the respective management plans.*

2. The Management Plan will include provisions for a Management Board to oversee its implementation, based on receiving regular progress reports on the Action Plan that include monitoring compliance with the targets set for indicators of ecological condition and for the well-being of communities dependent on wetland resources. This Board will assume its responsibility once the Plan is completed and approved by DoE.

3. Capacity Strengthening of GIS cell of DoE for establishing GIS-based real-time monitoring of ECA and proposed biodiversity heritage. The capacity strengthening will include hardware, software and training.

1. Reference should be made to the biodiversity, ecosystem services and socio-economic profiles of the project sites in **Annex 15**for a priority list of threats and respective interventions. They include:

Halda River:

- Point source (industrial, municipal) pollution → targeted monitoring and direct engagement
- Agricultural pollution→ agri-environment measures, alternative livelihoods, pest resistant and climate smart crops
- Broken hydrograph from dams, sluices and canals→ review sediment flows, restore natural flows
- Sand extraction→ control (may have been stopped already) and monitor
- Riverbanks modified for stabilization and development→ 'no riparian development' plan
- Habitat loss from canalization→ catchment-wide feasibility study to re-instate meanders

Illegal fishing of brood stock, over-exploitation of native fish stock→increase patrols/penalties

Morjat Baor:

- Water hyacinth (invasive alien species)→manual/mechanical removal, combined with composting to reduce need for chemical fertilisers. Possible sale of leachate as fertilizer
- Sedimentation→mechanical manual re-excavation or mud pumping, combined with instating the nutrient rich silt on farmers' fields to reduce need for chemical fertilisers
- Agricultural pollution → organic fertilisers from composting water hyacinth and nutrient rich silt from pumping mud from baor, as above, combined with agri-environment measures and alternative livelihoods
- Unsustainable fish stocks→ identify more sustainable fishery, possibly through allowing indigenous fish stock to recuperate and reducing reliance and associated costs on imported eggs; and establish no take nursery areas for stocked and indigenous fish

- Outcome 2.2 is a further reflection of having applied the ecosystem-based framework/system developed under Component 1 to the project sites and, through new monitoring procedures, demonstrated that restored and sustainably managed wetland ecosystems improve water, energy and food security. It will pick up on gender and social inclusion issues identified in the gender analysis and in line with the Gender Action Plan. In the case of the two project sites, improvements in water quality and quantity benefit public water supplies as well as the fishery, enhancing local livelihoods. They also benefit Chittagong's citizens with respect to securing improved quality of public water supplies.

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Output 2.3: Range of activities piloted in target sites to enhance protection of biodiversity and restore ecosystem to improve livelihoods.

- Activities in the project sites will focus on working with local communities to improve livelihoods through more sustainable and/or alternative practices, including management initiatives where such opportunities exist; and the private sector to help address their corporate social and environmental responsibilities, particularly with respect to industrial pollution of waterbodies. The latter will also benefit citizens of Chittagong City and District with respect to public water supplies and also the use of Halda River as an amenity for leisure pursuits, such as boating, walking along the riverbank and enjoying the scenery and its wildlife.
- Improvements in water quality in the project sites under Output 2.2 will directly benefit the health and welfare of local communities and their livestock, as well as reduce risks of irrigating their crops with river water contaminated by heavy metals from industrial effluents. Health risks from regularly consuming contaminated fish will also be reduced. Particularly important for local communities will be the recovery of fish populations as water quality improves and re-establishing their traditional rights of access to the fishery in cooperation with the Department of Fisheries.
- Livelihood support from the project will focus on improving the sustainability of existing livelihood practices, particularly in relation to agriculture (e.g., reducing use of agro-chemicals and minimizing soil erosion, especially in the proximity of waterbodies) and fisheries (e.g., ensuring compliance with regulations on net size and closed seasons) strengthening and promoting appropriate alternatives.
- **Activities:** It is particularly important that these activities remain indicative until confirmed or otherwise during the management planning process when stakeholders will be thoroughly consulted, as ownership of such activities is crucial to their successful delivery. Meanwhile, reference should be made to the biodiversity, ecosystem services and socio-economic profiles of the two project sites in Annex 15 and also the consultation findings in **Annex 21**, which provide the basis of the following indicative activities.

- Potential pilot options common to both Halda River and Morjat Baor
  - The fishery is a very significant part of the livelihoods of the traditional fishing communities(100% in the case of the 250 fishers in Morjat Baor and 500 fishers in Halda River) and, with improvements in water quality and protection of the fishery, there is the opportunity to make this sustainable – subject to a variety of measures that may/not be applicable such as: reforming the tenure/leasing system, ensuring compliance with fishing regulations (e.g. net mesh sizes, closed seasons etc.) and restoring native fish species.
  - Sanitation is a common problem among rural communities and their livestock when residing adjacent to water bodies and appropriate measures may need to be undertaken. More than likely, this can be facilitated by the project but co-financed from rural development funds can expand outreach.
  - Opportunities for introducing environmental safeguards to agricultural, fisheries, aquaculture and horticultural practices should be explored, particularly with regard to the soil erosion and the use of fertilizers, pesticides and herbicides and unsustainable harvest practices within and in the vicinity of water bodies.
  - Introduce water-sensitive agriculture incorporating crop choice, reducing agro-chemical use and enhancing climate resilience.
  - VCGs established under Output 1.2 will be able to explore conservation-oriented activities, including working in partnership with the ECA and proposed biodiversity heritage management authority in patrolling, monitoring and restoration tasks, most of which will be delivered by community members. There may also be some small-scale ecotourism opportunities to realize.
- Potential pilot investment options specific to Halda River
  - Training, monitoring and enforcement of pollution control
  - Establishing online monitoring stations for water flow and related monitoring
  - Preparation of standard guidelines for promotion of basin wide river and watershed management
  - Sanitary programs for waste and fecal management to prevent pollution of the water resources
  - Application of efficient irrigation management systems to reduce overuse of water from the river
  - Reduction in agricultural runoff and effluents to the river through appropriate filtering processes

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- Implementation of species conservation priorities are: Gangetic River Dolphin *Platanista gangetica*, a globally endangered species whose population has declined drastically in Halda River in recent years; and the spawning of Indian carps (*Catlacatla*, *Labeorohita*, *Cirrhinusrigala* and *Labeo calbasu*) in Halda River, which has been in a critical condition for the last few years. There is significant scope for engaging VCGs in conservation activities to safeguard these species, once the appropriate interventions are agreed and underway (e.g., community conservation of key species e.g., Gangetic dolphin breeding and nursery sites)
- The selection of Halda River as a project site is based on the opportunity to engage directly with the private sector, first time in the case of proposed biodiversity heritage from which important lessons are anticipated. Initially, this will be with CCCI (Chittagong Chamber of Commerce and Industry) with whom there has been ongoing consultation. It is proposed to work in partnership with CCCI to establish the Halda River Conservation Trust Fund in support of restoring this river. Further details are provided in **Annex 18.**
- It is also necessary to apply the 'polluter pays' principle and engage directly with industries polluting Halda River, with the project facilitating a PPP (Public-Private-Partnership) or similar initiative involving key industries and government in addressing current polluting practices. Entry points have yet to be identified but these will become clearer as the partnership with CCCI takes shape.

- Potential pilot investment options specific to Morjat Baor
  - Management of water hyacinth is a priority as this invasive species is responsible for major changes in the ecology of the oxbow lake and its provision of ecosystem goods and services, as well as sedimentation, as explained in **Annex 15.** Physical removal has been practiced in the past for which the community has been paid for their labor. Whether or not this can be sustainable over the long-term is uncertain but use of herbicides is out of the question and biological control, using weevils (*Neochetina eichhorniae* and *N. bruchi*), is not effective in high nutrient conditions as plant growth exceeds herbivory.
  - The Water Hyacinth plant does have various uses, for example: domestic wastewater treatment, compost (as identified above in paragraph), animal feed, bio-gas production, floating gardens for growing vegetables and stems can be turned into paper, handicrafts and furniture[26]. Some examples of textile products are illustrated below. A feasibility study of these and other options will be undertaken in collaboration with the community and local administrations to identify the most suitable for piloting.
  - Private sector engagement for women-based cottage industries for use of water hyacinth materials for enterprise and handicrafts
  - Application of alternative methods for removing jute bark to reduce pollution
  - Pilot manual re-excavation or mid pumping of silted areas
  - Prevention of agricultural runoff and effluents through appropriate filtering processes
  - Stabilization of oxbow lake drawdown area using grass species
  - Community conservation of key aquatic species nursery and breeding sites

1. A three-tiered evaluation process will be employed to facilitate the identification of the locations within the Morjat Baor ECA and proposed Biodiversity Heritage Halda for investment and demonstration. The first tier entails the use of biological criteria to identify the best sites, namely those sites that are representative of a suite of vulnerable species and habitats. Once these important sites are identified, these were subjected to a second-tier evaluation in terms of threats where historical and future trends of use and resource conflicts and drivers of degradation and predicted response of biodiversity to these trends are assessed. The third tier involves the assessment of the demonstration potential of the proposed sites in terms of resource use conflict reduction, enabling policy environment and potential trade-offs and community responsiveness.

2. **Activities** to be undertaken to achieve this output include:
   - Identification of target locations for investments (including manual re-excavation, water hyacinth removal, charcoal filters, sanitation, irrigation management, monitoring stations and community

[26] https://www.textiletoday.com.bd/use-of-water-hyacinth-in-sustainable-fashion/

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activities in particular fisheries and other aquatic species conservation and management) based on the three-tiered evaluation process defined earlier;

- Consultations with local communities (VCGs) on needs and expectation;
- Participatory planning to define sustainable investment options for participating VCGs in terms of fisheries, agriculture, MMSEs and income generation activities, including preparation of VCG plans that define investments, participatory monitoring, patrolling and enforcement measures and any measures necessary to compensate for lost incomes, if needed;
- Strengthening and capacity building of VCGs to implement VCG plans and to manage and report on funds and improve participatory management of such funds and performance based grant financing for implementation of VCG plan activities to enhance and improve ecological conditions in the water bodies; and
- Participatory monitoring of benefits, threat reduction and enforcement and documentation of lessons learned

1. Grant financing for VCG and village biodiversity committee investment activities will follow UNDP's LVG procedures and be performance-based and designed on basis of ensuring transparency and extensive consultations with local and district entities and other relevant stakeholders. It will be coordinated and promoted through effective technical support, regular review of implementation arrangements and the use of monitoring and evaluation information to adjust and refine the system in consultation with the stakeholders. Grants would be typical cash for work payments that would be based on the following principles: (i) competitive assessment to selected commune institutions/beneficiaries; (ii) selection of beneficiaries in accordance with transparent criteria (to be defined early in the project); (iii) upfront payment (percentage of payment to be defined in consultation with stakeholders); and (iv) balance payment on successful completion and verification of work. Grant financing will be mainly for promoting sustainable fisheries and aquaculture, sustainable agriculture and alternative livelihoods and income generation activities covering over 1,000 beneficiaries and their households. Efforts will be made to try to identify additional funding support for this activity from existing provincial and district development programs.

Component 3: Strengthening the institutional and technical capacity, knowledge management, gender mainstreaming and M&E to maintain the integrity of ECA and biodiversity heritage.

Total Cost: **US$2,479,007**; GEF project grant requested: US$345,283; Co-financing: US$2,133,724

Baseline conditions (without GEF project):

1. Without the GEF project, capacity within the key agencies to work towards an integrated ecosystem-based approach to planning and management of ECAs and proposed biodiversity heritage will continue to be limited. There will also likely be limited efforts of the key agencies involved in management of Morjat Baor ECA and proposed Biodiversity Heritage Halda to establish partnerships with communities, other sectors of government (e.g., agriculture, fisheries, rural development, tourism, energy, water) and the private sector (commercial and industrial enterprises) to work towards sharing knowledge and best practices, advise coordinate, promote collaboration and monitor compliance. Some inequities will exist in terms of gaps in information sharing, knowledge and attitudes amongst women, men and other disadvantaged groups. Considerations on gender and biodiversity that require examining the influence of gender roles and gender relations on the access and attitudes to use, management and conservation of biodiversity by men and women are needed. Without this project, gender inequality in relation to access to resources, including time; differences in impacts that men experience in relation to agriculture and impacts of climate and disaster risks; differences in relation to knowledge at the institutional and ground level regarding biodiversity and ecosystem functions would persist. Traditional knowledge if it persists, will likely continue to be unappreciated, only partly documented and segregated by gender. While there are some on-going efforts at sharing knowledge using public media and other social networks, this is likely to continue to advance at its own slow pace. Knowledge and understanding of the relationship between biodiversity conservation, ecosystems, sustainable resource use and human welfare will remain incomplete. Appreciation of the contribution of conservation to development will continue to be less recognized. Priorities for information collection will likely not fully consider gender, or the concerns of the indigenous and disadvantaged communities, NGO and vulnerable groups of people. The overall low appreciation of conservation values in general and limited understanding of the

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concept of ECA planning will persist. Significant gaps in understanding of terrestrial and freshwater habitats, both at the institutional level and at the community level will continue to exist and the impacts of poor land management and exploitative practices will remain not well understood. Management of land, forest, freshwater and biological resources data will continue to be limited. Despite its growing use of media, without the GEF increment, communications will modernize only slowly. While much information is generated through "projects", this information is likely to continue to be compartmentalized and not widely shared outside of the close circle of project implementers.

Alternative for this outcome (with GEF project):

2. The goals of Outcome 3 are: (i) capacity building for ecosystem-based management of Morjat Baor ECA and proposed Biodiversity Heritage Halda; (ii) improving knowledge and information collection and management systems to enhance awareness and sharing of best practices on conservation of ECA proposed Biodiversity Heritage Halda habitats and their associated biodiversity and ecosystems through communication, documentation and dissemination; (iii) ensuring gender considerations are mainstreamed into natural resources planning and management, including gender equitable access; and (iv) monitoring and evaluating project investments to ensure that these are meeting project outcomes and contribute to Bangladesh's conservation and ongoing development agendas. Specifically, the project presents an opportunity for the country to address in a very strategic manner, a number of critical policy and programmatic proposals and international commitments made over the years to enhance attention to gender mainstreaming in natural resources management.

3. To achieve such an objective requires the improved understanding and participation of key target groups (decision makers and staff from key sectors), non-governmental organizations, as well as community groups, researchers and others, including in particular women and the most vulnerable segments of the population. The development of a knowledge management and communication plan early in project implementation strategy is intended to promote meaningful stakeholder awareness, understanding and participation in biodiversity conservation, sustainable natural resource use and alternative livelihood as well as to document, disseminate and scale up successful lessons and best practices in resource conservation from the target Morjat Baor ECA/proposed Biodiversity Heritage Halda and beyond. This will be accomplished through awareness campaigns and creation and maintenance of an online public access database and documentation repository. Expanding the role of knowledge management is key to enabling a gender-equity perspective to inform how information is collected, prioritized, shared, communicated and used within the ECA proposed Biodiversity Heritage Halda planning, agriculture and fisheries development, tourism development and biodiversity conservation and management, according to the Gender Analysis and Mainstreaming Action Plan (**Annex 6**).

Outcome 3: Institutional capacity, knowledge management, gender mainstreaming and monitoring and evaluation contributes to identification of improved tools, approaches and best practices for replication and scaling up.

- The emphasis of this project is to introduce an ecosystem-based approach to managing the network of ECAs that can be monitored by means of indicators of *favorable ecological condition* and targets defining the condition. This provides a sound scientific basis for monitoring compliance with management prescriptions designed to restore a wetland to *favorable ecological condition*, thereby enabling the DoE to fulfill its mandate under the 1995 Environment Conservation Act.
- This approach should enable DoE to overcome previous difficulties associated with the multiple ownership of land that often prevail in Morjat Baor ECA and proposed Biodiversity Heritage Halda. Rather than take on the management of ECAs, DoE need to only prescribe the management regimes necessary for maintaining or achieving their respective *favorable ecological condition* and then monitor the compliance of the land owners in meeting the prescribed condition as indicated by one or more measurable targets, all of which will be spelt out in the ECA proposed Biodiversity Heritage Halda management plan and signed by the land owners or their tenants.
- The approach will be institutionalized during the life of the project by recruiting or redeploying from within DoE a small number of wetland and water quality professionals to form an ECA and Biodiversity Heritage Halda Management, Monitoring & Compliance Unit, tasked with applying this approach across the network of ECAs and monitoring their ecological status on an annual basis. Building the scientific capacity and expertise of DoE in respect

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of wetland restoration and management is also fundamental to enabling it to fulfill its mandate with regard to Morjat Baor ECA and proposed Biodiversity Heritage Halda, while recognizing that its enforcement role needs to be tempered by consolidating its partnerships with the local administrations and communities, providing technical guidance, advice and assistance as appropriate. This Unit will lead on all matters relating to wetland management and be readily available to technically support the ECA proposed Biodiversity Heritage Halda committees at district, upazila and union levels, particularly with regard to planning and implementing management plans.

- It will also be expedient/necessary to set up an independent, national ECA proposed biodiversity heritage Technical Panel of wetland experts that would be available to both this Unit and the National ECA proposed biodiversity heritage Committee for technical advice.

Output 3.1: Communications Strategy and Action Plan developed and implemented

- Development of a Communications Strategy should be a priority at the onset of the project in order to raise the profile of ECA and proposed biodiversity heritage and project's role towards underpinning their conservation and management with science (ecosystem)-based monitoring of compliance and invoking the 'polluter-pays' principle. This will help to generate a round of accord from many stakeholders and also send a clear message to polluting industries, particularly those in the project sites who will be among the first to be challenged with appropriate support to clean up their polluting activities. The scope of the Strategy should include:
    - Raising the profile of ECA and proposed biodiversity heritage and roles of DoE and other responsible parties, including civil society;
    - Improving mechanisms for communication between and within all levels of governance, from/to national government to/from Union Parishads and VCGs;
    - Knowledge management, both internally within the network of ECAs and, as appropriate, its accessibility to stakeholders (e.g., communities and civil society);
    - Reporting, including compliance monitoring and status of ECAs and proposed biodiversity heritage;
    1. Gender equity & social inclusion.

    - **Activities** to be undertaken to achieve this output within Year 1 of implementation include:
        - Procure a communications specialist at the earliest opportunity, more or less at the same time as the Project Manager and Project Assistant and use the Inception Workshop as an opportunity to share a draft and solicit feedback on the Action Plan and prepare a communication and knowledge management plan and communications materials and implement communication and KM plan;
        - Implement gender action plan; and
        - Ensure that an exit strategy whereby communications on Morjat Baor ECA and proposed Biodiversity Heritage Halda and the information and monitoring system reporting on their status is sustained post-project by institutionalizing, possibly within the Management, Monitoring and Compliance unit created within DoE[8].

Output 3.2: ECA and biodiversity heritage Management, Monitoring & Compliance Unit established within DoE

- Institutionalization of technical capacity, information management systems and training capacity into the project from the outset to ensure post-project sustainability.

- **Activities** to be undertaken to achieve this output include:
    - Comprise 3-4 wetland specialists, compliance/enforcement officer, information systems/GIS technician, communications specialist, training specialist by the end of project. Initially the Technical Coordinator and a wetland ecologist will work closely together to set up the Unit. Specialist will be recruited.
    - The current issue is there are no standards for ECAs, biodiversity heritage and their ecosystems/water quality, etc. Once standards are identified and written into regulation then, DoE and others can enforce. So, the project will support DoE in its establishment of an **ECA and biodiversity heritageManagement, Monitoring and Compliance Unit (ECA MMCU)** that will focus on benchmarking of the status of ECAs and identifying what measures need to be taken to restore them to 'favourable' conditions (or better) and setting targets within specific timeframes. This provides the basis of ECA management plans. The Unit will also maintain the web-based GIS Information System on ECAs, which will

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include all the monitoring data - much of which will be in the public domain so that there is accountability within DoA and the ECA committees regarding status of the ECAs.

- Meanwhile, a parallel initiative will be set up for national standards for ECAs in terms of the water and habitat/ecosystems quality. The standards will become law (regulations) framed under the ECA Management Rules. This same Unit will establish this, but they will bring it to a multi-sector **ECA Scientific Advisory Panel** SAP (6-10 persons max.) comprising outstanding scientists covering water quality, hydrology, aquatic plants and animals (including fisheries) set up by DoE for endorsement prior to presenting it to the national ECA Committee for approval and adoption. (The ECA SAP will also advise the National ECA Committee on other matters.)
- **Monitoring will be the responsibility of the Upazila ECA and biodiversity heritage Committee,** or if an ECA or biodiversity heritage comprises several Upazilas then the District ECA Biodiversity Heritage Committee is responsible.

- Once the above is in place then the ECA MMCU can monitor compliance, report non-compliance etc. to the National ECA Committee. DoE can then follow up on non-compliance, which would go before the Environmental Court in the first instance.
- The above is considered to be the best way of developing capacity within DoE to address ECA wetland management, given that DoE does not have the infrastructure, for example of the Forest Department with officers deployed on the ground everywhere; nor does it have the financial resources to pursue this mode of operation. However, by focusing on compliance and having everyone else take responsibility for applying and monitoring the management measures prescribed by/agreed with DoE, a paradigm shift is generated that can radically turn current trends in degradation into restoration initiatives. So, this Unit needs to be part of the core of the project and benefit from the experience of what the project will be achieving. Since DoE will need to institutionalise and sustain whatever the project generates for maximum national and global benefits, it is best that their staff (or people whom they will absorb within their department) set up the ecological frameworks and mechanisms for wetland restoration and future sustainable management. So, either DoE seconds a handful of its young officers with at least a keen interest in wetland ecology to the project, or it procures appropriate persons with the relevant qualifications and some experience - OR, if unable to resource such a Unit immediately (by 2019), then the project procures such a team with an agreement that these persons are absorbed by DoE, by year 4 of the project. This last option is probably the best as the members are directly answerable to the project and not distracted by other work. Thus, they can benefit 100% from the project, including working closely with the international intermittent experts.

Output 3.3: Modular training program, informed by competency-based needs assessment for ECA and biodiversity heritage stakeholders, designed, operational and institutionalized.

1. The training program will be targeted at a wide range of ECA and Biodiversity Heritage stakeholders. First and foremost is the DoE and its co-implementing agency (fisheries), its ECA Management, Monitoring & Compliance Unit to be established under this project and the national, district, Upazila and Union ECA committees and VCGs. Building the scientific capacity and expertise of DoE in respect of wetland restoration and management is also fundamental to enabling it to fulfill its mandate with regard to ECA and biodiversity heritage, while recognizing that its enforcement role needs to be tempered by consolidating its partnerships with the local administrations and communities, providing technical guidance, advice and assistance as appropriate. Other sectors and agencies include agriculture, forestry, education, rural development, planning, lands, mining, sewage and wastewater as well as the private sector (especially industries and factories), NGOs and CSOs. Training will need to be modular, enabling a particular combination of modules to be targeted at a specific stakeholder group. Modules will include general introduction to wetland ecosystems and their goods and services, ECAs and associated legislation and policy, wetland conservation management and restoration, monitoring the status of wetlands and compliance with *ecological favorable condition*, ECA/wetland management planning.

Indicative activities to be undertaken to achieve this output include:

- Procure a small team of consultants to prepare the training modules. Consult with DoE and its co-implementing agency (Department of Fisheries) and identify the range of competency needs and standards to be addressed by the training program within their respective departments and more widely. Validate

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these findings with a selection of other stakeholder groups including the ECA committees at national, district, upazila and union levels, as well as among existing VCGs in non-project target ECAs.

- Develop the training modules in Year 1 and embark on the training from Year 2. More than likely, much of the training material can be collated from existing materials generated from GEF and other projects, as well as educational institutions, Ramsar Secretariat and Wetlands International, which has a regional office in South Asia (New Delhi).
- Work closely with DoE's ECA Management, Monitoring & Compliance Unit (to be set up by the project) in designing and developing the training modules; and ensure that they are accessible via the ECA Information and Monitoring System established under Output 3.2.
- As part of the Exit Strategy for this project, ensure that this training program is sustained and institutionalized post-project, possibly within the ECA Management, Monitoring & Compliance Unit or by an academic or training institution.

- **Partnerships**

- This proposed GEF project will be implemented by the Department of Environment under the National Implementation Modality (NIM). The DoE will collaborate closely with the Department of Fisheries under the Ministry of Fisheries and Livestock. These two departments, lead by DoE, are the 'Responsible Parties' (RPs)for delivering the project, as described more fully in Section VIII.
- Close partnership working between these two Ministries will be critical, both in terms of understanding and applying the science of wetland ecosystems to establish minimum standards water quality and habitat standards and to support their restoration. DoE will need to establish an ECA Biodiversity Heritage Standards, Monitoring and Compliance Unit (SMCU)that will assess current status of ECAs and biodiversity heritage, identify management interventions necessary to meet national water/habitat quality standards, specify indicators to track progress in restoration, monitor changes and report these to the National ECA Committee at least every six months. Refer to Annex 14 for the composition of this Committee.
- SCMU will be supported by a multi-sector ECA Scientific Advisory Panel (SAP), established by DoE, that will guide its work and endorse standards introduced for ECAs (wetlands), as well as targets and interventions prescribed. It is envisaged that DoF will have an important role on this Panel, advising on fish conservation and on sustaining the fishery. Likewise, other government sectors will have a prominent role, not least advising their respective agencies about these standards and promoting more sustainable practices within their respective sectors. SAP will also advise the National ECA Committee. The National Committee will determine whether or not cases of non-compliance be taken to the Environmental Court.
- The project will also engage closely with the private sector: beginning with establishing the Halda River Impact Group, an initiative of the Chittagong Chamber of Commerce & Industry (CCCI) to engage the private sector in the project and set up a Halda River Conservation Trust Fund to provide a positive impact while also raising awareness within its own constituency. It is expected that this initiative will be closely aligned with Chittagong District ECA and proposed Biodiversity Heritage Halda Committee, to be established under the provisions of Bangladesh Biodiversity Act 2017. Further details of this partnership arrangement are provided in Annex 18 and activities are described under Output 2.1.
- Given the international status of a number of Morjat Baor ECA and proposed Biodiversity Heritage Halda being wetlands of international importance under the Ramsar Convention, it is highly recommended that the project establish a strong working relationship with the Ramsar Secretariat: both to strengthen the management of ECAs designated as Ramsar sites in line with their global biodiversity values; and to benefit from the wealth of knowledge and experience to be gained from the Secretariat and its Ramsar network. Similarly, developing a partnership with Wetlands International[27] could immensely be helpful to the project, accessing its Specialist Groups and Associate Experts, for example, as well as availing itself of best practices and experience from South Asia via its regional office in New Delhi, India.

[27] https://www.wetlands.org, https://www.wetlands.org/our-network/specialist-groups, https://south-asia.wetlands.org

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- **Risks and assumptions**

- Project risks, overall rating and mitigation actions required during project implementation are listed in Table 3. The assumptions on which these project risks depend are listed in the project's Theory of Change (Figure 2), with assumptions applied to the project indicators also described in the project Results Framework (Section VI). Risks are shown only if their rating is considered to be Moderate or High, the exception being that all risks from the Social and Environmental Screening Procedure (**Annex 4**) are included. UNDP protocol requires the Project Manager to monitor risks quarterly and report on their status to the UNDP Country Office, who will record mitigation progress in the UNDP ATLAS risk log. Risks are rated as critical when both their impact and probability are high. Management responses to critical risks will be reported to the GEF in the annual Project Implementation Review (PIR).

Table 3 Description of project risks, impact and probability and mitigation measures

[1]: The Project Manager is responsible for monitoring risks, reporting on them quarterly to UNDP CO.
[2]: Only risks rated moderate or high are listed. Additionally, low risks from the SESP are included.)
[3]:Significance, rated low, moderate or high, is a measure of the impact and probality of risk on scales of 1-5.

Risk Description [1]	Significance of Risk [3]	Mitigation Measures
General Risks		
Government's limited finances and capacity to effectively fulfill its mandate to protect Morjat Baor ECA and proposed Biodiversity Heritage Halda by enforce compliance with legal provisions, hence the long-term unsustainability of project interventions.	I=3, P=3 Moderate	Consolidating and expanding government's capacity to address its environmental pollution control responsibilities, particularly in the case of wetland Morjat Baor ECA and proposed Biodiversity Heritage Halda that are the focus of this project, will be underpinned by a sustainable Financing Strategy. This will be targeted at the national five-year planning level and effective enforcement of the polluter-pays principle, using policies (existing and new) and mechanisms to incentivize pollution reduction and mitigation measures. The strategy will be informed by assessing costs of its delivery versus financial benefits of having rivers with relatively clean (unpolluted) water that can be used for local consumption, irrigation and public water supplies. In addition, the project will look at establishing public-private partnerships to support collaborative efforts to reduce their impact on this river and its catchment through demonstrating operating practices, processes and management schemes that result in positive outcomes for both business and the aquatic environment. Application of a 'polluter pays' principle is acknowledged but not widely expressed in Bangladesh environmental legislation, but the 1995 Environment Conservation Act enables the Director General to determine compensation from persons causing environmental damage and for them to take corrective measures. The project also entails under Output 2.1 to (i) identify and evaluate potential PES opportunities, particularly in relation to public water supplies for Chittagong City and the fisheries and (ii) undertake an economic valuation of the benefits generated from functioning ecosystems and, in the case of dysfunctional ecosystems, the unrealized opportunity costs. Such demonstration and studies will help make the economic case for more private and public financing (beyond the MoEFCC) to support management of ECAs and biodiversity heritage. Further Output 2.2 will help demonstrate sustainable economic activities (fisheries, agriculture and livelihoods) that can have a positive impact on Morjat Baor ECA and proposed Biodiversity Heritage Halda as a means to facilitate replication and uptake.
Government may be unable to provide adequate human resources and technical capacity to support implementation of the project and beyond. *Category: Capacity*	I=3, P=3 Moderate	Government considers this project to be a priority for Bangladesh. It will be important, therefore, to ensure that the full-size project is designed appropriately to match the capacities of government during the initial years of implementation. Thus, the project will support creation of an ECA proposed Biodiversity Heritage Halda Standards, Management & Compliance Unit during its inception to benefit from training and implementation activities from project outset. Thereafter, implementation of the Financing Strategy should provide for institutionalization of this Unit, as well as the project's modular training program in wetland management, monitoring and enforcement, as part of the project's exit strategy.
Engagement with the private sector limited and insufficient to secure ownership from major polluting industries to reverse trends in declining water quality during life of project. *Category: Operational*	I=4, P=3 High	• This initiative of the project to demonstrate how pollution of wetlands can be reversed by tackling point sources of pollution, notably from industrial waste and untreated sewage, will be a huge challenge as it places responsibility on the polluter to pay for the costs of removing pollutants from water before discharging them into rivers and other water bodies. • The project will take the following steps towards maximizing awareness, transparency, accountability, and equitability: • Establish a platform for engaging with the private sector, specifically the Halda River Impact Group under the auspices of the Chittagong Chamber of Commerce & Industry. This Group will set up a Trust Fund and collaborate closely with the relevant ECA and biodiversity heritage Committees at District and Upazila levels in the deployment of its funds. • Design or adopt a water quality monitoring framework and sampling program for Halda River, using indicators that meet international standards, in collaboration with the Ministry of Water Resources.

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		• Introduce regulations under the 2016 ECA Management Rules to apply these water quality standards and begin to enforce compliance, • Work with the large industries polluting the Halda River, to prepare them ahead of the 'polluter pays' principle being enforced. • Conditions for and identify targets for mid-term and end of term. This should be undertaken by MoEFCC or contracted out to an independent body. • Set up an independent multi-sector national ECA Scientific Advisory Panel to support the national ECA Committee, DoE's SMCU and sectors that have most impact on wetlands and other water bodies.

Risk Description [1] *Risk Category* [2]	Significance of Risk [3]	Mitigation Measures
Risks from Social and Environmental Screening Report (Annex 4)		
Risk 1: The two project areas, Morjat Baor ECA and proposed Biodiversity Heritage Halda have some degree of resource conflicts that could be exacerbated and result in inequitable or discriminatory for poor or marginalized people if activities are planned without adequate consultation and consideration of the needs and aspirations of marginalized groups **SES Principle 1: Human Rights, Q2 and Q8**	**I=3, P=2 Moderate**	Risk 1 assumes that those most dependent on natural resources for their livelihoods are the poorest and most marginalized members of society, they could be inequitably impacted by measures to make the paradigm shift from over-exploitation to sustainable use of natural resources in ECA and biodiversity heritage. Risks will be managed by (i) ensuring that project activities are detailed in collaboration with Upazila and Union governments and local communities, to define management and sustainable use of resources in a manner to avoid discrimination and inequalities and hence reduce conflict; (ii) consultation and planning process will follow adequate consultation to ensure that all concerns of all people are heard and adequately addressed; (iii) screening checklist based on the SESP that will be developed early in project implementation (to screen all investments to ensure that they comply with sound social and environmental principles and is sustainable; and (iv) project grievance redressal system provides a mechanism to address any specific community concerns and resolve conflicts.
Risk 2: Declaration of Bangabandhu Biodiversity Heritage Halda River and application of rules and management practices might potentially restrict access to resources or basic services, in particular for marginalized individuals or groups. **SES Principle 1: Human Rights, Q1, Q3 and Q4 and Standard 5: Displacement and Resettlement Q2 and Q4**	**I =3, P=3 Moderate**	Risk 2 will be managed through (i) ensuring that project activities are detailed in collaboration with Upazila and Union governments and local communities; (ii) management of sustainable use of resources (for fisheries, egg collection and farming) planned and managed under community governance mechanisms that will take into consideration current uses of these resources; (iii) use of a screening checklist for project investments based on SESP to screen all investments (including harvest limits) to ensure that they comply with sound social and environmental principles and ensure avoidance of restriction in access to the extent feasible; (iv) planning will ensure that decisions regarding restrictions, if any, on resource use will not be imposed, but will involve through an informed, transparent and consultative community consensus building process and any restrictions, if any will be adequately compensated to match or exceed loss of incomes or livelihoods. An alternative livelihood development plan will be prepared early in project implementation (Year 1) for any households that are likely to be denied access to resources or current livelihood practice; (v) use of adequate consultation procedures to ensure consent regarding project investments and grievance redressal system as a mechanism to address any specific community concerns and resolve conflicts.
Risk 3: There is a risk that duty-bearers may not have the capacity to meet their obligations in the Project? **SES Principle 1: Human Rights, Q5**	**I =3, P=3 Moderate**	Risk 3 managed by: (i) assessing and undertaking capacity needs assessment for additional capacity needs of DOE, upazila, union and community requirements for effective planning and management of ECA and biodiversity heritage, based on which capacity building programs will be developed and instituted; (ii) technical support to agencies

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Risk Description [1] *Risk Category* [2]	Significance of Risk [3]	Mitigation Measures
		to enhance the planning, management and monitoring of project investments; (iii) management plans for two ECAs and biodiversity heritage will define specific favorable conditions to meet this requirements, including the technical, institutional and capacity needs; (iv) UNDP's regular monitoring will assess any specific additional capacity needs and define measures to achieve same and (v) sustainability/financial plan will also provide a vehicle for determining the capacity and technical needs and potential financial mechanisms to achieve same.
Risk 4: If Risks 1 and/or 2 apply, then women's ability to use natural resources within Morjat Baor ECA and proposed Biodiversity Heritage Halda could be adversely affected. **SES Principle 2: Gender, Q4** Moreover, the potential for discrimination against women could be reproduced. **SES Principle 2: Gender, Q1 and Q2**	I =3, P=2 Moderate	Risk 4 managed by: (i) ensuring active participation of women in the planning phase of the project; (ii) applying *"Gender Analysis and Mainstreaming Action Plan"* (Annex 6)on how perspectives, rights and interests of men and women are addressed to ensure that the project contributes to gender equality and create equitable opportunities for women and men at all levels of engagement; (ii) use of a gender and socially inclusive lens will be applied to every project activity and output to further analyze impacts on the rights of women and vulnerable people, (iii) special investments would be planned based on women's requirements to ensure that they adequately benefit from project investments; (iv) capacity building programs to enhance the capacity of women and vulnerable members to take an active part in the planning and decision making process at the ECA or sub-ECA or biodiversity heritage levels; (v) program and project level implementation arrangements, including gender consultant to provide training to project staff and key Upazila and Union staff on approaches that ensure active participation in decision making on all aspects of the project; and (vi) monitoring plan and gender action plan has gender responsive indicators to access gender dimensions, including that the project scores at least Gender Marker 2.
Risk 5: Inappropriate measures to restore wetlands, such as using exotic tree or mangrove species, could result in changes to habitats and ecosystem functioning. **SES Standard 1: Biodiversity Conservation, Q1 and Q5**	I =3, P=2 Moderate	Risk 5 managed through (i) Preparation of rehabilitation and restoration plans for the identified sites and restoration measures will ensure development of protocols that meet local and international criteria for ecological restoration and biodiversity conservation to avoid the use of IAS. The restoration and rehabilitation plans will encourage the use of native species and restoration efforts; and (ii) use of screening checklist during early project implementation based on eligibility criteria to screen all investments to ensure that they comply with sound social and environmental principles and is sustainable.
Risk 6: Development activities (such as harvesting of terrestrial and aquatic resources) can have adverse impacts on species and habitats if not well implemented **SES Standard 1: Biodiversity Conservation, Q2, Q3, Q4, Q6, Q7, Q9**	I =3, P=2 Moderate	Risk 6 managed through: (i) selection of target locations within the ECAs and biodiversity heritage for project interventions to conform to the project's objective of 'enhancing the conservation of biodiversity through mainstreaming of biodiversity into planning policies and practices into ECA and biodiversity heritage; (ii) all community fisheries, agriculture and livelihood activities will take place outside the key biodiversity areas (spawning and nursery areas), within ECAs through appropriate zoning arrangements; (iii) use of screening checklist developed using SESP to screen all investments to ensure that they comply with sound social and environmental principles and is sustainable. Such a checklist would also include the identification of investment location in relation to ECA and biodiversity heritage; and (iv) setting acceptable sustainable limits on harvest of fisheries products based on status and health of such populations and establishment of monitoring protocols.

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Risk Description [1] *Risk Category* [2]	Significance of Risk [3]	Mitigation Measures
Risk7: Climate change may adversely influence the potential outcomes of project interventions. **SES Standard 2: Climate Change, Q2**	I=4, P=4 High	Risk 7 managed through: (i) Implementation of participatory planning processes for Morjat Baor ECA and Proposed Biodiversity Heritage Halda based on ECA rules ensuring that activities are environmentally sustainable and supporting best practices managed for their climate risks: (ii) improved ECA and biodiversity heritage management and restoration and conservation practices would improve protection and management of critical ecosystems services as well as wildlife habitat, which should help to increase the overall resilience of the natural systems to climate risks in the areas compared to business as usual; (iii) in terms of the Monitoring Plan, the condition of the natural ecosystems would be monitored to ensure that activities do not damage these sensitive ecosystems so that it is overall in a better situation to manage climate change, (iv) knowledge and Communications activities is a key framework to improve awareness of climate and ensuring measures to improve climate resilience; and (v) identify and encourage regulatory and voluntary measures to protect the wetlands
Risk 8: Management and control of urban waste, agro-chemical pollutants and untreated industrial waste may involve occupational health and safety risks, **SES Standard 3, Q1 and SES Standard 7, Q2**	I=3, P=2 Moderate	Risk 8 will be managed through following measures on the basis of the findings and recommendations of the ESIA that will be undertaken under Output 2.1 and the pollution study under Output 2.2:(i) The manual re-excavation of the ox-bow lake will be undertaken following consultation with local communities, including determination of safe disposal sites for the dredged materials; (ii) Contractual proposals for manual re-excavation of ox bow lake would require specific details on the transport and sites and methods for disposal of dredged materials. Evaluation of proposals would include specific consideration for transport and disposal of dredged materials and payment clauses included in the contract to ensure that such measures are followed.(ii) The PMU (with support from the local environmental entities) will monitor the transport and disposal of materials(iv) In terms of removal and disposal of water hyacinth from the lake, this will follow the same procedures as above (i) through (iii) and (v) Every effort will be made to try to find alternative uses for the water hyacinth plant materials, including conversion to mulch and use as natural fertilizers

- The Social and Environmental Screening Procedure (SESP) was finalized during project preparation, as required by UNDP's Social and Environmental Standards (SES). The eight risks identified at PPG stage, all, but one is rated as moderate, were reviewed and in the light of consultations with communities in the two selected project sites. The risk associated with Indigenous people identified during the PIF stage was not relevant to the project as the ECA site where IPs are present, namely Cox's Bazar –Teknaf Peninsular was excluded from the project in order to restrict the number of target sites to 2 rather than 3. **Thus, overall SESP risk categorization for the project is Moderate.**
- In line with UNDP standard procedures, the Project will set up and manage a **grievance redress mechanism** (GRM) as recommended by UNDP (2014) that would address project affected persons' (PAP) grievances, complaints and suggestions. The GRM will be managed and regularly monitored by the NPM. It will comply with the following requirements:
- ***The intent of the GRM*** is to (i) receive and address concerns, complaints, emerging situations or conflicts, grievances and any harm arising from the project; (ii) assist in resolution of grievances between and among stakeholders, including project implementing agencies; and (iii) ensure flexibility, transparency and collaboration with the aim of problem solving and consensus building.
- ***The functions of the GRM*** would be to: (i) receive, log and track grievances; (ii) provide regular updates on grievances resolution; (iii) engage all necessary stakeholders to facilitate grievance resolution; (iv) propose solutions to resolve grievances in a defined timeframe (around 60 days); (v) recommend possible precautionary measures to avoid the more common grievances; (vi) make available bi-annual reports on grievances and resolution measures available to

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the public; (vii) Increase awareness, accessibility, transparency and credibility to the GRM process; (viii) collaborate with partner institutions and Civil Society Organizations (CSOs) to increase awareness to the GRM and its access; (ix) ensure continuing education of project entities to laws and policies related to GRM; and (x) monitor grievance resolutions and solutions.

- ***Management of GRM:*** The GRM will be managed by Department of Environment of the Ministry of Environment, Forest and Climate Change, local level (Morjad Baor and Halda River area) government offices of the Environment, Forest and Climate Change, Agriculture, Fisheries and Land.
- ***Communicating a Grievance through multiple locations and channels from grassroots level up to the Upazila, District and National Level:*** A simplified system of informing about the grievance redress system and also actual management of grievances will be developed under the project. Multiple ways (manual as well as virtual) of submitting complaints or suggestions at various levels will be provisioned in the project. Grievances and suggestions will reach the PMU in person, via mail, email, via special page of the Project website and phone. These channels will be locally appropriate, widely accessible and publicized in written and verbal forms on all project communication materials and in public locations in the project areas. Since the project will be dealing with local community/village population, natural resources based small entrepreneurs and producers of non-farm products and services at the local level, they will be facilitated to communicate their problems through their collectives like CBOs and NGOs, etc. They will also be able to communicate directly to the PMU. These ***teams will be responsible for the functioning as an interface for the grievance redress mechanism.***
- ***Process of informing and registering grievances at various levels:*** All grievances will be registered by the PMU. The complaint will be assigned a unique tracking number upon its submission. The PMU will maintain a database with full information on all submitted complaints, responses taken and solutions of the problems.
- ***Complaint Resolution System:*** A clear system of complaint resolution will be developed to ensure timely resolution of grievances of the stakeholders. The grievances of the stakeholders will be of different types therefore the grievance will be classified into three types:
    - Local level problems related to compensation/payments etc.
    - Project implementation related problems.
    - Grievances / Problems that require policy decisions/ decisions at the National Level.
- Procedures will be developed and observed and personnel at local level will be assigned to handle the grievances. Local level relevant government offices and elites from the communities/villages will follow nationally developed clear and strict grievance redress procedures and assign responsibilities. Difficult situations and conflicts will be brought to the attention of the Ministry of Environment, Forests and Climate Change and UNDP CO if the local level authorities (agriculture, fisheries, land, environment, forests) are unable to find appropriate solution.
- ***Repository of grievances and solutions and sharing it on the project website:*** A repository of all the grievances received from the different stakeholders will be maintained at the PMU for monitoring and evaluation purposes and also for learning. The grievances and their solutions will be shared through the project website so that all Morjat Baor ECA and proposed Biodiversity Heritage Halda of Bangladesh will be able to learn from each other. This aspect will be facilitated through project activities on communication and knowledge sharing. Further, this information will be used to assess trends and patterns of grievances across the project landscapes and for monitoring and evaluation purposes.
- ***Maintaining Communications and Status Update and provision of feedback about the compliance of grievances:*** A system of giving feedback will be developed to give response to all registered grievances. DoE at Dhaka and PMU will provide feedback by contacting the complainant directly or to their respective Upazila/Union Parishad so that complainants are aware about the status of their complaint. Once some decisions/actions are taken on the complaint, the complainant will be informed about the same. If complainants are not satisfied with the response to their grievance, they will be able to appeal to the Ministry of Environment, Forest and Climate Change and UNDP CO via mail, e-mail or the Project website.
- ***Investigation and Consensus Building:*** (i) within one week of receiving a Grievance, the Project authority/PMU will notify the relevant manager of the GRM at local or national level Management Team of the receipt of the grievance; (ii) the relevant manager of the GRM will identify a specific team of individuals to develop a response to the

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Grievance; (iii) this team will engage the Claimant and any other relevant Stakeholders deemed appropriate, to gather all necessary information regarding the Grievance; (iv) make a request to the appropriate institutions any information (documents or otherwise) relevant to resolving the Grievance and avoiding future Grievances of the same nature; (v) convene a meeting with relevant individuals and credible local institutions as needed; (vi) develop a thorough understanding of the issues and concerns raised in the Grievance and facilitate consensus around a proposed solution and way forward; and (vii) seek any advise required to resolve the Grievance.

- ***Making proposed actions and solutions public and overseeing implementation:*** Communicate to the Claimant proposed actions or resolutions and clearly articulate reasons basis and way forward, suggest alternative options if the Claimant is not satisfied with the proposed actions.
- ***Mediation:*** If mediation is required ensure professional expertise and impartial mediation; ensure mediation in local language; and ensure that mediators are willing to mediate without prejudice to personal relationships and interests.
- ***Monitoring and evaluation:*** The performance of the GRM will be regularly monitored. All information about the grievances and their resolution will be recorded and monitored. This data will be used to conduct in-depth analyses of complaint trends and patterns, identify potential weaknesses in the Project implementation and consider improvements. The full Social and Environment Screening Procedures (SESP) report is included in Annex 4.
- Proposed Grievance Redress Committee – Implementing Ecosystem based management in selected Moriat Baor ECA and proposed Biodiversity Heritage Halda in Bangladesh

At the Pourashava levels

- The process of redressing grievances will be dealt with in 3 stages:

1. First stage

Grievance Redress Committee at the Pourashava levels

- Executive Engineer/Assistant Engineer of the relevant Pourashava (Chairperson)
- Environment Officer of the Pourashava (Member)
- Social Safeguard Officer of the relevant Pourashava (Member Secretary)

Terms of Reference

- Receive complaints and redress through mutual consultation;
- Solve problem within 7 (seven) working days after receiving of the complaint;
- Appraise Affected Persons (AP) about the issue of acquisition of land and/or structures, effect on livelihood, entitlements and support services for the Aps;
- Document all sorts of information relevant to the complaints;
- Maintain all sorts of documents, registers and minutes of the meetings properly; and
- Keep the Project Director informed through Mayor.

2. Second stage

If not resolved in the first stage, the Member Secretary will place the complaint to the Second stage Committee through Pourashava Mayor.

Composition of the second stage Committee:

- Chief Executive Officer/Member, relevant Pourashava (Chairperson)
- Representative of the Mayor of the relevant Pourashava (Member)
- Representative of the Affected Person, relevant Pourashava (Member)
- Representative from the local Land Registration Directorate (Member)
- Representative from the Divisional Environment Directorate (Member)
- Town Planner of the relevant Pourashava (Member)
- Agriculture officer of the relevant Pourashava (Member)
- Fisheries and Livestock officer of the relevant Pourashava (Member)
- Environment/Social Safeguard Officer, Relevant Pourashava (Member Secretary)

Terms of Reference

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1. Determine loss (temporary/permanent) in terms of quantity and value and support the Affected Persons to get due compensation;
2. If the complaint of the Affected Persons qualifies the rules of grievance redressing, then arrange for compensation through Project authority;
3. To do categorization of the complaints as per their nature and arrange for solution in order of priority within one month;
4. To appraise the Affected Person about the solution of the Committee;
5. To appraise the Mayor, Project Director through relevant Pourashava about the complaint of the Affected Persons and the decisions of the Grievance Redress Committee;
6. The Grievance Redress Committee will sit for meeting at least twice a month. On the basis of the number of complaints received and in consultation with the Project Director, the number of monthly meetings can be reduced/increased.

3. **Project stage**

If a complaint remains un-resolved by the second stage GRC, Project Manager (Mayor) will quickly bring the issue to the notice of the Project Director. The Project Director after careful review of all the relevant papers, reports and recommendations and in consultation with the Mayor, place the issue for redressing in the third stage GRC, which comprises of:

- Project Director, ECA Project (Chairperson)
- Representative, Ministry of Land (Member)
- Representative, Directorate of Environment (Member)
- Agriculture/Fisheries/Livestock/Environment/Social Safeguard Officer of relevant Pourashava (Member)
- Representatives of the Affected Persons (Member)
- Technical Coordinator, ECA Project (Member Secretary)

Terms of Reference

i. Environment/Resettlement Officer will place the complaint along with all relevant papers and recommendations of the First and Second Stage GRC to the Third Stage GRC.
ii. The third stage GRC will call meeting within 7 (seven) days upon receipt of the complaint;
iii. The Project stage GRC will call meeting within 15 (fifteen) days; and
iv. Technical Coordinator, ECA Project will document all the discussions and decisions of the meeting and circulate meeting minutes;

- Technical Coordinator, ECA Project after reviewing the implementation status of the Project Stage GRC decisions will take necessary actions, as appropriate.

- **Stakeholder engagement plan**

- The success of the project, ultimately, will be reflected in the effectiveness of its engagement with a wide variety of stakeholders, notably: relevant sectors of government (e.g. environment, water resources, fisheries, agriculture, mining, infrastructural development, tourism, waste management) and at all levels of local government from district to union parishad; local communities living within or peripheral to ECAs; private sector, particularly in the case of Halda River; and visitors, local, national and foreign.
- Such engagement will be mirrored in greater depth through the ECA management planning process for the project sites, providing the opportunity to all those having vested interests to share their aspirations and concerns about their future management. The two target sites are expected to provide 'best practice' models of well-designed and executed processes of stakeholder engagement in the restoration of ECAs to safeguard nature, people's livelihoods and their well-being.
- The roles and responsibilities of the main stakeholders are outlined in Table 4. Key stakeholders and their potential involvement in the project were originally identified in the Project Identification Form (PIF). Thereafter, more detailed consultations were held with government at national and local levels, as well as with CCCI, during the first PPG mission to inform the formulation of this project document. The project formulation team also visited four potential project sites (Jaflong Dawki, Hakaluki Haor, Halda River and Morjat Baor) and consulted with the

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respective communities (over 130 participants in total).The mission concluded with a stakeholder consultation workshop (28 July 2018) in which the consensus from over 50 participants was to target one or at the most two sites. Halda River and Morjat Baor are selected as the project sites. Mission meetings and the main findings are documented in **Annex 21**.

Table 4: List of stakeholders, their mandate and potential role in the project

Stakeholder	Mandate and Potential Role in Project
National level	
Department of Environment (DoE), Ministry of Environment, Forest and Climate Change (MoEFCC)	DoE's mission is to secure a clean and healthy environment for present and future generations. Morjat Baor ECA and proposed Biodiversity Heritage Halda fall within DoE's mandate, and it is responsible for determining which activities may prevail or not in such areas. DoE is the Responsible Partner, under the MoEFCC, for implementing this project.
Forest Department, MoEFCC	FD is responsible for protection, management and development of the nation's forest estate and wildlife under its remit, some of which lies within ECA and biodiversity heritage, as well as the protection of wildlife throughout the country. It is a co-implementing agency.
Bangladesh Climate Change Trust, MoEFCC	Potential for involvement with Climate Change Adaptation in ECA and biodiversity heritage, particularly with regard to design and monitoring of ecosystem-based framework for monitoring favorable ecological condition.
Ministry of Agriculture	Department of Agricultural Extension: promotion of agri-environment practices in ECAs; and provision of guidance on best agri-environment practices, policies etc.
Ministry of Fisheries & Livestock	Department of Livestock – similar role to Ministry of Agriculture: supporting best practices to minimize enrichment of waterbodies by animal waste, which should go back onto farmed land and to minimize pollution from agro-chemicals while avoiding run off of waste, sediment and pollutants into streams and rivers etc. Department of Fisheries is responsible for fisheries, focusing mostly on enhancing production, largely through aquaculture extension. It has a key role in the restoration of inland waterbodies, especially rivers and lakes.
Ministry of Civil Aviation & Tourism	Bangladesh Tourism Board, Promotion of ecotourism in ECAs and best practice guidelines tailored to local context
Finance Division, Ministry of Finance	Project needs to engage with the unit (Financial Management Reform Program?) responsible for the development of the 8th-five year plan in order to strengthen the sustainability of financing the ECA system.
Ministry of Law, Justice & Parliamentary Affairs	Support the project in taking forward recommended changes to strengthen governance and sustainable financing of ECA system that will emerge from its review of ECA law, regulations, rules etc.
Ministry of Land	Relevant agency (Land Reform Board and/or Land Record & Survey Department) to provide guidance on land tenure issues, within DoE's context of needing to work with landowners/managers whose estate includes an area (partly) designated as ECA and biodiversity heritage.
Ministry of Local Government, Rural Development & Co-operatives	Rural Development & Co-operatives Division – potentially, the 'sustainable solution' may be to delegate management responsibility to the District Officer as he/she engages with all sectors of local government and ownership at district level is potentially strong – thus DoE needs districts on board, which presumably come under this Ministry.
Ministry of Social Welfare	Department of Social Welfare - provide guidance and possibly resources for improving local livelihoods.
Department of Women Affairs, Ministry of Women's & Children Affairs	Support project in promoting gender mainstreaming. National Women's Agency may also be relevant.
Ministry of Water Resources	The Ministry is responsible for regulating and developing rivers and their valleys, governing matters relating to irrigation and flood forecasting and control. Institute of Water Modeling and Bangladesh Haor & Wetland Development Board may also be relevant.
Centre for Environmental & Geographic Information Services (CEGIS)	Potentially relevant to project's development of a GIS for the ECA system plus database for monitoring ECA proposed Biodiversity Heritage Halda condition.
International agencies and NGOs	IUCN Bangladesh with UNDP funding, Government of the Netherlands, Swiss Agency for Development & Cooperation (SDS) and USAID have all supported ECA projects. WCS has provided support through capacity building, research and monitoring, educational outreach and the development of management plans for aquatic conservation.
Local level	

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Stakeholder	Mandate and Potential Role in Project
Local Authorities	District authorities (District Commissioner or Deputy) in which target Morjat Baor ECA and proposed Biodiversity Heritage Halda are located will play a vital multi-sector coordinating role within their respective districts; and operate at the interface between national government and those safeguarding and sustainably managing the resources and ecosystem services provided by the Morjat Baor ECA and proposed Biodiversity Heritage Halda (i.e., local communities and private sector interests). Coordination mechanisms will also be operational at upazila and union parishad levels.
Local communities, disadvantaged groups and women's associations	Local communities in and around ECAs and biodiversity heritage will be closely involved in project implementation, through the establishment of Village Conservation Groups (VCGs) and building on over a decade of experience. Final selection of target Morjat Baor ECA and Proposed Biodiversity Heritage Halda will take into consideration any opportunities and interests of local communities, women and vulnerable groups. Extensive consultations will be undertaken through community workshops during project implementation. Community level women's associations have been promoted in Bangladesh by the government and many NGOs as a means of empowering them economically and politically. Such associations will be involved to create opportunities for women and to ensure gender specific roles are built into ecosystem-based approaches to ECA management.
CSOs	Local NGOs will be involved, as appropriate, to facilitate awareness raising, mobilization and training of local communities (and indigenous peoples) and providing them with ready access to information on wetland conservation, sustainable agriculture and fisheries management, waste management and pollution control, along with strategies to cope with climate change and declining freshwater flows.
Private sector Chittagong Chamber of Commerce & Industry (CCCI)	CCCI is keen to engage with the project in the restoration of the Halda River declared biodiversity heritage, which is in an ecologically critical condition on account of industrial and other pollutants, such as agrochemicals from farmed land, sewage and low flows caused by irrigation and public water supplies. It will take a leading role in setting up a Halda River Conservation Trust Fund to raise awareness and provide some leadership within the private sector It is proposed to set up a sediment, will be a project site to be target within the private sector as elaborated in **Annex 18**.

- A plan for engaging stakeholders in the respective project Outputs is summarized in **Table 5**.

Table 5 Stakeholder engagement plan

Outcome/Output	Stakeholders	Key responsibilities
Outcome 1: Ecosystem-based framework applied to the planning and management of ECA and biodiversity heritage, institutionalized and operational across all relevant sectors of Government and other parties having vested interests (industries, farmers, landowners).		
National level		
Output 1.1: Improved ecological framework for effective planning and management of Morjat Baor ECA and proposed Biodiversity Heritage Halda	UNDP, Ministry of Environment, Forest and Climate Change (MOEFCC), Department of Environment, Forest Department, Department of Fisheries, Department of Agricultural Extension, Bangladesh Water Development Board, Local Level Government Agencies, Environment, Climate Change and Disaster Management Committees, etc., Office of the Deputy Commissioners of pilot districts, NGOs , private sector organizations and population from the affected areas.	With leadership from the Ministry of Environment, Forest and Climate Change and following a participatory process including direct consultation with local population (male, female, youth, elderly persons, etc.) develop a framework highlighting reasons for ecological degradation; how to combat; reasons and the responsible organizations to implement recommendations in Halda, Morjat Baor, Chittagong and Jhenaidah.
Output 1.2: Strengthened institutionalization and multi-sector coordination at national, district, upazila, union and community levels.	UNDP, MOEFCC, Planning Commission, Ministry of Local Government, Rural Development and Cooperatives, Ministry of Agriculture, Ministry of Water Resource, Ministry of Fisheries, Ministry of Agriculture, Tourism Department, NGOs, CSOs	Determine coordination strategy among different sectors and institutions on the basis of identified strategies. Determine Principal Coordinating Body and its Terms of Reference.

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Outcome/Output	Stakeholders	Key responsibilities
Output 1.3: Strengthen monitoring, enforcement, and compliance measures with achieving and maintaining favorable ecological condition of ECA and biodiversity heritage sites. Enhanced enforcement is necessary to underpin implementation of ECA Rules 2016 and Bangladesh Biological Diversity Act 2017 Component 1 outputs identified, drafted and submitted to government for adopting.	UNDP, Ministry of Environment, Forest and Climate Change (MOEFCC), Department of Environment, Forest Department, Ministry of Law, Bangladesh Water Development Board, Local Level Government Agencies (Environment, Climate Change, etc.), NGOs (BELA, private sector organizations and population from the affected areas.	With leadership from the Ministry of Environment, Forest and Climate Change and following a participatory process including direct consultation with other key national and sub-national stakeholders and local population to identify and develop legal and policy reform to effectively implement the ECA rules
Output 1.4: Sustainable financing strategy for ECAs and biodiversity heritage developed and implemented.	UNDP, Ministry of Environment, Forests and Climate Change, Ministry of Finance	Mobilization of finance, allocation for Morjat Baor ECA and proposed Biodiversity Heritage Halda with rationale and develop financial management plan.
Outcome 2: Improved ecological condition of target biodiversity heritage and ECA (Halda River, Morjat Baor), reflecting enhanced technical capacity, increased staff resources and more effective compliance with ECA legislation, regulations and management plans		
Output 2.1: Environmental, including economic valuation of eco-system goods and services undertaken in Morjat Baor ECA and biodiversity heritage Halda	UNDP, Ministry of Environment, Forests and Climate Change; Department of Environment, Forest Department, Department of Fisheries, Universities, Research Institutions, local government office and selected local level NGOs, CSOs. ECA committees, Biodiversity committees	Conduct environmental assessment (causes, consequences, corrective measures and costs) survey in Halda river and Morjat Baor
Output 2.2: Ecosystem-based, management plans, with associated monitoring, action and financing plans, prepared and implemented for target sites	Ministry of Environment Forests and Climate Change, relevant organizations like CEGIS, IUCN, CNRS, Aranyak Foundation, Halda River Conservation Committee, National River Conservation Commission, Deputy Commissioner's Office of the pilot sites, Chittagong Chamber of Commerce and Industries.	Develop 5-year management plan for each of the target sites (Halda and Morjat Baor). The management plan should highlight both protection and prevention measures for the bio-diversity conservation and ecosystem functions (Recently MoEFCC has approved "Management plan for the Ganges River Dolphin of the Halda River" under a completed UNDP funded project titled "Expanding the Protected Area System to Incorporate Important Aquatic Ecosystem" of FD which need to be considered while developing the plan for Halda river)
Output 2.3: Range of activities piloted in each target sites to enhance protection of biodiversity and restore ecosystem, to improve livelihoods.	UNDP, Ministry of Environment, Forests and Climate Change, relevant organizations I, Universities, Department of Fisheries, Bangladesh Fisheries Research Institute, Bangladesh Forest Research Institute, etc.	Determine activities to be piloted in each of the target ECA and biodiversity heritage. Prepare plan for implementation of the pilot activities. Design implementation monitoring mechanism. Specify favorable conditions for eco-system protection and preservation. The pilot activities should have special focus on sustainable alternative livelihood options for both women and men. Identification of pilot activities and its implementation monitoring mechanisms/plans to be determined in a participatory way.
Output 2.4: Monitoring systems designed and operational to track: • Biodiversity and ecosystem status of ECA and biodiversity heritage, • Compliance with measures agreed in management plan for achieving/maintaining 'favourable condition' and • Well-being of ECA Proposed Biodiversity Heritage Halda communities NB: These systems should be compatible and integral with Output 3.2	UNDP, Department of Environment, Forest Department, local level Government agencies, Implementation Monitoring and Evaluation Division of the Ministry of Planning, Community Conservation Committees, Village Conservation Group, village Biodiversity committee, NGOs, professional institutions, etc.	Develop monitoring instruments to track biodiversity and ecosystem status. Monitoring instruments should have domains on 'existing status', 'status after certain period of time', 'reasons for deviations' and 'suggested measures/recommendations' to improve the situation.

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Outcome/Output	Stakeholders	Key responsibilities
OUTCOME 3: Institutional capacity to effectively administer and monitor status of ECAs and biodiversity heritage to safeguard biodiversity and secure ecosystem services		
Output 3.1: Communication Strategy and Action Plan developed in Year 1	UNDP and MOEFCC	Determine both electronic and web-portal based communication strategy
Output 3.2: ECA and Biodiversity Heritage management, monitoring and compliance unit established within DoE National, spatial, web-based learning and participatory monitoring system for ECAs established and operational. (Portal linked to Mo EFCC)	UNDP and MOEFCC	Develop national, geographic location-specific, web-based information and monitoring system. Monitoring data field should cover names of existing species/structures and observed deviations during reporting.
Output 3.3: Modular training program, informed by competency-based needs assessment for ECA proposed Biodiversity Heritage Halda stakeholders designed, operational and institutionalized.	Department of Environment, District, Upazila and union ECA Committees, industries and business enterprises, farmers, VCG and communities involved in management UNDP, MOEFCC, national level training institutes like National Academy for Planning and Development, University Departments like (Dhaka University Institute of Disaster Management and Vulnerability Studies, University of Chittagong.	Develop training modules on the basis of needs assessment, mainstream gender in relevant modules and develop a separate training module on Gender and Ecosystem-based management of ECA and biodiversity heritage; how to plan for eco-system-based management; ecosystem based implementation, monitoring and reporting.
Output 3.4: National spatial, web-based information, learning and participatory monitoring system for Morjat Baor ECA and proposed Biodiversity Heritage Halda established and operational.	DoE, Forest Department national agencies, district, upazila and union ECA Committees, industries and business enterprises, VCGs and communities involved in management	Develop information management system, assess user capacity needs and training, functional information, learning and monitoring system
Local Level-agencies and their responsibilities		
All Components	Local Authorities	District authorities (District Commissioner or Deputy) in which target areas (Halda, Hakaluki and Morjat Baor) are located will play a vital multi-sector coordinating role within their respective districts; and operate at the interface between national government and those safeguarding and sustainably managing the eco-system related vulnerabilities. Coordination mechanisms will also be operational at upazila and union parishad levels.
Component 2 and 3	Local communities, disadvantaged groups and women's associations	Local communities in and around the Project locations will be closely involved in project implementation. Extensive consultation will be undertaken with local communities, vulnerable groups, women and elderly population both women and men through community workshop during Project implementation and monitoring. Community level women's associations have been promoted in Bangladesh by the government and many NGOs as a means of empowering them economically and politically. Such associations will be involved to create opportunities for women and to ensure gender specific roles are built into management of biodiversity and ecology.

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Outcome/Output	Stakeholders	Key responsibilities
All components	CSOs	Local NGOs will be involved, as appropriate, to facilitate awareness raising, mobilization and training of local communities and providing them with ready access to information on human and institutional behavior that may badly affect biodiversity, agriculture, fisheries and livestock management, managing alternative livelihood options.

- Gender equality and empowering women

Topic 1: Considerable knowledge and experience have been gained from previous ECA projects over the past 15 and more years about the different roles of men and woman living in rural wetlands with respect to energy, water and food production to secure their livelihoods through more sustainable management of agriculture, fisheries, forestry and water resources management. This is acknowledged and further documented in the current National Biodiversity Strategy and Action Plan (2016-2021).

Topic 2: Socio-economic and gender assessment was undertaken during the PPG phase to review the role of females, males and disadvantaged groups in the two project sites, identify any potential impacts of the project on each gender group and develop a Gender Action Plan for the project. The assessment aimed to ensure an inclusive approach through which women and men are able to participate actively and benefit equitably, have equitable access to the project resources and receive fair social and economic benefits. This study is reported in **Annex 6**, along with the Gender Action Plan. The gender analysis is focused on four domains of empowerment:

- Access to Information relating to present condition, future possible threats and participatory problem solving;
- Development of alternative livelihood skills for women, men and youth;
- Participation in conservation of natural resources; and
- Leadership development.

- The Gender Action Plan in Annex 6 describes actions to mainstream gender across project components and outcomes via specific outputs and includes gender indicators. The key strategies to achieve this include but are not limited to:
  - Mobilize support from gender specialists;
  - Designate gender focal points to be responsible for gender related activities;
  - Build capacity of the project management staff to promote gender equality;
  - Ensure women's genuine and equal representation (e.g., in task forces, committees, training, sustainable livelihoods etc., allocating women-targeted budgets, if necessary, to achieve this);
  - Ensure women's equal access to project information (e.g., by ensuring specific consultations with women's groups);
  - Project specific actions to empower women, including establishment and capacity support for women's groups in sustainable livelihoods, product development and marketing, community-based ecotourism development and reduction of women's workloads and improvement of working conditions through facilitating appropriate technology (such as efficient cooking stoves, improved water supply, etc.).

i. The project contributes to gender in a limited way (GEN2 according to UNDP gender marker standards). Key gender-disaggregated indicators and targets in the project results framework and monitoring plan will be tracked throughout project implementation. The project has set targets to engage women in project activities at a rate that is greater than the percentage of women in the agencies. These targets mean that the project will preferentially target women for involvement in related project activities to proactively encourage the engagement and empowerment of women in the participating communities and ensure that women are key beneficiaries of the project. A gender consultant will work with the PMU and the project focal points in the target areas will have responsibility for local gender mainstreaming and implementation of the Gender Action Plan. A Gender Specialist will be hired at the start of the project to provide specialized training and inputs.

- South-South and Triangular Cooperation

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1. Potential cooperation with other countries may include visiting experts; and/or training and exchange visits for government officials and community representative staff on key management and other challenges where greater experience and clearer vision exist. Reference has been made to potential opportunities for partnership support and exchanges with the South Asia branch of Wetlands International (Section IV. ii); and also, in India there is considerable experience in the management of Water Hyacinth, including product of handicrafts from the raw material. There is also much to learn from market-based instruments for controlling water pollution, as applied in China[28]; and certainly, the project should facilitate discussions between DoE and the Asian Development Bank with regard to scaling up post-project.

- **Sustainability and Scaling Up**

1. ***Financial sustainability*** will be achieved by a number of means, including: (i) ensuring through the integrated ecosystem-based planning exercise for the ECA and biodiversity heritage, the national, district and private entities that will facilitate the convergence of financial resources to support conservation and sustainable community livelihoods that would help financially sustain activities beyond the life of the project; (ii) ensure partnership arrangement between national, district and local institutions, communities, NGO and private sector partners within the Morjat Baor ECA and proposed Biodiversity Heritage Halda that will ensure complementarity and cost-effectiveness of multiple partners and investments; (iii) develop new business models for ECA proposed Biodiversity Heritage Halda pollution control that recognize the full range of environmental ecosystem services provided by ECAs and their attendant species and ecosystems. Developing market linkages for sustainable fisheries and agriculture products and services, ecotourism and local livelihoods through value chain mechanisms can financially sustain and expand investments beyond the project period; while training of local entrepreneurs and micro, small and medium enterprises and establishing linkages with financial institutions and private sector, including the use of potential PES mechanisms through the financial sustainability study under Output 1.4 could lead to diversification of funding base from management of ECA and biodiversity heritage.

2. ***Institutional sustainability*** will be ensured through systematic capacity development of existing national public institutions (DoE and others) and district, upazila and union entities, local communities and civil society organizations that operate in the Morjat Baor ECA and proposed Biodiversity Heritage Halda area. By engaging these stakeholders in gender responsive conservation and ecosystem management investment planning, the project will help establish alliances for conservation and sustainable use of biological resources that is expected to continue beyond the project period. Carefully tailored training and capacity building to enhance the skills of local communities in relation to sustainable fisheries and agriculture and MSM enterprises will provide institutional sustainability. The project's institutional arrangements will further help build coordination structures at the national, ECA Proposed Biodiversity Heritage Halda levels with representation from different development sectors and stakeholders (including district, upazila and union committees, NGOs and private sector) to implement integrated ecosystem-based planning and to ensure that sub-national development plans mainstream biodiversity policies. To ensure sustainability of institutional arrangements for integrated ecosystem-based management planning and ensuring mainstreaming of biodiversity policies into socio-economic development, the Government of Bangladesh will work towards strengthening and institutionalization of these coordination mechanisms as part of its long-term strategy to streamline and support biodiversity goals. Formalization of these coordination arrangements will enable sustaining and scaling up of benefits of the project within Morjat Baor ECA and proposed Biodiversity Heritage Halda in the country.

3. ***Social sustainability*** will be enhanced through the development/strengthening of stakeholder participation mechanisms for the target project area. A Knowledge Management and Communication plan will be developed early during the project to facilitate awareness and enhance stakeholder participation. The project will ensure adequate consultation and participatory decision making to ensure that project activities are detailed in collaboration with local communities, so that extensive consultation including all affected groups is undertaken prior to delineation of conservation and sustainable fisheries and agricultural activities. Social sustainability will also be achieved by strengthening of community institutions (VCGs), ensuring their active participation in planning and implementation of conservation and sustainable wetland resource management practices, improving community capacity for management of wetland resources and for improving grievance redressal mechanisms that will ensure social sustainability. These objectives and measures are all to be anchored in a gender responsive

[28] Asian Development Bank. Market-based instruments for water pollution control in the People's Republic of China. Mandaluyong City, Philippines: Asian Development Bank, 2011.

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approach resulting from robust mainstreaming of gender in all aspects of the project cycle.

4. ***Environmental sustainability*** will be achieved through a coordinated ecosystem-based approach involving improved wetland management approaches, sustainable fisheries and agricultural and other wetland resource use practices natural resources, water quality management and riparian area management, securing improved wetland restoration, improving incentives for conservation and community participation. It would also help reduction of external threats on Morjat Baor ECA and proposed Biodiversity Heritage Halda through targeted ecosystem-based partnerships, with the intent to manage and control the pollution of water bodies and improve inter-institutional collaboration. The water focus of integrated ecosystem-based management will help to mitigate climate change impacts and enhance community resilience. This work at ECA proposed Biodiversity Heritage Halda level is aimed at ensuring environmental and socio-economic sustainability through improved institutional capacity, policies and legislation.

5. ***Potential for scaling up:*** Thus, the potential for scaling up is high with this enhanced capacity (SMCU) established within DoE; and supported by the new multi-sector ECA Scientific Advisory Panel described in Section IV. It is also noteworthy that a precedent has previously been established with the previous GEF-funded ECA project, *Coastal and Wetland Biodiversity Management Project 2003-2011* (CWBMP), which DoE scaled up with its Community-based Adaptation in the ECAs through Biodiversity Conservation and Social Protection Project (CBA-ECA) from 2010 to 2015. The governance, capacity, training, management, monitoring and financial strengthening of the ECA system achieved and demonstrated in the two project sites during the lifetime of this project, including the adoption of standards, protocols and tools, will benefit other ECAs during and subsequent to its implementation. Moreover, all of the knowledge and experience gained, lessons learned, training modules, templates for management planning and monitoring, management plans and associated monitoring data and legal and regulatory provisions will be readily accessible on a web-based learning and participatory monitoring system with GIS capabilities. It is anticipated that this system will be hosted by DoE via a portal that will be maintained by the ECA SMCU. The Project's investment component will seek to develop synergies among rural development and private sector actors and programs with an objective of raising additional investments that will fund and expand models of ECA conservation and resource use and alternative livelihood activities within and outside of the targeted ECAs. The financial strategy plan would facilitate replication and scaling (Output 1.4) and help assess sustainable financial and institutional arrangements for scaling up, develop a best practice and conduct dissemination events to encourage uptake of integrated ecosystem-based approaches in other ECA sites. In particular, activities to be undertaken as part of the effort of scaling up include the following:

1. **Develop a financial strategy** based on lessons learned at the field level that will ensure that the integrated ecosystem-based management planning approach and models developed and tested in the pilot Morjat Baor ECA and proposed Biodiversity Heritage Halda is scaled up in the country. Component 3 would support the analysis, documentation and dissemination of best practices and lessons learned that deliver tangible improvements in biodiversity, wetlands and wetland resources status to provide examples for replication. It would also entail participation in regional workshops and best practice sharing events to improve learning and exchange of experiences in mainstreaming biodiversity considerations and integrated ecosystem-based wetland management planning and practices. Based on these best practices and lessons, the financial strategy will provide a basis for actions in other key ECAs, identify required institutional and coordination arrangements resources and partnership commitments (including with NGOs and private sector), select interventions and potential sites for replication by the fifth year of the project.
2. **Annual seminars** for key staff and decision makers on best practices, experiences and needs;
1. **Financial mechanisms** identified to strengthen and upscale financial support to conservation and sustainable wetland resources management in ECA an
2. d biodiversity heritage
3. **Publishing of best practice manuals/handbooks/compendiums** of integrated ecosystem-based management approaches; and
4. **End of project national seminar** on outcomes and replication for integrated ecosystem-based approaches in Bangladesh

Innovation

5. The project design is innovative in several ways. First, it proposes to pilot the first program in Bangladesh for integrated ecosystem-based planning and management in ECA and biodiversity heritage. The project seeks to

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mainstream biodiversity and water quality and conservation outcomes in sectoral and local planning systems. This approach, that would involve multi-stakeholder planning and an inter-sectoral coordination approach to ECA and proposed Biodiversity Heritage Halda management in Bangladesh that would propose the following approaches: (i) the ECA proposed Biodiversity Heritage Halda wetland ecosystem being viewed as a system in its self, comprised of various natural, cultural and socio-economic components; in turn, it is part of the bigger national, regional, thematic and global networks of wetland habitats; (ii) ECA and proposed Biodiversity Heritage Halda would be appropriately managed by ecology-based planning using a patch-matrix model for biodiversity and water quality and conservation outcomes, taking account of wetland ecology, inter-connectedness, vegetation zoning, regional land-use planning, hydrological parameters, nature and cultural integration, etc. (i.e., ecosystem-based planning); (iii) bringing actors from the districts, upazilas, unions communities, market and civil society sectors together to achieve mutual understanding and negotiate and implement mutually agreeable plans, combining top-down and bottom-up approaches and promotion of community participation (i.e. inter-sectoral coordination); and (iv) promoting a conservation and water-based economy in ECA and biodiversity heritage, with value creation and increased economic benefits for local people (e.g. tourism products and services; sustainable agricultural products; sustainable fisheries and resource utilization, etc.); and awareness of conservation of nature and culture. Lessons learned on collaboration with the fisheries, agriculture, tourism and other relevant sectors can be shared with other ECAs in the country and regionally. Secondly, it is innovative because it would seek to link wetlands, riparian restoration and protection and wetland-based agricultural systems as part of a larger effort to improve biodiversity conservation outcomes of ECA and adjacent areas. Thirdly, it would articulate the special biodiversity and ecosystem features of each ECA and proposed Biodiversity Heritage Halda at the time of its designation, identifying the criteria necessary to maintain these features in 'favorable ecological condition' and introducing management agreements between the DoE and parties responsible for the site (i.e., landowner, tenant etc.). The governance of UK's Sites of Special Scientific Interest[29] (most SSSIs being privately owned) may be a useful reference model to follow up with Natural England, UK's nature conservation agency and establish a monitoring framework for the ECA system that will cover both the management and ecological status (health) of individual wetlands. Fourth, it would serve as a pilot to develop and test sustainable financing mechanisms at the local level (community or district level) to improve incentive for community engagement in conservation and sustainable wetland resource.

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[29] https://www.gov.uk/guidance/protected-areas-sites-of-special-scientific-interest#condition-assessments

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IV. PROJECT MANAGEMENT

Cost efficiency and effectiveness

1. The project has been designed to reflect the most cost-effective approach. A number of strategies were evaluated during the project formulation stage to identify those strategies and activities that demonstrate this cost-effective approach. The cost-effective approaches that have been applied to the project are the following:

2. *Defining a holistic and integrated approach to project formulation:* The project adopts an integrated ecosystem-based management framework on the basis of which achievement of favorable ecological conditions are envisaged so as to ensure that ecologically rich habitats in the ECA, biodiversity heritage and their various interactions are connected to maximize opportunities for synergies, such that selected actions and interventions generate multiple benefits. This is accomplished through development and implementation of well-designed ECA and proposed Biodiversity Heritage Halda management actions (and community resource management and livelihood measures in agriculture, fisheries, tourism etc. that incorporate mainstreamed biodiversity policies and best practices in terms of improved food security and more resilience to climate events, whilst improving livelihood benefits, biodiversity conservation and ecosystem services.

3. Intervention sites in the pilot Morjat Baor ECA and proposed Biodiversity Heritage Halda will be selected using a tiered-approach adopting a systematic and spatially explicit method that optimally captured the best multiple criteria-based choice of the project sites. The approach considered globally significant and nationally important species in identifying the sites to ensure their protection and better management.

4. *Sequencing of activities:* Project design and sequencing of project activities ensures that foundational activities are completed first, to the extent feasible, or in parallel, such as (i) establishing governance and coordinating mechanisms at the national and sub-national levels; (ii) legislative and regulatory changes clarifying responsibilities of ECA planning, management and oversight; legislative and regulatory changes to facilitate mainstreaming biodiversity into sector and environmental planning; and (iii) capacity improvements developed to provide the necessary groundwork for later demonstration of ecosystem-based management planning in the two pilot areas and beyond (in Component 2); The project includes subsequent documentation, dissemination of best practices for scaling up under Outcome 3 and feedback mechanisms to influence further policy and legislative changes, as appropriate.

5. *Models to demonstrate benefits:* Project design ensures selectivity in the identification and development of on-the-ground demonstration investments (in Outcome 2) so as to ensure cost-effectiveness in terms of avoiding duplication and spread of activities. Locating the mix of management and restoration activities in selected ecologically rich areas and where threats are manageable within the pilot Morjat Baor ECA and proposed Biodiversity Heritage Halda will help demonstrate tangible impacts on the ground rather than spreading activities widely and in a scattered manner throughout the ECA and biodiversity heritage. It would also support identification and demonstration of efforts as a means to ensure community participation and financing of investments; improve financial sustainability; and long-term financial commitments for community livelihood activities, rather than having to depend on government hand-outs, thus empowering communities in the management of their own enterprises.

6. *Building on existing lessons and best practices:* As a measure to ensure cost-effectivitness, project design focuses on the use of available resource to the extent possible building on the existing ECA rules, , existing mechanisms for integration of biodiversity consideration into district, upazila and union planning. Using NGOs that are already active in the area to support local level planning, capacity building and provision of implementation support. Rather than investing in extensive Integrated planning that cannot be implemented without high levels of planning expertise, this project will invest in ecosystem-based plans that are specific to the ECAs and narrower in its scope and reach. The process for ecosystem-based planning advocated here is both effective and cost-efficient. Rather than hiring expensive external consultants, local planning teams consisting of NGOs and local government technical specialists will make use

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of available information and extensive stakeholder consultations to develop plans that follow the "No Regrets" principle adopted by national policies. This results in plans that have higher levels of participation and buy-in.

7. *Data management systems:* The project will focus on the development of standardized, but simple information collection and databases at Morjat Baor ECA and proposed Biodiversity Heritage Halda(including cost-effective GIS solutions) that is also a proven and effective way to collect and share data. The Knowledge Management and Communication Strategy in particular makes use of simple and effective local forms of communication.

8. The total GEF investment of US$ 3,046,347 for this project will leverage a minimum of US$ 10 million in co-financing from the Government of Bangladesh and UNDP, a cost-effective ratio of 3.5. While the GEF investment is focused on two wetlands totalling 11,025 ha, it will benefit the entire network of ECAs that total approximately 385,000 ha (excluding Bangabandhu Biodiversity-rich Heritage Halda of 10,700 ha). Finally, the receipt of GEF resources channelled through a UN agency can often help to achieve the necessary political commitment to apply recent legislation and address outstanding gaps with new legislation, strengthening inter-sectoral coordination and adopting more environmentally friendly practices in related sectors. Overall, this represents a cost-effective investment of GEF funds.

Project Management

1. Project managementarrangements are shown in Section VIII. There will be a single Project Management Unit (PMU), located within the Department of Environment under MOEFCC in Dhaka. The PMU will be staffed with a Project Director (government-funded), GEF-financed Project Manager, Project Administrative and Finance Assistant and two Community Development Assistants (one each for biodiversity-rich heritage Halda River and Morjat Baor ECAs). A number of thematic consultants will support the PMU and cover communications, institutional development, legislation, sustainable financing, social inclusion and gender issues.

2. Office space and costs for the PMU (excluding daily office expenses, equipment and consumables), as well as access to a vehicle (on rental basis) when required will be provided under co-financing by DoE. The office space would be sufficient to accommodate the ECA Management, Monitoring and Compliance Unit (MMCU), which will comprise of up to four wetland specialists, an IT Systems Technician and a Communications Assistant. Office space for the two Community Development Assistants will be provided by the respective Union Parishad, Upazila or District, whichever is best located with respect to ECA and proposed Biodiversity Heritage Halda operations in the field.

3. The PMU should collaborate closely with other projects currently engaged with the ECAs network to benefit from lessons, share best practices and maximise synergies. Such projects include the several ongoing projects associated with the Sundarbans already mentioned in Section II.

1. Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information: To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy[30] and the GEF policy on public involvement[31].

[30] See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/
[31] See https://www.thegef.org/gef/policies_guidelines

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V. PROJECT RESULTS FRAMEWORK

This project will contribute to the following Sustainable Development Goal (s): **Goal 15:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss. 1. Target 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreement 2. Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species 3. Target 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts **SDG Goal 1: End Poverty in all its form everywhere:** 4. Target 1.1: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance
This **project will contribute to the following country outcome included in the UNDAF/Country Program Document** (2017-2020) 5. Outcome 3: Enhance effective management of the natural and man-made environment focusing on improved sustainability and increased resilience of vulnerable individuals and groups
This project will be linked to the UNDP Strategic Plan 2018-2021 as follows: 6. IRRF Output 1.4.1: Solutions scaled up for sustainable management of natural resources, including sustainable commodities and green and inclusive value chains 7. IRRF Output 2.4.1: Gender-responsive legal and regulatory frameworks, policies and institutions strengthened and solutions adopted, to address conservation, sustainable use and equitable benefit sharing of natural resources, in line with international conventions and national legislation.

	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
Project Objective: To apply an ecosystem-based framework for managing Ecologically Critical Areas in Bangladesh to enhance the conservation of globally significant biodiversity and support local livelihood.	***Indicator 1:*** Area of new wetland declared as Biodiversity Heritage under the Bangladesh Biological Diversity Act 2-17	*94km of Halda River declared as Bangabandhu Biodiversity Heritage site*	*94km of Halda River declared as biodiversity heritage listing prohibited activities under Bangladesh Biological Biodiversity Act 2017*	*The 94km of Halda River biodiversity heritage with established biodiversity management committees at National district, upazila and union levels; village conservation groups established as cooperative societies; rules in place in terms of permissible and prohibited activities; management plan approved*	***Data Sources and methods:*** *Government gazette notification of ECA declaration* *- Notification of establishment of ECA management committees and VCGs* *-Approved management plan for ECA* *<u>Assumption:</u>* *-Development strategies and management plans will be officially approved by governments with allocation of appropriate funding for their implementation.* *-The district, upazila and local authorities will take active part in developing the strategies and implementation using new knowledge and skills provided by the project;* *-Local communities are convinced that critical habitats in their vicinities will benefit livelihoods and ecological security to them and they will participate in conservation and restoration work;*

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	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
					-Local community-based institutions would establish an effective institutional mechanism to facilitate conservation outcomes. *Risk:* *-Administrative/political changes may undermine the implementation of the management plan strategies.* *-Limited capacity in government and communities to meet obligations related to project.* *-Competing interests between national, district, local and sectoral interests and local communities regarding management and access to natural resources may undermine effective management of ECAs.*
	Indicator 2: Number of direct fisher and agricultural beneficiaries with increased incomes (15% increase) disaggregated by gender Note: Based on improved and sustainable fisheries practices, value addition and alternative/supplementary income sources for fishers and improved environmentally-friendly agricultural practices, improved marketing and storage for agricultural farmers	*250 fishers in Morjat Baor ECA receiving annual income of approximately USD357 from fisheries activities and 50 agricultural farmers* *500 (non-professional) fishers from proposed Halda River ECA receiving annual income of approximately USD324 and 100 agricultural farmers* *Note: The annual income figure for Morjat Baor based on publication by Bappa, S.B., Hossain, M., Dey, B.K. and Aktar, S. (2014) in publication Socio-economic status of fishermen in Morjat Baor in Kaligonj. These figures will be validated in Year 1. Baselines for*	- *150 fishers and 350 agricultural farmers from Morjat Baol and;* - *350 fishers and 100 agricultural farmers from Halda River ECAs* - *10% increase in annual income from baseline values, with at least 30% women beneficiaries*	- *250 fishers and 50 agricultural farmers from Morjat Baor; and* - *500 fishers and 100 agricultural farmers from Halda River ECAs and around 350 other dependents on ECA resources receiving at least 15% increase in annual income from baseline values, with at least 30% women beneficiaries.*	***Data sources and methods:*** *Annual income surveys and reports* *Progress reports* *Community consultation reports* ***Risks:*** *-Natural disaster/climate change may affect the restoration work.* *-Limited capacity in government and communities to meet obligations related to project.* *-Political transitions effects implementation of plans.* *-Livelihood benefits from sustainable management may be limited and slow for communities to give up current unsustainable practices.* *- Lack of involvement from private sector and/or resource users (including vulnerable people) with continued unsustainable practices.* ***Assumptions:*** *-Local communities, national and sub-national governments understand livelihood benefits and ecological security from cooperation with and sustainable management of land, water and other natural resources. Thus, they will*

	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
		agricultural farmers will be established in Year 1. Annual incomes for Halda River based Extrapolated from aggregation of income data from 50 fishermen in Halda river from publication of Kabir, H., Kibria, M., Jashimuddin, M., and Hossain, M.M. (2013). Economic Valuation of Tangible Resources from Halda. International Journal of Water Research. Results to be validated in Year 1, along with establishment of baselines for agricultural farmers			*participate in sustainable management and ecosystem restoration* *Sub-national governments, CBOs, private sector and communities collaborate closely for preparation of Integrated ecosystem plans and approaches*
	Indicator 3: Gender-responsive measures in place for conservation, sustainable use, and equitable access to and benefit sharing of natural resources, biodiversity and ecosystems as indicated by: (a) Policy/planning frameworks (b) Legal and regulatory frameworks and (c) Institutional frameworks	*Gender based policies and practices not adequately addressed due to lack of awareness, capacity and commitment*	*Policy and institutional arrangements in place to enhance integration of gender actions in ECA planning and management*	*(a) At least 3 policy/ planning frameworks namely: (i) Guidelines for ecosystem-based framework for ECAs; (ii) Guidelines for ECA committees at district, upazil and union levels; and (iii) Guidelines for ECA management/ operational planning* *(b) at least 2 regulatory framework on – (i) Rules for ecology management fund; (ii) Rules for applying Polluter Pay Principle.* *(c) institutions with trained staff and procedures – (i) at least 2 district ECA Committee; (ii) at least 4 Upazilla ECA Committee; (iii) at least 12 Union ECA Committee.*	***Data sources and methods:*** *Progress reports* *Policy documents* *Notification of regulations* *Staffing reports* ***Risks:*** *-Gender concerns might get neglected in the pursuit of economic gains* ***Assumptions:*** *There is adequate awareness and commitment within national and sub-national entities to improve gender participation;* *Staff are adequately trained and sensitized to gender issues and concerns*

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	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
Outcome 1: Ecosystem-based framework/system applied to the planning and management of ECAs, institutionalized, and operational	*Indicator 4:* Measurable level of institutional capacities for integrated ecosystem-based planning, management and monitoring of ECA and proposed biodiversity heritage Halda as measured by UNDP's capacity development scorecard.	*Limited institutional capacities for planning, management and monitoring of ecosystem-based approaches to ECAs as measured by UNDP Capacity Development Scorecard baseline values of 29*	*Average increase of institutional capacity as measured by a 5-point increase in UNDP Capacity Development Scorecard baseline values*	*Average increase of institutional capacity as measured by 20 points in UNDP Capacity Development Scorecard from baseline values*	***Data sources and methods;*** *UNDP capacity scorecard* *Progress reports* ***Risks:*** *Priorities of national, district and local government might shift if development benefits take long to manifest* ***Assumptions:*** *The national government will develop appropriate legislative, policy, institutional and technical measures that facilitate integrated ecosystem-based planning and management in a timely manner.* *-Development of ecosystem-based management strategies and plans will be officially agreed with district governments with allocation of appropriate staff and funding for their implementation* *-The districts and local governments will take active part in developing the strategies and implementation using new knowledge and skills provided by the project* *-Local communities are convinced mainstreaming biodiversity into key development sectors in Morjat ECAs and Biodiversity Heritage Halda is in their long-term interests*
	Indicator 5: Percentage of Morjat Baor ECA and proposed Biodiversity Heritage Halda with defined ecosystem-based framework/system and standards to achieve favorable ecological conditions with the documents of valuation of Ecosystem Services for both areas Note: An ecosystem-based management plan for Morjat Baor ECA and proposed Biodiversity Heritage Halda represents a multi-sector and multi-stakeholder integrated management approach that recognizes the full array of interactions within an ecosystem, including humans, rather than consider single issues, species, or ecosystem services in isolation. This approach intends to work across sectors and interests to	*Currently there DoEs does not exist clear biodiversity features and values for establishing favorable ecological conditions in ECAs and biodiversity heritage site*	*Ecosystem-based framework/system established for the two pilot ECAs, including standards for establishing favorable ecological condition in them.*	*Ecosystem based framework/system established for at least 50% of Morjat Baor ECA and Biodiversity Heritage Halda for identifying standards for achieving long-term favorable ecological conditions* with the documents of valuation of Ecosystem Services for both areas	

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	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
	manage species and habitats, economic activities, conflicting uses and the sustainability of resources within Morjat Baor ECA and proposed Biodiversity Heritage Halda and allows for consideration of resource tradeoffs that help protect and sustain diverse and productive ecosystems and the services they provide. Favorable ecological conditions is reached when each of a number of critical biotic and abiotic indicators selected by a technical advisory panel reach levels which are judged to allow full ecosystem functioning of the ECA				

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	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
	Indicator 6: Implementation of 2016 ECA Management rules and its compliance as measured/indicated by: (a) Sustainable financing strategy and action plan (b) Ecology management fund	*Currently, 2016 ECA Management Rules have yet to be applied and there is no scientific framework against which compliance monitoring can be applied.*	*ECA management rules developed and applied, along with development of sustainable financing Strategy for ECAs prepared and operational and institutional Action Plan developed, including design and creation on an Ecology Management Fund with respect to Halda River and Morjat Baor*	*DoE strengthened and adequately resourced with respect to ECAs, as evident from:* ▪ *ECA MMCU and fully operational across ECA network, monitoring compliance;* ▪ *ECA Technical Advisory Panel functional with clear rules and procedures* ▪ *'Polluter pays' policy successfully applied in Environmental Courts with respect to project sites.* ▪ *Private-public partnerships for resource conservation functional in two pilot ECAs* ▪ *Ecology Management Fund functional with clear rules for soliciting financial resources and procedures for fund utilization and monitoring*	***Data sources and methods:*** *New regulations and other legal instruments issued by national and sub-national governments. Compliance data held on ECA Information System.* ***Risks:*** *Delays in prompt promulgation and application of legislation handicaps effectiveness of ECA MMCU, all of which has knock-on implications with respect to other deliverables.* ***Assumptions:*** *Political and administrative support forthcoming from the highest levels (e.g. Prime Minister's Office, MOEFCC) regarding compliance monitoring, polluter pays principle and Ecology Management Fund.*
Outcome 2: Improved ecological condition of target sites (Halda River and Morjat Baor) through effective community engagement and benefit sharing arrangements	***Indicator 7:*** Number of ECA and biodiversity Heritage Halda management plans adequately resourced in terms of staff and resources and approved by government	*Morjat Baor ECAs and Biodiversity Heritage Halda do not have ecosystem based management and financing plans*	*Co-Management and financing plans under development in at least 50% of ECAs and biodiversity Heritage*	*At least 50% of ECA and biodiversity Heritage Halda have approved and revised ECA co-management and financing plans with clear staffing and financial sources identified*	***Data sources and methods*** *ECA and biodiversity Heritage Halda management and financing plans approval notices* ***Risks:*** *-Development of ecosystem-based management strategies and plans will be officially agreed with district governments with allocation of appropriate staff and funding for their implementation*

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	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
					Assumptions: *-Adequate staff and resources available for ECA planning* *-Government is committed to improving management of ECAs*
	Indicator 8: Improvement in water quality in Morjat ECA and Halda s in terms of pH, DO, COD, BOD, N and P and other relevant parameters as determined by ECA frameworks	*Baselines for Halda River are: DO (0.93-5.15 mg/L); BOD_5 (30-545 mg/L); COD (43-983 mg/L); pH (6.3-7.3); EC (110-524 uS/cm); Chloride (12-56 mg/L); Alkalinity (35-67 mg/L); and Hardness (38-121 mg/L).* *Note: The baseline data above is based on work of Bhuyan, S and Abu Bakar, M (2017). Assessment of water quality in Halda River. Current baselines as described above are variable and inconsistent and would be established in Year 1 for locations where interventions are proposed for both ECAs as the basis for monitoring water quality changes*	*7-10% improvement in water quality indices from baselines at selected monitoring stations*	*10-15% improvement in water quality indices from baselines at selected monitoring stations*	***Data Sources and methods:*** *Annual sampling reports for DO, BOD_5, COD, PH, EC, Chloride, Alkalinity and Hardness etc.* ***Risks*** *-Direct sources of pollution from industry or other commercial enterprises might negate any positive impacts from local communities* ***Assumptions:*** *-Adequate capacity and interests exists to undertake regular monitoring* *-Ability to relate any changes in water quality to project investments and community actions*
	Indicator 9: (a) No. Village Conservation Groups (VCGs); and (b) Total no. VCG members with at least 30% female representation	*0*	*(a) 10* *(b) 200*	*(a) 50* *(b) 1,000*	***Data sources and methods*** *Consultation with communities reports. Number of villages to be confirmed.* ***Risks:*** *-Lack of capacity in government and communities to meet obligations related to project* ***Assumptions:*** *-Indicator may not correlate directly with improved livelihood but it is indicative of self-*

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	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
					empowerment, which is likely to result in improved livelihoods. *-Local communities are convinced that critical habitats in their vicinities will benefit livelihoods and ecological security*
Outcome 3. Enhanced institutional and technical capacity to effectively administer and monitor status of ECAs to safeguard biodiversity and secure ecosystem services.	***Indicator 10:*** Establishment and technical capacity of ECA Management, Monitoring & Compliance Unit (MMCU) within DoE as measured by: (a) MMCU established and operational (b) Number of staff recruited and trained to safeguard ECAs	*Limited capacity and technical competence in wetland restoration and management prevent DoE from fulfilling its mandate in safeguarding ECAs, all of which are wetlands.*	- *MMCU created,* - *ecosystem-based framework applied to the restoration of project sites (Halda River and Morjat Baor) and* - *monitoring system in place to track compliance with prescriptions embedded in their respective management plans.*	- *MMCU fully staffed (3 wetland ecologists, 1 compliance officer, 1 IT/systems specialist, 1 communications officer), fully funded by DoE, and* - *restoration measures identified, prescribed and being monitored for 100% ECAs and biodiversity Heritage Site.*	***Data sources and methods*** *ECA and biodiversity heritage Halda management and monitoring reports* *Progress and staffing reports* *Training reports* ***Risks:*** *DoE may not be able to absorb costs of running this new unit by end of project.* ***Assumptions:*** *Establishing MMCU at project inception maximizes the timeframe for building its technical capacity and field experience, with the project providing technical support through the services of its Senior Technical Specialist, who will closely with the Unit.*
	Indicator 11: Increase in level of knowledge (disaggregated by gender) on ecosystem-based approaches as defined by the following: (a) Number of community members trained and adopting new technologies and practices (b) Communication strategy and action plan	*Coordinated outreach on conservation threats lacking. Limited awareness of impact unplanned development among general public. Baseline survey established in Year 1 after KAP survey*	*At least 100 community members trained in relevant ecosystem-based best practice approaches and 50% effectively applying these measures (at least 30% women beneficiaries)*	*At least 500 community members trained in relevant ecosystem-based best practice approaches and 50% effectively applying these measures (at least 30% women beneficiaries)*	*Means of verification:* *-KAP surveys* *- KM documents, best practice documents, proceedings of dissemination events and implementation reports* *Assumption:* *-Stakeholders willing to actively participate in the review process.* *- Project management will be able to identify, document and disseminate the best practices* *-Mid Term Review and End of Project Evaluation of the project will also contribute to identifying the best practices* *-Best practices from sustainable resource management readily available to resource users*

	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
	developed and effectively implemented				*Risks:* *-Government priorities may change from due to political pressure from resource users* *-Actions among the assorted agencies and NGOs remain uncoordinated*
	Indicator 12: Number of knowledge products that reflects best practices and lessons learned	*Limited number (less than 5) of KM products on conservation and sustainable resource management codified and disseminated nationally and regionally*	*At least 5 additional KM products on conservation and sustainable resource management codified and disseminated nationally and regionally*	*At least 20 additional KM products on conservation and sustainable resource management codified and disseminated nationally and regionally*	

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VI. MONITORING AND EVALUATION (M&E) PLAN

1. The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results. The project monitoring and evaluation plan will also facilitate learning and ensure knowledge is shared and widely disseminated to support the scaling up and replication of project results.

2. Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. The UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the GEF M&E policy and other relevant GEF policies[32].

3. In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point and national/regional institutes assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools) across all GEF-financed projects in the country. This could be achieved for example by using one national institute to complete the GEF Tracking Tools for all GEF-financed projects in the country, including projects supported by other GEF Agencies.[33]

M&E Oversight and monitoring responsibilities:

1. Project Manager: The Project Manager is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Manager will closely work with the Project Director and ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Manager will inform the PSC, the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted. The Project Manager will be supported by a National Technical Coordinator who will provide support and oversee the technical aspects of the project

2. The Project Manager will develop annual work plans based on the multi-year work plan included in **Annex A**, including annual output targets to support the efficient implementation of the project. The Project Manager will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g., ESMP, Gender Action Plan, Stakeholder Engagement Plan etc.) occur on a regular basis.

3. Project Steering Committee (PSC)/ Project Board: The PSC will take corrective action as needed to ensure the project achieves the desired results. The PSC will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the PSC will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

1. National Executing Agency of the project: The NEA is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The NEA 1. National Executing Agency of the project.

2. UNDP Country Office: The UNDP Country Office will support the Project Manager as needed, including through annual

[32] See https://www.thegef.org/gef/policies_guidelines
[33] See https://www.thegef.org/gef/gef_agencies

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supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and PSC within one month of the mission. The UNDP Country Office will initiate and organize key GEF M&E activities including the annual GEF PIR, the independent *Mid-Term Review* and the independent *Terminal Evaluation*. The UNDP Country Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

3. The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g., annual GEF PIR quality assessment ratings) must be addressed by the UNDP Country Office and the Project Manager.

4. The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO).

5. UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor (RTA) and the UNDP-GEF Directorate as needed.

6. **Audit:** The project will be audited as per GoB Financial Regulations and Rules and applicable audit policies on NIM implemented projects.[34]

Additional GEF monitoring and reporting requirements:

1. Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:
   a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;
   b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
   c) Review the results framework and finalize the indicators, means of verification and monitoring plan;
   d) Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;
   e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; SESP, Environmental and Social Management Plan and other safeguard requirements; project grievance mechanisms; the gender strategy; the knowledge management strategy and other relevant strategies;
   f) Review financial reporting procedures and mandatory requirements and agree on the arrangements for the annual audit; and
   g) Plan and schedule PSC meetings and finalize the first-year annual work plan.

1. The Project Manager will prepare the Inception Report no later than one month after the inception workshop. The Inception Report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and will be approved by the PSC.

2. GEF Project Implementation Report (PIR): The Project Manager, UNDP Country Office and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual GEF PIR covering the reporting period from July (previous year) to June (current year) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be

[34] See guidance here:https://info.undp.org/global/popp/frm/pages/financial-management-and-execution-modalities.aspx

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monitored regularly, and progress will be reported in the PIR.

3. The PIR submitted to the GEF will be shared with the PSC. The UNDP Country Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

4. Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyze and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

5. GEF Core Indicators: GEF core indicator worksheet and UNDP Capacity Development Scorecard will be used to monitor global environmental benefits. These will be updated by the Project Manager/Team (not the evaluation consultants hired to undertake the MTR or the TE) and shared with the Mid-Term Review consultants and Terminal Evaluation consultants before the required review/evaluation missions take place. The updated core indicator worksheet will be submitted to the GEF along with the completed Mid-term Review report and Terminal Evaluation report.

6. Mid-term Review (MTR): An independent mid-term review process will begin after the second PIR has been submitted to the GEF and the MTR report will be submitted to the GEF in the same year as the 3rd PIR. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the MTR report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC).As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTR report will be available in English and will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and approved by the PSC.

1. Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The Project Manager will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and will be approved by the PSC. The TE report will be publicly available in English on the UNDP ERC.

2. The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

3. Final Report: The project's terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the PSC during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

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Table 6: Mandatory GEF M&E Requirements and M&E Budget:

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to Project Budget[35] (US$)		Time frame
		GEF grant	Co-financing	
Inception Workshop	DoE and UNDP Country Office	USD 7,000	USD 2,000	Within two months of project document signature
Inception Report	Project Manager	None	None	Within two weeks of inception workshop
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	UNDP Country Office	None	None	Quarterly, annually
Risk management	Project Manager with support of Technical Coordinator Country Office	None	None	Quarterly, annually
Monitoring of indicators in project results framework	Project Manager with support of Technical Coordinator	USD 10,000 [USD 2,000 /year]	USD 5,000 [USD 1,000/year	Annually before PIR
GEF Project Implementation Report (PIR)	Project Manager and UNDP Country Office and UNDP-GEF team	None	None	Annually
Lessons learned and knowledge generation	Project Manager, DoE and consultant support	USD 15,000	USD 5,000	Annually
Monitoring of environmental and social risks and corresponding management plans as relevant	Project Manager UNDP Country Office	USD 10,000	USD 5,000	Possible ESIA & ESMP inputs; on-going
Stakeholder Engagement Plan	Project Manager UNDP Country Office	None	USD 5,000 [USD 1,000/year]	Annual Stakeholder Forums; on-going
Gender Action Plan	Project Manager UNDP Country Office UNDP GEF team and consultants	None	USD4,000	On-going
Addressing environmental and social grievances	Project Manager UNDP Country Office	None	None	On-going
Project Steering Committee meetings	PSC, DoE UNDP Country Office Project Manager	None	USD 4,000 [USD 1,000/year]	At least twice/year
Technical Advisory Panel meetings	Project Manager & DoE	USD 5,000 USD 500/meeting	USD 5,000 [USD 1,000/year]	At least three/year
Supervision missions	UNDP Country Office	None[36]	None	Annually
Oversight missions	UNDP-GEF team	None[36]	None	Troubleshooting as needed
GEF Secretariat learning missions/site visits	UNDP Country Office and Project Manager and UNDP-GEF team	None	None	To be determined.
Mid-term GEF Tracking Tool to be updated	Project Manager	None	None	Before mid-term review mission takes place.
Independent Mid-term Review (MTR) and management response	UNDP Country Office and Project team and UNDP-GEF team	USD 26,000 (IC+NC) [based on20 days to include demo sites]	USD 9,000	Between 2nd and 3rd PIR.
Terminal GEF Tracking Tool to be updated	Project Manager	None	None	Before terminal evaluation mission takes place

[35] Excluding project team staff time and UNDP staff time and travel expenses.

[36] The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.

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GEF M&E requirements	Primary responsibility	Indicative costs to be charged to Project Budget[35] (US$)		Time frame
		GEF grant	Co-financing	
Independent Terminal Evaluation (TE) included in UNDP evaluation plan and management response	UNDP Country Office and Project team and UNDP-GEF team	USD 36,500 (IC+NC) (based on 30 days to include demo sites)	USD 5,000	At least three months before operational closure
Translation of MTR and TE reports into English	UNDP Country Office	None	None	As required. GEF only accepts reports in English.
TOTAL indicative COST [Excluding project team staff time and UNDP staff and travel expenses]		USD 109,500	USD 49,000	

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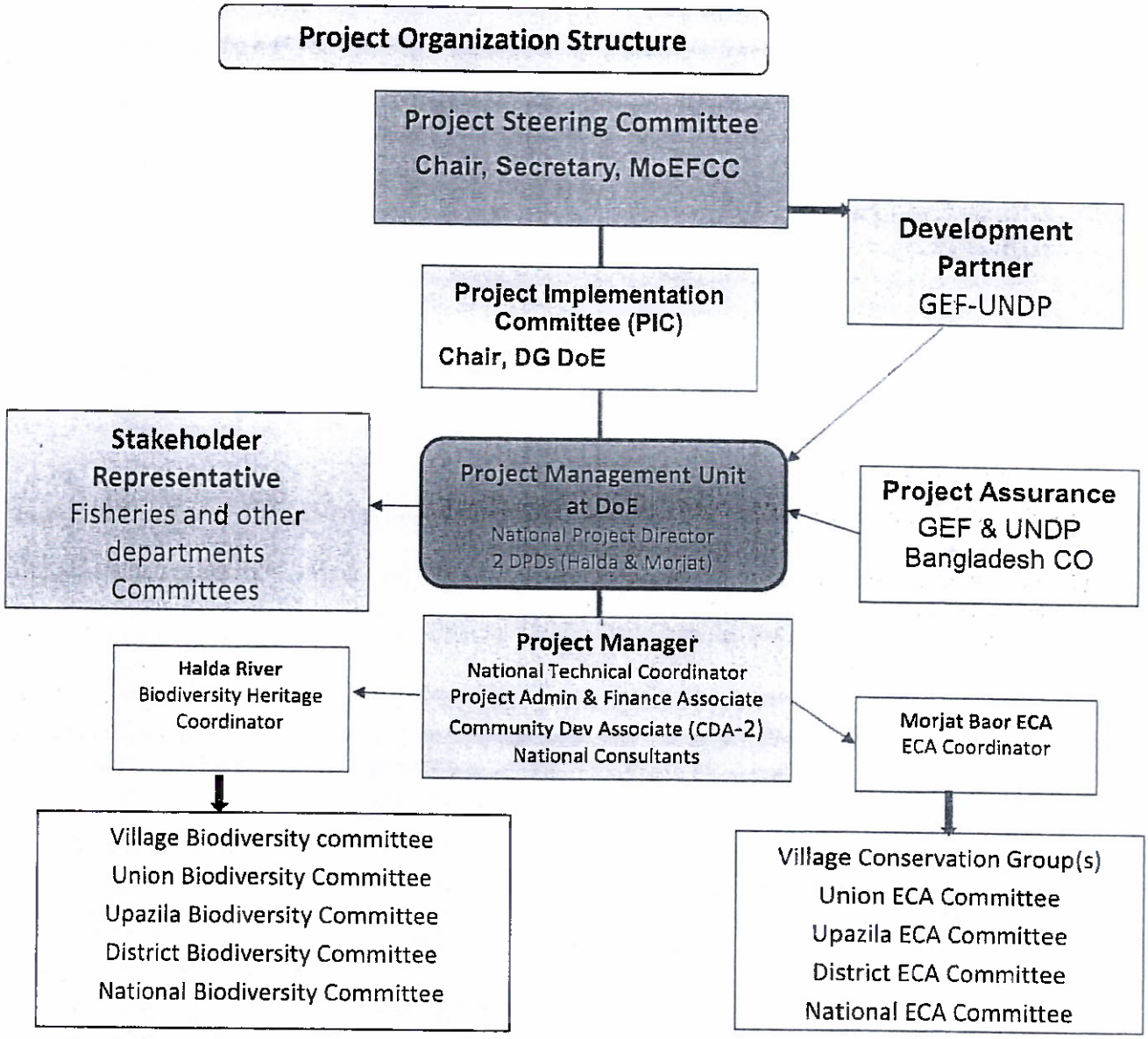
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VII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

1. The project governance and management arrangements are shown diagrammatically in Figure 2 and elaborated in the sections below.

Roles and responsibilities of the project's governance mechanism

1. The project will be implemented following UNDP's national implementation modality (NIM), according to the Standard Basic Assistance Agreement between UNDP and the Government of the People's Republic of Bangladesh and the Country Program.



2. The Sponsoring Ministry for this project is the Ministry of Environment, Forests and Climate Change (MoEFCC). MoEFCC will be responsible and accountable for supervision of this project through PSC and Development Wing, including the monitoring and evaluation of project interventions, achieving project outcomes and for the effective use of GEF resources. Other, specific responsibilities of the Sponsoring Ministry include:

- Approving and signing the multiyear work plan;

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- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

- The Sponsoring Ministry will establish a Project Management Unit (PMU) within the Ministry in Dhaka, with a full-time Project Manager, Technical Coordinator and Community Development Assistants (2). MoEFCC, in its role as Project Executive, will designate the Department of Environment as a responsible party to implement the project, given DoE's responsibility for ECAs and biodiversity heritage under the Bangladesh Environment Conservation Act, 1995; and a Director of DoE having the academic Background on NRM and Project Management Experience will be appointed as the National Project Director (NPD). NPD will be supported by the PMU.

- The **Project Steering Committee (PSC)/Project Board (PB)** is responsible for making management decisions by consensus, including recommendations for project plans and revisions and addressing any project level grievances. In order to ensure NEA and UNDP's ultimate accountability, PSC decisions should be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, the UNDP Resident Representative (or their designate) will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed. Membership of the PSC includes: Sponsoring Ministry (MoEFCC), National Project Director, UNDP (Co-Chair) and beneficiaries, such as the Ministry of Fisheries and Livestock (Department of Fisheries), Forest Department and District ECA committees for Morjat Baor and Biodiversity Management committee for Halda–responsible parties having key roles in supporting implementation. The PSC will be chaired by Secretary, MOEFCC, independent from the party responsible for project implementation (DoE). Specific responsibilities of the PSC include:
    a. Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
    b. Address project issues as raised by the Project Manager;
    c. Provide guidance on new project risks and agree on possible countermeasures and management actions to address specific risks;
    d. Agree on Project Manager's tolerances as required;
    e. Review the project's progress and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
    f. Appraise the annual project implementation report, including the quality assessment rating report; make recommendations for the work plan;
    g. Provide *ad hoc* direction and advice for exceptional situations when the Project Manager's tolerances are exceeded; and
    h. Assess and decide to proceed on project changes through appropriate revisions.

- The composition of the PSC/PB will include the following organizations, subject to confirmation during the project inception period. Observers may be included at PSC/PB meetings upon the agreement of the PSC members.
    i. Secretary, Ministry of Environment, Forest and Climate Change (Chair)
    j. Additional Secretary (Development), MoEFCC (Member)
    k. Additional Secretary (Environment), MoEFCC (Member)
    l. Director General, Department of Environment (Member)
    m. Upazila ECA Committee, Chair (member)
    n. Director General, Department of Fisheries (member)
    o. Forest Department (member)
    p. Bangladesh Parjaton Corporation (National Tourism Department) (member)
    q. Technical Advisory Panel, Chair (member)
    r. Upazila Biodiversity committee, Chair (Member)
    s. ECA and Biodiversity Heritage Management Committees for Halda River and Morjat Baor, Chairs (12 members)
    t. Chittagong Chamber of Commerce and Industry
    u. Planning Commission (Member)
    v. Director (Planning), DoE (Member)
    w. Implementation Monitoring and Evaluation Division (IMED) (Member)

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x. Economic Relations Division (ERD) (Member)
y. Desk Officer concerned, MoEFCC (Member)

- The composition of the **PSC** should include the following roles:

z. The Executive is an individual who represents ownership of the project who will chair the PSC. This role can be held by a representative from the Government Cooperating Agency or UNDP. The Executive is: Ministry of Environment, Forests and Climate Change.

The Executive is ultimately responsible for the project, supported by the Senior Beneficiary and Senior Supplier. The Executive's role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher-level outcomes. The Executive has to ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of beneficiary and suppler.

- Specific Responsibilities: (as part of the above responsibilities for the PSC)
  - aa. Ensure that there is a coherent project organization structure and logical set of plans;
  - bb. Set tolerances in the AWP and other plans as required for the Project Manager;
  - cc. Monitor and control the progress of the project at a strategic level;
  - dd. Ensure that risks are being tracked and mitigated as effectively as possible;
  - ee. Brief relevant stakeholders about project progress; and
  - ff. Organize and chair PSC meetings.

- Development Partner(s): Individuals or groups representing the interests of the parties concerned that provide funding and/or technical expertise to the project. UNDP is the main Development Partner. However, development partners like SDC, USAID, EKN, SIDA, etc. can top-up their resource to this project as co-financing partners.

1. The Beneficiary Representative(s) is an individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries. The Beneficiaries are the Fisheries and agricultural departments, national and district ECA committees, vulnerable and poor communities that are dependent on these two ecosystems.

2. The Beneficiary Representatives are responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The Beneficiary role monitors progress against targets and quality criteria. This role may require more than one person to cover all the beneficiary interests. For the sake of effectiveness, the role should not be split between too many people. Specific Responsibilities (as part of the above responsibilities for the PSC)
   1. Prioritize and contribute beneficiaries' opinions on PSC decisions on whether to implement recommendations on proposed changes;
   2. Specification of the Beneficiary's needs is accurate, complete and unambiguous;
   3. Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary's needs and are progressing towards that target;
   4. Impact of potential changes is evaluated from the beneficiary point of view;
   5. Risks to the beneficiaries are frequently monitored.

1. The **National Project Director** has the authority to run the project on a day-to-day basis on behalf of the PSC within the constraints laid down by the Board. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

2. The **Project Manager**–will work under the supervision and guidance of NPD. Specific responsibilities of the Project Manager include:

gg. Provide direction and guidance to project team(s)/ responsible party (ies);
hh. Liaise with the PSC to assure the overall direction and integrity of the project;

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ii. Identify and obtain any support and advice required for the management, planning and control of the project;
jj. Responsible for project administration;
kk. Plan the activities of the project and monitor progress against the project results framework and the approved annual work plan;
ll. Mobilize personnel, goods and services, training and micro-capital grants to initiative activities, including drafting terms of reference and work specifications and overseeing all contractors' work;
mm. Monitor events as determined in the project monitoring schedule plan/timetable and update the plan as required;
nn. Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
oo. Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
pp. Be responsible for preparing and submitting financial reports to UNDP on a quarterly basis;
qq. Manage and monitor the project risks initially identified and submit new risks to the PSC for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
rr. Capture lessons learned during project implementation;
ss. Prepare the annual work plan for the following year; and update the Atlas Project Management module if external access is made available.
tt. Prepare the GEF PIR and submit the final report to the PSC;
uu. Based on the GEF PIR and the PSC review, prepare the AWP for the following year.
vv. Ensure the mid-term review process is undertaken as per the UNDP guidance and submit the final MTR report to the PSC.
ww. Identify follow-on actions and submit them for consideration to the PSC;
xx. Ensure the terminal evaluation process is undertaken as per the UNDP guidance and submit the final TE report to the PSC;

1. **Project Assurance:** UNDP provides a three-tier supervision, oversight and quality assurance role – funded by the GEF agency fee. This involves UNDP staff in Country Offices and at regional and headquarters levels. Project Assurance must be totally independent of the Project Management function. The quality assurance role supports the PSC and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. The PSC cannot delegate any of its quality assurance responsibilities to the Project Manager. This project oversight and quality assurance role is covered by the GEF Agency.

Governance role for project target groups

2. The PSC/Project Board provides the highest level to engage the project beneficiaries in decision-making, as described above. During implementation, a number of other important governance mechanisms will be established for engaging target groups. These include the following:

yy. ECA Committees and Biodiversity management committee at District, Upazila and Union levels and Village Conservation Groups (VCGs) will be established or re-invigorated, as appropriate, with respect to the two project sites (Halda River proposed Biodiversity Heritage and Morjat Baor ECA), in line with the 2016 ECA Management Rules (Annex 14) and Bangladesh Biological diversity Act 2017. This decision-making hierarchy within the local government system will be represented on the PSC at District level for each of the project sites, as in indicated in Figure 2.

zz. In the case of Halda River, it is planned to establish the Halda River Impact Group, an initiative of the Chittagong Chamber of Commerce & Industry (CCCI) as outlined in Output 1.1.3 and elaborated in Annex 8. This initiative will be linked into the Chittagong District ECA Committee and represented on the PSC as shown in Figure 2.

aaa. A Technical Advisory Panel of water resources management experts, including aquatic ecologists to cover the full spectrum of plants, animals and their habitats, from relevant sectors of government, research institutions and the private sector will review and guide the development and application of the ecological frameworks designed to restore the target sites to favorable ecological condition. The Panel will be represented on the PSC in an advisory capacity and it membe[illegible] will interact directly with PIU through scheduled meetings.

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VIII. FINANCIAL PLANNING AND MANAGEMENT

1. The total cost of the project is USD 13,546,347. This is financed through a GEF grant of USD 3,046,347 and USD 10,500,000in parallel co-financing. UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the cash co-financing transferred to UNDP bank account only.

2. Parallel co-financing: The actual realization of project co-financing will be monitored during the *mid-term review* and *terminal evaluation* process and reported to the GEF. The planned parallel co-financing will be used as follows:

Table 7: Co-financing

Co-financing source	Co-financing type	Co-financing amount	Planned Activities/Outputs	Risks	Risk Mitigation Measures
MoEFCC – Dept of Environment	Grant	10,000,000	Improving organizational effectiveness of national agencies by strengthening institutional capacity, information systems and staff training; (ii) strengthening collaborative protected area and forest management for forest restoration, wildlife protection, biodiversity conservation and ecosystem services; (iii) increasing awareness for generation of alternative income generation activities and (iv) monitoring ecosystem restorative activities.	Unforeseen changes in annual budget allocations by government directed towards biodiversity conservation. Limited cooperation between DoE and DoF, result in opportunities missed and misunderstandings	Co-financing will be from existing and proposed government programs. PSC will ensure that co-financing efforts are not severely compromised. Stakeholder engagement in application of policies, regulations and ecosystem-based approach to wetland restoration and management will strengthen support for ECA and biodiversity heritage.
UNDP	Grant	500,000	Staff time for project monitoring and technical oversight	No significant risk	This is a core mandate of UNDP CO
Total (USD)		10,500,000			

1. Budget Revision and Tolerance: As per UNDP requirements outlined in the UNDP POPP, the PSC will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project manager to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the PSC. Should the following deviations occur, the Project Manager and UNDP Country Office will seek the approval of the UNDP-GEF team as these are considered major amendments by the GEF: a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more; and b) Introduction of new budget items/or components that exceed 5% of original GEF allocation.

2. Any over expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g., UNDP TRAC or cash co-financing).

3. Refund to GEF: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the UNDP-GEF Unit in New York.

4. Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP.[37] On an exceptional basis only, a no-cost extension beyond the initial duration of the project will be sought from in-country UNDP colleagues and then the UNDP-GEF Executive Coordinator.

1. Operational completion: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation

[37] see https://info.undp.org/global/popp/ppm/Pages/Closing-a-Project.aspx

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Report (that will be available in English) and the corresponding management response and the end-of-project review PSC meeting. The NEA through a PSC decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.

2. Transfer or disposal of assets: In consultation with the NIM National Executing Agency and other parties of the project, UNDP program manager (UNDP Resident Representative) is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the PSC following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project. In all cases of transfer, a transfer document must be prepared and kept on file[38].

3. Financial completion: The project will be financially closed when the following conditions have been met: a) The project is operationally completed or has been cancelled; b) The NEA has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the NEA have certified a final Combined Delivery Report (which serves as final budget revision).

4. The project will be financially completed within 12 months of operational closure or after the date of cancellation. Between operational and financial closure, the National Executing Agency will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-GEF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

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[38] https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PPM_Project%20Management_Closing.docx&action=default.

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IX. TOTAL BUDGET AND WORK PLAN

Award ID:	00107267	Project ID(s):	00107598
Award Title:	Implementing ecosystem-based management in Ecologically Critical Areas in Bangladesh		
Business Unit:	BGD10		
Project Title:	Implementing ecosystem-based management in Ecologically Critical Areas in Bangladesh		
PIMS no.	5854		
Sponsoring Ministry:	Ministry of Environment, Forests and Climate Change (MoEFCC)		

GEF Component/Atlas Activity	Responsible Party/ (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note:
COMPONENT 1 (9.2%)												
Designing a financially viable, ecosystem-based management framework for Ecologically Critical Areas (ECAs).	DoE, MoEFCC	62000	GEF Trustee	72100	Contractual Services-Company	12,000	14,000	2,000	0	2000	30,000	1
	UNDP	62000	GEF Trustee	71300	Local Consultant	7,920	7,920	7,920	7,920	7,920	39,600	2
	DoE, MoEFCC	62000	GEF Trustee	71600	Travel	7,000	7,000	7,000	7,000	7,000	35,000	3
	UNDP	62000	GEF Trustee	75700	Training/Workshop/Learning	14,032	21,056	19,548	17,048	17,048	88,732	4
					Sub-Total Component 1	**40,952**	**49,976**	**36,468**	**31,968**	**33,968**	**193,332**	
COMPONENT 2 (76.6%)												
Improved ecological condition of target sites (Halda River and Morjat Baor) through effective community engagement and	UNDP	62000	GEF Trustee	71300	Local Consultant	15,480	15,480	15,480	15,480	15,480	77,400	5
	DoE, MoEFCC	62000	GEF Trustee	72100	Contractual Services-Company	150,600	230,884	343348.26	217067.517	163100	1,105,000	6
	DoE, MoEFCC	62000	GEF Trustee	71600	Travel	8,600	8,600	8,600	8,600	8,600	43,000	7
	DoE, MoEFCC	62000	GEF Trustee	73400	Rental & Maint of Other Equip	10,000	10,000	10000	10000	10000	50,000	8
	DoE, MoEFCC	62000	GEF Trustee	72200	Grants	21,000	252,275	226,000	161,000	101,000	761,275	9

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GEF Component/Atlas Activity	Responsible Party/ (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note:
benefit sharing arrangements	DoE, MoEFCC	62000	GEF Trustee	72200	Equipment	30,000	30000	30000	30000	30000	150,000	10
	DoE, MoEFCC	62000	GEF Trustee	75700	Training/Workshop/Learning	10,333	68,333	71,167	49,167	20,000	219,000	11
					Sub-Total Component 2	**246,013**	**615,573**	**704,595**	**491,314**	**348,180**	**2,405,675**	
COMPONENT 3 (9.4%)												
Enhanced institutional and technical capacity to effectively administer and monitor status of Morjat Baor ECA and proposed Biodiversity Heritage Halda to safeguard biodiversity and secure ecosystem services.	DoE, MoEFCC	62000	GEF Trustee	71200	International Consultants-MTR&TE	-	-	17,000	-	25,500	42,500	12
	UNDP	62000	GEF Trustee	71400	Contractual Services – Individual	6,600	6,600	6,600	6,600	6,600	33,000	13
	DoE, MoEFCC	62000	GEF Trustee	71300	Local Consultant	24,000	0	0	0	20,000	44,000	14
	DoE, MoEFCC	62000	GEF Trustee	71600	Travel	9,556	9,556	9,556	9,556	9,556	47,780	15
	DoE, MoEFCC	62000	GEF Trustee	75700	Training/Workshop/Learning	6,000	3,000	9,000	3,000	7,000	28,000	16
	DoE, MoEFCC and UNDP	62000	GEF Trustee	72800	Information Technology Equipmt	44,000	0	0	0	0	44,000	17
					Sub-Total Component 3	**90,156**	**19,156**	**42,156**	**19,156**	**68,656**	**239,280**	
Project management (4.8%)												
	UNDP	62000	GEF Trustee	71400	Labour Cost - National Personnel Services Agreement:	38,400	38,400	38,400	38,400	38,400	192,000	18
	UNDP	62000	GEF Trustee	72800	Information Technology Equipmt	11,060	0	0	0	0	11,060	19
	UNDP	62000	GEF Trustee	72500	Stationery & other Office Supp	1,000	1,000	1,000	1,000	1,000	5,000	20
					Sub-Total Project Management	**50,460**	**39,400**	**39,400**	**39,400**	**39,400**	**208,060**	
GRAND PROJECT TOTAL						**427,581**	**724,105**	**822,619**	**581,838**	**490,204**	**3,046,347**	

	Amount Year 1	Amount Year2	Amount Year 3	Amount Year 4	Amount year 5	Amount Total (US$)
GEF	427,581	724,105	822,619	581,838	490,204	3,046,347
UNDP	100,000	100,000	100,000	100,000	100,000	**100,000**

Other Co-financing	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	10,000,000
TOTAL	2,527,581	724,105	805,619	581,838	464,704	13,146,347

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Summary of Funds:

Budget notes

Budget note	Comments
Component 1/Outcome 1:	
1	**Contractual Service- Firm** National Consultant Gender: 5 months (@ $ 2,000/ month) to provide services for integration of gender mainstreaming and action plan support, including training and capacity building of the project. **Total $ 10,000** National Public-Private Partnership Consultant: 4 months @$5,000/month (**Total=$20,000**) to provide service for preparing a revenue generating model and sustainable financing strategy for Morjat baor ECA and Halda river biodiversity heritage site
	TOTAL = $30,000
2	**Contractual Services – Individual** (i) Community Development Assistants (2) – Morjat Baor and Halda River Technical Coordinator: 30% of 60 months (@ $ 1100 per month). Output 1.1 and lead Output 1.2. = **$ 39,600**
	TOTAL = $39,600
3	**Travel cost of USD 35,000 over the project implementation period:** National Technical Coordinator, Consultants, DoE and other relevant Government Officials for Output 1.1, 1.2, 1.3 and 1.4. **TOTAL = $35,000**
4	**Workshops and conference** 1. 5 meetings per year (@ $800) with Technical Advisory Panel = **$20,000** 2. Workshop (2) for DoE and relevant stakeholders on ECA and biodiversity heritage-MP&G=**$5,000** 3. 5 meetings and workshops per year (@$800 per event) with ECA and Biodiversity Halda Committees at Union, Upazila, District, National levels, plus VCGs. = **$20,000** 4. 10 Sensitization workshop for key stakeholders @1508/workshop, = **$15,080** 5. 19 consultations on Ecosystem based management of Morjat baor (8) and Halda river (11) (@ $1,508 each) = **$28,652**
	TOTAL = $88,732
Component 2/ Outcome 2	
5	**Contractual Services – Individual**
	i) Community Development Assistants (2) – Morjat Baor and Halda River for 60 months: 45% of 60 months (@ $ 1100 per month). Output 2.1 and 2.2 **Total $ 59,400** ii) Driver for mobile laboratory @$300 for 60 months = **$18000**
	TOTAL = $77,400
6	Contractual Services- Firm/Company Assessment of economic valuation of ecosystem goods and services and development of sustainable financing strategy for Halda & Morjat for approximately 15-20 months (including travel) = **$82,000** Development of management plan and operational guideline for Halda river =**$60,000** Development of site-specific management plan and operational guideline for Morjat baor=**$20,000** Development of Biodiversity Register in the Halda Biodiversity Heritage and Morjat baor ECA=**$55,000** Monitoring and enforcement of pollution controls at Halda river **($52,000)** Monitoring Charcoal filter for managing agricultural run-off at Halda= **($84,000)** Establishing sanitary facilities for waste and fecal management in 200 households @$230/HH) = $46,000 +$34,000 = **($80,000)** Community SMART patrolling for Halda river & Morjat baor (equipment's-for 50 groups @$5000/group) **($250,000)** Promotion of efficient pollution management at Halda rivers for 500 farmers covering 100 ha ($500/Ha) = **($50,000)** Establishment of 3-online monitoring stations (GIS based real time monitoring) with monitoring system (including software and hardware) for monitoring water quality in Halda river and Morjat Baor **($117,000)** Removal of water hyacinth in Morjat Baor (using aquatic weed harvester) **($70,000)** Pilot manual re-excavation or mud-pumping of 10 ha silted areas @$10,000/ha.) at Morjat= **($100,000)** Pilot alternative/ environment friendly methods for removing jute bark (purchase of de-barking machineries with $3000/machine) at Morjat baor (10 machines) = **($30,000)**

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Budget note	Comments
	Technology and process for producing packaging material from water hyacinth (equipment & services) at Morjat baor (lumpsum)=**$35,000** Stabilization of Morjat Baor drawdown area and riverbank with ground and vegetation cover (e.g., vetiver grass and plantation) 5 ha (@$4000/ha) = **$20,000**
	TOTAL: $ 1,105,000
7	**Travel.**
	PMU staff, Consultants, DoE and other relevant Government Officials (Output for Component 2). **TOTAL = $43,000**
8	**Rental Equipment**
	Hiring vehicles (country boat/car and others (monthly) for 5 years @10,000/year). **TOTAL = $50,000**
9	**Grant** implemented consistent with the UNDP's guidelines on Low-Value Grants (LVG). Following LVG guidelines, grants will be delivered through broad range of development partners, including civil society and non-governmental organizations, academic or educational institutions. Low value grants for this activity include (under Output 2.3) for the implementation of biodiversity-friendly fisheries, agriculture, small scale enterprises, plantation and livelihood activities as well as alternative livelihood plans for loss of access and livelihoods. Village Conservation/ community groups will receive up to $8,000/VCG per grant in about 4 installments.
	Halda River = $521,275 1. (Grants for promoting sustainable fisheries and aquaculture for 30 Union Biodiversity Management Committees (BMC) in Halda river= 30 x $3,500 = **($105,000)** 2. Grants for protection of fish nursery and feeding sites for Halda river= 750x$400 = **($45,000)** Grants for conservation of Gangetic River dolphin breeding and feeding areas in Halda river = $51,275Grants for alternative livelihoods, and income generation activities for 800 fishers Halda river (800 family @ $400/fisher family) =**$320,000**
	Morjat Baor = $240,000 1. Grants for promoting alternative livelihoods, skills and income generation for 500 fishers in Morjat Baor = 500x$400 = ($200,000) 2. Grants for sustainable fisheries (indigenous fish biodiversity conservation) in Morjat Baor for 20 fishers= 20 x $2,000 = ($40,000)
	TOTAL = $761,275
10	**Equipment**
	Vehicle Mounted Mobile Laboratory for monitoring relevant environmental parameters at Morjat and Halda
	TOTAL = $150,000
11	**Training and Workshops**
	1. Farmer training (10 training @$3000/training)) in local language (Bangla) on organic farming = 600 farmers=**$30,000** 2. Conduct of training ($1666.67/training) for 30 community smart patrolling groups =**$50,000.1** 3. Sensitizing workshop (10 workshops@$1,508) for 10 key stakeholders (e.g., DOE, DOF, FD, BWDB, NRCC, CCC, CDA, CCCI, DC, ROKHSA committees etc. on river basin management in Halda = **$15,080** 4. Exposure visits (2 visits @$5000) for 100 VCG members from Morjat Baor to in Tanguar Haor = **$10,000** 5. Training on managing agricultural run-off through charcoal filter (2 trainings @ $3000/training) =**$6,000** 6. Skills training for alternative income generation activities = 20 training and skills development workshops (for 600 people) for promotion of sustainable fisheries, agriculture, small and medium enterprises and livelihood development @$3,500 each = **$70,000** 7. Training for producing packaging materials from water hyacinth (2 trainings @ $2500/training) =**$5000** 8. Training on alternative methods/environment friendly methods of removing jute barks (4 trainings @$2500/training) =**$10,000** 9. Training on monitoring (GIS based) and enforcement of pollution control of Morjat Baor ECA and Biodiversity Heritage Halda (2 training @$4000/training): Output 2.2 Total: **$8,000**
	TOTAL = $219,000
Component 3 / Outcome 3:	
12	**International Consultant – Mid-Term (MTR) and Terminal Evaluation (TE) (travel costs include under Travel) of Project**
	(i) Mid-term Review (MTR) Consultant 20days@850 = **$17,000.** Mission Cost, DSA and Travel
	(ii) Terminal Evaluation (TE) Consultant 30 days @$850 = **$25,500**. Mission Cost, DSA and Travel
	TOTAL = $42,500
13	**Contractual Services – Individual**
	i) Community Development Assistants (2) – Morjat Baor and Halda River for 60 months. 25% of 60 months (@1100 per month). Total $33,000
	TOTAL = $33,000
14	**Contractual Services – Firms**

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Budget note	Comments
	(i) Media company or NGO to deliver Communications Strategy and Action & preparation of communication materials Plan in Year 1 = $24,000
	(ii) Documentation of lessons learned budgeted at 50 days ($400/day) = $20,000
	TOTAL: $44,000
15	**Travel.**
	PMU staffs, Consultants, DoE and other relevant Government Officials including Evaluation Missions.
	TOTAL = $47,780
16	**Training and workshops**
	Project Launch/Inception workshop, project lesson learned workshop - @ $12,000
	Annual stock-taking meetings (Year 2,3 and 4) = $9,000
	Terminal/Final workshop - $7,000
	TOTAL = $28,000
17	IT Equipment
	Vehicle mounted mobile laboratory IT equipment for monitoring (hardware & software)
	TOTAL: $44,000
Project Management:	
18	**Contractual Services – Individual**
	(i) Project Manager for 60 months (@ $ 2,000 per month) = $120,000 **TOTAL = $120,000** (ii) Project Admin and Finance Assistant for 60 months (@ $ 1,200 per month) = **$ 72,000**
	TOTAL = $192,000
19	**IT equipment**
	Computers, laptops and printers, camera, etc. **TOTAL =$11,060**
20	**Office supplies**
	Printing supplies, stationary, ink, etc. $1,000/year **TOTAL = $5,000**

Note: The actual items and costs will be revalidated and adjust during inception workshop and preparation of inception report. Only Project Manager cost is included in PMC. Other project staffs like community development assistant is allocated under activity budget.$ refers to US dollar

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X. LEGAL CONTEXT

1. This project will be implemented by the Ministry of Environment, Forests and Climate Change ("Sponsoring Ministry") in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of a Sponsoring Ministry does not provide the required guidance to ensure best value for money, fairness, integrity, transparency and effective international competition, the financial governance of UNDP shall apply.

2. Any designations on maps or other references employed in this project document do not imply the expression of any opinion whatsoever on the part of UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

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XI. RISK MANAGEMENT

1. Consistent with Article III of the SBAA [or the *Supplemental Provisions to the Project Document*], the responsibility for the safety and security of the NEA and its personnel and property and of UNDP's property in the NEA's custody, rests with the NEA. To this end, the NEA shall:
   - put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried; and
   - assume all risks and liabilities related to the NEA's security and the full implementation of the security plan.

1. UNDP reserves the right to verify whether such a plan is in place and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the NEA's obligations under this Project Document.

2. The National Executing Agency agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via: http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.

3. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (http://www.undp.org/ses) and related Accountability Mechanism (http://www.undp.org/secu-srm).

4. The NEA shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

5. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information and documentation.

6. The NEA will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The NEA will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

7. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the National Executing Agency: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The NEA agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.

8. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programs. The NEA shall provide its full cooperation, including making available personnel, relevant documentation and granting access to the NEA's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the NEA to find a solution.

9. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

10. Where the NEA becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the National Executing Agency will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The NEA shall provide regular updates to the

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head of UNDP in the country and OAI of the status of and actions relating to, such investigation.

11. UNDP shall be entitled to a refund from the NEA of any funds provided that has been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the NEA under this or any other agreement.

12. Where such funds have not been refunded to UNDP, the NEA agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the NEA for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

13. Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

14. Each contract issued by the NEA in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution and that the recipient of funds from the NEA shall cooperate with any and all investigations and post-payment audits.

15. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

16. The National Executing Agency shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

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ANNEX 1: MULTI YEAR WORK PLAN

Task	Responsible Party(ies)	YR 0	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
			Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Pre-Planning Phase (PPG Phase)																										
Constituting of Project Board	UNDP, GOB																									
Hiring of Contractual Staff	MOEFCC																									
Establishment of Project Special Accounts and Fund Flow Arrangements	UNDP and GOB																									
Planning and Implementation Phase																										
Component 1: Designing a financially viable, ecosystem-based management framework for Ecolpogically Critical Areas (ECAs).																										
Outcome 1: Ecosystem-based framework applied to the planning and management of ECAs, institutionalized, and operational																										
Output 1.1: Improved ecosystem-based framework for effective planning and management of ECAs.																										
Activity 1.1.1	MOEFCC																									
Activity 1.1.2	MOEFCC																									
Activity 1.1.3	MOEFCC																									
Activity 1.1.4	MOEFCC																									
Activity 1.1.5	MOEFCC																									
Output 1.2: Strengthened institutionalization and multi-sector coordination at national, district, upazila, union and community levels.																										
Activity 1.2.1	MOEFCC																									
Activity 1.2.2	MOEFCC																									
Activity 1.2.3	MOEFCC																									
Output 1.3: Legal and policy reforms, necessary to enforce compliance with achieving and maintaining favorable ecological condition of ECAs, identified and submitted to government to adopt.																										
Activity 1.3.1	MOEFCC																									
Activity 1.3.2	MOEFCC																									
Activity 1.3.3	MOEFCC																									
Activity 1.3.4	MOEFCC																									
Output 1.4: Sustainable financing strategy for ECAs developed and implemented																										

Task	Responsible Party(ies)	YR 0	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
			Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Activity 1.4.1	MOEFCC																									
Activity 1.4.2	MOEFCC																									
Activity 1.4.3	MOEFCC																									
Component 2: Applying a participatory ecosystem-based framework to effectively plan, manage, finance and monitor compliance in target ECAs.																										
Outcome 2: Improved ecological condition of target sites (Halda River and Morjat Baor) through effective community engagement and benefit sharing arrangements																										
Output 2.1 Environmental assessments, including economic valuation of ecosystem goods and services), undertaken in target sites.																										
Activity 2.1.1	MOEFCC																									
Activity 2.1.2	MOEFCC																									
Activity 2.1.3	MOEFCC																									
Activity 2.1.4	MOEFCC																									
Output 2.2 Ecosystem-based management plans (5 years), with associated monitoring, action and financing plans, prepared and being implemented for target sites																										
Activity 2.2.1	MOEFCC																									
Activity 2.2.2	MOEFCC																									
Activity 2.2.3	MOEFCC																									
Activity 2.2.4	MOEFCC																									
Activity 2.2.5	MOEFCC																									
Output 2.3: Range of activities piloted in target sites to enhance protection of biodiversity and restore ecosystem to improve livelihoods.																										
Activity 2.3.1	MOEFCC																									
Activity 2.3.2	MOEFCC																									
Activity 2.3.3	MOEFCC																									
Activity 2.3.4	MOEFCC																									
Activity 2.3.5	MOEFCC																									
Component 3: Strengthening the institutional, technical capacity, knowledge management, gender mainstreaming and M&E to maintain the integrity of ECAs.																										

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Task	Responsible Party(ies)	YR 0	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
			Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Outcome 3: Institutional capacity, knowledge management, gender mainstreaming and monitoring and evaluation contributes to identification of improved tools, approaches and best practices for replication and scaling up.																										
Output 3.1: Communications Strategy and Action Plan developed and implemented																										
Activity 3.1.1	MOEFCC																									
Activity 3.1.2	MOEFCC																									
Activity 3.1.3	MOEFCC																									
Output 3.2: ECA Management, Monitoring & Compliance Unit established within DoE																										
Activity 3.2.1	MOEFCC																									
Activity 3.2.2	MOEFCC																									
Activity 3.2.3	MOEFCC																									
Activity 3.2.4	MOEFCC																									
Output 3.3: Modular training program, informed by competency-based needs assessment for ECA stakeholders, designed, operational and institutionalized.																										
Activity 3.3.1	MOEFCC																									
Activity 3.3.4	MOEFCC																									
Activity 3.3.5	MOEFCC																									
Activity 3.4.6	MOEFCC																									
Supervision, Monitoring and Evaluation																										
Monitoring social and environmental risks and implementation of gender action plan	MOEFCC																									
Supervision	UNDP and MOEFCC																									
Final tracking tool update	MOEFCC																									
Audits	MOEFCC, IMED, FAPAD																									
Final Project Review	MOEFCC																									

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ANNEX 2: TERMS OF REFERENCE OF KEY CONSULTANTS AND CONSULTANCY SERVICES

Consultancy Assignment	Main Tasks	Required Qualification	Inputs Man days/months	Total Costs (USD)
International Consultants				
Mid-term Evaluator	▪ Conduct the midterm review including updating of GEF tracking tools ▪ Recommend project design modifications, work program	▪ At a Master's degree or tertiary level certification in wetland or natural resources management ▪ Track record of undertaking evaluations ▪ At least 10 years professional experience in wetland biodiversity and threat analysis and data collection methodologies	20 days	13,000
Terminal Evaluator	▪ Conduct the Project terminal review including accomplishment of GEF tracking tools ▪ Review sustainability plans and advice modifications and post project impact surveys as needed	▪ At a Master's degree or tertiary level certification in wetland or natural resources management ▪ Track record of undertaking evaluations ▪ At least 10 years professional experience in wetland biodiversity and threat analysis and data collection methodologies	30 days	19,500
Local Consultant				
National Gender Consultant	▪ National consultant to facilitate mainstreaming of gender in development planning, provision of training in gender related aspects and guiding gender aspects relating to ECA Planning and implementation of sustainable agriculture, fisheries and livelihood activities ▪ Provide guidance on mainstreaming gender in policies, regulations, guidelines and other planning tools ▪ Provide guidance of monitoring gender specific indicators including the gender action plan Gender Support for all components	▪ MSc degree in social sciences with a t least 10 years working experience ▪ Individual with extensive experience and working knowledge of tools and approaches for gender inclusion and mainstreaming in development work	5 months	10,000

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Consultancy Assignment	Main Tasks	Required Qualification	Inputs Man days/months	Total Costs (USD)
Public Private Partnership Expert	▪ To deliver service for preparing a revenue generating model and sustainable financing strategy for Morjat baor ECA and halda river biodiversity heritage site (Outputs 1.3 and 1.4)	▪ At a Master's degree or tertiary level certification in legal aspects, with emphasis on environment, natural resources or related area ▪ At least 10 years professional experience in provide legal backstopping for biodiversity and natural resources management projects	4 months	20,000
Contractual Services – Individual (national)				
Project Manager	See Annex 3			
Community Development Associates (2)	▪ To support the community activities at the ECAs ▪ Mobilization of VGCs ▪ Strengthening VGS ▪ Facilitation VCG planning for sustainable activities ▪ Monitoring fund flows and community expenditures and monitoring project achievements	▪ At a Master's degree or tertiary level certification in sociology or related subject ▪ At least 10 years professional experience in working with local communities in natural resources related aspects ▪ Good expertise in community mobilization	60 months each	96,000 x 2
Auditor	▪ Arrange for audit of all project accounts for each fiscal year, ▪ Perform all kind of audit related reporting.	▪ Master's degree in relevant subject ▪ Track record of undertaking auditing service. ▪ At least 5 years professional experience.	5 Years	10,000
Project Administrative and Finance	▪ To monitor and support financial management of the project ▪ Maintaining financial reports and financial reporting	▪ At a Master's degree financial management or related subject ▪ At least 10 years professional experience in financial management ▪ Experience working with international programs an advantage	60 months	96,000
Contractual Services – Firms (national)				
Development of management plan and	National NGO or firm to: • Facilitate preparation of management plan and operational guideline for Haida river	▪ Firm with individuals with qualifications and experience in MP and operational guideline development	30 months	60,000 (includes travel)

Consultancy Assignment	Main Tasks	Required Qualification	Inputs Man days/months	Total Costs (USD)
operational guideline for Haida river	• Identifying clear programs for management of the ECAs, including management and restoration measures to bring environmental favorable conditions to the ECAs (one year) • Support partial implementation to management plans, guiding and advise on management plan interventions (two years)	▪ At least 10 years' experience in MP and guideline development ▪ Proven track record in undertaking similar assignments ▪ Knowledge on United Nations UNCBD, Ramsar Convention; ▪ Excellent written and spoken command of English ▪		
Development of site specific management plan and operational guideline for Morjat baor	▪ National NGO or firm to: ▪ Facilitate preparation of site-specific management plan and operational guideline for Haida river ▪ Identifying clear programs for management of the ECAs, including management and restoration measures to bring environmental favorable conditions to the ECAs (one year) ▪ Support partial implementation to management plans, guiding and advise on management plan interventions (two years)	▪ Firm with individuals with qualifications and experience in site-specific MP and operational guideline development ▪ At least 10 years' experience in MP and guideline development ▪ Proven track record in undertaking similar assignments ▪ Knowledge on United Nations UNCBD, Ramsar Convention; ▪ Excellent written and spoken command of English	12 months	20,000
Sustainable Financing strategy and Economic valuation of ecosystem goods and services for Haida river and Morjat baor	▪ Assess costs and benefits in order to raise awareness of the net benefits of restoration initiatives in order to help secure the necessary financial investments. ▪ Prescribe necessary measures to restore wetlands and maintain them in favorable ecological condition and monitoring their ecological status, and one of enforcement to ensure compliance with targets agreed by the management authority; ▪ Identifying a suite of funding resources and mechanisms that can be deployed to	▪ Firm with experts with extensive experience in under taking SEAs, ecological and socila aspects related to management of natural resources, including wetlands and extensive experience working with community organizations ▪ At least 8 years experience in undertaking SEAs, PA, natural resources or wetland management planning and implementation ▪ Experience in managing fund flows and fund reporting for national or donor institutions • Good track record for undertaking similar assignments in Bangladesh and overseas ▪	24 months	82,000

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Consultancy Assignment	Main Tasks	Required Qualification	Inputs Man days/months	Total Costs (USD)
	restore ECAs and biodiversity heritage to favorable ecological condition; ▪ Prepare an Action Plan that will prioritize actions for implementation during the project period; ▪ Provide guidance for the development of financing plans and strategies in ECA and biodiversity heritage management plans, ▪ Finalize valuation of ecosystem services for morjat baor and halda river ecosystem; ▪ Facilitate the establishment of the Ecology Management Fund ▪			
Manual re-excavation and mud pumping	Firm to undertake: • Pilot dreading or mud-pumping of 1 km wide width of Morjat Baor to increase depth by 1o feet • Disposal of over burden in places that will not impair carrying capacity of water retention of Baor	▪ Firm with heavy equipment for dredging waterways ▪ Firm with proven experience in cost effective dredging methods	LS	100,000
Development of outreach materials with communication strategy and action (TVC, documentary, etc.)	• Contractual services firm for supporting National Knowledge Management and Communications to promote outreach and increased public awareneof wetland conservation • Development of Communication and KM plan for 2 ECAs • Provide part time communication assistant (51 days) and communication assistant (6 months/year for 3 years)	• Firm with individuals with qualifications and experience in KM and communication skills • At least 10 years' experience in KM and communications • Proven track record in undertaking similar assignments • Individuals with experience delivering communication and awareness programs	LS	24,000
GIS based real time monitoring systems	Firm to help to:	▪ Firm with expertise in design of web-based system ▪ Experience in natural resources-based data management	90 days (60 days to design and develop system	117,000

Consultancy Assignment	Main Tasks	Required Qualification	Inputs Man days/months	Total Costs (USD)
	▪ Development of web-based information, learning and participatory monitoring system ▪ Development information collection formats ▪ Provide technical support for populating data base with ECA information		and 30 days for technical support to populate system	

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ANNEX 3: TERMS OF REFERENCE FOR PROJECT MANAGEMENT STAFF

Project Director

The Project Director (PD) will have overall responsibility for managing the organization, work plans, programs and activities, as well as progress and financial reporting to Project Board and UNDP. This position will be filled up designee of MOEFCC. The Project Director will be the head of the Project Management Unit. The PMU will have operational and financial autonomy, including the authority to select and sub-contract specific project activities or components to local consultants and local institutions. The PD will perform a liaison role with government, UNDP and stakeholders. Terms of reference for this position include the following:

The roles and responsibilities of the PD are:

- Establishment of the staffing and operational functions of the Project Management Unit;
- Guiding the preparation of annual work plans, monitoring and evaluation plans, etc.;
- Overseeing the drafting/reviewing of terms of reference key staff;
- Guiding and overseeing funds requisition, six-monthly progress and financial reporting and monitoring of outputs and outcomes as per GEF standards;
- Coordination with regional and local authorities and stakeholders in implementing project activities;
- Ensuring the disbursement of funds as per operational procedures consistent with financial management standards of the Government and GEF;
- Providing secretariat services to the Project Board;
- Reporting to the Project Board and UNDP-GEF Program Manager on the progress and issues in project implementation; and
- Facilitation of monitoring and evaluation missions by UNDP or designated consultants to UNDP.

National Project Manager

Project Manager has the authority to run the project on a day-to-day basis on behalf of the Project Board within the constraints laid down by the Board. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

2. The Implementing Partner appoints the **Project Manager**, who should be different from the Implementing Partner's representative in the Project Board. Specific responsibilities include:

- Provide direction and guidance to project team(s)/ responsible party (ies);
- Liaise with the Project Board to assure the overall direction and integrity of the project;
- Identify and obtain any support and advice required for the management, planning and control of the project;
- Responsible for project administration;
- Plan the activities of the project and monitor progress against the project results framework and the approved annual workplan;
- Mobilize personnel, goods and services, training and micro-capital grants to initiative activities, including drafting terms of reference and work specifications, and overseeing all contractors' work;
- Monitor events as determined in the project monitoring schedule plan/timetable, and update the plan as required;
- Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
- Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
- Be responsible for preparing and submitting financial reports to UNDP on a quarterly basis;
- Manage and monitor the project risks initially identified and submit new risks to the Project Board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
- Capture lessons learned during project implementation;
- Prepare the annual workplan for the following year; and update the Atlas Project Management module if external access is made available.
- Prepare the GEF PIR and submit the final report to the Project Board;

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- Based on the GEF PIR and the Project Board review, prepare the AWP for the following year.
- Ensure the mid-term review process is undertaken as per the UNDP guidance, and submit the final MTR report to the Project Board.
- Identify follow-on actions and submit them for consideration to the Project Board;
- Ensure the terminal evaluation process is undertaken as per the UNDP guidance, and submit the final TE report to the Project Board;

Qualifications:

- Masters degree related to natural resource management, biodiversity conservation, water resources management, ecosystems/PA/ management, or Tropical Biology or related field or another field with direct relevance to the project;
- At least 10 years of experience in managing large-scale projects on natural resource management, biodiversity conservation or integrated area development in the Bangladesh;
- Close familiarity with the roles, activities, and priorities of the MOEFCC and District, Upazila and Union regarding wetland, natural resource management, biodiversity conservation, agriculture, etc.;
- Basic technical understanding of wetland management and biodiversity conservation;
- Demonstrated ability to work effectively with a broad range of stakeholders;
- Demonstrated ability to work effectively under minimal supervision;
- Superior skills in organization and management, including past experience with planning, tracking, evaluation, and supervision of consultants and/or employees;
- Strong skills in financial tracking and budget management;
- Preferably have close familiarity with the operations and rules of UNDP;
- Fluency in English (reading, writing, speaking).

Finance and Admin Assistant

The Project Finance and Administrative Support specialist will be responsible for the financial and administrative management of the project activities and assists in the preparation of quarterly and annual work plans and progress reports for review and monitoring by the Project Director and UNDP.

The Project Finance Officer will have the following responsibilities:

- Responsible for providing general financial and administrative support to the project;
- Take own initiative and perform daily work in compliance with annual work schedules;
- Assist project management in performing budget cycle: planning, preparation, revisions, and budget execution;
- Provide assistance to partner agencies involved in project activities, performing and monitoring financial aspects to ensure compliance with budgeted costs in line with UNDP policies and procedures;
- Monitor project expenditures, ensuring that no expenditure is incurred before it has been authorized;
- Assist project team in drafting quarterly and yearly project progress reports concerning financial issues;
- Ensure that UNDP procurement rules are followed during procurement activities that are carried out by the project and maintain responsibility for the inventory of the project assets;
- Perform preparatory work for mandatory and general budget revisions, annual physical inventory and auditing, and assist external evaluators in fulfilling their mission;
- Prepare all outputs in accordance with the UNDP administrative and financial office guidance;
- Ensure the project utilizes the available financial resources in an efficient and transparent manner;
- Ensure that all project financial activities are carried out on schedule and within budget to achieve the project outputs;
- Perform all other financial related duties, upon request

Qualifications and Skills:

- At least Bachelor's degree in finance, business management, or related fields;
- Experience related to project implementation;
- A demonstrated ability in the financial management of development projects and in liaising and cooperating with government officials, NGOs, etc.;
- Self-motivated and ability to work under the pressure;
- Team-oriented, possesses a positive attitude, and works well with others;
- Flexible and willing to travel as required;

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- Excellent interpersonal skills;
- Excellent verbal and writing communication skills in English and local languages;
- Good knowledge of Word, Outlook, Excel, and Internet browsers is required;
- Previous experience working with a GEF-supported project is considered an asset.

COMMUNITY DEVELOPMENT ASSOCIATES/SITE COORDINATOR (2)

The Community Development Associates will work under the supervision and guidance of Project Manager. He/she will be responsible for the following tasks:

- Collect base line information for community resource uses and dependencies and livelihood related activities, and assess gender roles in decision-making, natural resources activities and income generation;
- Guide and oversee strengthening of community level committees (VCGs) and individual community members in planning, designing and implementing sustainable natural resources and livelihood activities;
- Conducted participatory resource appraisal, community needs assessment and gap analysis in livelihood and community resource use activities as well as gender mainstreaming;
- Link community organizations/interest groups with Government Departments, NGOs and private organizations for provision of needed inputs and services in livelihood development for income generation;
- Provide capacity building in gender mainstreaming, community fisheries and agricultural planning and livelihood activities;
- Facilitate preparation of community level investment plans;
- Facilitate linking of community organizations with Union, Upazila and District institutions, private sector and NGOs to improve community access to resources and investments in agriculture, fisheries, tourism and livelihood activities,
- Monitor and evaluate the implemented activities and made amendments in the activities accordingly.
- Plan, design and conduct capacity building/training/knowledge management programs for community activists, staff of different NGOs and Government Departments;
- Provide back up support to the community for utilization of trained skills;
- Liaise with project entities working in the target ECAs landscapes to ensure convergence of programs and funding within the landscapes.

Qualifications (indicative):

- University degree in social or gender related fields
- At least 10 years of experience in livelihood and participatory development in large-scale projects on livelihood initiatives, natural resource management, biodiversity conservation or social development in Bangladesh
- Close familiarity with the roles, activities, and priorities of the Government of Bangladesh, and other national partners, with regard to livelihood, gender mainstreaming and participatory development
- Demonstrated ability to work effectively with a broad range of stakeholders
- Demonstrated ability to work effectively under close supervision, as well as under minimal supervision
- Superior skills in organization and management, including past experience with planning, tracking, evaluation, and supervision of consultants and/or employees
- Strong skills in financial tracking and budget management
- Preferably have close familiarity with the operations and rules of UNDP
- Fluency in English and local languages, in reading, writing, and speaking.

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ANNEX 4: UNDP'S SOCIAL AND ENVIRONMENTAL SCREENING PROCEDURE

Project Information

Project Information	
1. Project Title	Implementing Ecosystem-based Management in Ecologically Critical Areas in Bangladesh
2. Project Number	PIMS 5854
3. Location (Global/Region/Country)	Bangladesh

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?

Briefly describe in the space below how the Project mainstreams the human-rights based approach

The project design mainstreams a human-rights based approach in the following ways:

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- By engaging with stakeholders in an inclusive, transparent and equitable manner by means of processes, protocols and other mechanisms that ensure either an open-door policy (e.g. consultation meetings) or representation of relevant, interested stakeholder groups. Consultation in the further design of this project will begin at the onset of the PPG process and a grievance procedure will be built into the project document for use, if necessary, during project implementation.
- By adopting and further enhancing the recent 2016 ECA Management Rules that define an institutional structure and process for managing ECAs, with committees established at all levels of government administration, from union to national levels.
- By designing and introducing a common framework for ECAs to be managed in compliance with achieving 'favorable ecological condition', based on ecological objectives and criteria identified and agreed as being necessary to achieve such status. This places the onus and responsibility for ECAs on their respective owners and/or managers of the ECA.
- By applying the 'polluter pays' principle for the first time in ECAs, demonstrating how this can be achieved in the case of the Halda River, which has been seriously degraded as a result of: poor urban waste management; withdrawal of irrigation water from the system and drainage of run-off containing chemical fertilizers and pesticides by the agricultural sector; and untreated chemical discharges from the industrial sector.
- By monitoring and reporting on the ecological condition of ECAs in a transparent manner and ensuring that the results are readily accessible by citizens via the Department of Environment's website and other means.

Across all Components, demonstration activities of the project include greater participation of local communities (particularly marginalized groups, rural women, farmers and fisher' cooperatives, NGOs/CSOs) through various capacity building strategies at the policy, program, monitoring and evaluation, knowledge management on biodiversity conservation, human rights, gender equality, and disadvantaged perspectives so that the provisions of the project is carried out and the intended results are achieved at the end of the project implementation period and beyond.

In the event community access to natural resources are impacted, the project will facilitate the development of a livelihood action plan early in project implementation to ensure that affected households are provided alternative livelihoods to match or exceed their current incomes through the proposed income and livelihood investments. All project interventions are gender-responsive, and do not further harm or impose drudgery on women, and radically alter traditional cultures.
Finally, principles of environmental governance, mutual accountability between rights holders and duty-bearers, rule of law are upheld through improved management of natural resources within the two biological corridors wherein will be implemented amongst others strengthening benefit-sharing arrangements, enhancing community decision-making, monitoring and self-enforcement to strengthen effectiveness.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

At the project preparation grant stage (PPG), UNDP as the GEF Implementing Agency recruited a Gender Specialist to ensure integration of the gender and gender mainstreaming actions in the GEF project planning processes and various stages of the project cycle; address the issues of inadequate sex-disaggregated data and statistics for development planning and programming; and underscore the stark gender differences that are evident in economic opportunities and access to and control over biodiversity resources and other productive assets, in decision-making power, as well as in vulnerability to biodiversity loss, climate change and natural disasters. A gender analysis was undertaken at PPG to determine the differentiated roles of rural women and men in natural resource management and biodiversity, agriculture, including the impacts of degrading biodiversity ecosystem loss and resource degradation. The gender analysis is based on: (1) stakeholder consultations held in

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selected ECA sites with strong participation of the affected communities (women and men members of various groups); development and environmental planners, and non-state actors; (2) desk review of key national policy documents; and (3) lessons learnt and recommendations from past gender assessment and studies done by the Government of the Bangladesh, UN agencies, development partners, non-state

The project design includes provisions that are likely to improve gender equality and women's empowerment in the following ways:

- By specifying the requirement for sex-disaggregated data in the RFA
- By developing a full gender analysis and gender mainstreaming action plan prepared during PPG for delivery during project implementation. This Plan will ensure that gender equity and social inclusion opportunities are maximized during project implementation.
- By ensuring that women are engaged in participatory consultative processes during the preparation of the Project Document (PPG) and, thereafter, by means of implementing the gender mainstreaming plan. Particular attention will be given to ensuring that representation of women on the ECA committees at local, union, upazila, district and national levels achieves parity and thereby women empowerment is upheld
- At the program and project level implementation arrangements, gender expertise will be solicited to provide guidance for gender mainstreaming, training and monitoring.
- Women representation in all capacity building workshops and training, as well as at any working group or committee for project implementation and monitoring will be ensured during implementation.
- Concerns of vulnerable groups, including women and girls as well as their voices are integrated in all relevant sections of the PRODOC towards maintaining inclusive approach in project designing, and then implementation and its monitoring.
- All vulnerable groups' needs, including women's, are incorporated into the project cycle at all the phases of the projects to ensure social and economic sustainability.

The project results framework contains measurable indicators related to gender equality and women's empowerment; an ATLAS gender marker of 2 has been applied to the project.

Briefly describe in the space below how the Project mainstreams environmental sustainability

The project will not adversely impact on environmental sustainability, rather it will promote, enhance and mainstream such sustainability in the following ways that are aligned mostly with **Standard 1 (Biodiversity Conservation and Natural Resource Management):**

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- The project will focus on developing an ecosystem-based management approach for ECAs, based on a common ecological framework that is adequately institutionalized and resourced through sustainable financing mechanisms. Application of the ecological framework will generate a set of ecological conditions determined as being necessary to maintain (or first restore and then maintain) the salient biodiversity features of each ECA, providing a basis for monitoring compliance towards achieving the management objective(s) for the site.
- Such a framework will be mainstreamed across all sectors of government, the private sector and civil society to safeguard wetland biodiversity, agro-biodiversity and production systems (i.e., agriculture and fisheries) from over-exploitation, infrastructural development, pollution, invasive alien species and other threats. Mainstreaming will be achieved largely through using the existing coordinating mechanism that has been successfully piloted by previous ECA projects, notably the GEF-financed CWBMP that is now institutionalized under the 2016 ECA Management Rules.
- In general, such measures are likely to benefit biodiversity, by preserving species and genetic diversity and protecting the integrity of natural ecosystems and production systems, all of which is beneficial to human well-being, livelihoods and economic prosperity.
- Strengthening capacities of communities and private sector for implementing effective biodiversity-friendly fisheries, agriculture and income generation, including alternative livelihood activities
- Improving awareness and knowledge and strengthening gender sensitive implementation, monitoring and evaluation as means to improve and sustain conservation impacts.
- Ensuring an adaptive management approach that progressively identifies and addresses threats to biodiversity and natural resources and associated challenges, including those related to ecological, demographical, climatic, market, technological, social and economic factors in the ECAs
- However, there may be short-term socio-economic cost associated with this paradigm shift towards an holistic ecosystem-based approach with respect to developing more sustainable livelihoods, through improvement in present practices or changing to alternative income-generating activities, and adopting a 'polluter pays' policy. It is these interventions that are highlighted in the project's design for repeated review during any further design of the project and its subsequent implementation to ensure that they are regularly monitored, re-assessed and appropriate adaptive measures taken as necessary.

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Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks?	QUESTION 3: What is the level of significance of the potential social and environmental risks?			QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?
Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses). If no risks have been identified in Attachment 1 then note "No Risks Identified" and skip to Question 4 and Select "Low Risk". Questions 5 and 6 not required for Low Risk Projects.	*Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			
Risk Description	***Impact and Probability (1-5)***	***Significance (Low, Moderate, High)***	***Comments***	***Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.***
Risk 1: The two ECAs have some degree of resource conflicts that could be exacerbated and result in inequitable or discriminatory for poor or marginalized people if activities are planned without adequate consultation and conflict resolution mechanisms and with consideration	I =3 P=2	Moderate	Assuming that those most dependent on natural resources for their livelihoods are the poorest and most marginalized members of society, they could be inequitably impacted by measures to	***In order to ensure that the project would not have inequality and discriminatory impacts (Principle 1: Question 2) and the risk of conflicts are managed (Principle 1: Question 8), the Project duration is proposed to be six years to account for time for negotiations and settlement of resource use conflicts. Nonetheless, the essence of the Project is really to minimize such 'conflicts' and ensure***

of the needs and aspirations of the marginalized groups SES Principle 1: Human Rights, Q2 and Q8.			make the paradigm shift from over-exploitation to sustainable use of natural resources in ECAs resulting in increased conflicts.	***synergy by developing a common framework for ecosystem management that is based on sufficient information, system of incentives, and mechanisms for resolving inconsistencies in natural resources use. Addition management actions include:*** (i) During management planning of ECAs, the project will ensure that project activities are detailed in collaboration with Upazila and Union governments and local communities, to define management and sustainable use of resources in a manner to avoid discrimination and inequalities and hence reduce conflict; (ii) The consultation and planning process will follow FPIC procedures to ensure that all concerns of all people are heard and adequately addressed (iii) A screening checklist based on the SESP that will be developed early in project implementation (to screen all investments to ensure that they comply with sound social and environmental principles and is sustainable; (iv) The project grievance redressal system (refer Section IV, Part iii of UNDP Project Document) provides a mechanism to address any specific community concerns and resolve conflicts.
Risk 2: Creation of ECA in Halda River and application of ECA rules and ECA management practices might potentially restrict access to resources	I =3 P=3	**Moderate**	With the improved management of ECAs and improved sustainable harvest regimes for multiple different uses, community	***To manage the risk from potential adverse impacts on human rights (Principle 1, Question 1); adverse impacts on affected populations (Principle 1, Question 2); restriction of availability, quality of access to resources (Principle 1, Question 3),***

or basic services, in particular for marginalized individuals or groups.			rights of access may be restricted in specific areas.	***exclude any potentially affected people (Principle 1, Question 4) and risk of economic displacement (Standard 5, Question 2) and affect on land tenure arrangements and/or community property/customary rights (Standard 5, Question 4) the Project will undertake following mitigation measures:***
SES Principle 1: Human Rights, Q1, Q3 and Q4 and Standard 5: Displacement and Resettlement Q2 and Q4				(i) During management planning of ECAs, the project will ensure that project activities are detailed in collaboration with Upazila and Union governments and local communities, including both men and women, to define management and sustainable use of resources in a manner to avoid limitations on existing community resource use rights and access;
				(ii) The management of sustainable use of resources (for fisheries, egg collection and farming) will be planned and managed under community governance mechanisms that will take into consideration current uses of these resources
				(iii) The development and use of a screening checklist for project investments based on SESP to screen all investments (including harvest limits) to ensure that they comply with sound social and environmental principles and ensure avoidance of restriction in access to the extent feasible;
				(iv) Project planning will ensure that decisions regarding restrictions, if any, on resource use will not be imposed, but will involve through an informed, transparent and consultative community consensus

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				building process (refer Annex 8), and any restrictions, if any will be adequately compensated to match or exceed loss of incomes or livelihoods. An alternative livelihood development plan (reflected in project budget) will be prepared early in project implementation (Year 1) for any households that are likely to be denied access to resources or current livelihood practice
				(v) Ensuring reaching consent with local communities regarding project investments; and (vi) The project grievance redressal system (refer Section IV, Part iii of UNDP Project Document) provides a mechanism to address any specific community concerns and resolve conflicts.
Risk 3: There is a risk that duty-bearers may not have the capacity to meet their obligations in the Project? SES **Principle 1: Human Rights, Q5**	I =3 P=3	**Moderate**	It is possible that third parties having a stake in the management of specific ECAs may not have the capacity or resources to address the ecological requirements necessary to restore the site to 'favorable ecological condition'. This might apply also to public and private sector bodies involved in activities that result in polluted water entering the catchment of an ECA. Such risks will be	***To ensure that government and local communities have capacity to meet obligations of the project (Principle1, Question 5), the project will support the following activities:***
				(i) Undertake capacity needs assessment (based on PPG capacity scorecard) in an inclusive manner to assess additional capacity needs of DOE, upazila, union and community requirements for effective planning and management of ECAs, based on which capacity building programs will be instituted
				(ii) Providing technical support to agencies to enhance the planning, management and monitoring of project investments

			assessed further on a case-by-case basis.	(iii) The management plans for two ECAs will define specific favorable conditions to meet this requirements, including the technical, institutional and capacity needs
				(iv) UNDP regular monitoring will assess any specific additional capacity needs and define measures to achieve same
				(v) The sustainability/financial plan will also provide a vehicle for determining the capacity and technical needs and potential financial mechanisms to achieve same
Risk 4: If Risks 1 and/or 2 apply, then women's ability to use natural resources within ECAs could be adversely affected. **SES Principle 2: Gender, Q4** Moreover, the potential for discrimination against women could be reproduced. **SES Principle 2: Gender, Q1 and Q2**	**I =3** **P=2**	**Moderate**	• Unless project implementation ensures that women and the vulnerable groups within the local population are engaged in consultation and their proposals form the core of projects proposals made under component, there is likelihood that women and marginalized groups would not be part of the decision-making process and benefit sharing agreements. •	***To ensure that project activities do not have adverse impacts on gender equality (Principle 2, Question 1); potentially cause discrimination against women based on gender (Principle 2, Question 2), and limit women's ability to use, develop and protect natural resources (Principle 2, Question 4) the project will institute the following actions:*** (i). Ensure that there is active participation of women, adolescent girls and youth in the planning phase of the project, a number of extensive consultations were held during the PPG stage to access the level of participation of women in the implementation phase of the project and to design measures to ensure their active participation in all stages of the project. (ii) The "*Gender Analysis and Mainstreaming Action Plan*" (Annex 6) discusses how perspectives, rights,

				and interests of men and women are addressed will be applied to ensure that the project contributes to gender equality and creates equitable opportunities for women and men at all levels of engagement.
				(iii) A gender and socially inclusive lens will be applied to every project activity and output to further analyze impacts on the rights of women and vulnerable peoples,
				(iv) Special investments would be planned based on women's requirements to ensure that they adequately benefit from project investments.
				(v) A series of capacity building programs would be conducted to enhance the capacity of women and vulnerable members to take an active part in the planning and decision making process at the ECA or sub-ECA levels.
				(vi) At the program and project level implementation arrangements, Gender consultant support will be acquired to training project and key Upazila and Union staff on approaches that ensure active participation in decision making on all aspects of the project, help develop monitoring mechanisms to monitor women's participation and benefit sharing
				(vii) Monitoring Plan and gender action plan have gender responsive indicators to access gender dimensions, including that the project scores a Gender Scorecard 2 Marker.
Risk 5: Inappropriate measures to restore wetlands, such as using exotic	I =3	**Moderate**	Unless properly screened project interventions can	***To ensure that project activities will not cause changes in habitats and ecosystem (Standard 1***

tree or mangrove species, could result in changes to habitats and ecosystem functioning. **SES Standard 1: Biodiversity Conservation, Q1 and Q5**	**P=2**		cause damage to native species and ecosystems	***Question 1) and risk introduction of introduced species (Standard 1 Question 5), the following measures will be implemented:*** i) **Preparation of rehabilitation and restoration plans** for the identified sites: Rehabilitation/restoration activities are planned in areas of degraded wetlands. The proposed restoration measures will ensure development of protocols that meet local and international criteria for ecological restoration and biodiversity conservation and which avoid the use of IAS. The restoration and rehabilitation plans will encourage the use of native species and restoration efforts. Communities will be made aware of adverse effects of exotic species on the natural ecosystems and environment. (ii) **The Preparation of a screening checklist** during early project implementation based on eligibility criteria for project investments developed to screen all investments to ensure that they comply with sound social and environmental principles and is sustainable.
Risk 6: Development activities (such as harvesting of terrestrial and aquatic resources) can have adverse impacts on species and habitats if not well implemented	**I =3** **P=2**	**Moderate**	Unless sustainable principles to restore and maintain wetlands in 'favorable ecological condition' are applied and enforced in terms of project interventions there is	***To ensure that project activities will not cause negative impacts to habitats and ecosystems (Standard 1, Question 1); proposed within or adjacent to critical habitats (Standard 1, Question 2); does not involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods (Standard 1, Question 3); pose risks to endangered species***

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SES Standard 1: Biodiversity Conservation, Q2, Q3, Q4, Q6, Q7, Q9			likelihood of loss of species and habitats	***(Standard 1, Question 4), that harvest are within sustainable limits and restoration actions are biodiversity-friendly (Standard 1, Question 6); involve the production and harvest of fish (Standard 1, Question 7) and utilization of genetic materials are managed (Standard 1, Question 9) the project has considered the following:***
				(i) The selection of target locations within the ECAs for project interventions will conform to the project's objective of 'enhancing the conservation of biodiversity through mainstreaming of biodiversity into planning policies and practices into ECAs. As a consequence project interventions will benefit from improved conservation, environmentally friendly agricultural and fisheries practices to reduce impacts on species and ecosystems, improved monitoring of species and ecosystem health, restoration of degraded wetlands with native species or through natural regeneration processes, and enhanced environmental stewardship of ECA resources by local communities.
				(ii) All community fisheries, agriculture and livelihood activities will take place outside the key biodiversity areas (spawning and nursery areas), within ECAs through appropriate zoning arrangements.
				(iii) The Preparation of a screening checklist developed using SESP will be applied to screen all investments to ensure that they comply with sound

				social and environmental principles and is sustainable. Such a checklist would also include the identification of investment location in relation to ECAs
				(iv) Setting acceptable sustainable limits on harvest of fisheries products based on status and health of such populations and establishment of monitoring protocols. These considerations have positioned the project into a framework of synergy between the natural environment and the actors within it.
Risk 7: Climate change may adversely influence the potential outcomes of project interventions. **SES Standard 2: Climate Change, Q2**	I= 4 P=4	High	Climate change impacts will be need to reviewed on a case-by-case basis, taking into account that certain interventions (e.g. mangrove restoration) may need to be enhanced in order to address anticipated impacts of climate change (e.g. sea level rise), while the same intervention may be aided by climate change (e.g. rising temperature).	***To ensure that the activities of the project are sensitive to potential climate change impacts (Principle 3, Standard 2, Question 2),*** the project will ensure the following: (i). The Implementation of participatory planning processes for ECAs based on ECA rules will be carried out ensuring that activities are environmentally sustainable and supporting best practices managed for their climate risks. These activities will be implemented through community participation that will encourage sustainable fisheries and climate smart agriculture, diversification of livelihoods, improved management of natural resources, eco-tourism businesses, water efficiency use and egg harvesting, etc. (ii) Improved ECA management and conservation practices would improve protection and management of critical ecosystems services as well

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				as wildlife habitat, which should help to increase the overall resilience of the natural systems to climate risks in the areas compared to business as usual.
				(iii) In terms of the Monitoring Plan, the condition of the natural ecosystems would be monitored to ensure that activities do not damage these sensitive ecosystems so that it is in a better overall situation to manage climate changes.
				(iv) Identify and encourage regulatory and voluntary measures to protect the wetlands. The Knowledge Management and Communications activities is a key framework to improve awareness of climate vulnerabilities and ensuring measures to address these as a means towards improving climate resilience
Risk 8: Management and control of urban waste, agro-chemical pollutants and untreated industrial waste may involve occupational health and safety risks, **SES Standard 3, Q1 and SES Standard 7, Q2**	I=3, P=2	**Moderate**	The dredging of an ox bow lake and removal and disposal of aquatic weeds could cause potential health risk to local communities	***To ensure that elements of project operation do not pose safety risks to local communities (Standard 3, Question 1) and the generation of wastes would be managed (Standard 7, Question 2), on the basis of the findings and recommendations of the ESIA that will be undertaken under Output 2.1 and the pollution study under Output 2.2 the following management actions will be taken:*** (i) The dredging of the ox-bow lake will be undertaken following consultation with local communities, including determination of safe disposal sites for the dredged materials; (ii) Contractual proposals for dredging of ox bow lake

				would require specific details on the transport and sites and methods for disposal of dredged materials. Evaluation of proposals would include specific consideration for transport and disposal of dredged materials and payment clauses included in the contract to ensure that such measures are followed.
				(iii) The PMU (with support from the local environmental entities) will monitor the transport and disposal of materials
				(iv) In terms of removal and disposal of water hyacinth from the lake, this will follow the same procedures as above (i) through (iii).
				(v) Every effort will be made to try to find alternative uses for the water hyacinth plant materials, including conversion to mulch and use as natural fertilizers

	QUESTION 4: What is the overall Project risk categorization?		
	Select one (see SESP for guidance)		**Comments**
	Low Risk	☐	
	Moderate Risk	☐	
			A total of eight risks have been identified, all but one of which have been assessed as moderate significance. The following safeguards are triggered (moderate risks): Principle 1: Human Rights, Principle 2: Gender Equality and Women's Empowerment, Principle 3, Standard 1: Biodiversity
	High Risk	☑	

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			Conservation and Natural Resource Management; Standard 2: Community Health, Safety and Working Conditions; Standard 5 Displacement and Resettlement; and Standard 7: Pollution Prevention and Resource Efficiency. The high risk is associated with Climate Change Mitigation and Adaptation; Standard 3:
			The overall project risk categorization is High
			This SESP template (Annex 4) will form the basis of the targeted assessment and will be updated as required. If the impacts are considered significant or cannot be managed by simple and practical mitigation measures that can be implemented within the capacity of the communities, these activities will be avoided. When impacts are easily manageable, the management plan for ECA would include responsibilities for ensuring oversight for these measures and monitoring of its implementation. The DOE oversees and evaluates the implementation of the ECA rules and the PMU will assess if social and environment screening has been adequate. Implementation of any social and environmental mitigation measures will be monitored by the Unions, Upazilas and PMU and reported annually, including actions taken. Annually supervision missions will assess the extent to which the risks have been identified and managed
			A gender assessment (Annex 6) has been completed along with a gender mainstreaming action plan. Implementation of the project gender action plan

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			will be integrated in all capacity building, livelihoods and other activities to ensure that institutions and individuals optimize gender outcomes. Gender consultant expertise will be available to ensure adequate gender mainstreaming and reporting
			Defined M&E and adaptive management procedures will be applied during project implementation. Key measures will include:
			• Ensuring capacity development and improved management effectiveness of ECAs and greater community participation and co-management.
			• Comprehensive stakeholder engagement plan that considers broad range of stakeholders and how to consult and engage them in project activities
			• All plans, tools and measures incorporate climate change adaptation considerations
			Support for safeguards and gender has been built into the project budget, the monitoring and evaluation framework and specific responsibilities allocated to Project Management Unit staff. Oversight for gender, environmental and social concerns will be provided by specialists who will be recruited for the PMU. The independent Mid-Term Review and Terminal Evaluation will be tasked to assess whether these mitigation measures have been met. This will be explicitly stated in the Terms of Reference of these consultancies.

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	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
	Check all that apply		**Comments**
	Principle 1: Human Rights	x	Referred to SESP Attachment 1: Principle 1. Questions 1, 2, 3, 4, 5 and 8; Standard 5, Questions 2 and 4 See Risk 1, 2 and 3. Ensuring effective consultation using FPIC prior to deciding on specific location, nature and scope of project investments, MOUs with communities to formalize investment agreements, use of grievance redressal mechanism and use of screening checklist and capacity development and technical support.
	Principle 2: Gender Equality and Women's Empowerment	☐	Referred to SESP Attachment 1: Principle 2. Questions 1, 2 and 4 See Risk 4: Gender disparities exist at project sites and could potentially be enhanced by project activities. A gender assessment has been completed along with a gender mainstreaming action plan. Implementation of the project gender action plan will be integrated in all capacity building, livelihoods and other activities to ensure that institutions and individuals optimize gender outcomes
	1. Biodiversity Conservation and Natural Resource Management	x	Referred to SESP Attachment 1: Standard 1, Question 1, 2, 3, 4, 5, 6 , 7and 9

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			See Risks 5 and 6: Criteria for the selection of locations for project intervention will be based on biodiversity values and the ability to manage same using the screening checklist (SESP) to ensure investments outside key biodiversity sites (spawning and nesting areas), ECA management planning define specific rules for location and nature of investments within ECAs; guidelines for sustainable harvest of fisheries products and monitoring of compliance and environmentally friendly natural regeneration of wetlands
	2. Climate Change Mitigation and Adaptation	x	Referred to SESP Attachment 1: Standard 2, Question 2 See Risk 7: Application of participatory community risk assessment and planning that will, inter alia, influence the choice of investment projects with considerations of their risks. Monitoring plan to ensure that the health of the eco-system and implementation of knowledge management and communication strategy to enhance public awareness and involvement in climate smart actions.
	3. Community Health, Safety and Working Conditions	☐	Referred to SESP Attachment 1: Standard 3 Question 1. See Risk 8: Ensuring safe transport and disposal of dredged materials in consultation with local communities and close monitoring of such contractual agreements to ensure compliance with agreed environmental standards

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4. Cultural Heritage	☐	
5. Displacement and Resettlement	☐	Referred to SESP Attachment 1: Principle 3: Standard 5, Questions 2 and 4 See Risk 2: Use of GRM, use of screening checklist (SESP) and culturally sensitive investments will be made and livelihood action plan if potential displacement is possible
6. Indigenous Peoples	☐	
7. Pollution Prevention and Resource Efficiency	☐	Referred to SESP Attachment 1: Standard 7 Question 2. See Risk 8: Ensuring safe transport and disposal of dredged materials in consultation with local communities and close monitoring of such contractual agreements to ensure compliance with agreed environmental standards

Final Sign Off

Signature	*Date*	*Description*
QA Assessor		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.

QA Approver		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

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SESP Attachment 1: Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks	
Principles 1: Human Rights	**Answer (Yes/No)**
1. Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	YES
2. Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? [39]	YES
3. Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	YES
4. Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	YES
5. Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	YES
6. Is there a risk that rights-holders do not have the capacity to claim their rights?	NO
7. Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	NO
8. Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	YES
Principle 2: Gender Equality and Women's Empowerment	
1. Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	YES
2. Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	YES

[39] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

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3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	NO
4.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	YES
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	YES
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	YES
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	YES
1.4	Would Project activities pose risks to endangered species?	YES
1.5	Would the Project pose a risk of introducing invasive alien species?	YES
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	YES
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	YES
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	NO
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	YES
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	NO

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1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? *For example, a new road through forested lands will generate direct environmental and social impacts (e.g., felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.*	NO
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[40] greenhouse gas emissions or may exacerbate climate change?	NO
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	YES
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	NO
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	YES
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	NO
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	NO
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g., collapse of buildings or infrastructure)	NO
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	NO
3.6	Would the Project result in potential increased health risks (e.g., from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	NO

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[40] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

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3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	NO
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	NO
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g., due to a lack of adequate training or accountability)?	NO
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	NO
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	NO
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	NO
5.2	Would the Project possibly result in economic displacement (e.g., loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	YES
5.3	Is there a risk that the Project would lead to forced evictions?[41]	NO
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	YES
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	NO
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	NO
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located	NO

[41] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

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	within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? *If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.*	
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	NO
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	NO
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	NO
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	NO
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	NO
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	NO
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	NO
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	YES
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	NO
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	NO
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	NO

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ANNEX 5: STAKEHOLDER ENGAGEMENT PLAN

The project included a wide range of consultations during the PPG stage. Initial stakeholder analysis during the PIF stage was followed up with consultation during the PPG stage in terms of the design of the project. During the PPG stage, the stakeholder analysis was updated and elaborated following consultations undertaken by international and national consultants addressing both institutional stakeholders in the context of their statutory involvement in the project, and more broadly for non-governmental stakeholders. Inception workshop on 28 July 2018 and validation workshop on 25 May 2019, including numerous consultations in the ECA to discuss the project design and reach general consensus on project outcomes, outputs, activities and institutional arrangements for the project. The list of stakeholders consulted has been downloaded in PIMS.

The purpose of Stakeholder Involvement Plan (SIP) for the project is the long-term sustainability of the project achievements, based on transparency and the effective participation of the key stakeholders. The objectives include the following: (a) to identify the main stakeholders of the project and their basic roles and responsibilities in relation to the project; and (b) to take advantage of the experience and skills of the main stakeholders and safeguard their active participation in different activities of the project to reduce obstacles in its implementation and sustainability after completion of the project. The approach is based on the principles of fairness and transparency in selection of stakeholders, ensuring consultation, engagement and empowerment of relevant stakeholders comprehensively for better coordination between them from planning to monitoring and assessment of project interventions; access of information and results to relevant persons; accountability of stakeholders; implementing grievances redress mechanism and ensuring sustainability of project interventions after its completion.

Stakeholder involvement is guided by the objective of the enhancement of opportunities for improving access and benefit sharing to caretakers of genetic resources and associated traditional knowledge to secure conservation of globally and national important biodiversity within Bangladesh, by improving incentives for local communities, including indigenous people to benefit from the wise use of these resources. The MOEFCC will be instrumental in establishing collaborative links with national and district, upazila and union entities, CSOs and local communities during the implementation of the project. MOEFCC will coordinate with district and local level stakeholders, may solicit the services of NGOs/Civil Society Organizations (CSOs) to support project activities.

Identification of Potential Stakeholders

The SIP was prepared through the identification of the stakeholders that would be involved as partners in the project. Stakeholders at national, district, upazila and union levels including relevant national and sub-national agencies, CSOs and local communities and others would be partners in project implementation.

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Role and responsibilities of key stakeholders and their Involvement Mechanisms and Strategies

Mechanisms and strategies for stakeholder involvement will ensure that the relevant shareholders receive and share information and provide their inputs in the planning, design, implementation, monitoring and evaluation of project initiatives and play a role in sustaining the initiatives during and after the closure of the project. Roles and responsibilities of main stakeholders of the project are summarized in Tables 4 and 5 of the UNDP Project Document. Early in project implementation, MOEFCC will develop a more detailed Stakeholder Engagement plan that would detailed to ensure (i) specific ways to involve stakeholders in project planning, implementation and monitoring; (ii) engagement of stakeholders in social and environmental screening and risk monitoring; (iii) ensuring free, fair and transparent methods of information sharing and accessibility; (iv) implementation of gender mainstreaming strategy and action plan; (v) measures to empower stakeholders and potential project beneficiaries; and (vi) information disclosure.

The following initiatives would be taken to ensure participation of stakeholders in project activities:

Project inception workshop

Project stakeholders would participate in the multi-stakeholder inception workshop within three months of the start of the project. The purpose of this workshop would be to create awareness amongst stakeholder of the objectives of the project and to define their individual roles and responsibilities in project planning, implementation and monitoring. The stakeholders would be acquainted with the most updated information (objectives, components, activities, roles and responsibilities of stakeholders, financial information, timing of activities and expected outcomes) and the project work plan. The workshop will be the first step in the process to build partnership with the range of project stakeholders and ensure that they have ownership of the project. It will also establish a basis for further consultation as the project's implementation commences. The inception workshop will address a number of key issues including: assisting all partners to fully understand and take ownership of the project; detail the roles, support services and complementary responsibilities of the government agencies like the DoE, Forest Department, MoA, MoFL, MoL, MoLGRDC, MoSW, MoWR, district and other sub-national entities, UNDP, CSOs, local communities/community in terms of implementation of sustainable fisheries, agriculture, livelihoods and other natural resources practices and discussion of the roles, functions, and responsibilities within the project structure, including reporting and communication lines, monitoring and conflict resolution mechanisms.

Stakeholder Participation and Communication Strategy

A comprehensive communication, education and public awareness (CEPA) strategy and action plan will be developed for the project to facilitate awareness, review and informing

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of policy and practices for wetland related activities. The project will develop and implement and maintain a communications and knowledge management plan to ensure that all stakeholders are informed on an ongoing basis about: the project's objectives; the projects activities; overall project progress; and the opportunities for involvement in various aspects of the project's implementation. This strategy will ensure the use of communication techniques and approaches that appropriate to the local contexts such as appropriate languages and other skills that enhance communication effectiveness. The project will develop and maintain a web-based platform for sharing and disseminating information on wetland conservation, biodiversity conservation, sustainable natural resources management, diversified livelihoods and ecotourism.

Quarterly Meetings with key stakeholders

On quarterly basis, MOEFCC will organize individual meetings with the main stakeholders including groups of local communities (CBOs, interest groups, etc.) with the aim of discussing achievements, challenges faced, corrective steps taken and future corrective actions needed for the implementation of planned activities. It would be ensured that the groups of local communities have the participation of women among the local communities. Result based management and reporting would consider inputs taken from stakeholders during such meetings.

Sharing Progress reports and work-plans

Copies of the annual and quarterly progress reports and work plans would be circulated to main stakeholders to inform them about project implementation and planning and outcomes.

Stakeholder consultation and participation in project implementation

An extensive stakeholder consultation and participation process will be developed and implemented for the project.

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ANNEX 6: GENDER ANALYSIS AND MAINSTREAMING ACTION PLAN (GAAP

Gender Analysis

The two intervention areas (Morjat Baor and Halda River) of the Project "Implementing Ecosystem Based Management in Ecologically Critical Areas in Bangladesh" have distinct vulnerabilities both environmental and social which affect women, adolescent boys and girls, youth, elderly and other communities inequitably. With respect to Morjat Baor women, adolescent and young girls are experiencing deprivation, discrimination and exclusion mainly because of societal and religious misinterpretations. In case of Halda, the said population is completely unaware of any kind of human made environmental degradation. They need 'eye opening' that as a human being they also have a role to protect the Halda environment for the sake of ecological comfort of their families and for protecting family food security in a sustainable manner.

The Morjat baor is co-managed by local Fishery Department (DoF) and the 150 member fishermen cooperative. The benefit from artificial fish farming with carps is distributed at a ratio of 60:40 for the government and fishermen. In the 2017-2018 fiscal year, this share was BDT 3,180,000 for the government and BDT 2,072,000 for the fishermen. This translates into an annual benefit of BDT 13,813 per fisherman. It is important to describe the total fishing benefits from the baor. The carps they produce in the baor are termed as *Raja Mach* (King Fishes). All the other fishes that are naturally growing the baor are called *Rani Mach* (Queen Fishes). Government doesn't have any share in the Queen Fish benefit; that is, 100% benefit available through Queen Fish goes to the fishermen. In FGDs conducted in this study, the fishermen stated that the benefit obtained from Queen Fish is at least 4-5 times (let's take the minimum average, 4.5) the benefits available through King Fish. That means the annual benefit per fisherman from Morjat Baor is BDT 75,973. (Source: A brief account of Morjat Baor, Bangladesh, Dr Mahfuz, 2018). Women of the fisher community are mostly engaged in household reproductive activities (cooking, cleaning, etc.) while some of them do fish net making and not at all directly or remotely contributing to fish management.

Morjat Baor has been suffering from a couple of natural and anthropogenic threats, such as Water hyacinth infestation, excessive and increasing rate of siltation, water pollution and fish mortality; and eutrophication and algal growth. If not addressed properly, these will result in decreased fish production, increased cost of fish production, increased fish price thus lowering demand for fish and all these together will increase poverty situation of the fish farmers living on the two sides of Morjat Baor. The eventual gendered impacts of all these will be family poverty, male migration, increased school drop-out particularly by girls, degraded gender relations, women's increased social vulnerability (dowry, divorce, multiple marriage, forced labour, child marriage, etc.).

Professor Manjoorul Kibria of Chittagong University and Halda Researcher said in a recent Press Conference that on average, one litre of water contains 0.05mg of oxygen, but Halda water currently contains less than 0.02mg of oxygen, which is not suitable for aquatic animals to survive in the river. Describing the pollution as an ominous sign, the Halda

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researcher said the river will face dire consequences in the future if steps are not taken to check it. Water pollution due to release of industrial waste from nearby paper mills, tannery, tobacco processing, dying industry and agricultural pollution due to use of pesticide and insecticides is happening. Furnace oil released from power plant creates breathing problem for fish. Sluice gates are not operated properly, and the connected canals have now huge siltation which together with rubber dam that slows water flow during spawning time at the end of dry season has a negative effect on the lives of fish habitat. River dredging horrifies fish and some of them die. The river had been straightened by cutting curves for better water traffic but that created problem for mother fish to breed egg. People do not adhere to the ban on catching mother fish.

Discussion with fish egg business community (November 2018) of Halda revealed the reality that women engagement in fish culture is not socially and religiously acceptable. Though strong patriarchal attitude prevails, school going young girls were found aware of the problems that are caused by factories and by non-functional sluice gates. Community men informed the visiting team that there is a Halda Rakkha Committee where fisherman, fish specialists, journalists and people living on the bank of Halda are representing. They opine that at least local women representatives and women from fishermen community can be included in that committee not for the sake of inclusion only but to be benefitted from their merit also. This will give women opportunity for their voices to be heard as they will receive opportunity to know the socio-economic and environmental problems better.

Both Noujuwan and IDF (local NGOs) provide micro-credit to community women and men where men are the receivers and women are the utilizers of the credit money. To ensure women entrepreneurship, cool chain and strong market link are obvious necessity. Women are engaged in small scale agriculture. The 3-point recommendations on gender development that are put forward with strong support from the community are: Local leaders, political elites and influential persons (mostly men) need to be made gender aware. HE4SHE approach to be applied; Women engagement as watchperson for fish catching and sluice gates operators is a possibility though will need community motivation; Participation of women leaders (lead women entrepreneur, UP Member, etc.) in Halda Prevention Committee should be ensured.

Keeping in view the differential nature and impacts of environmental degradation affecting the ecology, this gender analysis focuses on 4 domains of empowerment – (i) Access to Information relating to present condition, future possible threats and participatory problem solving; (ii) Development of alternative livelihood skills both for women, men and youth; (iii) Participation in conservation of natural resources like Halda River and Morjat Baor; and (iv) Leadership development.

Following have been suggested in the Project Gender Action Plan:

- Consultation with local level women leaders - UP and Union Parishad members, UP Standing Committee women, women and youth development organizations to determine special features and favourable ecological conditions of ECAs;

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- Proactive inclusion of local women to design strategies to monitor ecological compliance;
- Focus on support for the most vulnerable HHs in communities in resource use and development planning
- Strengthen coordination among local level women Farmers Field Schools, Gender and Development Standing Committee, Climate change and Environment Management Committee of the Upazila/Union Parishad; local level networks like Mothers' Club, Youth Club, School and College brigades towards management of Ecosystem.
- Proactive inclusion of women participants in related capacity development activities.

- Designing and implementation of capacity development activities for women (identification of ecosystem-based issues that particularly affects women's lives adversely, determining strategies/programs to address those problems, doing cost benefit analysis of the strategies/programs/projects, developing proposals and submission of proposals to appropriate authority for funding).
- Proactive engagement of women in program/project management activities.

- Proactive inclusion of women in doing environmental assessments.
- Consultation with women's groups of communities affected by ecosystem degradation for sustaining their livelihoods.
- Capacitating national (Ministry, Departments) and local level women leaders in doing socio-economic cost benefit analysis of ecosystem-based livelihoods for ecology sensitive planning and project management.
- Proactive engagement of women from selected ECAS in updating and preparing ecological actions and financing plans.
- Proactive formulation of women's brigade to protect and conserve biodiversity;
- Implement capacity building programs for women on bio-diversity conservation strategies, trainings should be organized at women friendly locations and time.

Also, ensure that ECA specific Girls and Youths networks get access to information and can participate in monitoring; Ensure participation of women and adolescent young girls in orientations on use of portals and aps; Ensure inclusion of gender aspects in training modules and manuals; Ensure participation of women officials/staff of DoE; women representatives of district, upazila and union ECA Committees, industries and business enterprises, farmers, VCG and communities involved in co-management) for future inclusive mainstreaming of Ecosystem-based management in all ECAs; Inclusion of Women in committees for maintaining favourable bio-diversity condition.

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Table 1: Proposed actions to facilitate and support mainstreaming gender into project outputs are identified in the table below.

Outcome/ Output	Responsible	Gender Mainstreaming Actions
OUTCOME 1: Ecosystem-based framework applied to the planning and management of ECAs, institutionalized and operational across all relevant sectors of Government and other parties having vested interests (industries, farmers, landowners).		
Output 1.1: Improved ecological framework for effective planning and management of ECAS	UNDP/PMU	ii. Consultation with local level women leaders - UP and Union Parishad members, UP Standing Committee women, women and youth development organizations to determine special features and favorable ecological conditions of ECAs; iii. Proactive inclusion of local women to design strategies to monitor ecological compliance; iv. Focus support on resource use and development planning on most vulnerable HHs in communities
Output 1.2: Strengthened institutionalization and multi-sector coordination at national, district, upazila, union and community levels.	UNDP, FD, DoF, DoE, other sector agencies (plantations, agriculture, tourism), private sector	(i) Strengthen coordination among local level women Farmers Field Schools, Gender and Development Standing Committee, Climate change and Environment Management Committee of the Upazila/Union Parishad; local level networks like Mothers' Club, Youth Club, School and College brigades towards management of Ecosystem. (ii) Proactive inclusion of women participants in related capacity development activities.
Output 1.3: Sustainable financing strategy for ECAs development and implemented	UNDP, PMO	(iii) Designing and implementation of capacity development activities for women (identification of ecosystem-based issues that particularly affects women's lives adversely, determining strategies/programs to address those problems, doing cost benefit analysis of the strategies/programs/projects, developing proposals and submission

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Outcome/ Output	Responsible	Gender Mainstreaming Actions
		of proposals to appropriate authority for funding). (iv) Proactive engagement of women in program/project management activities.
Gender indicators: • Women's voices are heard. • Improved competence of women in identification, apprising, and implementation and monitoring of Ecological conservation programs. • Women managers of ecosystem projects.		
OUTCOME 2: Improved ecological condition of target ECAs (Halda River, Hakaluki Haor, Morjat Baor, Sunamganj), reflecting enhanced technical capacity, increased staff resources and more effective compliance with ECA legislation, regulations and management plans		
Output 2.1: Strategic environmental assessment (SEA) undertaken in selected ECAs, including economic valuation of eco-system goods and services (or opportunity costs in the case of dysfunctional ecosystems)	UNDP, PMO, FD, DoF, I/NGOs, women groups	(v) Proactive inclusion of women in doing environmental assessments. (vi) Consultation with women's groups of communities affected by ecosystem degradation for sustaining their livelihoods.
Outcome 2 Improved livelihoods of ECA communities adjacent to and within immediate catchment of ECAs with respect to water, energy and food security, reflecting restored and sustainably managed ecosystems that are functionally able to supply goods and services.		
Output 2.1: Participatory, ecosystem-based, management planning process designed and facilitated, with provisions for co-management by local communities, NGOs, private enterprises and other government sectors, as appropriate and agreed among key stakeholders.	UNDP, PMO	(vii) Capacitating national (Ministry, Departments) and local level women leaders in doing socio-economic cost benefit analysis of ecosystem-based livelihoods for ecology sensitive planning and project management.

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Outcome/ Output	Responsible	Gender Mainstreaming Actions
Output 2.2: Management plans (5 years) prepared/updated for target site(s), including favourable ecological condition protocols and with associated action and financing plans.	UNDP, PMO and relevant ministries/ departments both national and local	(viii) Proactive engagement of women from selected ECAS in updating and preparing ecological actions and financing plans.
Output 2.3: Range of activities piloted in each target ECA to enhance: protection of biodiversity and ecosystem functions; compliance with ECA policy, laws and regulations; and, through more sustainable or alternative practices, to improve livelihoods.	UNDP, PMO	(ix) Proactive formulation of women's brigade to protect and conserve biodiversity. (x) Implement capacity building programs for women on bio-diversity conservation strategies, trainings should be organized at women friendly locations and time.
Output 2.4: Monitoring systems designed and operational to track: • Biodiversity and ecosystem status of ECAs, • Compliance with measures agreed in management plan for achieving/maintaining 'favourable condition', and • Well-being of ECA communities **NB** These systems to be compatible and integral with Output 3.1.2		(xi) Requirement for gender disaggregated information on socio-economic aspects of landscapes, resource use and livelihoods for monitoring biodiversity and ecosystem status of ECAs. (xii) Inclusion of Women in committees for maintaining favourable bio-diversity condition.
Gender indicators: • Stakeholder committees established include at least one female community / CBO representative. • Working Group specifically to monitor well-being of women (undisturbed livelihoods).		
OUTCOME 3. Institutional capacity to effectively administer and monitor status of ECAs to safeguard biodiversity and secure ecosystem services		

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Outcome/ Output	Responsible	Gender Mainstreaming Actions
Output 3.1: Communication Strategy and Action Plan developed in Year 1	UNDP, PMO, sector departments, CBOs, I/NGOs	(xiii) Ensure easy access to ECA specific ecosystem and biodiversity related information by women. (xiv) Awareness raising on how to use biodiversity and ecosystem-based information to sustain livelihoods. (xv) Women friendly communication strategy.
Output 3.2: National, spatial, web-based information and monitoring system for ECAs established and operational to inform and monitor ECA planning, management and compliance.	INDP, PMO, Portal Office established in M/o EFCC	(xvi) Ensure easy access to web-based information by rural women. (xvii) Ensure that ECA specific Girls and Youth networks can access information and participate in monitoring. (xviii) Ensure participation of women and adolescent young girls in orientations on use of portals and aps.
Output 3.3: Modular training program, informed by competency-based Needs Assessment for ECA stakeholders (e.g. DoE, district, upazila and union ECA Committees, industries and business enterprises, farmers, VCG and communities involved in co-management), designed, operational and institutionalized within relevant organization (s) to underpin future mainstreaming of Ecosystem-based management in all ECAs.	UNDP, PMO, Ministry of EFCC and selected public and private training institutes.	(xix) Ensure inclusion of gender aspects in training modules and manuals. (xx) Ensure participation of women officials/staff of DoE; women representatives of district, upazila and union ECA Committees, industries and business enterprises, farmers, VCG and communities involved in co-management) for future inclusive mainstreaming of Ecosystem-based management in all ECAs.
Gender indicators: • Gender mainstreamed in Ecosystem-based management in ECAs.		

The 2 important **Gender indicators that to be monitored during implementation and beyond the Project period are:**

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- Effective participation of men and women leaders (local government, elite class and private sector, etc.) in ecological management of Halda and Morjat.
- Well-equipped inhabitants both women, men, young, adolescent boys and girls with alternative marketable livelihood skills towards managing year round family food security/socio economic security.

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Table 2: Gender Action Plan

Gender mainstreaming objective	Gender Mainstreaming Activities	Gender Mainstreaming Target
OUTCOME 1.: Ecosystem-based framework applied to the planning and management of ECAs, institutionalized and operational across all relevant sectors of Government and other parties having vested interests (industries, farmers, landowners). **Output 1.1:** Improved ecological framework for effective planning and management of ECAs		
Inclusive ecological framework for sustainable management of ECAs.	(i)Consultation with local level women leaders - UP and Union Parishad members (UP), UP Standing Committee women, women and youth development organizations to determine special features and favourable ecological conditions of ECAs; (ii)Proactive inclusion of local women to design strategies to monitor ecological compliance; (iii)Focus on support for the most vulnerable HHs in communities in resource use and development planning **Actions by**: UNDP/PMU; Gender Consultant	(i)30% women UP members, 30% members of Gender and Development Committee of UP, 50% of all the existing local level women and youth development organizations at the Project locations to be consulted. (ii)30% of the women local leaders and vulnerable households; and women officials from sector-specific government offices. (iii)100% women heads of vulnerable households.
Output 1. 2: Strengthened institutionalization and multi-sector coordination at national, district, upazila, union and community levels.		

Gender mainstreaming objective	Gender Mainstreaming Activities	Gender Mainstreaming Target
Participation of local level women's organizations and various networks in related capacity development programs towards effective management of ecological issues.	(i)Strengthen coordination among local level women Farmers Field Schools, Gender and Development Standing Committee, Climate change and Environment Management Committee of the Upazila/Union Parishad; local level networks like Mothers' Club, Youth Club, School and College brigades towards management of Ecosystem. (ii)Proactive inclusion of women participants in related capacity development activities. **Actions by**: UNDP, FD, Dept. of Fisheries, DoE, other sector agencies (plantations, agriculture, tourism, relevant private sectors etc.); Gender Consultant	(i)30% women members from local level socio-economic and environment management committees, clubs, school and college management committees and students' brigades. (ii)In all capacity development activities 30% women participation to be ensured.

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Output 1.3: Sustainable financing strategy for ECAs development and implemented		
Improved competence of women in identification, apprising, and implementation and monitoring of Ecological conservation programs; and then lead ecosystem projects.	(i)Designing and implementation of capacity development activities for women on sustainable financing strategy (identification of ecosystem-based issues that particularly affects women's lives adversely, determining strategies/programs to address those problems, doing cost benefit analysis of the strategies/programs/projects, developing proposals and submission of proposals to appropriate authority for funding). (ii)Proactive engagement of women in program/project management activities. **Action by**: UNDP, PMO; Gender Consultant	30% participants in all financing strategy development orientations to be women. And they should be from Planning Cells of ministries (Agriculture; Environment, Forest and Climate Change; Fisheries and Livestock; Forestry; Environment; Women and Children Affairs; Local Government, Rural Development; Youth Development, etc.). Also, women officials from local level relevant government departments to participate in the orientations.
OUTCOME 2.: Improved ecological condition of target ECAs (Halda River, Hakaluki Haor, Morjat Baor, Sunamganj), reflecting enhanced technical capacity, increased staff resources and more effective compliance with ECA legislation, regulations and management plans. **Output 2.1:** Strategic environmental assessment (SEA) undertaken in selected ECAs, including economic valuation of eco-system goods and services (or opportunity costs in the case of dysfunctional ecosystems)		
Knowledge on Strategic Environmental Impact Assessment of women officials	Proactive inclusion of women in doing environmental assessments. **Action by:** UNDP, PMO, FD, DoF, I/NGOs, women groups; Gender Consultant	30% women officials from relevant ministries, departments and agencies.

working in ministries and also local level women leaders are strengthened.		
Output 2.2: Participatory, ecosystem-based, management planning process designed and facilitated, with provisions for co-management by local communities, NGOs, private enterprises and other government sectors, as appropriate and agreed among key stakeholders.		
Women empowerment through their effective engagement in co-management of bio-diversity/ecology.	(i)Capacitate national (Ministry, Departments) and local level women leaders in doing socio-economic cost benefit analysis of ecosystem-based livelihoods for ecology sensitive planning and project management. (ii) Organize consultations with women of local communities, NGOs, private enterprises and government sectors for designing ecosystem-based management process. **Action by**: UNDP, PMO, Gender Consultant	(i)30% local level women leaders and representatives from vulnerable households. (ii) In all consultations 30% participants should be women.
Women empowerment through their participation in preparing ecosystem management plans.	Proactive engagement of women from selected ECAS in updating and preparing ecological actions and financing plans. **Action by**: UNDP, PMO and relevant ministries/departments both national and local; Gender Consultant	30% women participation in preparing ecosystem management plans.

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Output 2.3: Range of activities piloted in each target ECA to enhance: protection of biodiversity and ecosystem functions; compliance with ECA policy, laws and regulations; and, through more sustainable or alternative practices, to improve livelihoods.		
Women are capacitated to pilot project to protect biodiversity and ecosystem functions.	(i)Proactive formulation of women's brigade and strengthen their capacity to protect and conserve biodiversity; (ii)Implement capacity building programs for women on bio-diversity conservation strategies; trainings should be organized at women friendly locations and time. UNDP, PMO, Gender Consultant	30% women participation to be ensured; and also women-only trainings to be organized. All vulnerable women to be accessed in trainings on alternative income generating activities.
Economic empowerment of women ensured.	(i)Vulnerable women are trained on alternative income generating activities with cost-benefit calculations – duck rearing, goat rearing, home based embroidery and tailoring, climate resilient vegetable gardening, hydroponic vegetation, cage fish culture, etc.	
Output 2.4: Monitoring systems designed and operational to track: • **Biodiversity and ecosystem status of ECAs,** • **Compliance with measures agreed in management plan for achieving/maintaining 'favourable condition', and Well-being of ECA communities**		

Gender inclusive monitoring systems designed and operational.	(i)Requirement for gender disaggregated information on socio-economic aspects of landscapes, resource use and livelihoods for monitoring biodiversity and ecosystem status of ECAs. (ii)Inclusion of Women in committees for maintaining favourable bio-diversity condition. (iii)Ensure gender sensitive data generation and monitoring project effects. Action by: UNDP, relevant government department, project Gender Consultant	All sorts of data generation, monitoring tools and indicators should be gender inclusive.
OUTCOME 3: Institutional capacity to effectively administer and monitor status of ECAs to safeguard biodiversity and secure ecosystem services		
Output 3.1: Communication Strategy and Action Plan developed in Year 1		
Women lead local level organizations are strengthened to monitor status of ECAs to safeguard biodiversity and secure ecosystem services.	(i)Ensure easy access to ECA specific ecosystem and biodiversity related information by women. (ii)Awareness raising on how to use biodiversity and ecosystem-based information towards sustaining livelihoods. (iii)Women friendly communication strategy. **Action by**: UNDP, PMO, sector departments, CBOs, I/NGOs; Gender Consultant.	100% women of vulnerable households.
Output 3.2: ECA Management, Monitoring & Compliance Unit established within DoE		

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Output 3.3: Modular training program, informed by competency-based Needs Assessment for ECA stakeholders (e.g., DoE, district, upazila and union ECA Committees, industries and business enterprises, farmers, VCG and communities involved in co-management), designed, operational and institutionalized within relevant organization (s) to underpin future mainstreaming of Ecosystem-based management in all ECAs.		
Gender sensitive modular training programs are designed to underpin future mainstreaming of ecosystem-based management.	(i)Ensure inclusion of gender aspects in training modules and manuals. (ii)Ensure participation of women officials/staff of DoE; women representatives of district, upazila and union ECA Committees, industries and business enterprises, farmers, VCG and communities involved in co-management) for future inclusive mainstreaming of Ecosystem-based management in all ECAs. **Actions by**: UNDP, PMO, Ministry of EFCC and selected public and private training institutes; Gender Consultant.	(i)100% training modules, manuals and illustrations are gender sensitive. (ii)30% women representation in co-management.
Output 3.4: National, spatial, web-based information and monitoring system for ECAs established and operational to inform and monitor ECA planning, management and compliance. (Portal linked to M/o EFCC)		
Women friendly web-based information system established and accessed.	(i)Ensure easy access to web-based information by rural women. (ii)Ensure that ECA specific Girls and Youths networks get access to information and can participate in monitoring. (iii)Ensure participation of women and adolescent young girls in orientations on use of portals and aps.	100% relevant women, girls and youth should have easy access to web-based information.

	Action by: UNDP/PMU/ Gender Consultant	

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ANNEX 7: UNDP RISK LOG

Note: Red = High Risk, = Medium Risk, Green = Low Risk

Risk No.	Description	Date Identified	Type	Impact & Probability	Mitigation measures	Owner	Submitted, updated by	Last Update	Status
1.	Government's limited finances and capacity to effectively fulfill its mandate to protect ECAs by enforce compliance with legal provisions, hence the long-term unsustainability of project interventions.	10 May 2019	Operational Financial	I=3, P=3 Moderate	Consolidating and expanding government's capacity to address its environmental pollution control responsibilities, particularly in the case of wetland ECAs that are the focus of this project, will be underpinned by a sustainable Financing Strategy. This will be targeted at the national five-year planning level and effective enforcement of the polluter-pays principle, using policies (existing and new) and mechanisms to incentivize pollution reduction and mitigation measures. The strategy will be informed by assessing costs of its delivery versus financial benefits of having rivers with relatively clean (unpolluted) water that can be used for local consumption, irrigation, and public water supplies. In addition, the project will look at establishing public-private partnerships to support collaborative efforts to reduce their impact on this river and its catchment through demonstrating operating practices, processes and management schemes that result in positive outcomes for both business and the aquatic environment. Application of a 'polluter pays' principle is acknowledged but not widely expressed in Bangladesh environmental legislation, but the 1995 Environment Conservation Act enables the Director General to determine compensation from persons causing environmental damage and for them to take corrective measures. The project also entails under Output 2.1 to (i) identify and evaluate potential PES opportunities, particularly in relation to public water supplies for Chittagong City and the fisheries and (ii) undertake an economic valuation of the benefits generated from functioning ecosystems and, in the case of dysfunctional ecosystems, the unrealized opportunity costs. Such demonstration and studies will help make the economic case for more private and public financing (beyond the MoEFCC) to support management of ECAs. Further Output 2.2 will help demonstrate sustainable economic activities (fisheries, agriculture, and livelihoods) that can have a positive impact on ECAs as a means to facilitate replication and uptake.	Project Director (PD)	22 May 2019		

Risk No.	Description	Date Identified	Type	Impact & Probability	Mitigation measures	Owner	Submitted, updated by	Last Update	Status
2.	Government may be unable to provide adequate human resources and technical capacity to support implementation of the project and beyond.	10 May 2019	Capacity	I=3, P=3 Moderate	Government considers this project to be a priority for Bangladesh. It will be important, therefore, to ensure that the full-size project is designed appropriately to match the capacities of government during the initial years of implementation. Thus, the project will support creation of an ECA Standards, Management & Compliance Unit during its inception to benefit from training and implementation activities from project outset. Thereafter, implementation of the Financing Strategy should provide for institutionalization of this Unit, as well as the project's modular training program in wetland management, monitoring and enforcement, as part of the project's exit strategy.	Project Director (PD)	22 May 2019		

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Risk No.	Description	Date Identified	Type	Impact & Probability	Mitigation measures	Owner	Submitted, updated by	Last Update	Status
3	Engagement with the private sector limited and insufficient to secure ownership from major polluting industries to reverse trends in declining water quality during life of project.	10 May 2019	Operational	I=4, P=3 High	This initiative of the project to demonstrate how pollution of wetlands can be reversed by tackling point sources of pollution, notably from industrial waste and untreated sewage, will be a huge challenge as it places responsibility on the polluter to pay for the costs of removing pollutants from water before discharging them into rivers and other water bodies. The project will take the following steps towards maximizing awareness, transparency, accountability and equitability: • Establish a platform for engaging with the private sector, specifically the Halda River Impact Group under the auspices of the Chittagong Chamber of Commerce & Industry. This Group will set up a Trust Fund and collaborate closely with the relevant ECA Committees at District and Upazila levels in the deployment of its funds. • Design or adopt a water quality monitoring framework and sampling program for Halda River, using indicators that meet international standards, in collaboration with the Ministry of Water Resources. • Introduce regulations under the 2016 ECA Management Rules to apply these water quality standards and begin to enforce compliance, • Work with the large industries polluting the Halda River, to prepare them ahead of the 'polluter pays' principle being enforced. • Conditions for, and identify targets for mid-term and end of term. This should be undertaken by MoEFCC or contracted out to an independent body. Set up an independent multi-sector national ECA Scientific Advisory Panel to support the national ECA Committee, DoE's SMCU and sectors that have most impact on wetlands and other water bodies.	Project Manager (PM)	22 May 2019		

Risk No.	Description	Date Identified	Type	Impact & Probability	Mitigation measures	Owner	Submitted, updated by	Last Update	Status
4	The two ECAs have some degree of resource conflicts that could be exacerbated and result in inequitable or discriminatory for poor or marginalized people if activities are planned without adequate consultation and consideration of the needs and aspirations of marginalized groups .	10 May 2019	Social	I=3, P=2 **Moderate**	Risk 4 assumes that those most dependent on natural resources for their livelihoods are the poorest and most marginalized members of society, they could be inequitably impacted by measures to make the paradigm shift from over-exploitation to sustainable use of natural resources in ECAs. Risks will be managed by (i) ensuring that project activities are detailed in collaboration with Upazila and Union governments and local communities, to define management and sustainable use of resources in a manner to avoid discrimination and inequalities and hence reduce conflict; (ii) consultation and planning process will follow FPIC procedures to ensure that all concerns of all people are heard and adequately addressed; (iii) screening checklist based on the SESP that will be developed early in project implementation (to screen all investments to ensure that they comply with sound social and environmental principles and is sustainable; and (iv) project grievance redressal system provides a mechanism to address any specific community concerns and resolve conflicts.	Project Manager (PM)	22 May 2019		
5	Creation of ECA in Halda River and application of ECA rules and ECA management practices might potentially restrict access to resources or basic services, in particular for marginalized individuals or groups.	20 May 2019	Social	I =3, P=3 **Moderate**	Risk 5 will be managed through (i) ensuring that project activities are detailed in collaboration with Upazila and Union governments and local communities; (ii) management of sustainable use of resources (for fisheries, egg collection and farming) planned and managed under community governance mechanisms that will take into consideration current uses of these resources; (iii) use of a screening checklist for project investments based on SESP to screen all investments (including harvest limits) to ensure that they comply with sound social and environmental principles and ensure avoidance of restriction in access to the extent feasible; (iv) planning will ensure that decisions regarding restrictions, if any, on resource use will not be imposed, but will involve through an informed, transparent and consultative community consensus building process, and any restrictions, if any will be adequately compensated to match or exceed loss of incomes or livelihoods. An alternative livelihood development plan will be prepared early in project implementation (Year 1) for any households that are likely to be denied access to resources or current livelihood practice; (v) use of FPIC procedures in line with international norms (and defined in Year 1) to ensure consent regarding project investments and grievance redressal system as a mechanism to address any specific community concerns and resolve conflicts.	Project Manager (PM)	22 May 2019		

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Risk No.	Description	Date Identified	Type	Impact & Probability	Mitigation measures	Owner	Submitted, updated by	Last Update	Status
6	There is a risk that duty-bearers may not have the capacity to meet their obligations in the Project?	10 May 2019	Human Rights	I =3, P=3 Moderate	Risk 6 managed by: (i) assessing and undertaking capacity needs assessment for additional capacity needs of DOE, upazila, union and community requirements for effective planning and management of ECAs, based on which capacity building programs will be developed and instituted; (ii) technical support to agencies to enhance the planning, management and monitoring of project investments; (iii) management plans for two ECAs will define specific favorable conditions to meet this requirements, including the technical, institutional and capacity needs; (iv) UNDP's regular monitoring will assess any specific additional capacity needs and define measures to achieve same and (v) sustainability/financial plan will also provide a vehicle for determining the capacity and technical needs and potential financial mechanisms to achieve same.	Project Manager (PM)	22 May 2019			
7	If Risks 4 and/or 5 apply, then women's ability to use natural resources within ECAs could be adversely affected.	10 May 2019	Social	I =3, P=2 Moderate	Risk 4 managed by (i) ensuring active participation of women in the planning phase of the project; (ii) applying *"Gender Analysis and Mainstreaming Action Plan"* (Annex 6) on how perspectives, rights, and interests of men and women are addressed to ensure that the project contributes to gender equality and create equitable opportunities for women and men at all levels of engagement; (ii) use of a gender and socially inclusive lens will be applied to every project activity and output to further analyze impacts on the rights of women and vulnerable people, (iii) special investments would be planned based on women's requirements to ensure that they adequately benefit from project investments; (iv) capacity building programs to enhance the capacity of women and vulnerable members to take an active part in the planning and decision making process at the ECA or sub-ECA levels; (v) program and project level implementation arrangements, including gender consultant to provide training to project staff and key Upazila and Union staff on approaches that ensure active participation in decision making on all aspects of the project; and (vi) monitoring plan and gender action plan has gender responsive indicators to access gender dimensions, including that the project scores at least Gender Marker 2.	Project Manager (PM)	22 May 2019			

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Risk No.	Description	Date Identified	Type	Impact & Probability	Mitigation measures	Owner	Submitted, updated by	Last Update	Status
8	Inappropriate measures to restore wetlands, such as using exotic tree or mangrove species, could result in changes to habitats and ecosystem functioning.	10 May 2019	Environment	I =3, P=2 **Moderate**	Risk 8 managed through (i) Preparation of rehabilitation and restoration plans for the identified sites and restoration measures will ensure development of protocols that meet local and international criteria for ecological restoration and biodiversity conservation to avoid the use of IAS. The restoration and rehabilitation plans will encourage the use of native species and restoration efforts; and (ii) use of screening checklist during early project implementation based on eligibility criteria to screen all investments to ensure that they comply with sound social and environmental principles and is sustainable.	Project Manager (PM)	22 May 2019		
9	Development activities (such as harvesting of terrestrial and aquatic resources) can have adverse impacts on species and habitats if not well implemented	10 May 2019	Environment	I =3, P=2 **Moderate**	Risk 9 managed through: (i) selection of target locations within the ECAs for project interventions to conform to the project's objective of 'enhancing the conservation of biodiversity through mainstreaming of biodiversity into planning policies and practices into ECAs; (ii) all community fisheries, agriculture and livelihood activities will take place outside the key biodiversity areas (spawning and nursery areas), within ECAs through appropriate zoning arrangements; (iii) use of screening checklist developed using SESP to screen all investments to ensure that they comply with sound social and environmental principles and is sustainable. Such a checklist would also include the identification of investment location in relation to ECAs; and (iv) setting acceptable sustainable limits on harvest of fisheries products based on status and health of such populations and establishment of monitoring protocols.	Project Manager (PM)	22 May 2019		
10	Climate change may adversely influence the potential outcomes of project interventions	10 May 2019	Environment	I=3, P=3 **Moderate**	Risk 10 managed through. (i) Implementation of participatory planning processes for ECAs based on ECA rules ensuring that activities are environmentally sustainable and supporting best practices managed for their climate risks: (ii) improved ECA management and conservation practices would improve protection and management of critical ecosystems services as well as wildlife habitat, which should help to increase the overall resilience of the natural systems to climate risks in the areas compared to business as usual; (iii) in terms of the Monitoring Plan, the condition of the natural ecosystems would be monitored to ensure that activities do not damage these sensitive ecosystems so that it is overall in a better situation to manage climate change, and (iv) knowledge and Communications activities is a key framework to improve awareness of climate and ensuring measures to improve climate resilience.	Project Manager (PM)	22 May 2019		

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ANNEX 8: RESULTS OF THE CAPACITY ASSESSMENT OF THE PROJECT NATIONAL EXECUTING AGENCY AND HACT MICRO ASSESSMENT

ANNEX 9: GEF 7 CORE INDICATOR WORKSHEET

Core Indicator 3	Area of land restored					*(Hectares)*
		Hectares (3.1+3.2+3.3+3.4)				
		Expected		Achieved		
		PIF stage	Endorsement	MTR	TE	
Indicator 3.4	Area of wetland restored[42]	30,398[43]	11,025			
Indicator 3.1	Area of degraded agricultural land restored					
		Hectares				
		Expected		Achieved		
		PIF stage	Endorsement	MTR	TE	
Indicator 3.2	Area of forest and forest land restored					
		Hectares				
		Expected		Achieved		
		PIF stage	Endorsement	MTR	TE	

[42] In terms of improved water quality by 10-15% on account of project interventions

[43] Area of wetland targeted reduced to 11,025 ha on account of reduction of target ECA sites from 3 to 2 on basis of STAP recommendation to make project more manageable

Indicator 3.3	Area of natural grass and shrublands restored					
			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 3.4	Area of wetlands (including estuaries, mangroves) restored					
			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Proposed Halda River ECA			10,825	10,825		
Morjat Board ECA			200	200		
Cox's Bazar – Teknaf Peninsula ECA[44]			20,373	NA		
			31,398	11,025		
Core Indicator 11	**Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment**					***(Number)***
			Expected		Number Achieved	
					MTR	TE

[44] ECA site dropped from project (see footnote 1

		Female	NA	300		
		Male	NA	700		
		Total	NA	1,000		

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ANNEX 10: LIST AND MAP OF ECOLOGICALLY CRITICAL AREAS (ECAS) OF BANGLADESH

No.	Name of ECA	Type of Ecosystem	Location	Areas (ha) - notified	Area (ha) - revised /proposed	Year of Declaration
1	Cox's Bazar-Teknaf Peninsula	Coastal-Marine	Cox's Bazar	20,373.27		1999
2	Sundarbans (10 km landward periphery)	Coastal-Marine	Bagerhat, Khulna Barguna, Pirojpur and Satkhira	292,926.00		1999
3	St. Martin's Island	Marine Island with coral reefs	Teknaf upazila, Cox's Bazar	1,214.42		1999
4	Hakaluki Haor	Inland Freshwater Wetland	Sylhet and Moulvibazar	40,465.80		1999
5	Sonadia Island	Marine Island	Moheshkhali, Cox's Bazar	4,916.00	10,298.00	1999
6	Tanguar Haor	Inland Freshwater Wetland	Tahirpur, Sunamganj	9,727.43		1999
7	Morjat Baor	Oxbow Lake	Kaliganj upazila of Jhenaidah and Chaugacha upazila of Jessore	200.00	325.00	1999
8	Gulshan-Baridhara Lake	Urban Wetland	Dhaka city	101.00		2001
9	Buriganga	River	Around Dhaka	1,335.50		2009
10	Turag	River	Around Dhaka	1,183.82		2009
11	Sitalakhya / Shitalakhya	River	Around Dhaka	3,770.93		2009
12	Balu including Tongi canal	River	Around Dhaka	1,314.59		2009
13	Jaflong-Dawki	River	Jaflong, Sylhet	1,493.00		2015
	Total area			**379,021.76**	**384,528.76**	

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No.	Name of ECA	Type of Ecosystem	Location	Areas (ha) - notified	Area (ha) - revised /proposed	Year of Declaration
	Halda River	River (107 km stretch)	Karnafuli River junction	10,700.00		Proposed

(Source: Department of Environment, 2015)

Notes: Bangladesh's ECAs cover a notified area 379,022 ha, which is an underestimate based on more accurate GIS estimates and proposed additions to Sonadia Island and Morjat Baor ECAs. The revised area is 384,529 ha.

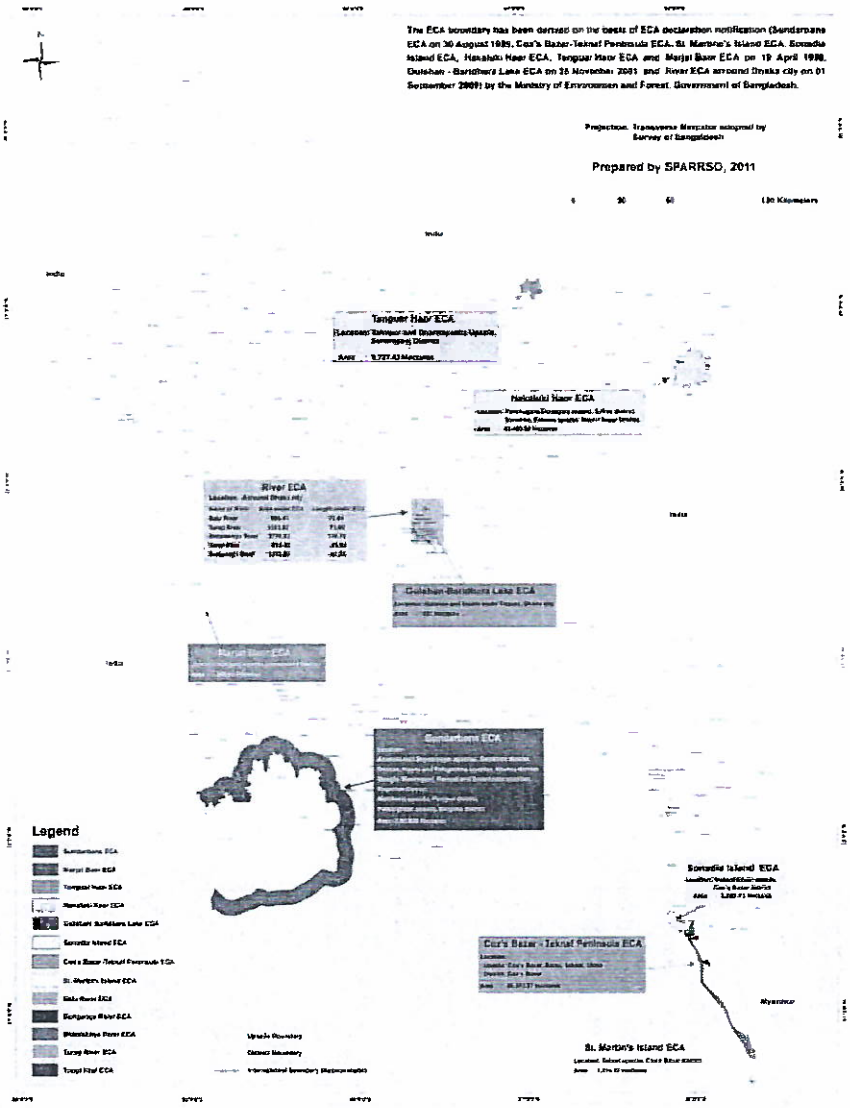
The total area of the two sites (Morjat Baor ECA and Halda River proposed ECA) provisionally identified for targeting by this project is 11,025 ha (GIS estimate), which is 2.8% of the total existing and proposed ECA network (395,229 ha).

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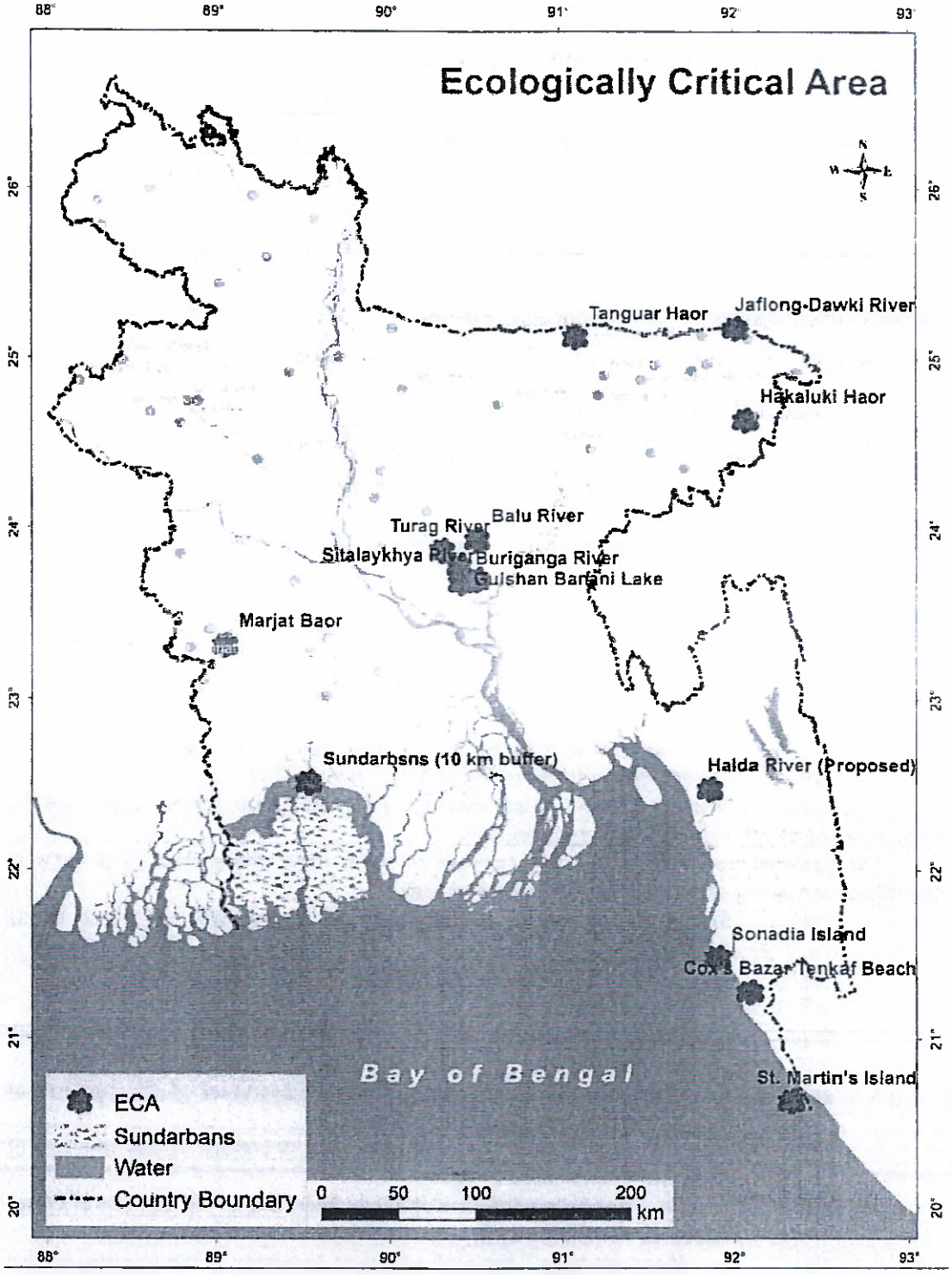
Country Map Showing the Positions of the ECAs



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ANNEX 11: ECA MANAGEMENT RULES 2016

Government of the People's Republic of Bangladesh
Ministry of Environment and Forest
Notification
Date: .....1423 Bangla/.....2016

S.R.O. No. .....Law/2016.- In the exercise of the power conferred by section 20, read with section 5, of the Bangladesh Environment Conservation Act, 1995 (Act No. 1 of 1995) the Government has made the following rules, namely:-

1. **Title of the rules and commencement**.- (1) These rules may be called the Environmentally Critical Area Management Rules, 2016.

(2) It shall come into force at once.

2. **Definition**.- (1) In these rules, unless there is anything repugnant in the subject or context-

(a) **"Act"** means the Bangladesh Environment Conservation Act, 1995 (Act No. 1 of 1995);

(b) **"Union Coordination Committee"** means the Union Coordination Committee formed under rule 12;

(c) **"Upazila Committee"** means the Upazila Committee formed under rule 9;

(d) **"Village Conservation Group"** means the Village Conservation Group formed under rule 13;

(e) **"National Committee"** means the National Committee formed under rule 3;

(f) **"Zila Committee"** means the Zila Committee formed under rule 6;

(g) **"Fund"** means the Fund constituted under rule 23.

(2) The words and expression that are used in these rules but not defined shall have the same meaning as are assigned to them in the Act.

3. **National Committee**.- For the purpose of these rules, there shall be a National Committee consisting of the following members, namely:-

(a) Secretary, Ministry of Environment and Forest, who shall also be its President;

(b) Director General, Department of Environment;

(c) Chief Forest Conservator;

(d) an officer not bellow the rank of a Joint Secretary of the Ministry of Land nominated by it;

(e) an officer not bellow the rank of a Joint Secretary of the Ministry of Fisheries and Livestock nominated by it;

(f) an officer not bellow the rank of a Joint Secretary of the Ministry of Agriculture nominated by it;

(g) an officer not bellow the rank of a Joint Secretary of the Ministry of Water Resource nominated by it;

(h) an officer not bellow the rank of a Joint Secretary of the Ministry of Civil Aviation and Tourism nominated by it;

(i) an officer not bellow the rank of a Joint Secretary of the Local Government Division nominated by it;

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(j) an officer not bellow the rank of a Joint Secretary of the Ministry of Housing and Public Works nominated by it;

(k) an officer not bellow the rank of a Joint Secretary of the Ministry of Home Affairs nominated by it;

(l) an officer not bellow the rank of a Joint Secretary of the Legislative and Parliamentary Affairs Division nominated by it;

(m) an officer not bellow the rank of a Joint Secretary of the Rural Development and Cooperative Division nominated by it;

(n) an officer not bellow the rank of a Joint Secretary of the Ministry of Disaster Management and Relief nominated by it;

(o) Chief Information Officer, Department of Information;

(p) a representative not bellow the rank of a Director of the Federation of Chambers of Commerce;

(q) not bellow the rank of an Associate Professor of Department of Zoology and an Associate Professor of Department of Botany nominated by the Government; and

(r) two representatives from the Non-Government Organization which are involved in environment conservation activities nominated by Director General.

(2) The members nominated under clause (q) and (r) shall remain in their office for a term of 4 (four) years from the date of their nomination:

Provided that the Government or, as the case may be, the Director General, may remove any nominated member at any time before the expiry of such period without showing any cause:

Provided further that such member may resign form his post by signing a letter addressed to the Government or, as the case may be, to the Director General.

(3) The Department shall give the secretarial support to the National Committee.

4. **Duties and functions of the National Committee.**- (1) If the National Committee is satisfied, either on its own motion or on the basis of any information, that the ecology of any area is critical or likely to be critical, then the National Committee shall, for the purpose of section 5 of the Act, submit recommendations to the Government for declaring that area to be an ecology critical area.

(2) The National Committee shall consider the following matters in preparing the recommendations submitted to the Government under sub-rule (1), namely:-

(a) prevailing natural conditions and bio-diversity, reserved forests and protected areas including habitats of wild animals, rivers, canals, flood plain, hoar-boar, lake, marshes, habitats of birds, habitats of water born animals and plants including fish habitats, swamp forests, mangrove and degradation of coastal areas;

(b) causes of danger to ecology and probable threats;

(c) causes of peril to the local and alien birds and livestock and way of prevention;

(d) if such area or part of it is declared as special zone under any other law then what are the conditions of it;

(e) the livelihood, religious and social culture of the inhabitants;

(f) artistic, historical important or architectural monuments, things or place;

(g) any other things related with the above things.

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Explanation.- For the purpose of clause (a), "biodiversity" means the prevailing variety of living creatures which is generally part of environment, and includes existing species diversity, genetic diversity and ecosystem diversity of land, water and marine species.

(3) The National Committee shall give recommendation to the Government for alternative livelihood of the people who are dependant on the ecologically critical area.

(4) The National Committee shall monitor the development plan which is being implemented by the Government in the ecologically critical area and give necessary directions.

5. **Meeting of the National Committee.**- (1) The National Committee shall meet once a year.

(2) The date, time and place of the meeting of the National Committee shall be determined by the President.

(3) The notice, working paper and minutes of the meeting may be issued through e-mail.

(4) The President of the National Committee shall preside over all meeting.

(5) To constitute a quorum at a meeting of the National Committee, at least one-third of the total number of members shall be present but no quorum is necessary for adjourned meeting.

(6) No act or proceeding of the Committee shall be invalid or be called in question merely on the ground of any vacancy in, or any defect in the constitution of, the Committee.

3. **District Committee.**- Subject to the provision of sub-rule (2), there shall be a District Committee consisting of the following members in the district where the ecologically critical area is situated, namely:-

(a) Deputy Commissioner, who shall also be its President;
(b) Superintendent of Police;
(c) Additional Deputy Commissioner (Revenue);
(d) Deputy Director, Department of Agricultural Extension;
(e) Executive Engineer, Bangladesh Water Development Board;
(f) Executive Engineer, Local Government and Engineering Department;
(g) District Fisheries Officer;
(h) District Livestock Officer;
(i) district level Officer of the Department of Forest;
(j) Deputy Director, Department of Social welfare;
(k) concerned Upazila Nirbahi Officers;
(l) district level Officer of the Bangladesh Agricultural Development Corporation;
(m) District Ansar and VDP Officer;
(o) District Woman Affairs Officer;
(p) President, District Bar Association;
(q) President, District Press Club;
(r) Deputy Director, Bangladesh Rural Development Board;
(s) District Cooperative Officer;
(t) 7 (Seven) representatives nominated by the Deputy Commissioner from the Nongovernment Organization, Professional body, if any, and civil society who are involved in the environment development activities;
(u) a district level Officer of the Department of Environment, if any, otherwise any Officer nominated by the President shall discharge the secretarial functions.

(2) If an ecologically critical area is situated at more than one district, the Divisional Commissioner shall discharge the functions of the President of the District Committee.

7. **Functions of the District Committee.**- (1) The functions of the District Committee shall be as follows, namely:-

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(a) to give advice and directions to the Upazila Committee in implementation of the actions and development plan adopted by the Department to overcome the danger to ecology;

(b) to send recommendations to the National Committee reviewing the proposals received from the Upazila Committee as to which harmful acts or process may continue or start in the ecologically critical area;

(c) to have local inspection of ecologically critical area and monitor the progress of the implementation of the actions and development plan adopted by the Department;

(d) to find out the alternative way of livelihood, when the livelihood becomes restricted due to prohibition of act in the ecologically critical area;

(e) to encourage the people to conserve the ecologically critical area;

(f) to monitor and evaluate the activities of the Upazila Committee, Union Coordination Committee and Village Conservation Group and give necessary directions;

(g) to take legal action against anyone who does or intends to do any prohibitory act in the ecologically critical area;

(h) to coordinate the activities of the Upazila Committees if an ecologically critical area is situated at more than one Upazila;

(i) to discharge other functions as are assigned by the Government or National Committee.

8. **Meeting of the District Committee**.- (1) The District Committee shall meet thrice in a year.

(2) The date, time and place of the meeting of the District Committee shall be determined by the President.

(3) The notice, working paper and minutes of the meeting may be issued through e-mail.

(4) The President of the District Committee shall preside over all meeting.

(5) To constitute a quorum at a meeting of the District Committee, at least one-third of the total members shall be present but no quorum is necessary for adjourned meeting.

(6) No act or proceeding of the Committee shall be invalid or be called in question merely on the ground of any vacancy in, or any defect in the constitution of, the Committee.

9. **Upazila Committee**.- There shall be a Upazila Committee consisting of the following members in the Upazila where the ecologically critical area is situated, namely:-

(a) Upazila Nirbahi Officer, who shall also be its President;

(b) Assistant Commissioner (Land);

(c) Upazila Agricultural Extension Officer;

(d) Upazila Fisheries Officer;

(e) Upazila Livestock Officer;

(f) Upazila Welfare Officer;

(g) Range Officer, Department of Forest, if any;

(h) Officer-in-charge of the Thana;

(i) Upazila Ansar and VDP Officer;

(j) Upazila Secondary Education Officer;

(k) Upazila Primary Education Officer;

(l) Upazila Cooperative Officer;

(m) Upazila Rural Development Officer;

(o) concerned Union Council Chairman;

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(p) President or Secretary of the Cooperative Society formed by the Village Conservation Group;

(q) 5 (Five) representatives nominated by the Upazila Nirbahi Officer from the Nongovernment Organization, Professional body, if any, and civil society who are involved in the environment development activities;

(u) a Upazila level Officer of the Department of Environment, if any, otherwise any Officer nominated by the President shall discharge the secretarial functions.

10. **Functions of the Upazila Committee.**- (1) The functions of the Upazila Committee shall be as follows, namely:-

(a) to give advice and directions to the Union Coordination Committee and Village Conservation Group in implementation of the actions and development plan adopted by the Department to overcome the danger of ecology; and send recommendations to the District Committee matters relating thereto;

(b) to send recommendations to the District Committee reviewing the proposals received from the Union Coordination Committee and Village Conservation Group as to which harmful acts or process may continue or start in the ecologically critical area;

(c) to have local inspection of ecologically critical area and monitor the progress of the implementation of the actions and development plan adopted by the Department;

(d) to find out the alternative way of livelihood, when the livelihood becomes restricted due to prohibition of act in the ecologically critical area;

(e) to encourage the people to conserve the ecologically critical area;

(f) to supervise, monitor, investigate and evaluate the activities of the concerned Union Coordination Committee and Village Conservation Group and give necessary directions;

(g) to take legal action against anyone who does or intends to do any prohibitory act in the ecologically critical area;

(h) to form cooperative society and assist to register the Village Conservation Group;

(i) to maintain the accounts properly received from the Fund;

(j) to discharge other functions as are assigned by the Government, National Committee or District committee.

11. **Meeting of the Upazila Committee.**- (1) The Upazila Committee shall meet every three months.

(2) The date, time and place of the meeting of the Upazila Committee shall be determined by the President.

(3) The President of the Upazila Committee shall preside over all meeting.

(4) To constitute a quorum at a meeting of the Upazila Committee, at least one-third of the total members shall be present but no quorum is necessary for adjourned meeting.

(6) No act or proceeding of the Committee shall be invalid or be called in question merely on the ground of any vacancy in, or any defect in the constitution of, the Committee.

12. **Union Coordination Committee.**- (1) There shall be a Union Coordination Committee consisting of the following members in the Union where the ecologically critical area is situated, namely:-

(a) Chairman, Union Council, who shall also be its President;

(b) Sub-Assistant Agricultural Officer;

(c) Union Assistant Land Officer;

(d) Union Ansar and VDP Officer;

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(e) Forester, Department of Forest (officer of the nearest office);
(f) concerned Member of the Union Council;
(g) President or Secretary of the Village Conservation Group Cooperative Society;
(h) 5 (Five) representatives nominated by the Chairman, Union Council from the Nongovernment Organization, Professional body, if any, and civil society who are involved in the environment development activities;
(i) an Officer nominated by the Department of Environment, if any, otherwise any Officer nominated by the President shall perform the secretarial duties.

(2) The Union Coordination committee shall-
(a) monitor and coordinate the activities of the Village Conservation Group and give necessary directions;
(b) assistant to solve any problem faced by the Village Conservation Group in performing its duties.

13. **Village Conservation Group.**- (1) In order to conserve and develop ecologically critical area there may be formed one or more Village Conservation Group with the people who are dependent on that area.

(2) The Village Conservation Group shall be registered under the Cooperative Society Act, 2001 (Act No. 47 of 2001).

(3) If any Village Conservation Group is registered under the Cooperative Society Act, 2001 (Act No. 47 of 2001) to conserve and develop ecologically critical area before the commencement of these rules, it shall be deemed formed under these rules.

14. **Functions of the Village Conservation Group.**- (1) The functions of the Village Conservation Group shall be as follows, namely:-
(a) to implement the actions and development plan adopted to overcome the danger to ecology;
(b) to build awareness among the people as to which acts are prohibited in the notification of the ecologically critical area;
(c) to encourage the people to conserve the ecologically critical area;
(d) to inform the appropriate authority to take legal action against anyone who does or intends to do any prohibitory act in the ecologically critical area;
(e) to maintain the money received from the Fund as per direction of the Department;
(f) to maintain the accounts properly received from the Fund;
(g) to discharge other functions as are assigned by the Government, Department, National Committee, District committee or Upazila Committee.

15. **Taking scheme, project, etc.**- The Village Conservation Group may, with the consent of the Department and approval of the Upazila Committee, take scheme or project to conserve and develop ecologically critical area.

16. **Maintenance and management of infrastructure and facility.**- (1) The Government or any authority may vest to the Village Conservation Group any infrastructure or facility in the ecologically critical area or adjacent area thereto.

(2) If any infrastructure or facility is vested upon the Village Conservation Group under sub-rule (1) such Group shall use, maintain and manage it.

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17. **Procedure of declaring ecologically critical area.**- (1) The draft of the notification of the ecologically critical area shall be pre-published at least 60 (sixty) days before in the website of the Ministry and Department and two national daily newspapers seeking opinion of the concerned stakeholders and interested peoples.

(2) Any opinion is received under sub-rule (1) shall be submitted to the meeting of National Committee for consideration.

(3) The following things shall be included in the notification of the ecologically critical area, namely:-

(a) the name of concerned Mouja and JL No;

(b) if the ecologically critical area is does not include a whole Mouja but includes one or more Dag No. then the name of concerned Mouja and JL No. and Dag No;

(c) if the ecologically critical area does not include a whole Dag No. of a Mouja but includes part of it then the name of concerned Mouja and JL No. and concerned part of Dag No;

(d) the name of concerned Upazila and District;

(e) if the ecologically critical area is out of Cadastral Survey the longitude and latitude of it.

(4) The information of declaration of ecologically critical area shall be published in the website of the Ministry and Department and in one local daily newspapers and shall be affixed in the conspicuous place of the hatbazar, educational institute and religious institute of the concerned area and copy of it shall be sent to the office of the Deputy Commissioner, Upazila Nirbahi Officer, office of the Mayor or Chief Executive Officer of the City Corporation or Pourashava, office of the Divisional Forest Officer, Assistant Commissioner (Land), Officer-in-charge, Sub-Registrar, Chairman of the Union Council and Union Land Office or, Tahshil Office, as the case may be.

18. **Prohibitory activities in the ecologically critical area.**- For the purpose of sub-section (4) of section 5, the following thing shall be considered while determining the act or process which may continue or start mentioned in the notification of the ecologically critical area, namely:-

(a) prevailing natural conditions and bio-diversity, reserved forests and protected areas including habitats of wild animals, rivers, canals, flood plain, hoar-boar, lake, marshes, habitats of birds, habitats of water born animals and plants including fish habitats, swamp forests, mangrove forest and degradation of coastal areas;

(b) contamination and degradation of the environment and ecology;

(c) causes of danger to ecology and probable threats;

(d) causes of danger to local and alien birds and livestock and way of prevention;

(e) the livelihood, religious and social culture of the inhabitants;

(f) artistic, historical important or architectural monuments, things or place;

(g) any other things related with the above things.

(2) The act or process which may continue or start in the ecologically critical area shall be determined by the Government in accordance with the standard mentioned in rule 12 and 13 of the Environment Conservation Rules, 1997.

19. **Alteration of classification of land in the ecologically critical area, etc.**- (1) Notwithstanding anything contained in the existing rules, regulations, circular or legal instruments, in the case of alteration of classification of land it shall be required to receive the consent of the Department.

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(2) If any land is included in the ecologically critical area, concerned Assistant Commissioner (Land) and Land Assistant Officer shall write down in the comments column of the concerned Khotian of the Rgister-1 kept in their office, "The Classification of the land is not alterable without the consent of the Department".

20. **Management of Syaratmahal in the ecologically critical area.**- (1) The Ministry of Land shall, in consultation with the Ministry of Environment and Forest and other concerned Ministries, Divisions and offices, issue directions to manage the Syaratmahal that is included in the ecologically critical area.

(2) If directions are issued to manage the Syaratmahal under sub-rule (1), the Syaratmahal shall be managed accordingly.

21. **Preparation of Management and Development Plan for ecologically critical area.**- The Department shall, as soon as possible, after the publication of the notification of ecologically critical area, prepare site specific plan for the management and development of the concerned area.

22. **Management by public-private partnership.**- (1) For the purpose of these rules, the ecologically critical area may be conserved and developed by public-private partnership.

(2) If a non-profit private organization or institution registered under the existing laws is interested to engage in the management of the ecologically critical area or part of it, it shall apply to the Director General.

(3) After receiving the application under sub-rule (2), if the Director General is satisfied after necessary inquiry that such organization or institution is competent to conserve the ecology, he shall ask such organization or institution to submit the draft of the agreement including the following matters, namely:-

(a) detailed proposal how to overcome the ecological danger;
(b) the amount of finance and mode financing by the organization or institution;
(c) necessary measure for training, health and education; and
(d) an oath approved by the Government to implement the management and development plan.

(4) The Director General or any officer authorized by him or any Committee or member of the Committee authorized by it may inspect locally, monitor, take data, and evaluate the progress of the implementation of the management and development plan.

23. **Constitution of Fund, management and use.**- (1) There shall be a Fund to be named as Ecological Management Fund for the purpose of the conservation and development of the ecologically critical area.

(2) Money received from the following sources may be deposited to the Funds, namely:-

(a) grants received from the Government;
(b) grants received, with the previous approval of the Government, from the foreigner, foreign government, organization or international organization;
(c) grants made by local people or authority;
(d) profit gained from the deposited money in bank.
(e) fee received under these rules;
(f) money received from any other source.

(3) The money of the Funds shall be kept in a scheduled bank.

(4) The Funds shall be administered with the joint signature of the Director General and Director (Natural Resources and Research) of the Department.

(5) For the purpose of the management and development of the ecologically critical area Fund may be used -

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(a) for preparing the plan, process, implementation, inspection, evaluation and giving incentives;

(b) to give necessary money to the Upazila Committee and Village Conservation Group.

(6) Giving money under clause (5) (b) and using them shall be in accordance with the directions issued by the Government in this behalf.

(7) If money is given for the purpose of the management and development of the ecologically critical area before the commencement of these rules, it shall be deemed to have given under these rules.

24. **Audit of the Fund.**- (1) The Department shall maintain all income and expenditure of the Fund properly.

(2) The Comptroller and Auditor-General of Bangladesh, hereinafter referred to as the Auditor-General, shall audit the accounts of the Fund.

(3) Besides audit under sub-rule (2), the accounts of the Fund may be audited by the Chartered Accountant as is defined in Article 2 (1) (b) of the Bangladesh Chartered Accountants Order, 1973 (P.O. No. 2 of 1973) and for this purpose the Department may appoint one or more Chartered Accountants.

(4) For the purpose of sub-rule (2) and (3), the Auditor-General or any person authorized by him in this behalf or Chartered Accountant may examine necessary records, documents, cash or deposited money in bank.

(5) A copy of the report of the audit shall be forwarded to the Government and to the Department.

25. **Evaluation of the Village Conservation Group.**- The concerned office of the Department shall prepare and publish the list of success rate by evaluating the activities and achievement of the Village Conservation Groups within 6 (six) months of the end of every year and incentives may be given to the Village Conservation Groups for their outstanding contribution to the conservation of ecology.

26. **Survey, research, search, etc. in ecologically critical area.**- If anyone is interested to make any search, survey or research on biodiversity, natural resources or mineral resources in the ecologically critical area, he needs to take permission from the Department:

Provided that in case of search, survey or research made a profitable organization for commercial purpose, fees as is determined by the Department shall be paid.

27. **Offence and penalty.**- If anyone violates any provision of these rules it shall be an offence and for that he shall be punishable with imprisonment for a term not more than 2 (two) years or with fine not more than 2 (two) lakh taka or with both.

28. **Statement.**- (1) The Department shall submit to Government the following statements, namely:-

(a) annual evaluation statement of the ecologically critical area within 90 (ninety) days of the end of every year; and

(b) ecological statement of the ecologically critical area every 5 (five) years.

(2) The Department shall follow the instruction given by the Government on the basis of the statement received under sub-rule (1).

29. **Publication of Authentic English Text.**- (1) After publication of these rules, the Government shall, by notification in the official gazette, publish the Authentic English Text of these rules.

(2) In case of conflict between the Bangla and English text the Bangla text shall prevail.

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ANNEX 12: ECA MANAGEMENT RULES 2016: HIERARCHY OF PROVISIONS FOR ECA COMMITTEES

Committee Members, lowest rank of representative	Committee Role
National Committee (meets annually)	
Ministry of Environment & Forest, Secretary (President) Department of Environment, Director General Chief Forest Conservator Ministry of Land, Joint Secretary Ministry of Fisheries & Livestock, Joint Secretary Ministry of Agriculture, Joint Secretary Ministry of Water Resource, Joint Secretary Ministry of Civil Aviation & Tourism Local Government Division, Joint Secretary Ministry of Housing & Public Works Ministry of Home Affairs, Joint Secretary Legislative & Parliamentary Affairs Division, Joint Secretary Rural Development & Cooperative Division, Joint Secretary Ministry of Disaster Management & Relief, Joint Secretary Department of Information, Chief Information Officer Federation of Chambers of Commerce, Director Department of Zoology, Associate Professor (4-year term) Department of Botany, Associate Professor (4-year term) Environmental Conservation NGOs x2 (4-year term) , nominated by Director General	(1) Recommend to Government ECAs for declaration, taking into account the following matters: (2) (a) prevailing conditions of biodiversity; (b) causes of danger to ecology and probable threats; (c) causes of peril to the local and alien birds and livestock and way of prevention; (d) if such area or part of it is declared as special zone under any other law then what are the conditions of it; (e) livelihood, religious and social culture of the inhabitants; (f) artistic, historical important or architectural monuments, things or place; (g) anything else related with the above. (3) Recommend to Government alternative livelihoods of the people dependant on the ECA. (4) Monitor the development plan being implemented in the ECA and give necessary directions.
District Committee (meets every four months)	
Deputy Commissioner (President) Superintendent of Police Revenue, Additional Deputy Commissioner Department of Agricultural Extension, Deputy Director Bangladesh Water Development Board, Executive Engineer Local Government & Engineering Department, Executive Engineer District Fisheries Officer District Livestock Officer; Department of Forest, district level officer Department of Social Welfare, Deputy Director Upazila Nirbahi Officers Bangladesh Agricultural Development Corporation, district level officer District Ansar and VDP Officer District Woman Affairs Officer District Bar Association, President District Press Club, President	(a) Advise Upazila Committee re: implementation of development plan adopted by DoE (b) Make recommendations to National Committee re: proposals received from Upazila Committee as to which harmful acts or process may continue or start in ECA. (c) Undertake local inspection of ECA and monitor implementation progress. (d) Identify alternative options for livelihood activities becoming restricted in ECA (e) Encourage people to conserve ECA. (f) Monitor and evaluate activities of Upazila Committee, Union Coordination Committee and Village Conservation Group and give necessary directions. (g) Take legal action against anyone who does or intends to do any prohibitory act in ECA. (h) Coordinate activities of Upazila Committees if ECA is situated in more than one Upazila.

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nk of representative	Committee Role
oard, Deputy Director y Deputy Commissioner from NGO, professional body, if any, and civil society nent development activities. rict level officer (if any), otherwise any Officer nominated by President to is.	(i) Discharge other functions as assigned by Government or National Committee.
three months)	
t) ficer rest (if any) icer r er an ative Society formed by Village Conservation Group; y Upazila Nirbahi Officer from the NGO, professional body, if any, and civil ient development activities. izila level officer (if any), otherwise any Officer nominated by the President to is.	(a) Advise Union Coordination Committee and Village Conservation Group (VCG) re: development plan implementation; and send recommendations to District Committee as necessary. (b) Send recommendations to District Committee after reviewing proposals from Union Coordination Committee and VCG as to which harmful activities or processes may be allowed in the ECA. (c) to have local inspection of ecologically critical area and monitor the progress of the implementation of the actions and development plan adopted by the Department; (d) to find out the alternative way of livelihood, when the livelihood becomes restricted due to prohibition of act in the ecologically critical area; (e) to encourage the people to conserve the ecologically critical area; (f) to supervise, monitor, investigate and evaluate the activities of the concerned Union Coordination Committee and Village Conservation Group and give necessary directions; (g) to take legal action against anyone who does or intends to do any prohibited act in the ecologically critical area; (h) to form cooperative society and assist to register the Village Conservation Group; (i) to maintain the accounts properly received from the Fund; (j) to discharge other functions as are assigned by the Government, National Committee or District committee.
(meetings unspecified)	

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nk of representative	Committee Role
ident) from nearest office) er ent or Secretary y Chairman, Union Council from NGO, professional body, if any, and civil nvironment development activities. it of Environment, if any, otherwise any Officer nominated by President shall	(a) Monitor and coordinate activities of VCG and give necessary directions. (b) Assist to solve any problem faced by VCG in performing its duties.
meetings unspecified)	
e formed with the people dependent on that area. d under the Cooperative Society Act, 2001 (Act No. 47 of 2001). this Act to conserve and develop an ECA before the commencement d formed under these rules.	(a) Implement development plan adopted to overcome danger to ecology; (b) Build awareness among people as to which acts are prohibited in ECA. (c) Encourage people to conserve the ECA. (d) Inform the appropriate authority to take legal action against anyone doing or intending any prohibited act in the ECA. (e) Maintain monies received from the Fund* as per direction of the Department. (f) Maintain the accounts properly received from the Fund. (g) Discharge other functions as assigned by the Government, Department, National Committee, District Committee or Upazila Committee. *Ecological Management Fund - must be held in a scheduled bank and administered with the joint signature of Director General and Director (Natural Resources & Research) of the DoE.

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bership constitutes a quorum in the case of all committees, except the Union Coordination Committee and VCG for which no quorum is specified.
provided by the DoE, if represented; otherwise by any Officer nominated by the President.

shad, this is the small rural administrative and local government unit in Bangladesh. Establish under *Local Government (Union Parishads) Act, 2009.*

ANNEX 13: BANGLADESH BIOLOGICAL DIVERSITY ACT 2017

Full Act available at: https://bangladeshbiosafety.org/wp-content/uploads/2021/03/Biodiversity-Act_2017.pdf

Summary Bangladesh Biological Diversity Act 2017

Bangladesh has ratified Convention on Biological Diversity and consequently in 2017 adopted this law in the domestic legal system. This Act, consisting of nine Chapters, regulates the biodiversity conservation and sustainable use of its resources, biota and the fair and equitable share of the benefits derived from their use of and other matters. The Act is divided into the following sectors: Biodiversity and related activities undertaken and transfer restrictions, approved and rejected applications; Functions of the National and Technical Committees on Biological Diversity; Biodiversity management teams, associations and sub-committees, etc.; Biota fair share distribution; Biodiversity strategy and action plan, traditional activities causing adverse effects on biodiversity, etc.; Fund, accounting and audit and Annual Report; Crime, investigation, trial and punishment; and Miscellaneous.

Under section 4 of this act, a non-citizen or a foreign organization can't collect or obtain any biological resource for research or commercial purpose without prior permission of the National Committee on biodiversity. Under sections 12,16,19,22 and 25 various Biodiversity Management committees are formed, and they are mandated to assist the government to implement this law. No one can use and claim intellectual property right without prior permission of the National Committee under section 6. Areas consisting of biological diversity and endangered animals are being protected under sections 32 and 33 respectively. Strict punishment is provided under sections 39,40,41 and 42 for various illegal acts.

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Ecological and socio-economic profiles of target ECAs

HALDA RIVER PROPOSED ECA

1. SITE DESCRIPTION

The River Halda lies in south-eastern Bangladesh, rising in the Chittagong Hill Tracts and merging with the Karnaphuli in the city of Chittagong. The river is of huge ecological importance as the sole spawning ground for the Indian Carp and provides habitat for the endangered Gangetic dolphin and a host of other endemic and threatened species. The river is also critical to the economy of the area, providing water for a large proportion of the city of Chittagong, water for industry and agriculture, and a source of income for the many businesses reliant on the carp egg trade across Bangladesh. Historically the river has been important for transport and trade, and in recent decades has supported increasing industrial development. The population of the Halda catchment is very diverse, ranging from the residents of Chittagong to very small agricultural communities in the headwaters. The river is currently threatened by a combination of pollution, habitat loss and water abstraction to the point where its ecology and industries are at risk. It is hoped that the river will shortly be declared an Ecologically Critical Area in order to help manage and protect its great ecological and economic assets.

2. BIODIVERSITY VALUES

- The Halda River is the single major source of Indian carp (*Labeo rohita*) eggs in Bangladesh and possibly in South Asia, being the major freshwater breeding ground and natural gene-bank of pure Indian carp[46].
- It provides habitat for the endangered Ganges Dolphin (*Platanista gangetica*, EN) and several other endangered birds, and habitat for a wide variety of endemic species.
- The river provides a wide range of habitats as it evolves from mountain streams to estuary, and the resulting mix of river habitats, associated wetlands, forestry, mangrove and saltmarsh support a diverse array of locally and globally important species.

3. ECOSYSTEM SERVICES

The ecosystem services provided by the river and its adjoining habitats are described in Table 1, below. As well as supporting the egg and fishing industries the river provides a wide range of services, some of which are globally important. These include provision of water for households and industries, carbon sequestration and flood and drought mitigation.

[46]https://en.wikipedia.org/wiki/Halda_River#cite_note-4

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Table 1: Ecosystem services provided by Halda River

Ecosystem Service	Description	Potential value of protection and improvement
Fish and egg production	The Halda River contributes significantly to total fish production of Bangladesh, which is the world's 4th largest inland fish producing country.	Collected carp eggs and subsequently farmed carp are valued over US$100 million per year and benefit an estimated 5000 fishermen from a wide range of communities, plus egg and fish sales nationally.
Habitat provision	The river provides critical habitat for a wide range of important, endemic and threatened species, notably the Gangetic dolphin (*Platanista gangetica*, EN).	The Gangetic dolphin is an indicator of the overall health of the river, and is of cultural importance to the fishing communities in the catchment. Its range is severely diminished in Bangladesh and India. As well as being a globally important species, the dolphin has potential financial value as a draw for eco-tourism which may represent a way to support vulnerable livelihoods and bring income to Halda communities.
Municipal Water provision	The Halda provides the water supply for approximately 40% of Chittagong's population, and for a large proportion of the upstream communities.	Potential to reduce raw water costs by investing in catchment management – reductions in municipal pollution, targeted agricultural programs to reduce run-off and riparian planting schemes (already in operation) will all serve to reduce inputs to the river and downstream cleansing costs. A cleaner river will also provide health benefits (and cost savings) for the communities who use the river daily.
Industrial water provision	A large number of businesses in the Chittagong region also abstract from the river to support industrial processes (tanneries, poultry, textiles, etc.)	A constant, reliable, clean water supply is essential to the larger businesses in the catchment, and will reduce production costs. In the longer term, improved catchment management will help buffer against floods, droughts, and poor water quality, and may protect businesses from future legislation.
Agricultural water provision	A large number of agricultural businesses abstract from the Halda, ranging from subsistence and micro-businesses to much larger tea and tobacco plantations.	Clean water for irrigation is essential for crop health and also for reduced farm infra-structure costs – high levels of silt can make irrigation impossible. Good catchment management can also protect the upper catchment against drought and potentially extend the season for which irrigation is possible.
Flood management	During the community consultations a number of businesses reported threats from flooding which they reported as more frequent and of greater severity than in previous decades.	Healthy, restored habitat and functioning riparian forestry and wetlands, plus improved management of the numerous flow controls on the river have the potential to alleviate both flooding and drought.
Carbon sequestration	The river and associated habitats provide a large carbon sink.	Many models exist which are capable of quantifying an valuing the amount of carbon the river catchment is able to sequester, and, conversely, the cost of losing or damaging these habitats.
Transport and trade	The river is a historic transport corridor allowing trade between communities within the catchment. Increasing industrialization and siltation pose a threat to its continued use.	The value in transport and trade is more likely to be important to the smaller upstream communities than those based in Chittagong, and therefore more likely to support vulnerable livelihoods.

4. THREATS

The river suffers from a number of key threats, mostly associated with increasing population and unmanaged industrial and agricultural development. These include

- Pollution from industry, municipal sewage and intensive agriculture
- Abstraction of water for municipal supply, irrigation and industry
- Illegal over-exploitation of breeding fish and possibly eggs
- Habitat loss, particularly of fish spawning habitat and riparian wetlands and forestry
- Sand dredging for construction and its associated noise and sediment pollution
- Increasing saline intrusion

Each of these threats is currently causing severe ecological harm to the river, and in turn threatening community livelihoods and well-being. However, legislation exists to combat many of these problems and increasing government, community and NGO action has the potential to restore the health of the river. The nature of each of these threats is detailed below.

Water pollution

The river is seriously threatened by pollution, largely from industry on the lower river, municipal sewerage discharges throughout the catchment, and agricultural chemical run-off. The pollution in recent years has been severe enough to cause nationally-reported widespread fish-kills and has caused the death of Gangetic dolphins in the river. The pollution has the potential to destroy the Halda's ecosystem and threaten the provision of the river's many ecosystem services.

The main point sources of chemical pollutants are Asian Paper Mill, Madina Tannery, Hathazari 100 MW peaking power plant, tea gardens, and brickfields. The main drainage network of the CDA-managed Annanya residential area drains directly to the Halda. This has been widely debated in recent years and the drainage was planned to be channelled downstream of the Halda. However, no significant improvement in this regard was observed during the current visit to the Halda.



Figure 1 Anannya Residential Drainage- still as it was!

Effluents of Madina Tannery finds its way into the Halda water through Khandakia canal, furnace oil from Hathazari 100 MW peaking power plant is also discharged into river Halda. Apart from these, chemicals like endrine and rotanon are used to catch prawn by some local people. Open dumping of commercial waste, domestic waste, and poultry waste is also common in places. Toxic discharges of industrial waste from tanneries, washing and dyeing plants are thought to be preventing mother fishes from spawning.

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Figure 2 Khandakia khal carrying chemical wastes and non-biodegradable solid waste to the Halda

Water withdrawal

Large quantities of water are abstracted from the river for industry, agriculture and municipal supply. Recent research[47] shows that the minimum monthly flow at Panchpukuria station in the Halda River is always less than 30% of the mean annual flow indicating it is not able to provide satisfactory habitat for fishes under present conditions, specifically at this location. Moreover, minimum monthly flow is less than 10% of mean flow during February–May, indicating that even poor habitat for fish cannot be maintained throughout the year. Flows are disrupted and impounded by a series of agricultural and industrial dams throughout the catchment.

The Halda River is one of the major sources of fresh water for the port city of Chittagong. The Chittagong Water Supply and Sewerage Authority (CWASA) supplies 2 million gallons of water daily from this river. This River also plays important roles in domestic water supply, agriculture, industry and navigation. The Halda River supplies about 50% (90×10^6L/d) treated water to the Chittagong City. A second water treatment plan is under way at Madunaghat. The plants combined would be able to meet 75-80% of drinking water demand for the City of Chittagong. According to the Halda researchers, this is a major disturbance factor for the migrating carp broodstock since it creates sound and a vibration that the mother carps are scared of.

Agricultural abstraction is also increasing. About 30% of the river basin inhabitants are directly involved in agriculture. The only source for agriculture here is the river Halda. Tremendous amount of water is withdrawn using low-lift pump and large-scale irrigation project during the dry season. This is forcing the river flowing potentially below the environmental-flow level

Reduction in carp spawning and egg harvest

The spawning of Indian carp is threatened by a number of factors including over-fishing, pollution, habitat loss, exclusion from remaining habitat by dams, weirs and low flows and disruption of migration by noise pollution and low flows. Community consultations reported illegal fishing of broodstock as it migrates up the river as a serious, on-going problem. Egg collectors report very variable but decreasing returns, and aware of all the factors listed above.

Many egg collectors observe that primary egg production, as well as number and size of fishes have declined significantly. They have not caught the Chital fish (*Chitala chitala)* in last 14 years for example; it is almost on the verge of extinction.

Habitat loss

The river has suffered greatly from a loss of habitat caused by canalisation for transport and industry, development and agriculture. A large proportion of the carp spawning grounds are lost, and the quality of riparian habitat has decreased, threatening degradation of the whole riverine ecosystem.

It is estimated that straightening of the rivers meanders for navigational purposes has reduced the overall length of the

[47] Akter, A and Ali, M.H. Environmental flow requirements assessment in the Halda River, Bangladesh in Journal Hydrological Sciences Journal Volume 57, 2012 - Issue 2

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river from 123km to 81km, causing a significant loss of habitat for all the aquatic fauna and flora. In particular, this is problematic for the Indian carp, whose primary spawning habitat was the outside of the meander bends. The majority of this habitat is now lost, reducing the carrying capacity of the river and threatening the carp population. The river has also suffered a loss of its riparian wetlands and forestry due to the expansion of agriculture and municipal development. These habitats are critical for supporting the river's ecological health and providing resilience against flood, drought and climate change.

Sand dredging

Sand-dredging from the lower river causes noise pollution, sediment pollution and bank and bed instability. The impacts are a threat to Gangetic dolphin moving in and out of the river and also to the Indian carp which must migrate through this area to reach their spawning grounds. Continued noise pollution and disruption could potentially prevent carp migration and spawning entirely.

Saline intrusion

Saline intrusion threatens to disrupt the ecology of the river and has the potential to affect the rivers potential for abstraction and irrigation. The saline intrusion is exacerbated by climate change and a reduction if river flow caused by human usage. Community representatives and Chittagong University staff suspect the large rubber dam and Kaptai hydro-electric plant have a particularly damaging impact on natural flow patterns.

5. CURRENT MANAGEMENT AND OTHER ACTIVITIES

A number of practical and legislative measures have been introduced to protect the Halda in recent years, including legislation covering polluting waste-water discharge, legislation and action to prevent illegal fishing of Indian carp broodstock and a number of community and conservation actions led by Chittagong University and NGO's such as Nowzuwan. These projects target a number of areas including reforestation, fish stock management and development of alternative incomes for low income families reliant on the river and its fish. Although these actions are a major step forwards the legislation seems poorly enforced and the community and conservation measures require rapid expansion throughout the catchment.

6. SOCIO-ECONOMIC ASPECTS

A large number of families and communities are reliant or partially reliant on the Halda for the fish and egg trade. Typically, it is the male heads of family involved in the river and the women are largely excluded from working with the fish and eggs for historic cultural reasons. Women are also generally excluded from the local fishery management committees and decision making. Despite this exclusion, they are aware of the problems the river faces. There is great scope for greater female involvement with the river and associated industries as a means of promoting gender equality and providing alternative incomes for low-income households and communities. The inclusion of women and young people in decision making for the river is critical to the river's future and to ensuring equitable use of its resources.

7. FEEDBACK FROM STAKEHOLDERS

The community consultations provided a range of identified issues. As the consultations were in fishing and egg-collecting communities their responses and concerns were centred on the river's fish populations. Key issues included:

- Continuing illegal fishing, particularly of Indian carp broodstock
- Loss of carp spawning habitat as meander bends have been lost throughout the catchment
- Pollution of the river. The bigger industries such as the tanneries were implicated.
- Increasing frequency and intensity of flooding (thought to be caused by climate change) washing out fish and egg rearing ponds causing large loss of income.
- Dolphin mortality. Illegal fishing nets and industrial pollution were implicated.

8. ACTIONS FOR RECOVERY

Each of the threats detailed above can be combatted. However, if the threats are not addressed immediately the river is likely to lose a large proportion of its fauna, and the ecosystem services it provides will be greatly reduced. The actions for recovery set out in Table 2, below, are prioritized according to most critical threat. To effectively deliver each of the actions below requires an urgent, coordinated effort from government, industry, communities and NGOs, and delivery and would be best delivered through a recovery framework, as detailed in Annex 7.

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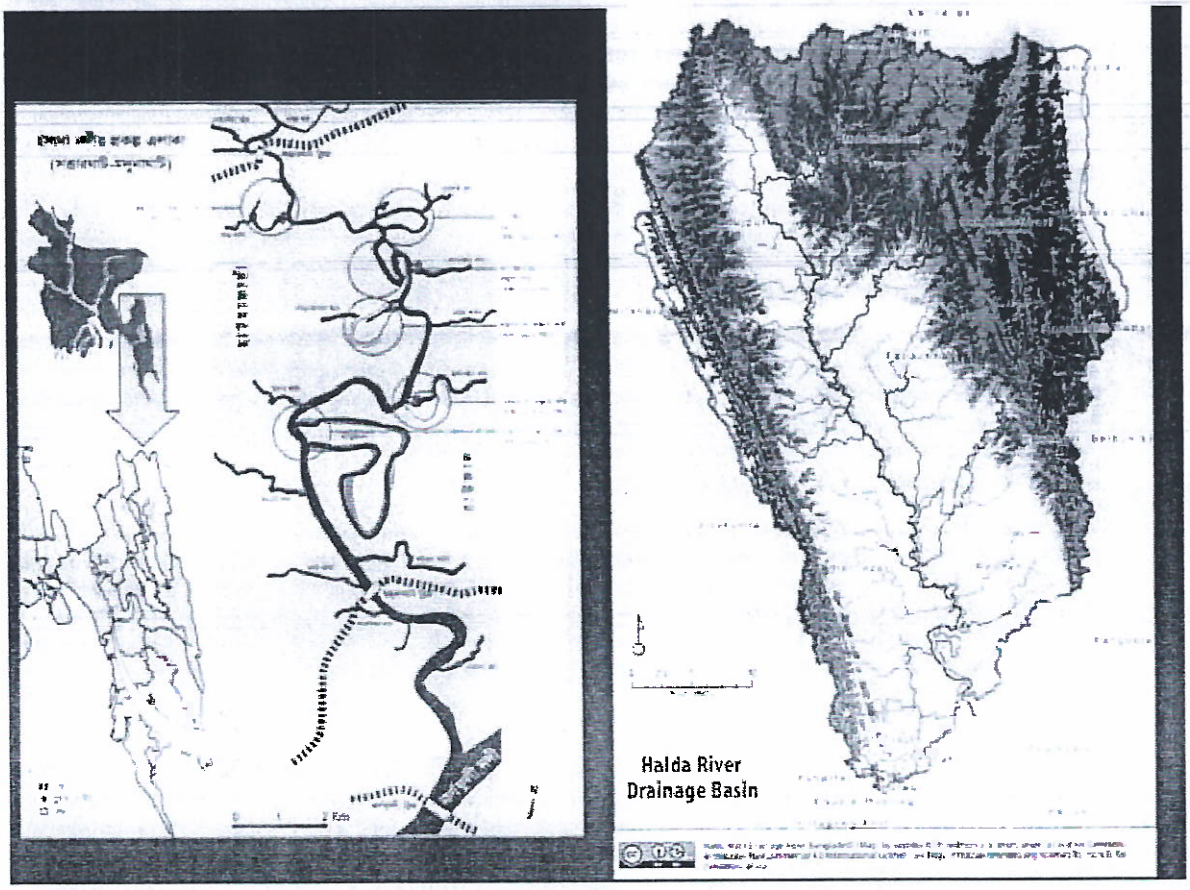


Figure 3: Halda River Map and drainage system

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Table 2: Priority actions for recovery of the Halda River

Environmental Threat	Current problem	Proposal	Monitoring	Result
Industrial pollution – tanneries, paper mill, large-scale poultry farming	Chronic and episodic pollution, sometimes resulting in fish kills and a general degradation of the Halda's ecology, including internationally important and threatened species such as Gangetic dolphin.	Implement targeted monitoring strategy to identify sources. Engage with larger businesses to implement combination of tighter, enforced legislation and look for 3rd sector industry leader.	General suite of water quality indicators including heavy metals, suspended solids, ammonia and nutrients. Sampling program targeting major tributaries and likely urban sources in Chittagong. On-going program to establish baseline levels and set achievable objectives	On-going monitoring and engagement leading to catchment wide improvement in water quality and cessation of episodic point-source pollution events
Municipal pollution – treated and untreated sewage, plastics	Likely high levels of phosphorus and ammonia in the river and tributaries resulting in damaged and modified eco-system	Monitoring program as above. Engagement with water company - more info needed about sewerage in Chittagong and wider catchment	As above	On-going monitoring and targets leading to reduced nutrient levels in the river. Possible investment in rural sewage treatment works.
Agricultural pollution – fertilisers, herbicides, insecticides from increasingly industrialised farming,	Loss of sensitive invertebrate life and threat to fish life. The pesticides and excess nutrients disrupt the ecosystem at the most basic level, threatening all species using the Halda, including internationally important bird and mammal species.	Linked to alternative livelihoods program and Centre for Natural Resource Studies (CNRS) climate-wise farming advice. Seek alternative high-value crops requiring less chemical input. Legislate against more harmful pesticides. Education amongst the communities engaged in both fishing / egg collecting and farming.	As above	Reduction in harmful pesticides and excess nutrients entering the river leading to gradual improvement in invertebrate life. May also deliver hydrological benefits if farmers move away from winter rice to less water hungry crops.
Broken hydrograph – flows interrupted by a variety of dams, sluices and canals	Lack of flows as water is held back at the beginning of spawning season. Barriers to fish migration. Loss of habitat behind dams and disruption of natural sediment transport. the disrupted flows and passage may also prevent Gangetic dolphins reaching important habitats.	Feasibility study into restoring natural flows. Program of assessment of each of the dams and sluices looking at current use, impacts on flow and sediment transport and a future management plan of removal, modification or implementation of an environmental flow regime.	Program of site visits following implementation of suggested measures to ensure objectives are met	Restored spawning habitats, fish migration and a naturalised hydrograph, likely improvement in macro-habitat for Gangetic dolphin.
Sand extraction	Release of toxic levels of suspended sediment, noise	Reported stopped? Check legislation and monitor	Monitor sand extraction activities in	Cessation of noise and sediment pollution

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Environmental Threat	Current problem	Proposal	Monitoring	Result
	pollution deterring migrating fish and dolphins, de-stabilisation of river bed and banks		lower Halda / Karnaphuli	
Modification of river banks for stabilisation and development	Loss of natural riparian habitat	Assessment of where further bank stabilisation is required to protect riparian communities, and designation of areas where stabilisation and further riparian development will not be allowed.	Monitoring of further developments from Google Earth and community groups	Prevention of further riparian habitat loss. Prevention of bank stabilisation (canalisation) upstream of Chittagong may also reduce exacerbation of future flooding
Habitat loss due to canalisation	Loss of meander bends – critical carp spawning habitat. Canalisation also likely to exacerbate downstream flooding.	May be possible to re-instate lost meanders. Requires catchment-wide opportunity assessment	Annual monitoring of fish stocks and egg collection.	Restoration of lost carp spawning grounds.
Illegal fishing of broodstock from lower Halda and Karnaphuli	Loss of broodstock to regenerate natural fish stocks and supply egg trade	Despite legislation outlawing fishing for broodstock and the presence of community patrols this practice is still reportedly widespread	Continued monitoring of illegal fishing from established community groups linked to Manzoorul Kibria at Chittagong University	Protection of broodstock and increased security of carp spawning
Over-exploitation of native fish stocks	The value of the egg harvest, in combination with the loss of fish passage, loss and degradation of habitat and legal and illegal fishing of broodstock will inevitably threaten stocks of the native Asian carp species.	Implement multi-species, simple monitoring program leading to sustainable catch limits and stock management	Suggest simple seine net surveys at multiple locations Can be NGO / community or university led.	Sustainable management of fish stocks

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Ecological and socio-economic profiles of target ECAs

MORJAT BAOR ECA[48]

1. SITE DESCRIPTION

Morjat Baor[49] (N 23°18'10"; E 89°06'09") is located in western Bangladesh, to the north-west of Jessore. This 200 ha baor is a crescent-shaped, ox-bow lake, with a depth ranging from 0.5 to 6 m. The baor supports important plant, invertebrate, fish and bird communities and is economically critical to local communities as a fish rearing facility and fishery. Fish eggs are bought in from outside the area, reared to fingerling size in rearing ponds around the baor, and released into the baor to mature before capture. The baor's own endemic fish population also provides a valuable fishery. Investment by the World Bank in the twentieth century successfully improved the ability of local communities to rear and harvest fish from the baor.

Very limited information is readily available about this ECA, despite significant efforts on the part of Department of Fisheries and the UNDP Bangladesh County Office to track down relevant details. This dearth of information highlights the low profile of some wetlands within the ECA network and is identified as a barrier to address in this proposed project.

The baor is threatened by an invasive plant, pollution and over-exploitation.

2. BIODIVERSITY VALUES

Morjat Baor is famous for its diversity of over 100 species of freshwater fish species, including *Botia dario* (*Rani mach* in Bangla), a nationally endangered fish species (IUCN Bangladesh Redlist 2015). Globally, this species is classified by IUCN as being of Least Concern (LC). Although there are threats to its habitats and it is heavily harvested for the ornamental trade, the species is hardy and widely distributed in the Ganga and Brahmaputra drainages in India, and Meghna basin in Bangladesh.

The lake is also very important habitat for bird species, such as the locally endangered little black cormorant (*Phalacrocorax sulcirostris*, LC), Great White Egret (*Ardea alba*, LC), kingfishers and other species. The abundant plant life also supports diverse and abundant communities of invertebrates, amphibians and reptiles.

3. ECOSYSTEM SERVICES

Morjat Baor is an important fishery for the local communities but this has been declining due to encroachment, pollution and over-exploitation, with adverse consequences on the local socio-economy. The current status of the fishery and local livelihoods needs to be assessed during the PPG.

The baor is co-managed by local Fishery Department and the 150 member fishermen cooperative. The profits from artificial fish farming with carp are distributed at a ratio of 60:40 between the government and fishermen. In 2017/18, this share was US$ 37795 for the government and US$ 24626 for the fishermen. This translates into an annual benefit of US$ 164 per fisherman.

It is important to describe the total fishing benefits from the baor. The carp produced in the baor are termed as *Raja Mach* (King Fishes). All the other fishes that are native to the baor are called *Rani Mach* (Queen Fishes). Government doesn't have any share in the native fishery; that is, 100% of the income from Queen Fish goes to the fishermen. In community consultations conducted during this study, the fishermen stated that the benefit

[48] The name of this baor is spelt as 'Morjat' in the ECA notification of 19 April 1999 (refer to map legend in Annex 1). However, locally the name is spelt and pronounced as 'Morjat'. The former spelling is used to avoid any potential legal confusion.

[49] A baor is the dead arm of a river, also referred to as an oxbow lake, and appears as a depression. It usually receives water only when its parent river is in high flood. Baors were the property of zomindars (landlords) during the British colonial era (1757-1947) and became government property after removal of the zomindary system under the 1951 Land Settlement Act.

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obtained from Queen Fish is at least 4-5 times the benefits available through King Fish. That means the annual benefit per fisherman from Morjat Baor is US$ 902. The total annual benefit for the fishermen cooperative is therefore approximately US$ 135492. Combined with the government share from the King Fishes, the total annual economic return from the Baor's combined fisheries alone is US$ 173,287.

Existing scientific studies on efforts to estimate the value of natural capital show that, on an average, the value a biodiversity or natural resource can produce is 2.5 -3.0 times the value of the marketable good and services it can produce. A rough estimate of Morjat Baor's annual economic worth can be visualized to be around US$ 433099 – US$ 519742. This estimate highlights the potential significance of the baor to the local economy in particular and national economy as a whole.

Table 3: Ecosystem services provided by Morjat Baor

Ecosystem Service	Description	Potential value of protection and improvement
Provision of habitat for imported fish-rearing business	The baor is stocked annually with "fingerling" fish brought in as eggs or fry from other parts of Bangladesh (Halda?), initially reared in local ponds and then released into the baor. The fish are later caught at adult size and sold nationally. This business is supported and regulated by the Department of Environment and supports hundreds of livelihoods in the Morjat communities and nationally.	The stocked fishery is of great economic locally and also important nationally. It is threatened by the encroachment of the non-native water-hyacinth and also herbicides and
Provision of endemic fish fishery	The endemic fish of the lake are also fished and sold, for greater value per kg than the stocked fish.	An economic and ecological assessment is necessary to show the potential for increasing the endemic fishery, possibly at the expense of the imported fish. Protecting and enhancing the environment may provide a more ecologically appropriate, sustainable, profitable fishery.
Municipal water provision	The baor communities use the baor for water supply, and therefore rely on its cleanliness. Reports of pesticides harmful to human health suggest further regulation might be needed. The balance of endemic to stocked fish may also affect municipal water supply if planktivorous carp become dominant and threaten water quality.	Steps taken to improve water quality for supply would also protect the baor's ecosystem. Pesticide management is particularly important.
Agriculture	The baor provides water for agriculture, and the riparian zone is also used for crop production in the dry season. These activities support local livelihoods.	All the baor communities are reliant on agriculture for both subsistence and sale. A financial assessment of the value of this agriculture and its reliance on the baor is recommended.
Carbon sequestration	The riparian zone and associated forestry, wetlands and backwaters have the potential to sequester large amounts of carbon.	Models exist to quantify and value the boar's carbon sequestration.
Potential for eco-tourism	The baor has the potential to support eco-tourism, as at Hakaluki Haor, which in turn may support alternative livelihoods.	Eco-tourism would be reliant on a healthy, functioning eco-system, but could co-exist with a well-managed fishery and existing agriculture.
Provision of habitat for native (often endemic) wildlife	The baor supports a number of nationally and internationally important species, many of which are threatened. Fish, bird and reptile species appear to be of particular interest. All	Each of the steps suggested in the ecosystem management framework would be beneficial to the overall ecological value of the baor, supporting

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	these species are supported by the baor's natural ecology, and therefore reliant on effective management of water hyacinth, nutrients, fish stocking and agricultural run-off. The Department of Fisheries staff has good knowledge of fish communities and threats to the baor, although more knowledge is needed.	not just the species of direct economic value, but also the lesser known species and the ecosystem upon which the Morjat fauna and flora rely.

4. CULTURAL VALUES/FEATURES/CONTEXT

The lives of the communities of Morjat Baor are based around the baor. The villages are built close to the water, and a high proportion of adults work on and around the boar. The baor provides not only food and income, but is also used for transport and trade between communities. The communities wash and bathe in the baor, and fish harvesting is a communal (although male-only) multi-generational social activity. The baor, in effect, provides a large proportion of community income, an easy means of travel and trade and is a back-drop for community life.



Figure 4: communal fishing, Morjat Baor

5. THREATS

Morjat Baor is subject to a number or threats:

- The invasive water hyacinth, *Eichhornia crassipes*
- Pollution by agricultural herbicides and pesticides
- Exploitation of the baor as a rearing facility and fishery
- Nutrient balance in the baor
- Sedimentation of the baor

Water hyacinth

This is the most hazardous and cost-intensive problem of this baor. Of the 10km length of the baor, 4km water surface is completely and continuously covered by water hyacinth at any point of time. It has been assumed by the local fishermen and fishery department professional that 95% of the water hyacinth is webbed together while the remaining 5% of is scattered across the baor. The floating mass of water hyacinth is frequently forced to travel by strong wind from place to place in the baor. The main problem water hyacinth has been creating is the reduction of baor's water depth. The depth of the baor has been reduced from 40-45 ft. in 1984 to just 10-20 ft. in 2018. This tremendous reduction of water depth is considerably reducing the fish production rate and the diversity of aquatic flora and fauna, let alone the local environmental impacts.

[Notes: Why is hyacinth-based agriculture not favorite in this area? Answer: Queen Fishing is terribly popular and financially rewarding compared to any other form of agriculture. The demand for other agriculture diminished by the income coming from Queen fishing.]

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A complete eradication of water hyacinth is expected to increase fish production, fish breeding, reduced fish mortality, reduced fish production cost. So, how is a complete eradication possible? The fishermen and the local fishery department officials opined that at least three consecutive complete removal of water hyacinth is needed to get rid of this infestation. As explained in the FGDs, at least BDT 1,000,000 is needed for each cycle of manual removal of hyacinth at rate of BDT 400/labor. It can be noted that some farmers present in the FGD were opting for chemical control of the hyacinth. However, others were protesting as saying - such a control is detrimental not only to the hyacinth but also to all the living beings and local environment. Evidently, the latter is correct.



Figure 5: the extent of water hyacinth cover of the baor (green area)

Water pollution

The overall water quality in the baor remains sufficiently good to support the diverse plant and fish community, but is threatened by regular low-oxygen events caused by the decay of water hyacinth, the occasional use of herbicides to control the hyacinth and agricultural run-off. Sewerage from the baor communities is also likely to be a problem.



Figure 6: Dead carp: possibly a victim of pollution or low oxygen

The immediate and devastating impact of these episodic pollution events is the mortality of fish in the baor. The baor faces two critical periods for possible fish mortalities in a year: once during October-December when water level is and water hyacinths is rotting, and another during March-May when agrochemicals are washed off the adjacent agricultural fields.

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Exploitation of the baor as a fishery

The stocking of the baor with large numbers of non-native fish annually is likely to have an adverse impact on the baor's endemic fish population and wider ecology, as the additional fish create extra completion for resources. The fishermen report that the stocked fish are planktivorous cyprinids, likely to reduce zooplankton populations thereby increasing the likelihood of phytoplankton algal blooms. This may lead to a cycle of dramatically fluctuating oxygen levels, lethal for fish and may also encourage a shift in the baor's fundamental ecology, allowing plankton to out-compete the submerged plant community.

Nutrient balance

The agrochemicals washed off from the adjacent agricultural land are causing serious algal growth in the baor Growing algae has both beneficial and detrimental impacts on the baor. However, its detrimental impacts are likely to be more weighed than its beneficial impacts. Algae provides food and shelter for the fishes. However, their growth in some places is so severe that it often threatens the boar in the following way: causing raising of baor floor with accumulation of muddy residues, rotten residues are lowering down the DO level, hindering the fishing process, removal of them involves money that ultimately increasing fish production cost.

Excessive and increasing rate of siltation

As stated in the preceding section, decaying water hyacinth is mainly causing this problem. In addition to this, the siltation is caused by the erosion from adjacent agricultural activities done by the non-fishing community. The removal of the muddy substrate from the baor floor is excessively cost-intensive. The existing record as available from Water Development Board shows that the removal of this settled mud requires about BDT5.7 million.

6. CURRENT MANAGEMENT AND OTHER ACTIVITIES

The baor is currently managed as a commercial fishery, under license and guidance from the Department of Fisheries. The communities recognize the threats of the water hyacinth, over-fishing and agricultural pollution. Hyacinth has historically been treated with toxic herbicide (reports vary as to whether this practice continues) and is currently removed mechanically, although not to a sufficient level to approach eradication or limit ecological damage.

The fishery is well managed, with stocking and catch records, targets and quotas, and, importantly, areas set aside as fish refuges. If these areas are expanded, made permanent and set aside from exploitation they are likely to play a significant part in protecting and enhancing the baor's ecology.

7. SOCIO-ECONOMIC ASPECTS

The baor is critical in supporting the livelihoods of a high proportion of the people in the surrounding communities through subsistence or commercial fishing activities, and also supports employment nationally through the trade in eggs to supply the baor and the sale of fish from the baor. The Department of Fisheries employ several people in the immediate area to manage the baor and fishery. Women are culturally excluded from involvement in the fishing industry.

The baor is also used for sanitation and recreation and is of huge cultural and social significance to its communities.

8. FEEDBACK FROM STAKEHOLDERS

The stakeholders met were predominantly fishermen or fishery managers, and were well aware of the problems facing the baor. The major concerns voiced were:

- Water hyacinth and its effects. Opinions varied on whether the community or government should remove water hyacinth.
- Nutrients in the lake (the fishermen believed algal domination to be natural and good for the fish, and thought the submerged macrophytes only appeared when the hyacinth out-competed the algae for nutrients).
- Agricultural run-off, particularly of pesticides
- Silt levels and the impact on baor depth.

9. PROPOSED RESTORATION ACTIONS

Each of the threats detailed above can be combatted. However, if the threats are not addressed immediately the baor is likely to lose a large proportion of its fauna and flora, and the ecosystem services it provides will be greatly reduced. The actions for recovery set out in Table 2, below, are prioritized according to most critical threat. To effectively deliver each of the actions below requires an urgent, coordinated effort from government, industry,

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communities and NGOs, and delivery and would be best delivered through a recovery framework, as detailed in **Annex 6.**

Table 4: Recovery actions for Morjat Baor

Environmental Threat	Current problem	Proposal	Monitoring	Result
Water hyacinth *Eichhornia crassipes*	Invading the baor, shading out native plant and plankton life, changing ecological balance of the baor. Currently managed by a combination of spraying and manual removal. Spraying with Gamaxin and B4 is dangerous for the baor and fishermen, and leads to the hyacinth sinking and decaying, releasing more nutrients and consuming oxygen.	Provision for mechanical and manual removal with set annual targets of tonnage or surface area. Hyacinth can be composted and sold to farmers. This could partially negate the need for fertiliser application. *	Annual estimation of surface area coverage by boat survey or drone.	Improved ecosystem balance, nutrient and oxygen status of the baor.
Agricultural pollution – fertilizers, herbicides, insecticides from increasingly industrialised riparian farming.	Loss of sensitive invertebrate life and threat to indigenous fish life. Potentially excessive nutrient input.	Linked to alternative livelihoods program and Centre for Natural Resource Studies (CNRS) climate-wise farming advice. Seek alternative high-value crops requiring less chemical input. Legislate against more harmful pesticides. Education amongst the communities engaged in both fishing and farming.	Monitoring program targeting nutrients, Biological Oxygen Demand (BOD) and easily identifiable agri-chemical markers	Reduction in harmful pesticides and excess nutrients entering the river leading to gradual improvement in invertebrate life. May also deliver hydrological benefits if farmers move away from winter rice to less water hungry crops.
Sustainable fish stocks	The majority of the marketed fish harvest is from imported eggs that are reared to fingerling size, released into the baor to grow and harvested at adult size. These fish are mostly planktivorous carp species and may upsetting the plant / plankton balance of the baor. Alongside the stocked fish trade is an indigenous fishery which currently produces fewer (but higher market value) fish. There are current nursery areas set aside for both stocked and native fish, but these do not seem to be no-take zones.	Assess the possibility of reducing the stocking of fish while building on the indigenous fish trade. This would require economic, ecological and social assessment but should in theory lead to a more balanced eco-system and possibly a shift from plankton to plant domination. Encourage the establishment of bigger, better-linked no-take nursery areas to benefit both stocked and indigenous fish.	Annual seine-net surveys of fish stocks. Annual review of stocked and indigenous catches.	Improved ecology and sustainable native fish industry.

* Note that sedimentation associated with this plant might also be addressed by pumping the mud onto terraced arable land, allowing the water to drain back into the baor after the silt has settled and then ploughing nutrient enriched silt into the soil once dry. Application of any dredging or mud-pumped silt to arable land must be subject to extensive sampling of the area to be dredged to check for possible contamination by heavy metals.

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ANNEX 15: SUMMARY OF VALIDATION WORKSHOP

'Implementing Ecosystem-Based Management in Ecologically Critical Areas in Bangladesh'
25 May 2019 at Chameli Conference Room, Department of Environment, Dhaka

Introduction

A validation workshop was held at Department of Environment, Dhaka on 25 May 2019 regarding the finalization and validation of project document titled "Implementing Ecosystem Based Management in Ecologically Critical Areas in Bangladesh." Mr. Abdullah Al Mohsin Chowdhury, Secretary, MoEFCC presided over the workshop. Among others Mr. Md. Mozahed Hossain, Additional Secretary (Development), Ministry of Environment, Forest and Climate Change (MoEFCC); Dr. Nurul Quadir, Additional Secretary (Climate Change), MoEFCC; Dr. Munjurul Hannan Khan, Additional Secretary, MoEFCC; Dr. Sultan Ahmed, Director General, Department of Environment were also present. A total of 35 representatives from the relevant ministries, line agencies, experts, NGOs, private sectors and relevant officials of the MoEFCC, DoE, and UNDP participated.

Presentation of project proposal and key Discussion

Programme was moderated by Dr. Munjurul Hannan Khan and chair of the workshop. He started with welcome address and briefly discuss about the purpose of validation workshop. Mr. Solaiman Haider, Director (Planning) of DoE presented in this validation workshop. He described the project objective, major challenges and barriers in ecologically critical areas Mr Arif Faisal, Programme Specialist of UNDP also added with this presentation regarding activities and outcome indicator of this project. He also discussed about the consultation process and other meetings that were conducted during preparation of the project. He emphasized on the rationale of implementation of the project.

Dr. Sultan Ahmed discussed and gave valuable recommendation to improve the project document. Community-based adaptation models are being implemented in Hakaluki and Tanguar Haor. It is better to know the experiences of those models for the purpose of application in this project. Halda river management guideline from ecological conservation perspective has already been developed. It is better to review that one and customize for this project which will also work for Halda. Detail activity plan along with budget allocation is needed to be included in this project document. Towards keeping consistency with the objective of people's participation, it is very much expected that we practice community engaged eco-system approach. We should be careful that in the name of 'livelihood development approach' we do not get diverted from ecosystem-based management/biodiversity conservation.

Mr. Mozahed Hossain, Additional Secretary, MoEFCC added that for effective implementation of the project, none can deny the importance of pin-pointed objectives. So, we need to rearticulate the objectives in a more specific manner. What are the specific reasons for wetland habitat degradation – should be specified clearly. The project should clearly mention the livelihood options mentioned by the local people of both the locations.

Dr Nurul Quadir, Additional Secretary, MoEFCC mentioned that we should always remember the challenges of ecosystem-based management. The pertinent role of DoE should be considered in its strength and weaknesses. He also mentioned that we should consider environmental resilience and climate change importantly for ecosystem-based management.

Honorable Secretary, Mr Abdullah Al Mohsin Chowdhury included that budget to be made more realistic. He urged that at least 70% budget should be kept for investment since we have generated loads of legal framework and policy documents on ECA management. The necessity of the money needs to be clearly spelled out. He also recommended to put more emphasize on activities and investments.

Key recommendation:

- MoEFCC and DoE also recommended to prepare 2 site specific ecosystem based-mgt plan for 2 ECAs (Halda and Morjat). DoE advised to specifically mention ECA mgt rule 2016 and operationalization of ECA mgt rule thru this project. They also requested to concentrate all budget in two ECAs. They also requested to replace "ECA mgt framework" with "ECA management system" as there are ECA rule 2016 for Bangladesh.
- MoEFCC and DoE requested to make significant change in the major components of the ProDoc. They requested to keep 10%, 70% & 15% resource for comp 1,2 and 3 respectively. They would like to see clear and specific development intervention for 2 ECAs
- Instead of implementing partner, DoE will be national executing agency.

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- There is some inconsistency in project component 1 and outcome1 which need rewording and rephrasing.
- Activity oriented budget plan needs to be incorporated. Some inconsistency in budget component like IT equipment. Budget document is not break down in relation to activities.
- As ecosystem-based management framework is already in place, right now for project component 1 site specific management plan need to be developed.
- In activity level removal of rubber dam, this kind of controversial activities should need to be revisit.
- As one of the activities mentioned about dredging a proper planning is very important for Morjat Baor as there are some sediment pockets. Without proper planning or impact study this kind of project activities might be detrimental for that natural ecosystem.
- Community selection process should need to be done very carefully so that maximum involvement of community members and benefits can be accessed. A proper planning is also important so that any kind of conflicting situation shouldn't be arise among communities of selected sites.
- Activities also included preparing software-based baseline for all ECAs. However, St Martin, Hakaluki, Halda, Sonadia many of ECAs has already been developed some baseline. Instead of preparing baseline for all ECAs, stocktaking and review of accessible information is very important. However, baseline information preparation should be concentrated only for Morjat and Halda River.
- As this project document lacks incorporation of previous projects related to ECA like CWBMP, CBA-ECA proper inclusion is important to get insight form previous ECA related project.
- The future project, 'Protibesh Project' should not be in the Prodoc as there is no certainty that this project will be permitted by the MoEFCC.
- Need to prepare an elaborate activity chart of the project. Who will do what and budget requirement for the implementation of each of the activities need to be reflected
- Ministry of Fisheries has conducted a study on the entire Halda river from the perspective of fisheries development which contains many recommendations. ECA Project should take ideas from that study particularly with respect to fishing, fish habitat, protection, and preservation.
- IWM person suggested to develop a vision map showing 'how the project locations/situations are now; how will it look like if the project is implemented'
- Two specific Project Implementation Plan should be developed- one for Morjat Baor and another for Halda.
- Instead of Terms of Reference in general terms, it will be better to specify activities of all sorts of committees. These activities may differ between the 2 locations.
- Action on the ground should be adequate allocation. The project should clearly highlight the ratio of allocation among human resources, equipment-logistics and more importantly on activities to attain objectives. The ratio should be 70% for program activities and 30% for others.
- The Project should focus on **Results.** Results based management should be given emphasis.
- Both the floor and head table suggested to make public the activities that this project will do for Halda and Morjat Baor- what, why, result.
- For an effective partnership, the project should mention the responsibilities of each of the government agency like – BWDB, DoF, DoE, DoA, NRCC, etc. very clearly.
- Before suggesting 'Rubber dam should be removed', we should be careful, because it can create conflicts with another sector.
- In implementing the project, less involvement of consultants will economize the project.
- Important challenges for this project will be pollution control, maximizing the support of the local communities, and involving the DoE staffs in project implementation.
- As the project activities mentioning about alternative livelihood support it is important to pay careful attention to focus ecosystem-based approach for amazing ECA. Because co-management and eco-system-based approach quite different.

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- In ECA Management Rule mentioned about ECA management committee. So instead of proposing any new committee in the project document it is needed to incorporate with the existing platform.
- Community Based Adaptation models are being implemented in Hakaluki and Tanguar Haor. It is better to know the experiences of those models for the purpose of application in this Project.
- Halda management guideline from ecological conservation perspective has already been developed. It is better to review that one and customize (if needed at all) for this Project which will also work for Halda.
- As Halda River covered vast area including two districts it is important to consider the upstream and downstream situation instead of considering administrative boundary.
- For proper activity to be initiated awareness among industrialists and business partners are important and necessary action is needed to eradicate Halda exploitation. Sensitization and ownership building of business communities are important to achieve project objective.
- NPD role is note elaborately defined in the project document. It needs to be elaborated.
- Budget note needs to be revised like weed control, it equipment, training, etc.
- a proper exit plan needs to be incorporated.
- Taking endorsement of responsible parties and implementing partners are necessary to ensure success of the project.
- Type of evaluation midterm or terminal evaluation needs to be clearly mentioned.
- Need clarification and clear activities for ecosystem monitoring system.
- How ECA committee would be functional and operationalize this sort of activities and clear indication should be given in the project document.
- Need to be careful to use wording like "obsolete" and "lack of".

Participant list:

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7.	Dr. S. M. Munjurul Hannan Khan	Additional Secretary	MoEFCC
8.	Md. Morjad Hossain	Additional Secretary	MoEFCC
9.	Dr. Sultan Ahmed	Former DG	DoE
10.	Dr. Nurul Quadir	Additional Secretary	MoEFCC
11.	Shamsur Rahman Khan	Deputy Secretary	MoEFCC
12.	Dr. Monwar Hossain	ED	IWM
13.	Dr. Stefaan Groenwold	Coordinator	GIZ
14.	M. Zakir Hossain Khan	Head,Climate Finance Governance Unit	TIB
15.	Canra Van Welden	GIZ-SMP	GIZ
16.	MD. Danesh Miah	Consultant, EbM ECA	Chittagong University
17.	Arif M Faisal	Programme Specialist	UNDP
18.	Dr. Md. Saifur Rahman	Sr. Assistant Chief	MoEFCC
19.	Md Abdul Matin	Deputy Chief	MoFL
20.	Dr Rokeya Khatun	Social Safeguard& Gender Specialist	Consultant, EbMECA
21.	Md Abdul Mannan	Coordinator	NACOM
22.	AKM Rafiqul Islam	Deputy Director	DoE
23.	MD. Hasan Hasibur Rahman	Deputy Director	DoE
24.	M. Hafijul Islam Khan	Director	Centre for Climate Justice
25.	Md Mokhlesur Rahman Sarker	DMD	BCCT

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26.	Keya Khan	Joint secretary	MoEFCC
27.	Dr. Fahmida Khanam	Director, NRM	DoE
28.	Md Ziaul Haque	Director	DoE
29.	Renerio Acosta	Senior Environment & Climate Change Advisor	USAID
30.	Md Abul Hashem	Sr. Assistant Chief	MoEFCC
31.	Md. Iliyas Mahmud	Assistant Director	DoE
32.	Dr. Abu Nasar Abdullah	Deputy Secretary	MoEFCC
33.	Tanzina Dilshad	Project Officer	UNDP
34.	Shimul Barua	HRA	UNDP
35.	Md. Farhad Alam	PA-Rio	UNDP
36.	Mokhlesur Rahman	ED	CNRS
37.	Dr. Md. Muzammel Haque	PM	ICBAAR
38.	Motaleb Hossain Sarker	Director, Water Resources	CEGIS
39.	Md Ariful Haque Belal	Assistant Chief Consultant of Forests	Forest Department
40.	Md Mozahidur Rahman	Assistant Director	DoE
41.	Dr. Sharif A Mukul	Assistant Professor	Independent University

Programme Schedule

Time	Activity	Responsible Facilitator/Resource Person
1:30–2:00	Registration	
2.00–2.10	Welcome address, Project brief, setting the tone and expectation from the consultation	Mr. Solaiman Haider, Director (Planning), Department of Environment, and Arif M. Faisal, Programme Specialist, UNDP
2.10–2.40	Presentation on the proposed project	National Consultant Team
2.40–3.40	Stakeholder's opinion on project documents, targeted activities and implementation arrangements	Moderated by Dr. Munjurul Hannan Khan Additional Secretary, MoEFCC
3.40–3.50	Summary of consultation wrap up and way forward	Mr. Solaiman Haider, Director (Planning), Department of Environment
3.50-4.00	Closing speech by Special Guest	Mr. Md. Mozahed Hossain, Additional Secretary, Ministry of Environment, Forest and climate Change
4.00–4.10	Closing Remarks by the Chief Guest	Mr. Abdullah Al Mohsin Chowdhury, Honourable Secretary, Ministry of Environment, Forest and climate Change
4.10-	Prayer and distribution of Iftar Box	

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ANNEX 16: PROJECT ALIGNMENT WITH GEF-6 BIODIVERSITY STRATEGY OBJECTIVE

Program 9 (red font) and CBD Aichi Biodiversity Targets (2011-2020)

RELATIONSHIP BETWEEN CBD STRATEGIC PLAN FOR BIODIVERSITY 2011-2020 AND GEF BIODIVERSITY OBJECTIVES AND PROGRAMS		ALIGNMENT OF PROPOSED PROJECT
CBD Strategic Plan Goals and Associated Aichi Biodiversity Targets by 2020	**GEF Biodiversity Objectives and Program Alignment**	**Proposed project outputs and activities contributing to Aichi Targets and GEF 6 Biodiversity Strategy**
Goal A. Address underlying causes of biodiversity loss	GEF Objective 4: Mainstream biodiversity	Yes
1) Raise awareness of biodiversity values	BD Programs 1-10 (integration into project design and implementation as appropriate and useful)	Yes
2) Integrate biodiversity values into development	BD Programs 9 and 10	Yes (limited)
3) Remove or reform incentives harmful to biodiversity	BD Program 10	Yes
4) Achieve sustainable production and consumption	BD Program 9	Yes
Goal B. Reduce direct pressures on biodiversity	**GEF Objective 1: Improve Sustainability of Protected Area Systems**	**Yes**
	GEF Objective 2: Reduce threats to biodiversity **GEF Objective 3: Sustainably Use Biodiversity GEF Objective 4: Mainstream biodiversity**	
5) Halve rate of habitat loss	BD Programs 1, 2, 9	Yes
6) Fish and invertebrate stocks managed sustainably	BD Program 2 and 6	Yes
7) Agriculture, aquaculture and forestry sustainably managed	BD Program 7 and 9	Yes (limited)
8) Reduce pollution to safe levels for biodiversity and ecosystems		Yes
9) IAS effectively controlled and managed	BD Program 4	Yes
10) Minimize pressures on reefs and other vulnerable ecosystems	BD Program 2 and 6	Yes

Goal C. Improve status of biodiversity	**GEF Objective 1: Improve Sustainability of Protected Area Systems**	**Yes**
	GEF Objective 2: Reduce threats to biodiversity GEF Objective 3: Sustainably Use Biodiversity GEF Objective 4: Mainstream biodiversity	
11) 17% terrestrial/inland water and 10% marine areas effectively and equitably conserved in PAs	BD Programs 1,2,7, and 9	Yes
12) Prevent extinctions, improve status of threatened species	BD Programs 1, 2, 3,4, 5, and 9	Yes
13) Gene pool of cultivated plants and farmed/domesticated animals and their wild relatives maintained	BD Programs 1 and 7	Yes (limited)
Goal D. Enhance benefits from biodiversity and ecosystem services	**GEF Objectives 1,2,3, and 4**	**Yes**
14) Restore and safeguard essential ecosystem services	BD Programs 2 and 9	Yes
15) Enhance ecosystem resilience and carbon stocks	BD Programs 1, 2, 9 and 10	Yes
16) ABS Protocol operational, consistent with national legislation	BD Program 8	No - Bangladesh has not signed Protocol
Goal E: Enhance implementation	**Integrated throughout GEF Programming**	
17) Implementation of revised NBSAPs underway by 2015	NBSAP development funded during GEF-5. Implementation supported by all GEF-6 BD programs.	Yes
18) Traditional knowledge and practices integrated with CBD implementation	Integrated into project design and implementation as appropriate in all GEF-6 BD programs.	Incidental only
19) Knowledge, science-base and technologies on biodiversity values widely shared and applied	Integrated into project design and implementation as appropriate in all GEF-6 BD programs.	Yes (limited)
20) Mobilization of financial resources increased substantially	GEF will identify, make use of, and report on all financing leveraged through GEF BD programs and integrated approaches piloted in GEF-6.	Yes

ANNEX 17: ECOSYSTEM-BASED MANAGEMENT OF ECAS

Assessing, Measuring, Monitoring and Enforcing Compliance

INTRODUCTION

An ecosystem-based management plan treats a protected area (such as Halda River or Morjat Baor) as a dynamic system with a wide range of external influences. For example, in a river or wetland, water quality is affected not just by direct discharges to the system, but also by remote activity in the wider watershed, such as intensive agriculture or deforestation causing sediment pollution or changes to flow patterns. The approach also recognizes that important species such as Gangetic dolphin or Indian carp rely on healthy, functioning *ecosystems* rather than small areas of river or wetland. This approach is equally applicable to livelihoods that rely on Bangladesh's ECAs, recognizing that a sustainable fishery, or high-quality water for municipal supply or agriculture are reliant on a wide range of catchment scale factors, rather than just immediate influences. Ecosystem-based management can be a successful tool not only for conserving existing sites or assets but also for re-building entire damaged ecosystems. The approach has clear benefits over more traditional species or habitat focused conservation schemes in that it has the potential to address a site holistically, addressing a broad suite of environmental concerns, rather than more spatial and quantitative limited factors limiting a single species or habitat.

Ecosystem-based management systems have been applied in Europe, Africa and Australia with varying success. In order for an ecosystem-based approach to be effective on a meaningful scale, it is important that targets are time-bound and written into legislation in a way that ensures delivery of necessary actions is not only possible, but also enforced. The European Water Framework Directive (EWFD) (EC, 2000) was introduced in order to bring all water bodies in the European Union to good ecological health within a prescribed period of time, and works on the principle that member states are penalized should their water bodies fail to achieve the agreed level of ecosystem health.

The EWFD is based on the principle that a healthy functioning ecosystem is reliant on a number of key basic components, all of which must be within healthy parameters in order for the water body as a whole to be in good health. These factors are agreed by government-appointed technical specialist panels and include wide suites of ecological (habitat quality, fish population, invertebrate population, plant and algae communities, hydrographs) and chemical (nutrients, oxygen, indicators of pollution such as heavy metals and pesticides) parameters, each of which are regularly assessed and graded Bad, Poor, Moderate, Good or High. Any score below Good is considered a failure. If a water body should fail to reach the required standard for any of these criteria, then measures must be taken to address the failure within a set timeframe. The overall ecological status of the water body is determined by the lowest score of any of these variables, thereby acknowledging that an ecosystem is limited by the poorest of its contributing building blocks, and ensuring that no factor can be overlooked if a site is to reach good ecological status. In addition to providing an action plan for improvement, the EWFD also makes it illegal to cause ecological harm to water bodies. In Europe this aspect has been an important addition to existing environmental law.

POSSIBLE APPLICATION TO ECOLOGICALLY CRITICAL AREAS IN BANGLADESH

The EWFD provides a useful, transferable framework for Bangladesh's Ecologically Critical Areas, and could provide a practical and legislative framework for safeguarding and maximizing the ecological health of the existing sites and delivering the associated gains for communities whose benefits from the ECAs are often declining. Importantly, the EWFD recognizes the role of communities and non-government bodies in determining and delivering targets. Given the high level of knowledge within Bangladeshi communities regarding the management of natural resources, the number of competent NGOs and the legislative framework already in place to manage the ECAs, adoption of an EWFD – style framework appears to be an achievable objective for future management of the ECAs, as shown diagrammatically in **Figure 1.**

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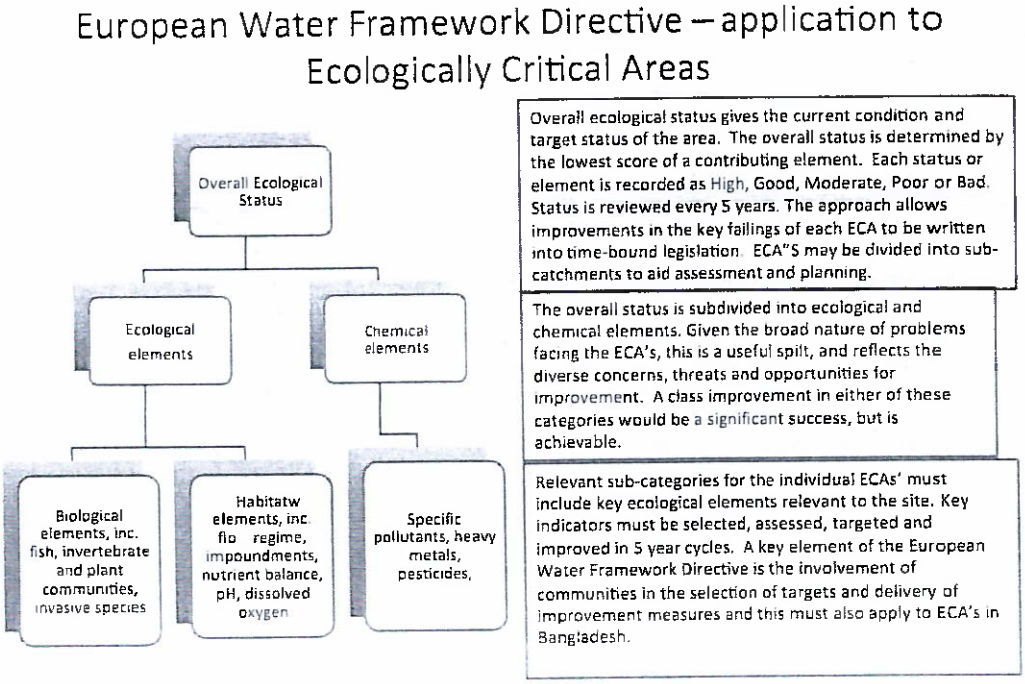


Figure 3: Overview of EWFD structure and its potential application to ECAs in Bangladesh

When applying the framework to particular sites, it serves to highlight the factors having the greatest impact upon the ecosystem and highlighting them as priorities for ameliorative action without removing focus from other (possibly less apparent) limiting factors. Table 1, below, shows how the framework is applied to the River Ingol, UK. Despite scoring well for various elements such as invertebrate populations and heavy metal pollution, the river is of overall poor ecological status. This is caused by an excess of phosphate in the river originating primarily from municipal sewage, and also a poor fish population, which is limited by a number of barriers to migration. The initial framework assessment of the river identifies these two problems and ensures that the river cannot be recognized as "good" until these problems are addressed. Failing measures such as the fish and phosphate trigger an investigation followed by a recovery program. Measures for this particular river have included a treatment wetland below the main sewage works (delivered in 2018 by an NGO) and measures to enable fish migration past the major barrier (due for delivery by UK Environment Agency and an NGO in 2019). These measures should reduce the phosphate levels in the river to a "moderate" level and improve the fish population to a "good" status. At this point the river will be lifted from an overall poor status to moderate. At this point the river's status will be limited by phosphate, ammonia and invertebrates. Targeted agricultural advice to reduce run-off and further work to reduce the impact of municipal sewage may be able to lift the whole river to good status post 2021.

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Table 1. **Application of the European Water Framework Directive to the River Ingol, UK.**

Color coding: Poor Moderate Good Not Applicable

Current Status 2019				Previous status 2011	Target 2021 status
Poor Overall Status	Poor Ecological Status	Surface Water	Surface Water	Surface Water	Surface Water
		Biological	Plants	Plants	Plants
			Fish	Fish	Fish
			Invertebrates	Invertebrates	Invertebrates
		Hydro-morphology	Hydromorphology	Hydromorphology	Hydromorphology
		Physio-chemical	pH	pH	pH
			Temperature	Temperature	Temperature
			Oxygen	Oxygen	Oxygen
			Ammonia	Ammonia	Ammonia
			Phosphate	Phosphate	Phosphate
		Specific Pollutants	Triclosan	Triclosan	Triclosan
			Copper	Copper	Copper
			Zinc	Zinc	Zinc
	Good Chemical Status	Priority substances	Lead Pb	Lead Pb	Lead Pb
			Nickel Ni	Nickel Ni	Nickel Ni
		Other pollutants	Not applicable on this river	Not applicable on this river	Not applicable on this river
		Priority Hazardous Pollutants	Cadmium	Cadmium	Cadmium
			Nonylphenol	Nonylphenol	Nonylphenol
			Tributyltin	Tributyltin	Tributyltin
			Di(2-ethyl-hexyl)phthalate	Di(2-ethyl-hexyl)phthalate	Di(2-ethyl-hexyl)phthalate

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EXAMPLE 1: APPLICATION TO THE HALDA RIVER PROPOSED ECA

How such a framework may be established and implanted for the Halda River is highlighted in **Table 14**. The problems facing the Halda are diverse (see **Annex 3**) but the framework offers a mechanism to look at the river and its watershed holistically, identify the threats precisely, and ensure that appropriate actions are taken within an acceptable timeframe. Arguably the greatest challenge to implanting the framework may be the question of where ultimate responsibility for delivery rests, and what, if any, punitive measures are required should delivery milestones not be met.

Adoption of such a framework provides a clear, practical and legislative pathway to combat threats to the river and associated actions set out in **Annex 15**. It would also prevent further exacerbation of existing problems by ensuring that causing harm to the river became a criminal act.

Table 2: Application of the EWFD to the River Halda proposed ECA

Building a framework	Actions	Application to the Halda	Who is responsible?
Setting Targets – "what is good?"	The EWFD sets targets for a wide suite of environmental criteria, which determine the overall ecological health of the target site. The Halda requires a scientific assessment of the relevant criteria which contribute to the overall health of the river and expert judgment regarding what constitutes failure, acceptability, and success in each of these categories. It is important that the targets are set with reference to an ideal, ecologically stable state for the river, rather than current or perceived achievable state. The number of assessed criteria may be large. EWFD typically covers a small number of (complex) ecological measures such as fish and plant communities and a larger number of simple environmental measures such as nutrient and pollutant concentrations.	Setting targets specific to the Halda is likely to be by expert judgment and comparison to similar rivers. For example, targets may include quantified populations of Gangetic dolphins or Asian carp, percentages cover of particular riparian habitats, seasonal flow rates, or critically, target levels of water quality indicators such as nutrients, pesticides, heavy metals	Ultimate responsibility must lie with government, but this aspect must be delivered by scientific partners (from universities or research institutions) with input from ecological specialists and possibly qualified NGO's.
Establish monitoring program	Monitoring intensity at EWFD sites varies depending on variability of the criteria measured and resources available, and data is reviewed at five-yearly intervals.	A framework seems to be in place through the work and Chittagong University and existing community fish management groups to deliver an agreed monitoring program.	Responsibility and oversight must lie with the relevant government department, but the actual monitoring may be delivered by a range of organisations from communities to universities as long as the data is on-going and consistent.
Initial Ecological Assessment	The above steps should take place prior to or alongside an initial ecological review, so that results do not determine targets. A wide range of data is available for the Halda, from various water quality surveys to fish passage and population assessments and land-use mapping. This data should be reviewed and	Chittagong University and various NGO's and third sector groups (Riverine People, Centre for Natural Resource Studies) are already well placed to deliver this work for the Halda.	Technical specialist panel, possibly based within Chittagong University.

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Building a framework	Actions	Application to the Halda	Who is responsible?
	considered alongside data from the newly established monitoring program.		
Determining actions	The actions taken to improve the status of the Halda should be determined by the outcomes of the on-going monitoring program and ecological assessment and subjected to cost-benefit analysis and assessment of wider impacts. A key part of the EWFD is its recognition of the value of water to people, and this is critical on the Halda. Targets must be time-bound and written into legislation. It may be that some necessary measures are perceived to be impossible to deliver due to cost or other constraints. If so, a full assessment and justification is required and should be reviewed every five years.	Some of the likely Halda actions are obvious – reduce industrial pollution, enforce better waste-water management. Some may be cost-prohibitive, such as dam removal or habitat re-instatement. All require economic and social assessment.	Determination of appropriate actions to achieve good ecological status should be by a multi-disciplinary technical expert panel with input from community representatives.
Delivery of improvement	Identified actions may be delivered by any competent body. The diversity of likely actions for the Halda makes it unlikely that any single body will be able to deliver the actions alone, and legal, technical, and community bodies are likely to be required.	Different bodies will be suited to delivering different objectives, and this should not apply only to government. For example the Water Development Board may deliver structural works to weirs, NGOs may deliver habitat works, government must deliver legislation	Government responsibility for appointing competent delivery bodies. Government ultimately responsible for quality of delivery.
Progress review	Review of progress is on-going, with each of the measured criteria re-assessed against the prescribed targets at 5 yearly intervals with the aim of bring the entire river (and therefore ach of the measured criteria) to "good" status within the agreed timeframe.		The technical expert panel must present progress for review to the relevant government department at agreed intervals.
Accountability for delivery	A key element of the EWFD is that each nation's government is held accountable to the European Union for improvement of its river. National governments may be fined if their rivers fail to meet good status in agreed timeframes. Within the context of the European Union this model is possible but may be harder to deliver on a single-nation scale, however, pressure to deliver rapid change is critical.		It appears that the Ministry of Water Resource and Water Development Board would be ultimately responsible for delivery. The recent deceleration of the legal recognition of rivers as citizens may mean that citizens are able to prosecute these bodies should delivery fail.

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EXAMPLE 2: APPLICATION TO MORJAT BAOR ECA

Application to Morjat Baor is potentially more straightforward than for Halda River, given the fewer contributing factors and smaller number of organizations involved. However, it would require the same level of legislation to ensure delivery. The steps to delivery are outlined in **Table 3**, below.

Table 3: **Application of the EWFD to Morjat Baor ECA**

Building a framework	Actions	Application to Morjat Baor	Who is responsible?	Time required
Setting Targets – "what is good?"	The EWFD sets targets for a wide suite of environmental criteria which determine the overall ecological health of the target site. The baor requires a scientific assessment of the relevant criteria which contribute to its overall health and expert judgment regarding what constitutes failure, acceptability, and success in each of these categories. It is important that the targets are set with reference to an ideal state for the baor, rather than current or perceived achievable state. The number of assessed criteria may be relatively low as the diversity of threats to the baor is limited. EWFD typically covers a small number of (complex) ecological measures such as fish and plant communities and a larger number of simple environmental measures such as nutrient and pollutant concentrations.	Setting targets specific to the baor is likely to be by expert judgment and comparison to similar sites. For example, targets may include quantified populations of endemic fish or macrophytes, percentage cover of water hyacinth, or target levels of water quality indicators such as nutrients, pesticides, heavy metals	Ultimate responsibility must lie with government, but this aspect must be delivered by scientific partners with input from ecological specialists, baor communities and possibly qualified NGO's.	2 years.
Establish monitoring program	Monitoring intensity at EWFD sites varies depending on variability of the criteria measured and resources available, and data is reviewed at five-yearly intervals.	Monitoring would likely be undertaken by Department of Fisheries in conjunction with baor communities and possibly universities or NGOs.	Responsibility and oversight must lie with the relevant government department, but delivery of the actual monitoring program may be delivered by a range of organizations from communities to universities as long as the data is on-going and consistent.	On-going. Sampling and review intervals to be determined by specialist advisors.
Initial Ecological Assessment	The above steps should take place prior to or alongside an initial ecological review, so that results do not determine targets. Limited data are available for Morjat Baor, and a key part of this assessment would be establishing an ecological baseline.	Department of Fisheries holds some data on fish populations, hyacinth cover and water quality which would provide an initial baseline.	Technical specialist panel, to be appointed.	2 years.
Determining actions	The actions taken to improve the status of the baor should be determined by the outcomes of the on-going monitoring program and ecological assessment and subjected to cost-benefit analysis	Some of the likely actions for Morjat Baor are obvious – reduce hyacinth cover,	Determination of appropriate actions to achieve good ecological status should be by a multi-	1 year, following delivery of initial monitoring and

Building a framework	Actions	Application to Morjat Baor	Who is responsible?	Time required
	and assessment of wider impacts. A key part of the EWFD is its recognition of the value of water to people, and this is critical at this site. Targets must be time-bound and written into legislation. It may be that some necessary measures are perceived to be impossible to deliver due to cost or other constraints. If so, a full assessment and justification is required and should be reviewed following each five-year period.	and control fish stocking regime. The monitoring program and baseline assessment is likely to reveal other critical actions.	disciplinary technical expert panel with input from community representatives.	ecological assessment.
Delivery of improvement	Identified actions may be delivered by any competent body. The initial list of threats and solutions presented in the site profile suggest that the actions are likely to be delivered by the Department of Fisheries in conjunction with the local communities.		Government responsibility for appointing competent delivery bodies. Government ultimately responsible for quality of delivery.	On-going in 5-year cycles.
Progress review	Review of progress is on-going, with each of the measured criteria re-assessed against the prescribed targets at 5 yearly intervals with the aim of bring the entire river (and therefore ach of the measured criteria) to "good" status within the agreed timeframe.		The technical expert panel must present progress for review to the relevant government department at agreed intervals.	On-going in 5-year cycles.
Accountability for delivery	A key element of the EWFD is that each nation's government is held accountable to the European Union for improvement of its river. National governments may be fined if their rivers fail to meet good status in agreed timeframes. Within the context of the European Union this model is possible, but may be harder to deliver on a single-nation scale, however, pressure to deliver rapid change is critical.		It appears that the Ministry of Water Resource and Water Development Board would be ultimately responsible for delivery. The recent deceleration of the legal recognition of rivers as citizens may mean that citizens are able to prosecute these bodies should delivery fail.	On-going in 5-year cycles.

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ANNEX 18: PUBLIC-PRIVATE PARTNERSHIP IN ECA MANAGEMENT

1. BACKGROUND

Private sector is a broad term and how a large corporation or group of companies behaves is different from small vendors or localized private entities. In respect to the ECA selected for this project, there is no presence of 'corporate companies' that are directly involved in polluting or interested in preserving ECAs at this point in time.

There are small to mid-sized players. For example, poultry farm owners and farmers are somewhat responsible for polluting Morjat Baor; whereas in Halda tanneries, tobacco companies, poultry farms and kitchen markets are responsible. However, except for the tobacco company, no other company is as structured or resourceful to be labelled under 'corporate partnership'. Large corporations care about compliance, their image and their surroundings; otherwise, their revenue and operations become affected. Their presence can be found in multiple forums where they support development partners to reach a certain objective. Examples of such platforms are: National Capital Impact Group, facilitated by the Cambridge Institute of Sustainability Leadership[50]; and Business Call to Action[51], managed by UNDP. However, companies that are small, medium-sized and cater mostly to local demand as suppliers are difficult to engage in meaningful partnership, especially when cost-sharing is involved.

2. PRINCIPLES FOR ENGAGING PRIVATE SECTOR

2.1 Co-financing or parallel financing from private sector is built on trust, co-management, clear division and delegation of work, and corporate responsibility

In terms of conservation of Halda River, Chittagong Chamber of Commerce & Industry (CCCI) can play a leading role, with funding as well as implementation. They should be perceived as designing and implementing partners, not only as sponsor. The Chamber must be provided with a step-by-step action plan having a clear objective and work plan. In order to receive their funds, trust is a major factor, which has to be preceded by accountability, work plan, and sharing and delegating the activities to an appropriate authority. The profile of Halda should be raised through a well-designed communication strategy that acknowledges the contribution of private sector, as well as other stakeholders.

2.2 Private sector as partners, not adversaries

Although some private entities may be polluters or encroachers, they are providing livelihoods to thousands of people and an entire economy has been built over decades, which to some extent benefits the growth of the country (e.g., quarried stones are being sold mostly to government-led projects). They need to be sensitized to the alternatives, better practices, long-term implications and alternative financing mechanisms available to them; and of course, made fully aware of the compliance issues.

2.3 Pay back Halda

All stakeholders, not only the large polluting industries, need to be made aware of Halda River's goods and services in order to then be engaged in 'paying back Halda' – independent entrepreneurs, tourists and tour operators, commercial businesses, industries and communities

[50] https://www.cisl.cam.ac.uk/business-action/natural-capital/natural-capital-impact-group
[51] https://www.businesscalltoaction.org/

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(villages, towns and cities). Such funds can contribute to restoring the river from its former abusive use and overuse.

2.4 Practice what we preach

Private companies dance to the tune of the practices and policies of the public sector. So, if city corporations or government bodies overseeing land or water pollute, degrade or disturb the ecosystem of ECAs, in this case Halda River, it will undermine course correction with private companies and become counterproductive, no matter what the extent of pollution is.

3. PROPOSED HALDA RIVER IMPACT GROUP

While the private sector is an important stakeholder, public and development sectors as well as community are no less important for the successful conservation of Halda River. Thus, different levels of public administrations and sectors need to be involved to ensure implementation of activities. A possible model is shown diagrammatically below.

A national Advisory Committee is envisaged, which will comprise senior management members (heads of department level) to ensure buy-in, strategizing and creating a general consensus on the process and activities to be conducted to save Halda. Led by Department of Environment (DoE) and supported by UNDP, the Advisory Committee should include: the departments of Agriculture and Fisheries, due to the respective agricultural and fisheries interests; Chittagong City Corporation as their plans can positively or negatively affect Halda, and also because CCC is planning to treat water from Halda River to supply to households; CCCI due to their influence, and future engagement in managing the Trust Fund; local NGOs and universities for research, monitoring and their ability to speak for the communities; other donors for better coordination, communication and advocacy; and the Prime Ministers' Office to promote application of the polluter pays principle, as well as to open doors to incentivize the polluters.

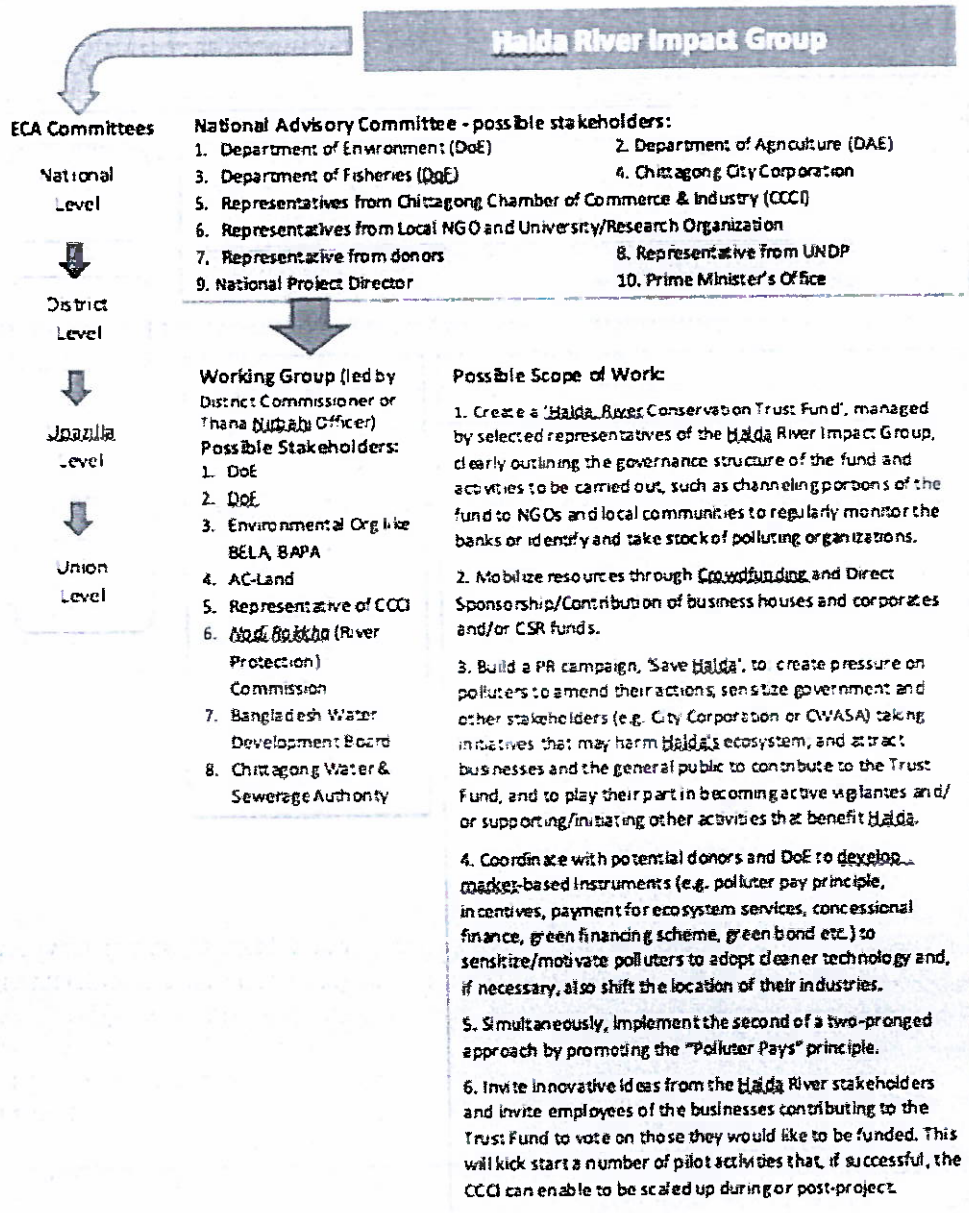
While the Advisory Committee may meet in Dhaka or Chittagong, for getting things done at the ground level, a district-level Working Group is proposed with representatives mirroring the composition of the Advisory Committee. In addition, environmental advocacy and civil rights-based organizations, such as Bangladesh *Poribesh Andolon* (BAPA), Bangladesh Environment Lawyers' Association (BELA), local administration such as AC-land, and Halda River Protection Committee should be onboard. The Working Group must be led by the District Commissioner or *Upazilla/Thana Nirbahi* Officer.

Although the presence of public bodies is quite prominent, CCCI is expected to play an equally instrumental role, as it is envisioned that the CCCI will manage the Trust Fund after the project ends. While most of the polluting companies may not be part of CCCI, the Chamber is very

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influential in mobilizing resources and advocating for better business practices. UNDP will need to provide the facilitation and guidance in designing the governance architecture, fund disbursement model and procedures. If needed, a consultant can be recruited for a period of 50-60 days during the project life to evaluate existing Trust Funds, such as Bangladesh Climate Change Resilience Fund, managed by World Bank, and Bangladesh Climate Change Trust, managed by Bangladesh Government, and design the management, organogram, transparency mechanism, fund disbursement procedures, eligibility criteria and other relevant protocols to help CCCI to manage the fund on their own. Transparency should be ensured from the very beginning, for which a website can be set up for public viewing which will highlight the activities and future plans. Audit reports and other information related to finance should be made available to the public.

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Alongside the Trust Fund being set up, the Advisory Committee will proactively mobilize resources for the Trust Fund. CCCI has indicated that they should be able to raise at least BDT 1 crore (US$120,000) from members alone. If saving Halda can be turned into a national concern or a matter of regional pride, crowd funding can also boost the Trust Fund. There are examples of national newspapers running crowd-funding programs to help poor people in winter or support rehabilitation of acid-survivors. Any such media campaign needs to be backed by knowledge and research institutions, such as University of Chittagong. Therefore, image building is necessary to have the private companies interested in engaging with this project. Partnerships with both local and international NGOs, along with development partners renowned for conservation, should be sought as they too can raise this issue on different platforms. Buy-in or championing from the Prime Minister's Office (PMO) is crucial for resource mobilization from other channels. Support from the PMO will also be needed to impose the 'polluters pay' principle, as it may disrupt existing players who have vested interests in maintaining the status quo. It can also help draw CSR funds, which in Bangladesh are highly PR-oriented. Having influential citizens as ambassadors for saving Halda will also strengthen leverage for resource mobilization and awareness raising.

During the project period, while UNDP will help CCCI set up a Trust Fund, it may implement a pilot which will create the foundation for CCCI to scale it up beyond the life of project. A good record of activities will gradually build up the momentum and gain the confidence of stakeholders to raise fund, and be associated with the implementation. UNDP, in consultation with CCCI and DoE, will make a list of activities and prioritize given the timeline of the project. This will run simultaneously, as UNDP designs the Trust Fund and builds the capacity of CCCI to manage the fund. In addition, UNDP can run idea-generation contest and arrange for $100,000 that could be awarded to multiple entities who will propose innovative ways to save Halda. If possible, this fund could be set up with allocations from Ecology Management Fund from ECA 2016 Rules. NGOs, universities, social enterprises could be eligible for a contest like this, which could be labeled as the **Halda River Challenge Fund**.

4. APPLYING 'POLLUTER PAYS' PRINCIPLE[52]

During the pilot phase of establishing the Halda River Impact Fund, UNDP will explore ways for polluting industries and factories to access finance in the form of green bonds, preferential loans, concessional finances, blended finance and other schemes. For the last 20-30 years, the 'Command and Control' approach was undertaken to save environmentally critical areas but that bore little fruit or long-term results. In fact, it led to unfavorable practices with incidents of community people resisting such drives of the Law Enforcement Agency in order to protect their own jobs. For better results, these polluting companies need to be sensitized on the better business practices, offered financial schemes to relocate or adopt cleaner technologies, or embrace market-based instruments, such as 'polluter pays'.

For other industries, different measures can be taken. For tanneries, advocacy with the Leather Goods and Footwear Manufacturers & Exporters Association of Bangladesh (LFMEAB) and large multilateral platforms, such as the International Finance Corporation (IFC IFC or Asian Development Bank (ADB), could be effective to see if the tanneries adjacent to Halda River can be given preferential loans or other forms of financial assistance. However, not all tanneries are members of LFMEAB, nor have the required documents or standards to receive ADB or IFC

[52] The 'polluter pays' principle is the commonly accepted practice that those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment. www.lse.ac.uk/GranthamInstitute/faqs/what-is-the-polluter-pays-principle/

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financing, which could be facilitated by UNDP. For poultry farms, who could very well be selling to local market where awareness may not be high, Bangladesh Poultry Industries Association and Feed Industries Association can be engaged to introduce a waste-management technique in the packaging or as a separate leaflet with every package. These awareness-raising initiatives are small, yet focused and cost-effective. Tobacco factories, with whom UNDP may not be able to work directly or receive contributions, can also be encouraged to follow the same cause through their own initiatives. If all fail, polluting companies should be given a timeline to terminate their operations.

5. POSSIBLE DELIVERABLES

v. Formation of a Halda River Impact Group, with a national Advisory Committee and a district-level Working Group

vi. Consultant recruited to design the governance architecture and disbursement models of the Halda River Conservation Trust Fund

vii. Partnership between UNDP and Chittagong Chamber of Commerce & Industry

viii. A selection of innovative activities funded by the Trust Fund and piloted, with a view to scaling up during or post-project.

ix. Funding mechanisms identified, explored and initiated to enable polluting industries and companies switch to non-polluting production methods that meet national and international standards.

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ANNEX 19: LEGAL, POLICY AND INSTITUTIONAL APPROACHES TO ECA ECOSYSTEM-BASED MANAGEMENT

List of abbreviations and acronyms

BARC - Bangladesh Agricultural Research Council
BCCSAP- Bangladesh Climate Change Strategy and Action Plan
BRRI - Bangladesh Rice Research Institute
CDMP- Comprehensive Disaster Management Program
DC - District Commissioner
DMB - Disaster Management Bureau
DMC - Disaster Management Committee
DMIC - Disaster Management Information Centre
DMRD- Disaster Management and Relief Division
DoE - Department of Environment
DoF - Directorate of Fisheries
ECA - Ecologically Critical Area
EIA - Environmental Impact Assessment
FFWC - Flood Forecasting and Warning Centre
FY - Financial Year
GMO - Genetically Modified Organisms
GoB - Government of the People's Republic of Bangladesh
GPA - Guidelines for Project Assessment
GPP - Guidelines for People's Participation
HYV- High Yielding Variety
LGED- Local Government Engineering Department
MIS - Management Information System
MoEFCC -Ministry of Environment, Forest and Climate Change
MoFDM- Ministry of Food and Disaster Management
NAPA - National Adaptation Program of Action
NBSAP- National Biodiversity Strategy and Action Plan for Bangladesh
NEP - National Energy Policy
NFP - National Fisheries Policy
NGO - Non-Government Organization
NSDS - National Sustainable Development Strategy
NWMP-National Water Management Plan
NWP - National Water Policy
NWRD- National Water Resources Database
RAJUK- Rajdhani Unnayan Kartripakkha
SREDA- Sustainable and Renewable Energy Development Authority
SRO - Statutory Regulatory Order
UDMC- Union Disaster Management Committee
UNFCCC- United Nations Framework Convention on Climate Change
UN - United Nations
WMO - World Meteorological Organization

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WARPO- Water Resources Planning Organization
WASA - Water and Sewerage Authority

Executive Summary

This report reviewed the current policy and legislative frameworks for ECAs management in Bangladesh and also reviewed the institutional structures for ECA management. Moreover, this study takes a comprehensive approach to review other related laws, policies and institutions related to environment, ecology, biodiversity, forest, water, agriculture, fisheries, climate change and disaster management with a view to explore a coordinated and integrated governance approach to natural resource and ECA management. This review and assessment led to identify the gaps and based on the identified gaps, this report proposes some further interventions for policy, legislative approaches to natural resource management with particular focus on ECA management as follows:

Short term

- Formation of the National Committee, District Committee, *Upazila* Committees, Union Coordination Committees and Village Conservation Groups (VCGs) in accordance with ECA Management Rules, 2016
- Developing Modalities of works for each committee in accordance with the structure and functions suggested in the Ecologically Critical Areas Management Rules, 2016
- Developing Reporting format for each committee and also review and synthesis processes
- Developing monitoring accountability mechanisms for each committee
- Developing Financial Accounting systems for each committee
- Developing public-private joint management plan including benefit sharing mechanisms
- Developing ECA management plan for each ECA
- Establishing Ecology Management Fund and developing it's modalities for receiving and disbursements of funds

Mid Term

- Establish a Community based Resource Management Framework
- to develop community access to resources and benefit sharing mechanisms Access to resources
- develop a community livelihood framework considering alternative livelihoods
- Empower the communities for taking part in the decision making processes, for access to information and justice
- Establish a Public Private Joint Management Framework
- Applying the Polluter Pay Principles (PPP)
- Establish a Monitoring and Transparency framework
- Establish a Capacity Building Frameworks

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Long term:

- Establish an integrated and coordinated policy and legal framework for environment, natural resources, climate change and disaster management
- Establish a National Commission on Environment, Climate Change and Disaster Management
- Establish a Common Fund for Environment, Climate Change and Disaster Management

Exploring Legal, Policy and Institutional Approaches for Implementing Ecosystem-based Management in Ecologically Critical Areas in Bangladesh

1. Introduction

Natural resources and rich biodiversity of Bangladesh have influenced to frame the lives and livelihoods, of the people of the country. Moreover, culture and values of the people are also influenced by the ecology and biodiversity of the country. But unfortunately, the ecology and the biodiversity of the country are facing a critical state due to many reasons including changing the nature of lands, pollutions, siltation, unplanned infrastructures, over exploitations of resources, unplanned urbanization and industrialization and lack of good governance.

In terms of governance, Government of Bangladesh (GoB) has taken legislative and institutional efforts to protect, and converse natural resources and associated ecology and biodiversity of the Country. In particular, for Ecological Critical Area (ECA) and Protected Area management GoB adopted recently specific Rules, under the Bangladesh Environment Conservation Act, 1995. The focus of the report is Ecological Critical Area (ECA) management and the ECA Management Rules was adopted in 2016. However, these Rules are yet to be operationalized effectively and other institutional and administrative problems are also causing harm to ecology and biodiversity of the declared ECAs in Bangladesh.

So, this study, reviews the current policy, and legislative frameworks for ECAs management and also reviews the institutional structures for ECA management. Moreover, this study takes a comprehensive approach to review other related laws, policies and institutions related to environment, ecology, biodiversity, forest, water, agriculture, fisheries, climate change and disaster management with a view to explore a coordinated and integrated governance approach to natural resource management and ECA management. This review and assessment leads to identify the gaps and based on the identified gaps, this report proposes some further interventions for policy and legislative reforms, if needed and also for effective institutional frameworks with compliance and monitoring mechanisms.

2. Objectives

The overall objective of this project is to enhance effective management of the natural and man-made environment, focusing on improved sustainability and increased resilience of vulnerable individuals and groups with a particular focus on ECA in Bangladesh. Hence this project ultimately intends to design a project that would address the right approaches identified through action research. This report specifically intends to identify the right approaches related to legal, policy and institutions for ECA management in Bangladesh.

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So, this report reviews existing policies, legislations and institutional structures and functions, relevant to ECA management in Bangladesh. This report also reviews other related laws, policies and institutions related to environment, ecology, biodiversity, forest, water, agriculture, fisheries, climate change and disaster management to examine the coordination and integration among the sectoral laws, policies and institutional approaches to natural resource management. This assessment leads to identify the gaps in effective governance of ECAs management in Bangladesh. It also explores the potentials of introducing polluter pay principle in ECA Management. The specific objectives of this report are:

- Identify the need of Legal and policy reforms, for financially viable and ecosystem-based management framework for ECAs and to propose activities to address those needs.
- Identify the need of effective governance for strengthening institutions and multi-sector coordination of ECAs management and to propose activities to address those needs.
- Identify the need of training and capacity building and to propose activities to address those needs.
- To explore a coordinated and integrated governance approach to natural resource management and ECA management.

3. Methodology

The ultimate objective of the GEF PPG is to develop the project concept into a full-sized project on 'Implementing Ecosystem-based Management in Ecologically Critical Areas in Bangladesh'. Environmental Policy and Institutional Development Specialist is exploring the avenues to design project interventions taking into account the following tools and approaches:

Desk Review

- Reviewed the related literatures including academic journals, grey literatures in the contexts of Bangladesh and some other countries those adopted innovative, effective and transparent governance mechanisms for Ecosystem-based Management in Ecologically Critical Areas in Bangladesh.
- Reviewed the related legislations, judicial and administrative decisions, policies and institutional structures in the contexts of Bangladesh and some other countries
- Analyzed and synthesize the data and information collected from desk review, FGDs. KIIs, expert consultations and to formulation of interventions.

Focus Group Discussions (FGDs)

- FGDs conducted with representatives' local administrations, NGOs, Civil Society
- FGDs conducted with local governments and local communities

Key Informant Interviews

- Key Informant Interviews conducted with selected policy makers, practitioners, representatives local administrations, NGOs, Civil Society and local communities

Consultations

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- Expert Consultations conducted at the beginning of the project through stakeholder consultation workshop
- Expert Consultations conducted through sharing the draft interventions

4. Legal, Policy and Institutional Analysis and the Gaps

Bangladesh has signed and ratified a number of international instruments including Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973, Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972, Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) 1971, Convention on Biological Diversity (CBD), 1992 and further instruments adopted under this Convention, United Nation Convention to Combat Desertification, 1994, International Treaty on Plant Genetic Resources for Food & Agriculture, 1982, UN Convention on the Law of the Sea, 1982, UN Framework Convention on Climate Change, 1992, The Paris Agreement on Climate Change, 2015, the Sustainable Development Goals, 2015. As to the Parties of these international instruments, Bangladesh committed globally to act in response to protection and conservation ecology and biodiversity, and to adopt related national, policies, plans, legislations, policies and institutional arrangements at the national level. All these international instruments provided guidance for taking national efforts for protection of environment, ecology and biodiversity and also providing technical and financial supports to developing countries including Bangladesh. All these instruments are relevant to sustainable management of ECAs in Bangladesh.

The Constitution of Bangladesh was adopted in 1972, and part three of the Constitution guarantees the basic human rights including the Right to Life[53], which has been extended to include Right to Environment through judicial interpretation in 1997.[54] Consequentially, under the right to a safe environment, some Public Interest litigations (PILs) were filed before High Court Division of the Supreme Court of Bangladesh and environmental harm was frequently discussed and elaborated on by the higher judiciary in such PILs, which also influenced to develop further environmental laws in Bangladesh. Recent amendment to the Constitution of Bangladesh incorporated the provisions on environment and natural resource management, which states that, the State shall endeavor to protect and improve the environment and to preserve and safeguard the natural resources, biodiversity, wetlands, forests and wild life for the present and future citizens.[55] However, this provision is incorporated in part two of the Constitution within Fundamental Principles of State Policy.

4.1. Environment, Ecology, Biodiversity and Forest

In 1995, the GoB adopted a comprehensive environmental law called the Bangladesh Environment Conservation Act, which provides directions and legal bindings for conservation of the environment, improvement of environmental standards and control and mitigation of environmental pollution. It established the Department of Environment (DoE), and outlined the structures and functions of DoE including to issuing environmental clearance certificate, taking legal actions for environmental pollution and damage, declaring ecologically critical area etc. The Act also provides the standards for management of water, air and soil and defines certain

[53] Article 31 of the Constitution of Bangladesh, 1972

[54] The appellate Division (1997) 49 DLR (AD)

[55] Article 18A, the Constitution of the People's Republic of Bangladesh, 1972; Fifteen Amendement-2011

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environmental damages and offences and prescribes punishment for them.[56] This Act, incorporated a specific provision for ECAs Declarations by the Director General of the Department of Environment (DoE). Section 5[57] of the Act, provides that if the Government is satisfied that due to degradation of environment, the ecosystem of any area is in an environmentally critical situation or is threatened to be in such situation, the Government may by notification in the official gazette declare such area as an ECA. This section also provided guidance for demarcation of a declared ECA, through identification a maps and also for developing a management plan of an ECA. This section also provided provisions for identification of prohibited activities within ECA that causes harm to ECA through further gazette notification by the Government.

Subsequently the Ministry of Environment and Forest (MoEF) has adopted a number of Rules under this Act, including the Environment Conservation Rules of 1997. Rule 3 of the *Environment Conservation Rules 1997* provided further guidance for declaring ECA and identified 12 factors that the Government shall take into consideration, while declaring any are as an ECA, including ancient monument, archaeological site, wild animals' habitat and mangrove. In accordance with these provisions of the Act, of 1095 and the Rules, adopted thereunder in 1997 the Ministry of Environment and Forest (MoEF) has declared certain areas as ecologically critical in a number of notifications as follows:[58]

	Name of ECA	Ecosystem type	Location	Area (ha.)	Declaration date
01	Sundarbans (10 km landward periphery)	Coastal-Marine	Bagerhat, Khulna and Satkhira	292,926	30/08/1999
02	Cox's Bazar-Teknaf Peninsula	Coastal-Marine	Cox's Bazar	20,373	19/04/1999
03	St. Martin' Island	Marine Island with Coral reefs	Cox's Bazar	1,214	19/04/1999
04	Sonadia Island	Marine Island	Cox's Bazar	10,298	19/04/1999
05	Hakaluki Haor	Inland Fresh Water Wetland	Sylhet and Moulavibazar	40,466	19/04/1999
06	Tanguar Haor	Inland Fresh Water Wetland	Sunamganj	9,797	19/04/1999
07	Morjat Baor	Ox-bow Lake	Jhenaidah	325	19/04/1999
08	Gulshan-Baridhara Lake	Urban Wetland	Dhaka City	101	26/11/2001
09	Buriganga	River	Dhaka	Total area of 4 rivers is 7,607 (including foreshore and	01/09/2009

[56] Sec. 7 & 15, of the Bangladesh Environment Conservation Act, 1995

[57] Sec. 5 is amended in 2010

[58] Source: DoE, mentioned in '*Bangladesh Environment and Climate Change Outlook 2012*', page 53

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				river bank)	
10	Turag	River	Dhaka		01/09/2009
11	Sitalakhya	River	Dhaka		01/09/2009
12	Balu	River	Dhaka		01/09/2009
	Total Area under ECA			**383,105**	

The Government prohibited some activities or processes, which cannot be initiated or continued in a declared ECA in accordance with the Gazette Notifications those declared the above ECAs, including felling or collecting trees; hunting, catching or killing wild animal; fishing and other activities those are harmful for aquatic life; industrial establishment; polluting water by disposing waste; and any other activity that could destroy or change the natural characteristics of soil and water. Any such activities or processes in any of the ECAs, is punishable with imprisonment up-to 2 years, or fine up-to BDT 2 lac for the first offence and for the repetition of the same offence the offender will be punishable with imprisonment up-to 10 years or a fine up-to BDT 10 lac.[59] Moreover, the Brick Manufacturing and Brick kilns Establishment (control) Act adopted in 2013, prohibited the establishment of brick kiln in or within minimum one kilometer distance from the boundaries of any ECA and made punishable.[60]

Government of Bangladesh, recently adopted a specific Rules in 2016, to manage the ECAs in Bangladesh called the Ecologically Critical Areas Management Rules[61] under the Bangladesh Environment Conservation Act, which provided a provisions to adopted further related Rules.[62] This Rules formed a number of committees from local to national levels and also identified their structures and functions related to ECAs management and development in Bangladesh. This Rules of 2016, structured a National Committee consisting of 19 members from different relevant public agencies, academic institutions (2 members), NGOs (2 members) and private sector (1 members). Secretary, MoEF will act as the chair of this National Committee, while Department of Environment (DoE) will provide the secretarial assistance to the National Committee.[63]

The Rules of 2016, also identified the responsibilities of this National Committee and deigned the functions including to play important role to manage and development of ECAs in Bangladesh.[64] The National Committee, will recommend government to declare ECAs taking into account the environmental degradation, critical state of the eco-system or threatened for ecological and biodiversity damage and so on. The National Committee will also consider the traditional livelihoods of local people, religious, social and cultural aspects of local inhabitants, and also archeological sites for recommending an area to be declared as ECA. Moreover, this Committee will also take efforts for promoting alternative livelihoods for the local people dependent on an ECA, so that local community can conserve and protect

[59] The Bangladesh Environment Conservation Act, 199, Section 15(1)

[60] The Brick Manufacturing and Brick kilns Establishment (control) Act 2013, section 8(1)(e).

[61] The Rules was published in the Bangladesh Gazette, Extra-ordinary Issue of 22-9-2016.

[62] The Bangladesh Environment Conservation Act, 1995, Ssection 20(2) (k)

[63] The ECA Management Rules 2016, Rule 3.

[64] *The ECA Management Rules 2016*, Rule 4.

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the natural resources, ecology and biodiversity. The Committee will meet once in a year to take vital decisions with a participatory manner.[65]

The Rules of 2016 for ECA management, also structured and designed functions for district level committee to provide guidance ECA management where a particular ECA is located. This District Committee, will be headed by the District Commissioner, however, Divisional Commissioner will be the head of such District Committee, in case an ECA is located in more than one district. This committee will be consist of 26 members from different relevant public agencies working at the district level including 7 members from civil society, nominated by the District Commissioner.[66] *Involving a good number of civil society members in the District Committee provides an opportunity for public participation in the decision making processes.*

The Rules of 2016 for ECA management, identified the responsibilities of District Committee. This Committee will provide necessary guidance to the Upazila Committees related to development of plans and implementing measures required to overcome the critical situation existing within the ECA and to promote sustainable management. This District Committee, will also play a role for coordination among other subordinate committees and play a monitoring role to oversee the progress of implementation relevant development plans and measures related to protect and conserve the ecological state of ECA, including promoting livelihoods of local community through generating alternative livelihoods. The District Committee also made responsibility of taking necessary legal actions against any unlawful activities imitated by any person or entity. The District Committee will be meeting three times in a year so that they can evaluate their activities and to make recommendations to the National Committee as appropriate. [67]

The Rules of 2016 for ECA management, provided provisions for formation of Upazila Committees, in the Upazilas where the ECA is located, consisting with 21 members and headed by Upazila Nirbahi (executive) Officer. The members of the Upazila Committees will consist of members from different public agencies working at the Upazila level and also representatives from Village Conservation Groups (VCGs), relevant Union Parsihad Chairman and members of civil society. In terms of functions of the Upazila Committees, it also responsible for providing necessary guidance to Union Coordination Committee and Village Conservation Groups for implementing the development plans and measures relevant to ECA management and to resolve disputes among different stakeholders involved with ECA management and ECA dependent communities. Upazila Committees, are also made responsible to assist VCGs to form cooperative societies and to register to have a legal entity. Upazila Committees are also made responsible for maintaining proper accounts for money received from the Ecology Management Fund established under this legal instrument. Finally, the Upazila Committee will make recommendation for this District Committee and will meet once after every three months to evaluate their responsibilities and to make further decisions.[68]

The Rules of 2016 for ECA management, further provided guidance to form the Union Coordination Committees, which will be formed with 13 members, including 5 civil society members. This Coordination Committees will be headed by the Chairperson of that Union Council. Coordination Committees will coordinate and observe the functions of Village Conservation Groups (VCGs) to facilitate to take appropriate actions at the local level and also will provide necessary directions to improve their functions. It will take necessary actions to address their problems and to resolve their conflicts related to performing their functions.[69]

[65] Ibid, Rules, 4 & 5.
[66] *Ibid,* Rule 6.
[67] Ibid, Rule 7 & 8
[68] Ibid, Rues, 9, 10, & 11.
[69] Ibid, Rules, 12

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The Rules of 2016 for ECA management provided the provisions to form Village Conservation Groups (VCGs), which can be formed with the members of the local ECA dependent community. VCGs need to register as a cooperative society in accordance with the Cooperative Societies Act, 2001 and VCGs formed for ECA management related activities before enacting this Rules also will be considered as to form under this Rule. VCGs are responsible to implement development plans and necessary measures in an ECA, in accordance with the ECA Management plans, programs, and projects suggested by the DoE and the scheme or project initiated by VCGs with the permission of the Upazila Committee and approval of the DoE. VCGs are also made responsible for marinating and accounting funds, received for ECA related activities. VCGs are also can be involved with use, maintenance and management of any infrastructure or facility in an ECA or in its vicinity, developed by government or other relevant stakeholders. VCGs are made responsible for promoting public awareness regarding prohibited activities or processes in an ECA, those are identified in the relevant laws and regulations and in case of any violation of legal provisions by any person or entity, and VCGs have to inform the relevant Upazila Committee.[70]

The Rules of 2016 for ECA management, provided also some guidance on procedure for declaring an area as an ECA; the regulation of prohibited activities in the ECA; Changing the nature of land in an ECA; Sayrat Mahals management in an ECA, Management and development plan; a public-private joint initiative for ECA management.[71] *The provisions related to the procedure for declaring an area as an ECA stated that, before declaring an area as an ECA, a draft notification has to be published for at least 60 days on the website of the Ministry of Environment and Forest (MoEF) and DoE and also in two Bangla daily newspapers to seek opinions from relvent stakeholders and interested persons. Opinions obtained by these ways are required to be taken into consideration at the meeting of the National Committee for recommending to government for declaring an ECA. In the Gazette notification, that declares an ECA, shall mention the boundary and legal description (land survey information) including a map of the area and this information must be widely circulated in the concerned area of an ECA.*[72]

The Rules of 2016 for ECA management, further provided guidance on the regulating the prohibited activities in an ECA. In identification of the activities or processes may be prohibited in an ECA in accordance with section 5(4) of the Environment Conservation Act, 1995, the Government is required to consider matters mentioned in the Rule 18 of the Rules of 2016 for ECA management. Moreover, Government will specify the activities or processes which cannot be continued or initiated in an ECA in accordance with the standards referred to in Rules 12 and 13 of the Environment Conservation Rules, 1997. The Rules of 2016 for ECA management, also provided guidance on changing the nature of land within an ECA that without permission for DoE, nature of land in an ECA cannot be changed, notwithstanding anything contained in any other laws and regulations. Assistant Commissioner of Land will mention such provisions that the nature of land within an ECA cannot be changed without permission for DoE in relevant register.[73] *The Rules of 2016 for ECA management, provision for management of the Sayrat Mahals in an ECA, that the Ministry of Land in consultation with MoEF and other concerned ministries and departments will issue necessary directions for Sayrat Mahals management. Sayrat Mahals management within an ECA will be regulated in accordance with such directions, issued under this Rule.*[74]

[70] Ibid, Rule 13-16.
[71] Ibid, Rules-17-22
[72] Ibid, Rules 17.
[73] Ibid, Rules 18.
[74] Ibid, Rules 19 & 20

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The Rules of 2016 for ECA management, provides that while Government, issues a notification for declaring an ECA, in accordance with Environment Conservation Act, 1995, DoE will develop a site specific management and development plan for that particular ECA.[75] The Rules of 2016 for ECA management, also provides, provisions for public-private joint initiative for ECA conservation, management and development. Any interested registered and non-profit-Non-Government Organisation (NGO), can apply with specific management and development plan with regard to an ECA and subject to approval of the Director General (DG) of DoE a joint management initiative can be undertaken. Such joint management initiative will be monitored by the DG or any committee or any person authorized appropriately, DG or such person authorized appropriately, will visit the area and assess the progress of implementation of management and development plans of GO and NGOs jointly submitted.[76]

The Rules of 2016 for ECA management, furthermore provided provisions for the establishment of an Ecology Management Fund and such established Fund can receive financial resources from inter alia the national budget; subject to the approval of the government, foreign individuals or governments, any international organisation or institution; native individuals or authorities; and fees charged under the Rules. An Ecology Management Fund can disburse funds for preparing, processing, implementing, monitoring and assessing the plans and for incentives for ECA management and also necessary resources can be allocated to the Upazila Committees and VCGs. An Ecology Management Fund will be managed by the DoE and it is also subject to regular audits in accordance with this Rule.[77] The Rules of 2016 for ECA management made responsible DoE to prepare an annual assessment report on the performance and achievement of VCGs and the financial and technical incentives received and utilized by VCGs. DoE is also made responsible to submit yearly and fine yearly reports related to ECA management status in Bangladesh and also obliged to follow other directions provided by Government.[78] The Rules of 2016 for ECA management, provided guidance for conducting the survey, and scientific research in any ECA. But conducting such survey, and scientific research in any ECA required to obtain permission from the DoE. However, any such activities intent to make profit need to provide specific fees to Government.[79]

Government of Bangladesh recently adopted a new legislation called Bangladesh Biological Diversity Act, 2017 with a view "to provide for conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters incidental thereto", which is in line with the objectives of the Convention on Biological Diversity, 1992. Biological Diversity Act, 2017 provided required guidance for conservation of biological diversity through forming different committees from national level to local level as like as The Rules of 2016 for ECA Management.

At the local level, this law provides guidance for forming Biodiversity Management Groups, Societies and Sub-committees and these entities need to be registered as cooperative society. These groups can have receive financial resources from the fund established under this law.[80] This law formed a domestic fund named the 'Biodiversity Conservation Fund' and this financial entity can receive funds from different sources including local and international sources, with prior approval from government. The fund aims to provide financial incentives for inter alia the conservation and management of Biodiversity

[75] Ibid, Rules 21

[76] Ibid, Rules 22

[77] Ibid, Rules 23 & 24

[78] Ibid, Rules 25 & 28

[79] Ibid, Rule 26

[80] *The Bangladesh Biological Diversity Act 2017*, Sec. 28 & 29

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Heritage Sites; compensating or rehabilitating any person or section of the people economically affected by the declaration of Biodiversity Heritage Sites; for any other incidental expenses.[81]

Bangladesh Biological Diversity Act, 2017 provided provisions for Equitable sharing of benefits arising out of genetic or biological resources and made responsible the National Committee to determine the fair and equitable benefit sharing through applying all or any of the following parameters:[82]

> *(a) Equitable sharing of benefits arising out of the use of accessed biological resources, their by-products, innovations and practices associated with their use and applications and knowledge relating thereto in accordance with prior-informed consent (PIC) and mutually agreed terms (MAT) and conditions between the person applying for such approval, local bodies concerned and the benefit claimers;*
>
> *(b) Granting the ownership of IPRs to benefit claimers where benefit claimers are identified; or granting the joint ownership of IPRs where not identified;*
>
> *(c) Transfer of technology relating to the development of biological diversity in favor of benefit claimers of local communities or people; (d) the location of production, research and development units in such areas which will facilitate better living standards to the benefit claimers;*
>
> *(e) Engaging Bangladeshi scientists or their organizations, benefit claimers and the local communities with research and development in biological resources, bio-survey or bio-utilization; and/or (f) payment of monetary compensation and non-monetary benefits to the conservator of biodiversity, holder and inventor of biological knowledge, as the National Committee may deem fit.*[83]

The Forest Act, 1927, is the basic law governing forests in Bangladesh, and enacted to consolidate the law relating to forests, the transit of forest-produce and the duty livable on timber and other forest-produce. This Act provides for four types of forests, namely: reserved forest, protected forest, village forest and social forest. Chapter II of the Act governs the regime of reserved forest. For constituting any land as reserved forest it must be the property of Government, or over which the Government has proprietary rights, or to the whole or any part of the forest produce of which the Government is entitled; and the land must either be forest-land or waste-land or any land suitable for afforestation.[84] *The declaration proposing to constitute reserved forest must be done through a Gazette Notification specifying the situation and limits of such land, and the appointment of a Forest Settlement Officer. A series of procedural activities including settlement of rights or claims over forestland needs to be performed and documented to finalize the reserved forest status and constitution. Any activity within the reserved forest is prohibited, unless permitted by the Forest Department.*[85]

Chapter III of the Forest Act, 1927, deals with village forest and social forestry. A village forest is where the Government assigns to any village community the rights of Government to or over any land which

[81] Ibid, Sec. 36

[82] Ibid, Sec. 30

[83] Imtiaz A Sajal, 'Managing Ecologically Critical Areas in Bangladesh', (2018) 8 IUCN EJournal. Available at https://www.researchgate.net/publication/325471666

[84] Sec.3 of the Forest Act, 1927.

[85] Sec.26 of the Forest Act, 1927

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has been constituted a reserved forest[86]. When any land assigned to the Government by voluntary written agreement of the owner for the purpose of afforestation, conservation or management is called social forestry[87]. The Forest department has introduced different types of social forestry, like- woodlot, agroforestry, strip plantation, coastal afforestation. The provisions for the constitution of protected forest are procedurally less cumbersome than those of reserved forest. The government may declare any public forest which has not been 'reserved' as protected forest[88]. The government may prohibit some activities in the protected forest by making Rules[89]. The Act provides elaborate provisions for imposition of duty on timber and other forest produce and transit thereof.

The Social Forestry Rules, 2004, describes in details about social forestry. It specifies parties of social forestry, namely: Forest Department, owner of the land, beneficiary and private organization and determines their duties and responsibilities[90]. The Rules provides procedures for selecting beneficiaries and private organizations and their responsibilities. It suggests a management committee and an advisory committee for social forestry and determines their formation and responsibilities[91]. It provides for tenure of social forestry and ratio of income generated from social forestry among the parties[92].

Section 13 of the Wildlife (Protection and Safety) Act, adopted in 2012, makes provisions for designating wildlife sanctuaries, taking into account the importance of forest, biodiversity and wildlife protection and preservation within government-owned forests and wetlands. This section also authorizes protection for traditional livelihoods (Section 13 (3). However, restrictions can be imposed on fishing and boating within the declared sanctuary with due consultation with the co-management committee (Section 16 (2). The Act also sanctions the co-management of natural resources within declared sanctuaries, ensuring the effective participation of local communities for the utilization of resources, and their protection and management. It also authorizes the formation of co-management committees (Section 21). In accordance with section 17, the government can establish National Park on government forest land, or on any other land with natural worth, in order to protect and conserve the wildlife and environment. Section 18 of the Act also provides for the declaration of Community Conservation Areas, Landscape Zones or Corridors, Buffer Zones, and Core Zones. Finally, this Act allows for the declaration of Special Biodiversity Protection Areas.

Forestry Co-Management Gazette circulated in 2009 provides the provisions on formation of co-management institutions and community participation in the co-management processes of protect forest resource management in Bangladesh. Section 2 and 3 of the Gazette provided clear options for formation of co management council and co management committee and community representation in the co management council and co management committee. Section 3.2 of the Gazette identified the responsibility of the co management committee, which will regulate and manage daily activities and prepare annual action plan, mobilize necessary fund and appoint local people to manage and implement various activities. It also identified the responsibility of co management for Revenue collection, adaptation of various activities for sustainable economy, fund collection and expend it in the reserve forest.

[86] Sec.28 of the Forest Act, 1927.
[87] Sec.28A of the Forest Act, 1927.
[88] Sec.29 of the Forest Act, 1927.
[89] Sec.32 of the Forest Act, 1927.
[90] Rules 4 and 26-19 of the Social Forestry Rules, 2004.
[91] Rules 9-14 of the Social Forestry Rules, 2004.
[92] Rules 15 and 20 of the Social Forestry Rules, 2004.

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Section 2.2 of the aforementioned Gazette, provides provisions on profit sharing stating that goods and services produce or collected from reserve forest shall be distributed to the beneficiaries who were involved in the management of that area. In addition Section 3 of the Gazette suggested for distribution of benefit from the reserve forest to the stakeholder and the revenue collected from entry fee shall be expended for the conservation of biodiversity and community development. The Gazette also provides administrative resolution to the conflicts related to co-management processes. Section 2.2 of the Gazette stated that, if there is any conflict or dispute within co-management committee or in management process co-management council shall take effective measure to resolve it. On the other hand, if there is any dispute in overall execution process or in local stakeholder co-management committee shall take effective measure to resolve it (Section 3).

National Forest Policy, adopted in 1994 and states that, government shall endeavour to preserve soil, water and biodiversity, the natural forests of the hilly areas and the catchments of the rivers within the country and shall be declared as protected areas, game sanctuaries and national parks as appropriate. The National Biodiversity Strategy and Action Plan (NBSAP) provides a framework for the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources of the country. It emphasizes the need for cross-sectoral linkages, reflecting the fact that biodiversity conservation in Bangladesh is closely inter-woven with the socio-economic development of the country. The NBSAP also provides a framework for securing necessary environmental conditions to reduce poverty, ensure sustainable development and respond to the implementation of elements of the country's Poverty Reduction Strategy Paper (PRSP).

The major objectives of the aforementioned NBSAP are: (i) to conserve, and restore the biodiversity of the country for well-being of the present and future generations; (ii) to maintain and to improve environmental stability for ecosystems; (iii) to stop introduction of invasive alien species, genetically modified organisms and genetically modified organisms. According to the NBSAP, threats to biodiversity in Bangladesh arise from loss of habitat due largely to deforestation and inappropriate water and agricultural management, over-harvesting of resources, efforts to increase agricultural productivity, and natural disasters. Underlying causes are predominately related to issues of land tenure and users' rights, and institutional capacity constraints. Although the strategy considers various threats to biodiversity in Bangladesh, there is no estimation about the nature and extent of threats that GMOs could pose to the conservation of biodiversity in Bangladesh. Of the sixteen strategies developed to shape and direct the actions towards achieving the goals and objectives of the NBSAP, strategy 4 focuses on the adoption of national measures and standards to deal with invasive alien species and genetically modified organisms.

4.2. Land, Water, Fisheries and Agriculture

Land

The major laws on public land management are the Bangladesh State Acquisition and Tenancy Act, 1950 and the Land Reforms Ordinance 1984. These Acts contain substantive mechanisms, but procedural mechanisms are provided by three policies, namely: Policy for Distributing *Khas* Land among the Landless 1987, Policy for Distribution and Administration of Non Agricultural *Khas* Land 1995 and Agriculture *Khas* Land Management and Settlement Policy 1997. The State Acquisition and Tenancy Act 1950 is a framework legal document which was adopted to abolish the Zemindari System (Permanent Settlement of 1793). This law is the basis for all subsequent laws on public lands which declared that "So far as agricultural lands are concerned, they shall be held by one class of people to be known as maliks or raiyats which means that there shall be no intermediary between the State at the top and malik or raiyats to be regarded as the tillers of the soil at the bottom". However, it gave a definition of khas land that was of no practical use: *"khas*

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land" or "land in khas possession" in relation to any person, includes any land let out together with any building standing thereon and necessary adjuncts thereto, otherwise than in perpetuity.[93]

The Land Reform Ordinance 1984 in section 7 stated about settlement of khas land for homestead purpose. In rural areas if any khas land fit for being used as homestead is available, the Government shall, in settling such land, give preference to landless farmers and laborers. The maximum limit of such allotment will be five katha for each family and the family can inherit the land but cannot transfer it. The Act was silent about the procedure to distribute such land. In 1987 Bangladesh's Land Ministry launched the Land Reforms Action Programme, an initiative to distribute khas and unoccupied state owned land to landless families. On 1st July 1987 the government adopted the "Policy for Distributing Khas Land among the Landless". The policy had the objective of equal distribution of land and income with maximum output from the land. It projected to give work to the landless so that rural economy could gear up.

Although a policy for distribution of Agricultural Khas land was formulated in 1987, there was no policy for Nonagricultural *Khas* land until the Policy for Distribution and Administration of Non Agricultural *Khas* Land was adopted in 1995. This policy has defined the Non-agricultural Khas land as : Non-agricultural Khas land shall include: the land of four metropolitan areas, every municipality area, every thana sadar, all agricultural land inside the above mentioned area, any land outside the above mentioned that are not agriculture land. Section- 3(d) of the policy provides very little access of poor to the Non-agricultural Khas land. It only allows the land to be distributed among the family who have become destitute by natural disaster or any family legally resettled by the government. This was despite Section-7 of the Land Reform Ordinance 1984 specifying that the government shall give preference to landless farmers and labourers during allotment of non-agricultural khas land. However, this issue of targeting overlooks a fundamental flaw in these policies.

The aforementioned policy focuses on allocating lands perceived as being unused to individuals (poor) for private exclusive use, it makes no allowance for recognizing community use of such lands which are typically part of wetlands and riverine areas. Allocation of such lands to individuals may undermine long established customary use rights and the diverse environmental functions and human uses of wetlands. This is apparent in floodplain wetlands such as haors in the northeast and the Pabna basin where khas lands were distributed in the 1980s as part of a political process but were not used by the "recipients" since the lands were actually marshy or underwater and not suitable for agriculture. But this has more recently been abused by investors making deals with those who were allocated such lands so that the investors can establish aquaculture enterprises, when in fact the allocated khas lands are an integral part of larger common pool wetland resources and have been traditionally used by the poor to collect aquatic plants and catch fish from long before the khas land legislation up until recent aquaculture enclosure[94].

But the policy of 1995 did not consider the landless farmers and labourers for the allotment of non-Agricultural Khas land. In 1997 another policy named "Agriculture Khas Land Management

[93] Section 2 (15), The State Acquisition and Tenancy Act 1950

[94] Sultana, P. 2012. Implications of floodplain aquaculture enclosure, *Journal of Environmental Planning and Management* 55(9): 1159-1174,

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and Settlement Policy 1997" was adopted to eliminate corruption related with the distribution of khas land so that real landless people can get the land. This policy directed that all khas land available in 61 districts will be given to the landless people. The policy defined agricultural khas land as "any cultivable khas land is agricultural khas land if it is not situated within the metropolitan, municipal or thana sadar area"[95]. It reshuffles the national khas land management committee but was silent about civil society representation. Maximum limit of allotment is given as 2 acres (but after 1998 gazette notification now the maximum limit of allotment is 1 acre of land except in char (accreted island) areas where it is 1.50 acres). It redefined the landless people as "any family who have no homestead or agricultural land but depends on agriculture[96]". So two more criteria given in 1987 policy were removed. But the 1998 gazette notification added one more criteria: "any family who have 10 shotangsho [decimals] land for homestead purpose but have no land for agriculture priority list of is also landless people". Under the policy now the selection process will be conducted by Thana khas agricultural land management and distribution committee. Previously under 1987 it was conducted by Upzilla land distribution committee. In 14th September 2000 gazette notification a new decision from the GoB is adopted. In any area, if any khas land is left after distributing it to all landless people of that area' the remaining land will be distributed to the adjacent union or Upzillas landless people.

The Government has enacted Economic Zone Act in 2010. The act provides legal basis for the establishment of economic zones in all potential areas including backward and underdeveloped regions with a view to encouraging rapid economic development through industrialization. The development of Economic Zones is expected to help investors find a place with various facilities that are conducive for industrial development. The Act promotes Economic Zones in the Private sector, Government led EZs or in a combination. In this connection, Bangladesh Economic Zone Authority (BEZA) has been established. The mandate of the BEZA is to identify local potential zones, acquire lands and build the zones with necessary facilities. BEZA may seek public Private Partnership (PPP) to build and effective utilization of such zones.

Water

The Bangladesh Water Act, is adopted recently in 2013 and provided a comprehensive framework for water resource management in Bangladesh. It provided regulatory provisions related to integrated development, management, abstraction, distribution, use, protection and conservation of water resources. It also outlined the institutional structures for water resource management and suggested to form the 'National Water Resources Council (the Council)' as to the highest decision making authority. The Council is structured further with an Executive Committee, which is made responsible to maintain normal flow of water, to protect water zones, to tackle crisis of drinking water and to issue Clearance Certificate for any development project relating to water resources. Under the Act any area facing critical situation can be declared as 'Water Stress Area' and can be demarcated the water zones for efficient use of water resources.[97] In terms of regulating water pollution, the Act, provided specific reference of the Bangladesh Environment Conservation Act, 1995, which sets out the standards for water quality

[95] Agriculture Khas Land Management and Settlement Policy 1997, Article 9.0

[96] Ibid, Aricle 10.0

[97] Sec. 7, & 17 of the Bangladesh Water Act, 2013.

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maintenance. The Embankment and Drainage Act, was adopted in 1952, which provides regulatory provisions related to maintenance, protection and preservation of embankments.[98]

The Bangladesh Water Development Board Act, 2000 was enacted for the development and efficient management of water resources. The Water Development Board is established under the Act, with the power to control the flow of water in all rivers, channels and underground aquifers. The Board can develop standards and guidelines for the operation and maintenance of all water management structures; construct dams, barrages, reservoirs, embankments, regulators or other structures.[99] To ensure the development and balanced use of water resources, the Water Resources Planning Act, 1992 was enacted. Under the Act the Water Resources Planning Organisation is established and outlined the structures and functions. [100] To ensure the development and balanced use of water resources, the Water Resources Planning Act, 1992 was enacted. Under the Act the Water Resources Planning Organisation is established and outlined the structures and functions[20]. Some other related laws regulating water resource management exists in Bangladesh including to Water-course Act, 2000, The National River Protection Commission Act, 2013, the Sand Quarry and Earth Management Act, 2010, Bangladesh Oceanographic Research Institute Act, 2015, River Research Institute Act, 1990.

On the other hand, the Ground Water Management Ordinance, 1985 was adopted with a view to manage the ground water resources for agricultural production, but unfortunately this ordinance does neither regulate the reasonable use of ground water nor address the issues of ground water pollution. Groundwater is a common pool resource that was abundant and easily recharged in the monsoon in the past, and only became an economically important resource in Bangladesh since the 1980s with human consumption and agriculture competing to extract using tube wells. It has been left legally as an open access resource. There is abundant evidence of declining groundwater tables in several parts of Bangladesh, mainly the western side of the country and also affecting Dhaka area. In the northwest "groundwater mining" likely results in reduced wetland water levels and drying up of surface public water bodies in the dry season. In addition the ground water that is available in the shallow and deep aquifers in parts of the country has deadly arsenic contamination as a result of greater seasonal variation in water tables associated with high levels of dry season abstraction. It is reported that 59 districts of Bangladesh out of 64 is faced with arsenic contamination.[101] Therefore, this ordinance needs to be revised to regulate ground water abstraction.

In addition to these legislations, some of the Policies also provided important guidance on water resource management in Bangladesh. National Water Policy adopted by GoB in 1999 and the objective of the policy is to ensure progress towards fulfilling national goals of economic development, poverty alleviation, food security, public health and safety, a decent standard of living for the people and protection of the natural environment.[102] But unfortunately the policy has no reflection on climate change impacts on water sector. The Coastal Zones Policy was adopted in 2005 and the goal of the Policy is to ensure integrated coastal zone management to create conditions, in which the reduction of poverty, development of sustainable livelihoods and

[98] Section 3(d) The Embankment and Drainage Act, 1952

[99] Sec.5 & 6 of the Bangladesh Water Development Board Act, 2000.

[100] Section 3, Ibid

[101] Ibid

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the integration of the coastal zone into national processes can take place. The Policy identified climate change in section 4.8.3 and suggests some programmes for adaptation to climate change, including: a) Existing institutional arrangements for monitoring of climate change in Bangladesh will continue. Steps will be taken to support upgrading of technology and institutional strengthening for enhancing their capacity for generation of better data and more accurate long-term prediction and risk related to climate change; b). Implementation of adaptive measures identified in relation to climate change for coastal zone and resources shall be gradually undertaken; c). Efforts shall be made to continuously maintain sea-dykes along the coastline as first line of defense against predicted sea-level rise; d) an institutional framework for monitoring/detecting sea level rise shall be made and a contingency plan for coping with its impact. The laws and Policies related to water resource management lack with the approach of coordination and integration and needs to amend to ensure the coordination and integration within the sector and other related sectors, like agriculture, fisheries, forest and son on.

Policies and laws regarding wetlands and water bodies have often been general in order to appear all-embracing but as a result are unclear or contradictory regarding what categories of physical space (water and land) they refer to. In 2000, a law with the long title "Mega city, Divisional Town and District Town's municipal areas including country's all the municipal areas' playground, open space, park and natural water reservoir Conservation Act, 2000"[103] was enacted to protect the playgrounds, open spaces and natural water bodies of the metropolitan cities, divisional headquarters and municipal towns from being used for other purposes. For convenience it is known as the Open Space Act, 2000. The Open Space Act, 2000 defined natural wetland as *'Natural wetland' means- the place declared as the flood flowing land as river, canal, beel, pond, stream, fountain indicated in master plan by the government gazette or government, and flowing water and the land which conserve the rain water should be included here'*.[104] The Environment Conservation Act, 1995 defined water reservoir through an amendment in 2010 as *'the place which is marked as river, canal, beel, haor, baor, dighi, pond, water-fall or water body in Government land record or any water body, flood plain area, flowing water and land which reserve rain water which is declared as such in gazette notification by the Government, local government or any government organization'*.[105]

On the other hand, The Haor Development Board Ordinance, 1977[106] defined 'haor'[107] as low lying areas popularly known as such and referred to the ones scheduled to the Ordinance. The Ordinance proposes for the establishment of a Haor Development Board[108] to prepare projects and schemes for the development of scheduled haors and to execute such projects and schemes. This Ordinance fails to consider the special needs of the two crore people living around the *haors* who are literally arrested by water for more than half of the year because this Ordinance does not have any provision for participation of these people in management of Haor. The Open Space Act, 2000 and Environment Conservation Act, 1995, provided definitions of wetland or water reservoir with some similarities. Open Space Act, defined the wetland for the purpose of urban areas and hence the same is not applicable beyond the urban areas. Therefore, it is needed to

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[103] Act No. 36 of 2000, it also called as Open Space Act, 2000

[104] Section 2 (f) of the Open Space Act, 2000

[105] 2 (a), the Environment Conservation Act, 1995

[106] Ordinance No, IX of 1977

[107] Article 2 (1) of the Haor Development Board Ordinance, 1977

[108] Article 3 of the Haor Development Board Ordinance, 1977

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adopt a clear and comprehensive definition of wetlands and their physical constituents for regulating fresh water resources in Bangladesh.

Fisheries

There are two basic laws in Bangladesh for regulating freshwater fisheries and marine fisheries, respectively the Protection and Conservation of Fish Act, 1950[109] amended in 1995, and the Marine Fisheries Ordinance, 1983.[110] The Protection and Conservation of Fish Act, defined 'fishery' to mean "any water body, natural or artificial, open or closed, flowing or stagnant (such as river, haor, baor, beel, floodplain, canal etc.) where activities for growing fish, or for conservation, development, demonstration, breeding, exploitation or disposal of fish or of living organisms related to such activities are undertaken, but does not include an artificial aquarium of fish used as a decorative article, pond or tank.

However, the Protection and Conservation of Fish Act, deals primarily with inland capture fisheries and regulates some of the concerns for gradual depletion of fishery and fish resources. In accordance with the mandate of this Act,[111] the Protection and Conservation of Fish, Rules, 1985[112] was adopted and prohibited the erection of fixed engines in rivers, canals, khals and beels, construction of dams and embankments other than for irrigation, flood control or drainage purposes, destruction of fish by explosives in inland or coastal territorial waters or by poisoning/depleting water. The Rules also prohibited the catching of certain fish species during their spawning season.[113] All of these rules being set centrally and lacking clear mechanisms for implementation other than through enforcement by law enforcement agencies.

On the other hand, the Marine Fisheries Ordinance, 1983[114] was adopted in order to provide framework for the management, conservation and development of marine fisheries in Bangladesh. The Marine Fisheries Ordinance, 1983 regulates marine fisheries within the territorial waters and economic zone of Bangladesh as specified in accordance with the Territorial Waters and Maritime Zones Act, 1974[115] and the other marine water over which Bangladesh has or claims to have jurisdiction with respect to the management, conservation and development of marine living resources.[116] The Ordinance of 1983, has defined fishery as one or more stocks of fish that can be treated as a unit for the purpose of conservation and management.[117] In accordance with section 28 of the Ordinance of 1983, Government can declare any area of the Bangladesh fisheries waters to be a *marine reserve* where special measures are necessary as follows:[118]

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[109] Bengal Act XVIII of 1950

[110] Ordinance No XXXV of 1983

[111] Section 3 (1) of the Protection and Conservation of Fish Act, 1950, provided the authority to the Government to make further rules for the purposes of the Act.

[112] Notification dated 16 October, 1985

[113] Management of Natural Resources: Access and Justice Issues, BELA, 2002, p.3.

[114] Ordinance No, XXXV of 1983

[115] Act No. XXXVI of 1974

[116] Section 2 (a), the Marine Fisheries Ordinance, 1983

[117] *Abid* Section 2

[118] *Abid* Section 28.

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a. To afford special protection to the aquatic flora and fauna of such areas and to protect and preserve the natural breeding grounds and habitats of aquatic life, with particular regard to flora and fauna in danger to extinction; or

b. To allow for the natural regeneration of aquatic life in areas where such life has been depleted; or

c. To promote scientific study and research in respect of such areas; or

d. To preserve and enhance the natural beauty of such areas.

The Fisheries Policy, 1998 provided the broader framework of inland and marine fish and fisheries management in Bangladesh and addressed the concerns of the traditional fisher folks and their involvement in management and conservation process. The policy stated that, the Fishermen Societies along with the local government will be engaged in the execution of fish conservation besides the authorities presently engaged[119], but gave no place for fishers in decision making. It also suggested to give priority to the genuine fishers to obtain *khas* water bodies and requires the government to take necessary steps to develop the standard of lifestyle of the fishers.[120] All of which was consistent with the past and present policies regarding access to public water bodies (jolmohals), even if practice often differs. Moreover, the Policy suggests for establishing fish sanctuaries in order to increase fish production and to conserve biodiversity. It also suggested that Department' of Fisheries will be liable for the care and management of the declared fish sanctuaries with the help of fishers societies and bodies of local government.[121] Under its various projects, the Department of Fisheries established a number of fish sanctuaries. Since the concept has no legal sanction, the sanctuaries are confronted with serious problems after the completion of the relevant projects as the local groups may or may not retain formal use rights over those waterbodies/sanctuaries, lack support to coordinate with the other agencies for example on pollution control, and often lack any benefit from protection and source of income to manage sanctuaries if they lose exclusive access to adjacent water bodies managed for fishing.

While the fish and fisheries related laws deal with the conservation aspects of fisheries, the management (leasing out etc.) of fisheries is regulated by land related directives. Ministry of Land is responsible for management of all the fisheries designated as *Jalmohals* and all other public land and water bodies in the country in accordance with the land related laws. The Public Water body Management Policy 2009 (the current MoL policy for jalmohals), provides that the public water body would be leased out to the real fisher folks with due preference in order to promote biological management of fisheries along with revenue collection. The policy also defined fishers and fisheries, however, which is found some other laws strewn. Fishers are defined as those persons who catch fish from natural source and sell fish for means of livelihood[122] and provided further that if there is any person, who is not a real fisher involved with registered community based organizations then it is not eligible for applying for obtaining lease of the water bodies.

A detailed procedural mechanism of leasing is adopted in the Public Water body Management Policy 2009, however, biological factors have taken little space in the Policy. The policy provides

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[119] Section, 6.9 of the Fisheries Policy, 1998

[120] Section 12.1 of the Fisheries Policy, 1998

[121] Section 6.2 of the Fisheries Policy, 1998

[122] Section 2(a) of the Water Policy, 2009

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administrative redress regarding the conflicts in relation to leasing procedure. A decision of lower tier can be brought to higher tier and finally land tribunal takes the final authority to dispose of the disputed issue. There are two things to be considered here, firstly, decision of the land tribunal cannot be challenged before any formal judicial forum and secondly, disputes regarding assessment of CBOs performance cannot be challenged since no forum is suggested. So, the policy adopted, creates new avenues of undue influence. But overall leasing period and sole authority of management remains the same. Existing governance mechanisms of water bodies aim at harnessing of revenue instead of ecological and biological management. Management ought to facilitate the traditional lives and livelihoods of poor fishers within the context of conservation of natural resources. Therefore, existing governance mechanisms need to be revised.

Agriculture

The Irrigation Act, adopted in 1876 states in its preamble that the objective of the legislation is to make provision for the construction, maintenance and regulation of canals, for the supply of water and for the levy of rates for water so supplied, in Bangladesh. Part III of the law contains provisions regarding maintenance of canals and embankments. Section 33 gives power to a canal officer to enter upon any land as he may think necessary for the purpose enquiry regarding a projected flood-embankment, or with the maintenance of an existing flood-embankment. The Agricultural and Sanitary Improvement Act, 1920 was enacted to consolidate and amend the law relating to the construction of drainage and other works for the improvement of the agricultural and sanitary conditions of certain areas in Bangladesh. The Collector (Deputy Commissioner) is responsible to undertake any work for the improvement, or for the prevention of the deterioration, of the agricultural or sanitary condition of any area.[123]

Some other relevant legislations for regulating agricultural related activities and land management include, the Canals Act, 1864, the Bangladesh Irrigation Water Rate Ordinance, 1983, the Agricultural Pests Ordinance, 1962, the Pesticides Ordinance, 1971, the Seeds Ordinance, 1977, the Plants Quarantine Act, 2011, the Agricultural Development Corporation Ordinance, 1961, the Bangladesh Agricultural Research Institute Ordinancec1976, the Bangladesh Agricultural Research Council Act, 2012.

Moreover, the Policies related to agriculture provide some important guidelines for agriculture resource management in Bangladesh. National Agriculture Policy, adopted in 2013 and considered irrigation as an integral part of agriculture. In Paragraph 8 Policy provide guidance about small irrigation and provides guidance to increase irrigation area through modern irrigation, extraction, and water supply system in restricted and adverse areas like char, haor, hilly area, barind tract, drought and salinity prone areas. Integrated Small Irrigation Policy, 2014 is a very recent Policy document describes the government policy on small-scale irrigation. The Policy is aimed to ensure food security through determining sources of irrigation water and efficient use of water then reducing costs of irrigation.

4.3. Climate Change and Disaster management

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[123] Sec.3 and 29 of the Agricultural and Sanitary Improvement Act, 1920.

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GoB prepared the National Adaptation Program of Action (NAPA) in 2005[124]. NAPA identified vulnerable areas and fifteen projects as future adaptation strategy. NAPA was updated in 2009 and identified thirty-eight adaptation measures. The NAPA process has been advanced through the adoption of the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) of 2008 (reviewed in 2009)[125] which provides the climatic contexts, analysis of socio-economic realities, and outlines policies for promoting the well-being of vulnerable groups and elaborates a set of programs based upon broad areas of interventions. BCCSAP, 2009, identified forty-five adaptation and mitigation measures based on the six pillars: (1) food security, social security and health, (2) disaster management, (3) infrastructure, (4) research and knowledge management, (5) reducing greenhouse gas emissions and a conversion to low-carbon development, (6) capacity development.

The GoB, furthermore adopted a legislation called the Climate Change Trust Fund Act in 2010 with the view to establish the Bangladesh Climate Change Trust Fund (BCCTF) to fund activities to address the adverse impacts of climate change. The Fund is financed from the national budget of Bangladesh. The GoB also created the Bangladesh Climate Change Resilience Fund (BCCRF), originally called the Multi-Donor Trust Fund, in 2009 to implement the six pillars identified in the BCCSAP. This fund became operational in 2010[126]. Moreover, Bangladesh is also taking necessary initiatives for accessing the fund from Green Climate Fund (GEF) and the Economic Relations Division (ERD) of Ministry of Finance, is acting as the National Designated Authority (NDA) of Bangladesh to GCF. NDA has also initiated a process to get Bangladeshi institutions accredited as National Implementing Entity (NIE) to GCF and identified fourteen national entities, those have the high potential to be eligible to fulfill the criteria set by the GCF board to gain accreditation.

The recently developed Disaster Management Act, adopted in 2012[127] recognized the impacts of climate change and provided guidance for setting up an institutional mechanism for disaster management, reducing vulnerabilities, rehabilitation, and providing humanitarian assistance to the victims of both disasters and climate change impacts. In addition to these plans, strategies, and legislations, the Renewable Energy Policy 2008, the Energy Efficiency and Conservation Master Plan (E&CC Master Plan), the Road Map of National Adaptation Plans (NAPs), the National Sustainable Development Strategy, the Perspective Plan (Vision 2021) and the Sixth Five Year Plan, the National Disaster Management Plan provided some guidance for mitigation and adaption measures needed for Bangladesh.

Government of Bangladesh (GoB) signed the Paris Agreement and now preparing to ratify the Agreement in accordance with the Constitutional provisions regarding ratification of international treaties, which needs to be submitted initially to President, and then before Parliament to be approved by majority vote. 128 Nevertheless, GoB developed the Intended Nationally Determined Contributions (INDC), and submitted to UNFCCC, well before adoption of the Paris Agreement. GoB developed the INDC of Bangladesh with a view to take necessary mitigation

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[124] MoEFCC, 2005, National Adaptation Program of Action (NAPA), Ministry of Environment and Forest

[125] MoEFCC, 2009, Bangladesh Climate Change Strategy and Action Plan (BCCSAP) Ministry of Environment and Forests

[126] BCCRF Operational Manual adopted in 2011

[127] Act, No. 34, 2012, The Act is adopted in Bangla and there is no official translation of it in English yet.

[128] The Constitution of the People's Republic of Bangladesh, 1972, Art. 145A and 75,

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actions to reduce its growing emissions of GHGs and to play its role in global efforts to limit temperature rise to two degrees or preferably 1.5 degrees' above pre-industrial levels agreed in Paris Agreement.[129] The INDC of Bangladesh takes both unconditional and conditional emissions reduction goals for the power, transport, and industry sectors, alongside further mitigation actions in some other sectors, which Bangladesh intends to carry out with subject to required technical and financial supports. INDC of Bangladesh also outlined the adaptation goals and measures through identification of existing measures already taken and also for future needs including the long-term vision for adaptation, drawing synergies with mitigation measures. It also provides a qualitative description on support needs for taking actions for mitigation and adaptation efforts. Now, the challenge for GoB is to implement the INDC, in accordance with the Paris Agreement through enacting new legal and policy frameworks or/and amending existing frameworks. However, in order to amend the existing legislations and policies, and/or adopt new policies and legislations, it is important to examine the scope, gaps and constrains of existing provisions.

5. Scope of Applying Polluter Pay Principles in ECA Management in Bangladesh

Polluter Pay Principles (PPP), is a well-recognized and practiced international environmental law principle, which makes liable the polluters for paying the costs for environmental damage or natural resources inter alia water, agriculture, fisheries depletion (Coffey CJ Newcombe, 2001). The PPP, is plying very important role, at national and international environmental policy regimes along with the key aspects of other related principles including the precautionary principle and the principles of preventive action and rectification of environmental damage at its source. Application of the PPP at environmental policy regime makes liable the polluter not only to pay the coast for damage but also makes liable to take actions for prevention and corrections for environmental and ecological damage due to their pollutions/harms (Grossman M, 2007). So, PPP makes responsible the polluters to consider the environmental costs into decision making for economic andother development plans, programs and projects, for avoiding, minimizing and addressing environmental harms (Millar I, 2013).

PPP is recognized in a number of international and regional Treaties and Conventions related to environment. The PPP was first recognized in the recommendations of the OECD, back in 1972 and also the key aspects of PPP were included in the Stockholm Declaration of the United Nations Conference on the Human Environment in Stockholm, 1972.[130] UN Declaration on Environment and Development, 1992 (known as Rio Declaration) specifically incorporated a principle. Principle 16 of the Rio Declaration, 1992, which stated that, *"National authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment."* [131]The PPP is further incorporated in in Agenda 21 and Johannesburg Plan of Implementation adopted in the World Summit on Sustainable Development (WSSD), known as Earth Summit held in 2002. The PPP is incorporated further in some international instruments including WTO regime and also in some regional instruments. The PPP is considered in the European Community

[129] GoB, INDC, 2015

[130] See- https://www.soas.ac.uk/cedep-demos/000_P514_IEL_K3736-Demo/treaties/media/1972%20Stockholm%201972%20-%20Declaration%20of%20the%20United%20Nations%20Conference%20on%20the%20Human%20Environment%20-%20UNEP.pdf

[131] See- http://www.unesco.org/education/pdf/RIO_E.PDF

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Environmental Policy and the Helsinki Convention on the Protection of the Baltic Sea or for the Protection of the Mediterranean Sea against Pollution, with due importance. Art. 38 of the Statute of the International Court of Justice, included the PPP and hence provides the basis for considering the PPP as a general principle of customary international law. It's worth mentioning that most of the States have incorporated PPP into their national legal, policy and plans. Thailand adopted the PPP in 1992's Environmental Act B.E. 2535 and in its environmental conservation strategies of the 8th Economic and Social Development Plan. A French Legal instrument provided a definition PPP stating that PPP, according to which the cost of the measures carried out to prevent, reduce and control pollution have to be borne by the polluter.

The PPP, has evolved into different strands, including the extended to prevent, reduce and control pollution have to be borne by the polluter. GoB of Bangladesh, also tried to address the environmental harm with the spirit of PPP, however, the PPP is not widely expressed in Bangladesh environmental laws and regulations. Bangladesh Environment Conservation Act, 1995 incorporated the liability regime for environmental harm stating that *"If it appears to the Director General that any act or omission of a person is causing or has caused, directly or indirectly, injury to the ecosystem or to a person or group of persons, the Director General may determine the compensation and direct the firstly mentioned person to pay it and in an appropriate case also direct him to take corrective measures, or may direct the person to take both the measures; and that person shall be bound to comply with the direction."* [132] Bangladesh Environment Conservation Act, 1995, further provided guidance for complaining by an affected person or likely to be affected person to environmental harm caused by environmental pollution or degradation and the penalty provisions provide the scope for making liable for financial penalty.[133] Moreover, Environment Court Act 2000 (amended in 2010) established the environmental courts at the district levels and defines the jurisdiction of the courts and nature of offences and punishments.[134]

PPP has been evolving at international, regional and national levels, through exploring financial and technical resources for monetary compensation and correction approaches for environmental harm. Moreover, PPP has been considering the cost of the measures carried out to prevent, reduce and control pollution have to be borne by the polluter. GoB of Bangladesh need to take an comprehensive approach to incorporate the PPP in terms of preventing, reducing, controlling pollution and addressing residual harm and hence it needs to amend the existing laws and to restructure the institutional arrangements with innovative financial, technical and capacity building frameworks. And within this innovative environmental harm addressing framework an ECA management approach needs to be incorporated.

6. The Gap Assessment and Proposed Policy Interventions for ECA Management

The previous sections of this technical report, identified and reviewed the relevant provisions of the existing legislations, policies, and institutional structures related to ECA management. Considering the multi-actors involvement in the ECA governance, this report has taken a comprehensive approach to review the legislations, policies, and institutional structures related to ECA management. So, it reviewed the relevant sectoral legislations, policies, and institutional

[132] Bangladesh Environment Conservation Act, 1995, Sec. 7

[133] Ibid, Sec. 8 & 15

[134]

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structures relevant to environment, ecology, biodiversity, water, agriculture, fisheries, land, climate change and disaster, with an ultimate objective of providing some policy guidance for designing some interventions for effective ECA management. This section of the report, provides an overview on the previous gap assessment and thereafter suggests some relevant interventions for improving ECA within a project framework. The review and assessment process identify the following key issues to address at regulatory regime of ECA management taking into account the concerns related to environment, natural resource management, climate change and disaster as follows:

- In terms of ECA management and governance, GoB of Bangladesh has taken some specific legislative and institutional efforts to protect, and converse natural resources and associated ecology and biodiversity of the Country. In particular, for ECA management, Protected Area and Biodiversity management GoB adopted recently specific laws and regulations.

- Recent amendment to the Constitution of Bangladesh in 2011, incorporated the provisions on environment and natural resource management, which states that, *the State shall endeavor to protect and improve the environment and to preserve and safeguard the natural resources, bio-diversity, wetlands, forests and wild life for the present and future citizens.*[135] However, this provision is incorporated in part two of the Constitution within Fundamental Principles of State Policy. National Environment Commission need to be formed, so that this State Policy can be implemented in a coordinated and integrated manner.

- GoB, recently adopted the Ecologically Critical Areas Management Rules in 2016 under the Bangladesh Environment Conservation Act, 1995. The Rules of 2016, provided guidance for structures and functions of a number of committees from local to national levels for ECAs management and development in Bangladesh. The Rules of 2016, also provided guidance on ECA declaration and management and also established a fund called Ecology Management Fund. However, the committees, management plans, the fund, suggested under this Rules, all are yet to be formed. So, immediate interventions are needed to form all these committees, to develop the required management plans, to establish the fund.

- GoB, recently adopted the Biological Diversity Act, in 2017, which provided required guidance for conservation of biological diversity through forming different committees from national level to local level likewise the Rules of 2016 for ECA Management. This law establishes a domestic fund named the 'Biodiversity Conservation Fund' to provide financial incentives for inter alia the conservation and management of Biodiversity Heritage Sites; compensating or rehabilitating any person or section of the people economically affected by the declaration of Biodiversity Heritage Sites; for any other incidental expenses. However, the committees, management plans, the fund, suggested under this Rules, all are yet to be formed. So, immediate interventions are needed to form all these committees, to develop the required management plans, to establish the fund.

[135] Article 18A, the Constitution of the People's Republic of Bangladesh, 1972; Fifteen Amendement-2011

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- BCCSAP, adopted in 2009, identified 44 adaptation and mitigation programs and The GoB, furthermore adopted a legislation called the Climate Change Trust Fund Act in 2010 with the view to establish the Bangladesh Climate Change Trust Fund (BCCTF) to fund activities to address the adverse impacts of climate change. The Fund is financed from the national budget of Bangladesh. This fund is established and providing funds for climate related activities. BCCSAP, 2009 also provided governance structures and it suggested to form inter alia the National Environment Committee, National Steering Committee. But these committees are not functional.

- GoB also adopted the Disaster Management Act, in 2012, which also provided governance structures for different committees from national to local level and MoDMR is developing now the Disaster Management (Committee Structure and Functions) Rules. The Disaster Management Act, in 2012 also suggested to form Disaster Management Fund, which is yet to be formed and functional. Some of the committees formed under this Act, however all the committees need to be formed.

- The Polluter Pay Principle (PPP), has been evolving at national and international levels with different strands, including the extended to prevent, reduce and control pollution have to be borne by the polluter. GoB of Bangladesh, also tried to address the environmental harm with the spirit of PPP, however, the PPP is not widely expressed in Bangladesh environmental laws and regulations. GoB of Bangladesh need to take an comprehensive approach to incorporate the PPP in terms of preventing, reducing, controlling pollution and addressing residual harm and hence it needs to amend the existing laws and to restructure the institutional arrangements with innovative financial, technical and capacity building frameworks. And within this innovative environmental harm addressing framework an ECA management approach needs to be incorporated.

- Laws, policies and institutional approaches are also reviewed related to Land, Water, Agriculture, Fisheries, Forest management to look at the sectoral approaches and coordination. Policies, laws and the regulations related to public land and water management are ad-hoc and sectoral. Sectoral conflicts and contradictions in terms of legal and institutional structures, functions and mandates deprive local communities from secure access to public lands, water and related resources. Absence of legislative and policy frameworks for land zoning resulting uncertainty in compliance of the sectoral laws and policies.

- Current management approaches to water bodies in Bangladesh still aim at generating government revenue instead of ecological sustainability and secure livelihoods for poor users, instead they create obstacles to fair access to public waters for traditional users. Sectoral approaches of policies and laws undermine one another; e.g. laws related to fisheries focus on general conservation, but access (leasing) of fisheries is regulated by land related laws and policies set by Ministry of Land.

- The basic elements of community based resource management including community access to resources, community participation in decision making processes, and secure benefits for local communities particularly the poor are not yet institutionalized in Bangladesh with appropriate legal and policy mandates. The concept of common natural resources (e.g. common property institutions) does not exist in laws and policies, which

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are inflexible and focus on allocating exclusive rights of use to individuals (khas land) or cooperatives (water bodies). Policies and their implementation create space and opportunities for local elites to capture common natural resources.

- There is no clear decision or policy on whether rural people have a right to flood protection or suitable water for their traditional/preferred livelihood activities (e.g. legal cases over failure to repair cyclone damaged embankments and release of saline water for shrimp farming affecting crop cultivation did not result in recognition of any rights or norms). Compliance and Monitoring Mechanisms within the legal and policy frameworks are very fragile which fail to promote the transparency and accountability in the conservation regime. Access to justice and dispute resolution mechanism found very complex in terms of judicial, administrative and alternative dispute resolutions (ADRs).

6.1. Proposed Policy Interventions for ECA Management

Short term

- **Implementation of the Ecologically Critical Areas Management Rules, 2016**
  - Formation of the National Committee, District Committee, *Upazila* Committees, Union Coordination Committees and Village Conservation Groups (VCGs)
  - Developing Modalities of works for each committee in accordance with the structure and functions suggested in the Ecologically Critical Areas Management Rules, 2016
  - Developing Reporting format for each committee and also review and synthesis processes
  - Developing monitoring accountability mechanisms for each committee
  - Developing Financial Accounting systems for each committee
  - Developing public-private joint management plan including benefit sharing mechanisms
  - Developing ECA management plan for each ECA
  - Establishing Ecology Management Fund and developing it's modalities for receiving and disbursements of funds

Mid Term

- **Establish a Community based Resource Management Framework**
  - A comprehensive study: to review the different community based approaches to ECA management, Biodiversity management, disaster management and also climate change.
    - To develop a common framework for community based approaches resource management
    - To develop community access to resources and benefit sharing mechanisms Access to resources
    - To develop a community livelihood framework considering alternative livelihoods
    - Empower the communities for taking part in the decision making processes, for access to information and justice

- **Establish a Public Private Joint Management Framework**

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- A comprehensive study: to develop a public-private joint management framework with identifying the responsibilities and profit sharing mechanisms

- **Applying the Polluter Pay Principles (PPP)**
  - A comprehensive study: to incorporate the PPP in terms of preventing, reducing, controlling pollution and addressing residual harm.
    - To review the existing laws and the institutional arrangements for applying the scope of applying PPP and to amend the existing laws and enact new law if needed.

- **Establish a Monitoring and Transparency framework**
  - A comprehensive study: to identify the scopes, gaps and constrains of existing monitoring and transparency frameworks and to suggest an innovation and inclusive monitoring and transparency framework.
    - To develop an institutional structures for monitoring and transparency
    - Reporting issues, format and mechanisms
    - Review structures and synthesis process
    - Developing consultation processes
    - Involving community people

- **Establish a Capacity Building Frameworks**
  - A comprehensive study: to develop a framework for capacity building initiatives for the institutions and human resources
  - Training Programs for capacity Building
    - Developing training manuals on 'legal, policy and Institutional arrangements on ECA management, planning and monitoring and enforcement' for management stakeholders
    - Developing training manuals on legal, policy and Institutional arrangements on ECA management and participation, access and benefit sharing mechanism for community people.

Long term:

- **Establish an integrated and coordinated policy and legal framework for environment, natural resources, climate change and disaster management:**

  - A comprehensive study: to remove the inconsistencies identified in this report from the existing sectoral policies, legislations and institutions related to environment, natural resource management, climate change and disaster management and sustainable development.
    - to identify the policy gaps,
    - to develop strategies for addressing such policy gaps, and
    - to develop policy reforms action plans for developing a transparent and accountable conservation regime in Bangladesh

- **Establish a National Commission on Environment, Climate Change and Disaster Management**

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- A comprehensive study: to identify the structures and functions of different committees at national and local levels, established under sectoral laws and policies and to design a structure and function of such National Commission on Environment, Climate Change and Disaster Management.

- **Establish a Common Fund for Environment, Climate Change and Disaster Management**
  - A comprehensive study: to identify the structures and functions of different funds established under sectoral laws and policies and to design a structure and function of such Fund.

7. Concluding Remarks

This report reviewed the current policy and legislative frameworks for ECAs and also reviewed the institutional structures for ECA management. Moreover, this study takes a comprehensive approach to review other related laws, policies and institutions related to environment, ecology, biodiversity, forest, water, agriculture, fisheries, climate change and disaster management with a view to explore a coordinated and integrated governance approach to natural resource and ECA management. This review and assessment led to identify the gaps and based on the identified gaps, this report proposes some further interventions for policy, legislative approaches to natural resource management with particular focus on ECA management for short term, midterm and long term. Further project, needs to take necessary initiatives based on these proposed interventions suggested in this report.

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Acronyms used:

BCR	: Benefit-Cost Ratio
BDT	: Bangladesh Taka (*The Bangladesh Currency*)
BWDB	: Bangladesh Water Development Board
CCC	: Chittagong City Corporation
CCCI	: Chittagong Chamber of Commerce and Industry
CDA	: Chittagong Development Authority
CSR	: Corporate Social Responsibility
CWASA	: Chittagong Water and Sewerage Authority
DO	: Dissolved Oxygen
DoE	: Department of Environment
ECA	: Ecologically Critical Area
FGD	: Focused Group Discussion
IDF	: Integrated Development Foundation
IRR	: Internal Rate of Return
LGED	: Local Government and Engineering Department
LGRD	: Local Government and Rural Development
MoA	: Ministry of Agriculture
MoEF	: Ministry of Environment and Forest
NGO	: Non-Government Organization
NPV	: Net Present Value
PKSF	: Palli Karma Shahayok Prokolpo (*Rural Employment Assistance Project*)

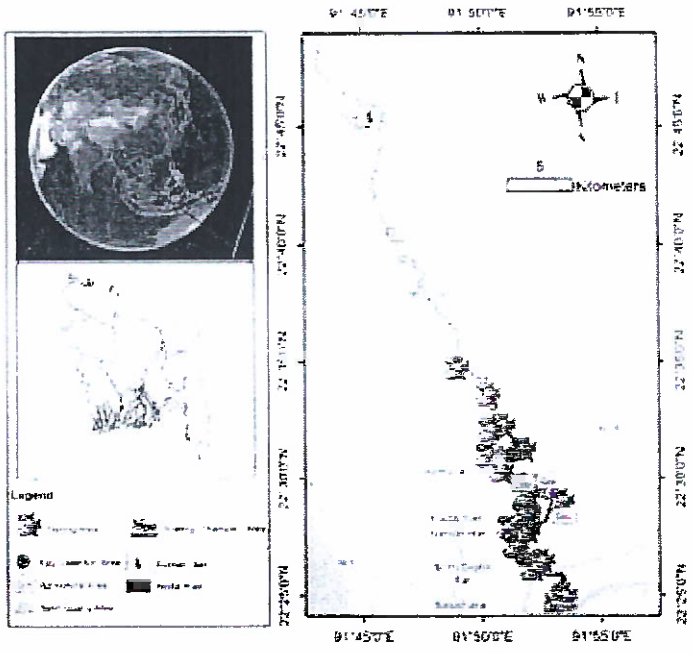
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A. Understanding the Halda ECA: An Environmental Assessment

Located at 22° 54′N and 91° 48′E to 22° 24′N and 91° 53′E, the Halda is one of the most important rivers in the South-eastern part of Bangladesh with a total length of 98 km. Originating from the Batnatali Hills in Khagrachari District, it travels through Fatikchari, Hathazari, Raozan, and Chandgaon of Chittagong District, and finally finds its way into the Karnafully River. The river is the single major freshwater breeding ground and natural gene-bank of pure Indian carps not only in Bangladesh but also in South Asia. This is probably the only tidal river in the world from where fishermen directly collect several thousand kilograms of fertilized eggs of Indian carps every year. The river harbours the habitat for the endangered Ganges Dolphin (*Platanista gangetica*, EN) and several other endangered bird species.



The Halda is also extremely important for the kind and array of economic benefits it provides for the people of Chittagong - the port city of Bangladesh. The Chittagong Water Supply & Sewerage Authority (CWASA) lifts nearly 90 million gallons of water per day for about four million people in the port city. Local people are heavily dependent on the river for diverse livelihood activities including boating, boat-building, fishing, farmer, egg collecting, and sand quarrying. The other major use of the river is agricultural farming; 30% of the people living on the river banks are farmers using Halda-water for agricultural irrigation.

The river is now facing multi-faceted ecological issues including salinity intrusion, siltation, inadequate water flow, and water pollution. All these combined have resulted into serious ecological consequences including multiple cases of fish and dolphin mortality, reduced release of carp eggs, and extinction of a number of fish and Ichthyofauna species. The environmental health of the river is so much at stake now that the government is at the final stage of declaring it an ecologically critical area (ECA). The government, local people, researchers, development organizations, and civil society are in frequent debate as to why and how such a vibrating river turned into an ECA.

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Environmental Issues Identified



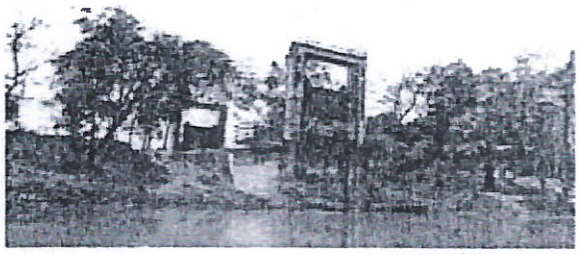
a. Climate change

- Salinity intrusion
- River bank erosion
- Biodiversity loss



b. River manipulation

- Removal of 11 oxbow bends to shortened the river lengths by 25km (from 123km to 98km)
- Installation of rubber dam in the upstream to withdraw water for agricultural irrigation
- Regulating water flow through sluice gates



c. Polluting the river

- Throwing untreated industrial wastes (Asian Paper Mill, Madina Tannery, Hathazari 100 MW peaking power plant, Brick fields, and multiple poultry farms)
- Pesticides and agrochemicals from adjacent agricultural fields and 17 of Bangladesh's 163 tea gardens are in Fatickchari Upazila
- Application of insecticides (Endrine and Rotanon) to catch prawns
- Disposal of domestic waste water into the river
- Open defecation (although very rarely)



d. Anthropogenic pressure

- Killing of mother fishes
- Sand quarrying
- Engine boat plying



e. Withdrawal of water by water treatment plant and irrigation projects.

- Irrigation projects withdraws millions of gallons of water during the dry season when the river itself suffers from insufficient recharge;
- Mohora water treatment plant withdraws 90 million gallons of water everyday all the year round;
- Halda Scientists believe it creates a couple of problems
  - Disturbance of carp breeding ground
  - Killing of important aquatic fauna through propelling of the pumps

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- Reduces environmental flow level of the Halda

Impacts on Ecosystem services:

Multi-faceted factors or vectors have impacted the Halda ecosystem from so many dimensions. People's perceptions have been summarized to explore how anthropogenic and social activities have impacted provisioning, cultural, regulatory and supporting services available from the Halda. These impacts are expressed through the following figures:

a. Impacts on provisioning services

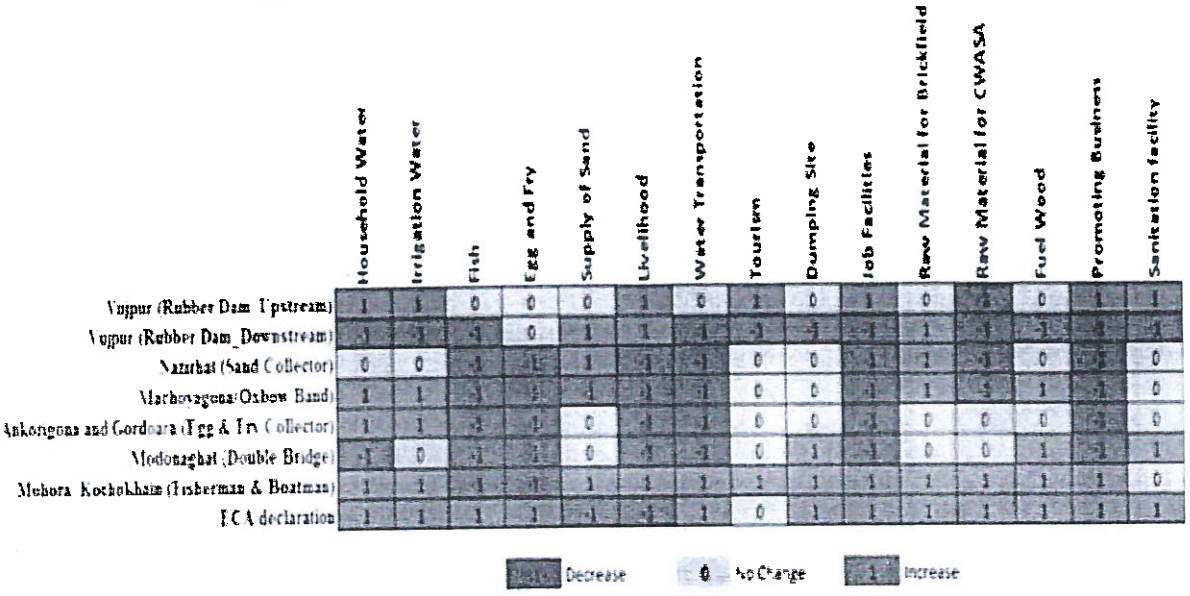


Fig: Provisioning Services

b. Impacts on regulatory services

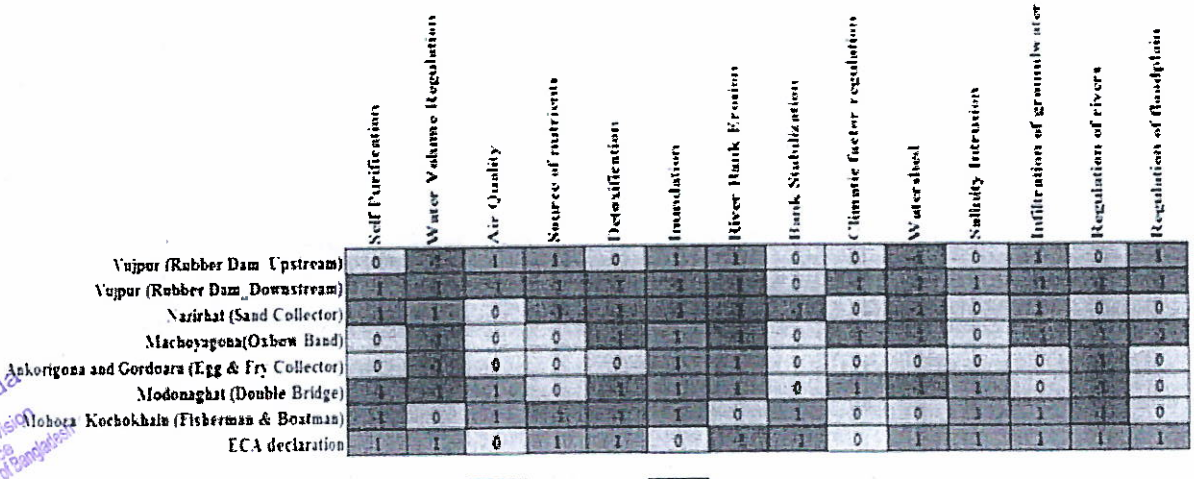


Fig : Regulatory Services

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c. Impacts on cultural services

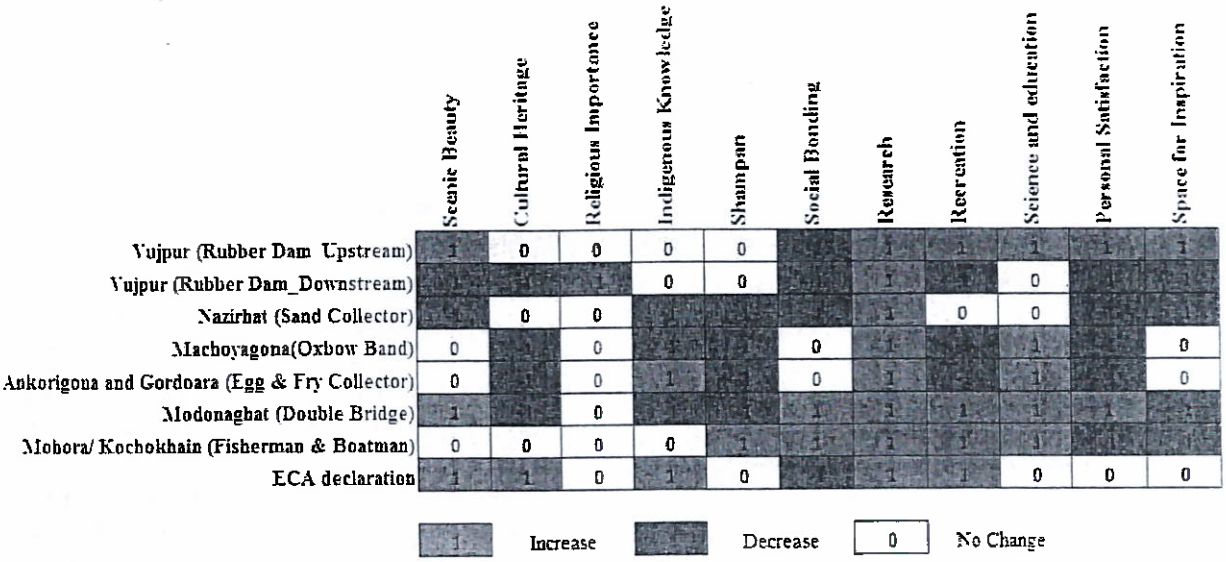


Fig: Cultural Services

d. Impacts on Supporting Services

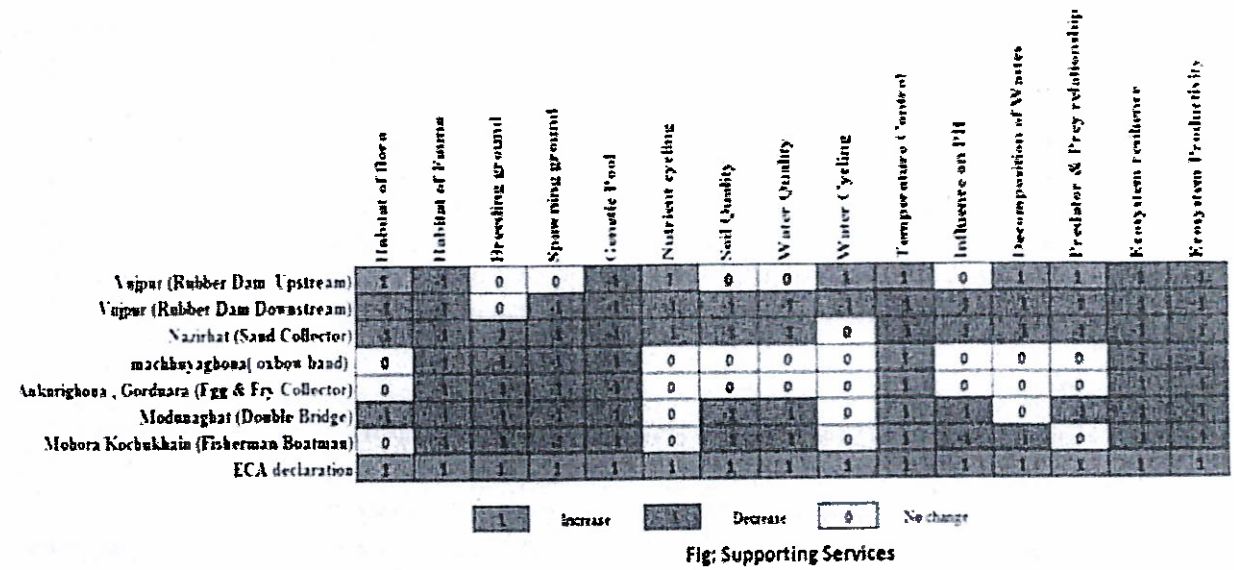


Fig: Supporting Services

B. Financial Investment Options

There are a number of social investment options suggested by the local stakeholders. Some of them are:

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- Capacity building of the Halda community patrolling team
- Tree plantation for Halda watershed conservation
- Development of fishing plan considering the livelihoods of the Halda-dependent community
- Research for scientific management of the Halda
- Halda Research center development

However, some of the options' financial potentials have been evaluated, which are as follows:

1. Capacity building for Halda Community Patrolling Team

Current/Baseline Scenario

Halda patrolling team is a community-based initiative to safeguard Halda and its resources for their own benefits. Presently, two teams are involved in Halda patrolling activities, each comprising 15 members and one team leader. The teams use only one country boat provided by two locally working NGOs named IDF and PKSP. The NGOs are also paying the teams at the rate of BDT 1000 per person per month.

The teams are now covering a length of 10km of the river from Sattarghat to Kalurghat at a frequency of 2-3 days of patrol each month. The team has captured and destroyed more than 100,000 ft. of legally banned fishing net (locally known as current net) this year. Carp egg collected in 2018 is around 22,680 kg against 1760 kg in the preceding year. This increased production is partly credited to the patrolling team assuming that egg production is associated to a set of other environmental factors. Thus, the Halda community and researchers believe in enhancing the size and capacity of the current patrolling team.

Proposed scenario

As outlined in the FGD conducted on the riverbank with the participation of the local people, the Halda patrolling teams should be made more effective to provide strong conservation service to the river. Major steps needed should include the following:

- The patrolling team should be legally empowered with all-time visible ID cards;
- Patrolling length of river should increase from existing 10 km to 30 km from Peshkarghat to Kalurghat to bring the entire river under effective watch;
- Patrolling frequency should increase from exiting 2-3 days/month to 10 days/month;
- A total of at least 120 people should be in the patrolling teams in place of existing 30;
- Logistics need: 2 more country boats equipped with hand mikes and flash light.

Costs

The cost of the proposed facilities was estimated $311180. The particulars are as follows:

* Two country boats cost $16400; at the rate of $8,200 per boat;
* Cost of three hand mike = 3*$200 = $600; at the rate of $200/mike
* Monthly honorarium= 120*12*4*3 = $218,880; at the rate of $38/per person per month over a period of four years.
* Rain coat= 120 piece *$15/piece = $1,800
* Flash light = 6 piece*$50/piece = $300
* Maintenance cost = 100*3*4 = $1,200

Benefits:

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*It will expectedly increase the following benefits:

- Increased egg production
- Fish production (though subsequent supply chain)
- Increased fish production
- Increased other aquatic biodiversity

  * The hatched fry from the eggs is sold at BDT 40000-60000/kg.
  * Although not very reliable, tangible resources from Halda are worth US$20.5 million a year [Kabir, M. H., Kibria, M. M., Jashimuddin, M., & Hossain, M. M. (2013). Economic Valuation of Tangible Resources From Halda–The Carp Spawning Unique River Located at Southern Part of Bangladesh. *Int. J. Water Res*, *1*, 30–36.]

Although there is not enough data to conduct a benefit-cost analysis, it can be concluded that, conserving Halda has promising returns, even in tangible terms, let alone all the non-market benefits it can potentially produce.

2. Tree plantation

Halda has been suffering from serious ecological problems including erosion, siltation, salinity, and pollution. One of the important options is to enrich its watershed through plantation. This may be done by indigenous tree species and bamboo (very good for soil biding). A short to medium rotation species might yield an IRR of 22.82% in a 10-year rotation (Please see the MS Excel file for detailed calculation). Potential costs and benefit items are as follows. Note that non-market benefits are not valued and listed here.

Costs

* Seedling
* Plantation, gap filling, post-plantation care and maintenance
* Opportunity cost (of land)
* Management and monitoring
* Direct cost (beneficiary selection for example)
* Final harvesting and transportation cost

Benefits

* Fuelwood
* Poles
* Sawlogs (Final Harvest)
* Landslide protection

3. Research for scientific management of the Halda

Multiple stakeholders have suggested conducting a comprehensive research on how to scientifically manage Halda. We estimated that such research might cost around US $50,000. This must be a multi-disciplinary research consisting of Biologists, Sociologist, Economist, and Environmentalist.

C. Challenges

While Halda has strong potentials to produce ecosystem services worth large economic returns, the majority of them are not in the form of marketable or physical resources. Given the present framework of paying for ecosystem services (in fact, there exists no such framework), it is

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extremely difficult to practically agree upon the value the Halda adds to the society each year. We might have a theoretical number, however, it has almost no representation in our real-world financial dealings. Given the inherent non-market attributes of the Halda ecosystem, sustainable financing for the management of Halda Ecosystem would face the following challenges:

- Inadequate funding from government and other agencies;
- Sometimes even if funds might be available, however, sustainable release of fund is a big issue. As learnt from the discussion with the community leaders, funds are sometimes released for purposes/options that have seasonal or periodic constraints;
- Given the present funding scenario, restoration costs are most likely to exceed the running costs/budget;
- Extremely ambitious and most likely impracticable target as stated in the Five-Year Plan - Zero discharge of industrial effluents, restoration of urban wetlands and protection of at least 15% of a wetland in peak dry season as a sanctuary. Well, it sounds pretty good, however, in most cases, running after such stern target is often practiced at the cost of the livelihoods of marginalized people. In that case, sustainable funding for the alternative livelihood development is of prime importance.
- Halda is the center-point for dozens of stakeholders. Reaching financial decisions among so many stakeholders is always a challenge. Following is a comprehensive list of Halda stakeholders:
- Stakeholders at different level, their link, level of interest, power etc. in terms of management of the Halda River is analyzed and listed in stakeholder analysis. The identified stakeholders are given below:

Sectors	Actors	Internal/External
International/National agencies	Donors	External
Public entities	Department of Environment	External
	Ministry of Fisheries	Internal
	CWASA	Internal
	Water development board	External
	Ministry of Agriculture	External
	LGED	External
	LGRD	External
	Chittagong City Corporation	External
	CDA	External
	Ministry of road transport and bridges	External
	Ministry of law	External
	River commission	External/internal
	Ministry of water resource	External
	Prime Minister's office	External
	National planning commission	External
Local legislator	Local administration	External/internal
	Local political leaders	Internal
	Local religious leaders	Internal
Educational (Public/private entities)	Universities	External

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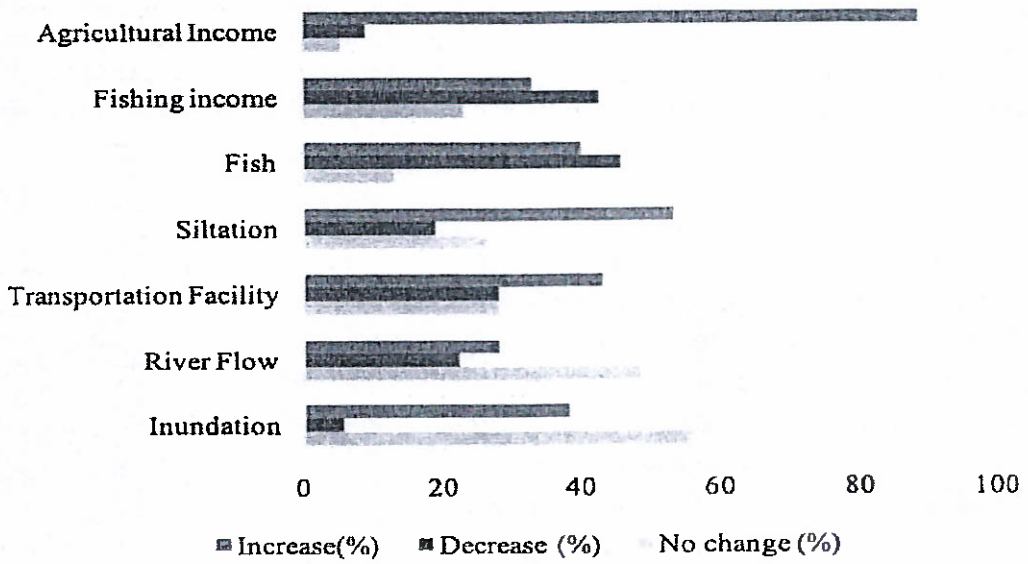
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Sectors	Actors	Internal/External
	Research institutes	External
	Educational institutions	External
For-profit communities and organizations	Local contractors	External
	Local community	Internal
	Brick field	Internal
	Industry	Internal
	Egg collector	Internal
	Fishermen	Internal
	Boatmen	Internal
	Sand collector	Internal
	Farmer	Internal
Non-profit organization	NGOs	External
Business organization	Chamber of commerce	External
Communication	Media	External
Tourism	Tourist	External

- Regulating rubber dam and irrigation is a big challenge. Even though they are explicitly appearing to be detrimental to Halda ecosystem, their necessities cannot be ignored. The following figure highlights on people's perception in how rubber dam is impacting their economy and environment. The dependence of local agriculture and economy is so intensive that these cannot be shut down.

D. Financing Strategy

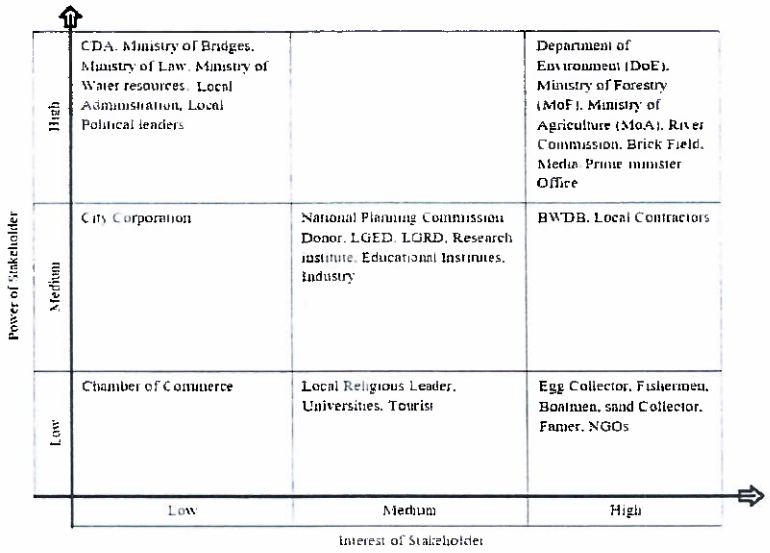


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a) Stakeholder relationship: It is important to understand the involvement, interest, and power of each of the stakeholders of the Halda. Exploring financial flow requires careful understanding of the power and interest of each group in the Halda. We have worked out the following stakeholder evaluation.



b) Finding potential funding sectors: It is needed to examine sectors other than just MoEF that might have potential stakes in Halda. Such agencies might include organizations, Departments, or Ministries having strong leverage on agriculture, fisheries, tourism, mining, water resources and waste management; to identify linkages and potential opportunities for partnerships and investments.

c) Polluters' pay: Stringent regulation of polluters is important for both controlling pollution and brining in money for Halda management. High pollution tax (Pigouvian tax) will significantly increase the production cost of the polluting firms. This will compel them to be compliant. The taxed/penalized money should come to Halda welfare activities. There are dozens of laws (see below) that can be enforced to accomplish this objective:

Environmental policy, 1992
ECA (amendment), 2010
Fisheries Protection and Conservation Act, 1950,
Fish Inspection and Quality Control Ordinance, 1983
Fisheries Management Policy, 1986
National Fish Policy, 1998
National Water policy, 2012
The embankment and drainage act, 1952
National River protection commission act, 2013
Environmental conservation act, 1995
National Water act, 2013

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While implementing polluter's pay principles, we have to make sure that the businesses should not be whipped with so called penalty by the Department of Environment. This is punishing without any justification from any economic evaluation. This payment should be formal, well-planned, regular, and sustainable. This payment should be integrated with business's production cost, so that they might themselves be able to evaluate how much they might be able to pollute and pay.

d) Sharing derived benefit: Agriculture, local businesses, residential communities, city dwellers are direct beneficiaries of Halda. A scientific estimation of how much they get out of Halda is extremely important. They have to give back a portion of their net benefits available through Halda. For example, CWASA withdraws about 90 million gallons of Halda water a day. If just an additional charge of only BDT1 is imposed on every 100 gallons of water, additional revenue that might come to CAWSA is about BDT 900,000 a day. This money is more than enough to manage Halda resources all the year round. However, the city dwellers should be convinced and aware of this. And of course, it has to make sure that the money comes to Halda. The same may be applied to other Halda-users too.

e) Corporate Social Responsibility - CSR: Unfortunately, Chittagong Chamber of Commerce and Industry (CCCI) has both low interest and low power (administrative) in Halda Management. So, public-private partnership in a for-profit venture based on Halda is less likely. However, CSR still has a good potential. The interest and involvement of CCCI in Halda matters are low for a number of reasons including: (1) For many years, the Halda did not get enough environmental attention at the national scale, (2) Most of the decisions taken so far have been dominated mainly by DoE and district administration, (3) Potential Halda-cantered business models did not get enough attention, and (4) Greening the business is relatively a new idea in Bangladesh.

However, since CCCI is financially and politically a powerful body, it need to be incorporated in the Halda management decision. Important inclusion of this organization in Halda management will help them think of their importance and responsibility for this very important river of the nation. Simply asking money from them probably would not work. The government, especially the district administration and DoE, in connection with the scientific and development entities, have to find set procedure detailing the following:

1) Potential businesses the government will be willing for CCCI to take up and whether those options might interest the CCCI;

2) Environmental amenities and qualities the business must maintain while doing businesses;

3) Exact procedure of environmental payments should be well-described upfront (the businesses are already scared and tired of so called penalty for pollution - it must go away). The administration and businesses should have to be in discussion to move forward rather than the kind of hostile relationship they feel they have now between them;

4) Investing in Halda might be ground for important tax breaks for the businesses;

f) Involving CCC and CDA: Since Chittagong City Corporation (CCC) has a strong responsibility to manage the city's drainage network and drainage activities are directly impacting the Halda water quality, I believe CCC should have had good involvement in Halda ECA management decision-making process. Similarly, the Chittagong Development Authority (CDA) also should be a strong

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partner in Halda conservation activities. These two organizations have strong linkages and influences with elite classes of the society, businesses like CCCI. So, their active participation in the Halda decision-making process would open potential ways for investment in Halda conservation efforts.

B. Understanding Morjat Baor[136]: An Environmental Assessment

Management history

Morjat is a 10km crescent shaped baor situated in Kaliganj upazila of Jhenaidah district and Chougacha upazila of Joshore district. The baor has an official area of 625 acres, which is debated by the local people to be 787 acres. The baor was under a 30-year lease from 1989 to 2009 to the local lease-owner. However, this lease was not economically so productive since the management system was not people-oriented. Later on, the baor was left just as a fallow khas land (government owned water body) during the fiscal years from 2009-2010 through 2011-2012. The negligence towards the baor in terms of its management and maintenance was so extreme that many people were cultivating maize in the silted portion of the haor with no specific accounts of fishing. Nonetheless, to maximize benefits both for the government (revenue) and the local fishermen, the existing 6-year term leasing system entered in fiscal year 2012-2013. The baor will enter into the second round of this system in 2019 (2019-2025). There are 150 fisherman families, distributed into 15 groups with one leader for each, dependent on the baor for their livelihoods. These fishermen live in five villages - Morjat, Nolvanga, Haoli under Kaliganj Upazila and Mirjapur and Hayatpur under Chougacha Upazila. However, there are at least 10 more villages around the baor who are indirect beneficiaries of the baor.

Problems identified

Morjat baor has been suffering from a couple of natural and anthropogenic threats:

1. Water hyacinth infestation
2. Excessive and increasing rate of siltation
3. Water pollution and fish mortality
4. Eutrophication and algal growth
5. Shortage of human resources and administrative problem since it is under two district administrations.

1. Water hyacinth

This is the most hazardous and cost-intensive problem of this baor. Of the 10km length of the baor, 4km water surface is completely and continuously covered by water hyacinth at any point of time. It has been assumed by the local fishermen and fishery department professional that 95% of the water hyacinth is webbed together at all times while the remaining 5% is scattered across the baor. The fleet of water hyacinth is frequently forced to travel by strong wind from place to place in the baor. The main problem water hyacinth has been creating is the reduction of baor's water depth. The depth of the baor has been reduced from 40-45 ft in 1984 to just 10-20 ft in 2018. This tremendous reduction of water depth is considerably reducing the fish production rate and the diversity of aquatic flora and fauna, let alone the local environmental impacts.

[136] Refer to foonote 48 in Annex 13 regarding the spelling of 'Morjat' baor

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A complete eradication of water hyacinth is expected to increase fish production and fish breeding, reduce fish mortality, and lower fish production cost. So, how is a complete eradication possible? The fishermen and the local fishery department officials opined that at least three consecutive complete removal of water hyacinth is needed to get rid of this infestation. As explained in the FGDs, at least BDT1,000,000 is needed for each cycle of manual removal of hyacinth using 2,500 man-days of labor at a rate of BDT400/man-day. It can be noted that some fishermen present in the FGD were opting for chemical control of the hyacinth. However, others were protesting as saying - such a control is detrimental not only to the hyacinth but also to all the living beings and local environment. Evidently, the latter is correct.

2. Excessive and increasing rate of siltation

As said in the preceding section, water hyacinth is mainly causing this problem. In addition to this, the siltation is caused by the erosion from adjacent agricultural activities done by the non-fishing farming community. At the present situation, at least 4 km of the baor floor needs immediate removal of the muddy substrate. The depth of the baor now is 10-20 ft. as opposed to 40-45 ft in 1984. Some places are raised enough and is under agricultural practices, which in turn is opening the door of gradual loss of the baor land to occupying farmers. However, the depth of the mud varies from just a couple of ft at some places to about 10-20 ft. at many places. Assuming to increase baor depth by 10 ft., Bangladesh Water Development Board estimated a cost of BDT 1.425 million for each km. Thus, the estimated cost of mud removal from 4 km of the baor length would be around BDT 5.7 million.

3. Water pollution and fish mortality

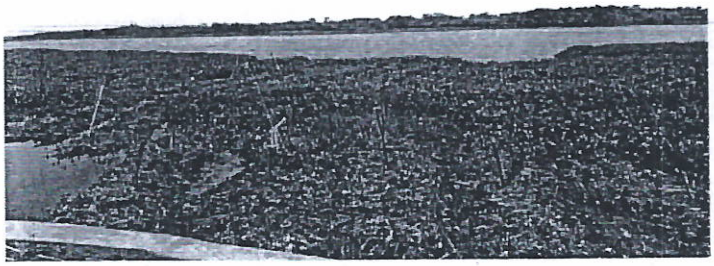
Overall, the baor still has pleasing water quality. However, it is sometimes so polluted that the DO (Dissolved Oxygen) level is no more supportable to many aquatic life forms. This is caused by:

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rotting of water hyacinth, rotting of jute in the baor, and agrochemicals washed off from the adjacent agricultural land.





The immediate and devastating impact of such pollution is the mortality of fish in the baor. The baor faces two counts of fish mortality in a year: once during October-December when water level is lowered to a risky level and water hyacinths are dried and rotten, and another during March-May when agrochemicals are washed off the adjacent agricultural fields. As again, water hyacinth is a major cause here. However, agrochemicals don't have any immediate alternatives - as explained by the locals.

4. Eutrophication and algal growth



The agrochemicals washed off from the adjacent agricultural land are causing serious algal growth in the baor. Growing algae has both beneficial and detrimental impacts on the baor. However, its detrimental impacts are likely to be more weighed than its beneficial impacts. Algae provides food and shelter for the fishes. However, their growth in some places is so severe that it often threatens the boar in the following way: causing raising of baor floor with accumulation of muddy residues, rotten residues are lowering down the DO level, hindering the fishing process, removal of them involves money that ultimately increasing fish production cost.

5. Shortage of human resources and administrative problem since it is under two districts

Officially there are ten positions at the Chougacha office of the management committee. However, there are only six people in the office right now. The Baor is situated in two districts - Jessore and Jhenidah. Thus, coordination of work is naturally problematic.

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Economic Value of Morjat Baor

The baor is co-managed by local Fishery Department and the 150 member fishermen cooperative. The benefit from artificial fish farming with carps are distributed at a ratio of 25:35:40 among Ministry of Land, Ministry of Fishery, and the fishermen community. In the 2017-2018 fiscal year, this share was BDT 3,180,000 for the government and BDT 2,072,000 for the fishermen. This translates into an annual benefit of BDT 13,813 per fisherman. The management authority normally releases 16 metric ton of carp fries each year for a targeted production of 90 metric ton. Thus, the estimated target of cash return is BDT 6.75 million a year @BDT 75,000 per ton. However, the actual return is around BDT 5-6 million a year. The targeted cost-benefit ratio is 1: 2.50. That is, the fishermen cooperative expects a net return of BDT 2.50 against every BDT they are willing to invest in the baor.

It is important to describe the total fishing benefits from the baor. The carps they produce in the baor are termed as *Raja Mach* (King Fishes). All the other fishes that are naturally growing in the baor are called *Rani Mach* (Queen Fishes). Government doesn't have any share in the Queen Fish benefit; that is, 100% benefit available through Queen Fish goes to the fishermen. In FGDs conducted in this study, the fishermen stated that the benefit obtained from Queen Fish is at least 4-5 times (let's take the minimum average, 4.5) the benefits available through King Fish. That means the annual benefit per fisherman from Morjat Baor is BDT 75,973. That is, the total annual benefit for the fishermen cooperative is about BDT 11.40 million. Combined with the government share from the King Fishes, the total annual economic return just from fish is BDT14.58 million.

[*Existing scientific studies on efforts to estimate the value of natural capital show that, on an average, the value a biodiversity or natural resource can produce is 2.5 -3.0 times the value of the marketable good and services it can produce. Taken this, a rough estimate of Morjat Baor's annual economic worth can be visualized to be around BDT 36.44-43.73 million. However, this is not a debate-beyond estimate. This number is estimated just to highlight on the significance of this baor on the local economy in particular and national economy as a whole.*]

Sustainable Investment

In two different FGDs, the community and the management organization (Fishery Department) narrowed down the priority to a combined investment option: Removal of water hyacinth and mud substrate from the baor bed. We have evaluated the financial viability of such investment. The estimated IRR was 40% - pretty promising. However, following are the details of the estimation:

Assumptions

- Manual removal of hyacinth for three consecutive years @ BDT 400/man-day* 2500 man-days a year.
- After that, 600 man-days a year would be needed
- Initially BDT 5.7 million (estimated by Bangladesh Water Development Board @ million1.425 per km for an average digging depth of 10 ft.); thereafter, on a regular basis, needs 10% of this initial amount every other year.
- King fish production will increase by 10% due to better water quality and water depth
- Queen fish production will increase by 10% due to better water quality and water depth

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- Now fish mortality is twice a year, which causes at least 10% productivity loss. After removal of mud and hyacinth, this mortality can be avoided

The IRR of this investment was estimated to be 40% (Please see the MS Excel file for calculation details. That means, this investment ensures a constant return of 40% over the next 10 years and beyond. This return is considerably higher than current central bank rate in Bangladesh. However, the return is assumed to be even higher if non-market ecosystem benefit could have been included in the analysis. Thus, planning and implementing the investment is worth from economic and environmental viewpoints.

Possibility of private-public partnership

Overall, the baor has beautiful natural set up. It can be a wonderful ecotourism or Eco-resort. However, that possibility is constrained to a number of factors including removal of hyacinth and excessive algal growth, forbidding of jute rotting (through providing alternative space for jute rotting), and implementing a planned transportation network. This involves a huge investment in infrastructure, which is most likely possible through a public-private partnership. The returns against such investment is highly promising since it will boost up the local economy through the following:

- Increased in-haor income (fish and other aquatic resources);
- Increased income attributed to new business, transpiration, communication, and tourism, to name a few;
- Increased employments; and
- Better communication and lifestyle.

There are potentially inclined private investors in the region. What needed is the initiative and appreciation for private-public partnership. While improving the local communication and transportation network is basically a public mandate (no matter Morjat may or may not be an ecotourism hotspot), the private ownership is willing and can work on converting the location a tourist hotspot. Such a business model is expected to have a high potential, which can be substantiated from the following example: The district administration has installed two floating bridges on an adjacent baor- Jhapa Baor. These bridges are of extremely low-cost: made of redundant plastic drums floated across the baor connecting both of its banks. This has attracted hundreds of local (possibly also international) tourists. The tourists were seen extremely willing and happy to pay for taking a walk on the bridge across the baor. In addition to just collecting the bridge fee/toll, there were dozens of businesses flourishing in the area including - small business (ice-cream vending, for example), amusement options for kids (merry go round, for example), boat-riding, and fishing. Given this, it can be concluded that Morjat Baor has tremendous economic potential when it would be scientifically managed

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ANNEX 21: PPG CONSULTATIONS AND MISSION REPORT

Schedule of Meetings and Consultations (17-28 July 2018)

(Mission members participating in the field visits are listed below this table.)

Day	Time	Activities	Status
17 July Tuesday	09:30-12:00	Kick off meeting of the Mission Team at UNDP CO	Notify meeting at UNDP 18th Floor
	17:00-18:00	Meeting with GIZ Bangladesh	Mr. Oemar Idoe, Principal Advisor Sundarbans Management Project (SMP) Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH T +880 (0) 9 666 701 148, M +880 172 92 72 999 E: oemar.idoe@giz.de
18 July Wednesday	~~09:00-12.00~~ re-scheduled to afternoon	Meeting with Mr. Mohammad Solaiman Haider, Director (Planning), DoE, Focal point of the project	haider.doe@gmail.com; dg@doe.gov.bd, sulbul2002@yahoo.com Paribesh Bhaban, E/16 Agargaon,Sher-e-Bangla Nagar Dhaka-1207. Telephone: 88-02-8181800
	13.30-14.30	Meeting with Economic Relations Division Dr. Kazi Anowarul Hoque, Additional Secretary, ERD Mr. Nur Ahmed, Deputy Chief, ERD	kazianowarulhoque@yahoo.com addlsecy-un@erd.gov.bd
	15.30-16.30	Meeting with Mr. Raquibul Amin, Country Representative, IUCN Bangladesh	IUCN (International Union for Conservation of Nature) House B-138 (Level 5 & 6), Road 22, Mohakhali DOHS, Dhaka 1206, Bangladesh;Tel. +88 02 48810194; +88 02 48810198; Raquibul.AMIN@iucn.org
	14.30-17.30	Meeting with Mr. Farid Uddin Ahmed, Executive Director, Arannayk Foundation, Dhaka	Executive Director, Arannayk Foundation +88 01713040583 farid1952@gmail.com
19 July Thursday	10:30-13:00	Meeting with Mr. Michael Green on Prodoc preparation and individual responsibilities for inputs/deliverables.	
20 July	16.00	Fly to Sylhet on the last flight	
21 July Saturday	08.30-16.00	Visit Jaflong Dawki River, Sylhet	Hamidul Haque Khan and Mohammad Rezaul Haque to arrange travel and organize local consultation in discussion with DC, Sunamgonj/Jessore
22 July Sunday	07.00-17.00	Visit Hakaluki Haor and return from Sylhet by last flight	
23 July Monday	09.00-11.00 15:00-16:00	Fly to CTG in the evening	Arif Faisal to organize meeting with director, DoE, Ctg Division. Phone: 031659379 chittagong@doe.gov.bd mnzoorul@yahoo.com
24 July	11.00-13:30	Consultation with Chittagong Chamber of Commerce stakeholders	WTC Building, 102-103, Agrabad, C/A, Chittagong, Bangladesh

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Tuesday			Tel: +88-31-713366 info@chittagongchamber.com
	14:00-19:00	Visit Halda River and consult with community stakeholders	By boat
25 July Wednesday	09.30-10.30	Return to Dhaka by first flight	
	10.30-13.30	Meeting with Md. Guljar Hossain, Director General, Department of Fisheries	13, Shohid Captain Moonsur Ali Sharani Matshya Bhaban, Ramna, Dhaka-1000 Phone:02-9562861; Fax:02-9568393 dg@fisheries.gov.bd
	14:00-15.30	Meeting with Peter de Vries, First Secretary (Thematic Expert Water) and Md. Reaz Uddin Khan, Senior Policy Advisor Water Management, EKN	Embassy of the Kingdom of the Netherlands, Road 90, House 49, Gulshan 2, Dhaka peter-de.vries@minbuza.nl reaz.khan@minbuza.nl
26 July Thursday	09.00-12.00	Fly to Jessore on the First Flight	Jessore Circuit House
		District level consultation,	
	14:00-16:00	Visit Morjat Baor, consult with community	
		Return from Jessore by last air	
27 July Friday	Evening	Consultation with core group of experts	Arif Faisal to invite a small group of relevant experts (Yonus Ali, Ishtiaq Ahmed, Junaid Kabir, Azharul Mazumder, Dr. Zakir Hossain, Ram Sharma, Haseeb Irfan, Farid Ahmed, Solaiman Haider, Manzur Rashid Polen, Abdu Baten, Niaz A Khan).
28 July Saturday	09.00-14.30	Stakeholder Consultation Workshop at Chameli Conference or CIRDAP Conference. Guests: Secretary, MoEFCC and DG, DoE	Mr. Arif M. Faisal, UNDP and Mr. Solaiman Haider, DoE will organize the consultation. Mr. Hamid, Mr. Forhad (Rio) and Mr. Rezaul will support various logistics.
	15.00-19.00	Wrap-up meeting with PPG team led by Michael Green	

Mission members participating in field visits

For Halda River, Chittagong	For Morjat Baor, Jessore	For Jafflong-Dawki, Sylhet
3. Mr. Mohammad Solaiman Haider	2. Mr. Mohammad Solaiman Haider	4. Mr. Mohammad Solaiman Haider
4. Dr. Michael J.B. Green	3. Dr. Michael J.B. Green	5. Dr. Michael J.B. Green
5. Mr. Arif Faisal	4. Mr. Arif Faisal	6. Ms. Mayeesha Azhar
6. Mr. Hamidul H Khan	5. Dr. Md. Danesh Miah	7. Mr. Hamidul H Khan
7. Mr. Khondker Zunaed Rabbani	6. Mr. Mohammad Hafijul Islam Khan	8. Dr. Md. Danesh Miah
8. Dr. Md. Danesh Miah	7. Mr. Khan Areef Ur Rahman	9. Dr. Rokeya Khatun
9. Mr. Khondker Zunaed Rabbani		10. Mr. Khondker Zunaed Rabbani
10. Mr. Khan Areef Ur Rahman		11. Mr. Khan Areef Ur Rahman

Note: Attendance records of stakeholders (community members and others) consulted during the field visits are available from UNDP Bangladesh on request.

Consultations held in Dhaka during July 2018 in different offices (GO, NGO)

Date	TNo	CNo	Stakeholder Consultations (TNo = topic number; SNo = consultation number)
17-7	1		GIZ Bangladesh (Oemar Idoe, Principle Advisor, et al.)

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locations. Saline water intrusion is a big climate change threat for the Halda. It is being attributed to, as the scientists and local people observe, reduction of freshwater flow from the upstream due to climate change, construction of rubber dam and sluice gates, and control of hydraulic flow by the Kaptai hydro-electric dam in the dry season. This is believed to have negative impacts on the spawning of carps in the river.

Chemical pollution

The Halda is a prolonged and constant prey of chemical pollution from multiple sources including industry, agrochemicals, and household wastes. Chemical pollution has become a great threat for the ecosystem and biodiversity of the river. The **main point sources of chemical pollutants are Asian Paper Mill, Madina Tannery, Hathazari 100 MW peaking power plant, tea gardens, and brick fields.** The main drainage network of the CDA-managed residential area "Annanya Residential Area" is exposed to the Halda as well. This has been widely debated in recent years and the drainage was planned to be channelled to the downstream of the Halda. **However, no significant improvement in this regard was observed during the current visit to the Halda.**



Anannya Residential Drainage- still as it was!

Effluents of Madina Tannery finds its way into the Halda water through Khandakia canal, furnace oil from Hathazari 100 MW peaking power plant is also discharged into river Halda. Apart from these, chemicals like endrine and rotanon are used to catch prawn by some local people. Open dumping of commercial waste, domestic waste, and poultry waste is also common in places. **Toxicity discharge of industrial waste from tanneries, washing and dyeing plants are condemned to be preventing mother fishes from spawning.**





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Khandakia khal carrying chemical wastes and non-biodegradable solid waste to the Halda

Diverting the Halda course

Oxbow-bends are the spawning ground for major Indian carps in the Halda River. So far, 11 oxbow-bends of Halda River have been removed to straighten the river to ease river transportation in terms of time and travel cost! **This has reduced the length of the river from 123 km to 98 km! Since the length of the river is shrunken by about 25 km, the saline water is entering easily into the river from Bay-of-Bengal. This has badly impacted the safe harbour of the mother carps.**

3. Issues identified for immediate actions

We conducted two meeting on the present and future of the Halda. One was an FGD that was composed of the Halda-dependent local people and the other was a meeting with NGOs and researchers working on socioeconomic, physical, and biological aspects of this important river. The meetings identified the following problems that Halda is confronting.

- Saline water intrusion as the rubber dam is hampering the natural water flow
- Waste water disposal (industrial and residential through Khandakia khal)
- Unauthorized mother fish killing
- Dolphin mortality
- Tobacco cultivation in the upstream
- Deforestation in the upland watershed from where the water of Halda comes from

4. Climate Change adaptations needed

The meetings suggested the following adaptation strategies

- Capacity building for Halda patrolling team
- Halda Research center development
- Development and implementation of fishing plan considering the livelihoods of the Halda-dependent commun ty
- Research for scientific management of the Halda

Capacity building for Halda patrolling team

Current/Baseline Scenario

Halda patrolling team is a community-based initiative to safeguard Halda and its resources for their own benefits. Presently, two teams are involved in Halda patrolling activities, each comprising 15 members and one team leader. The teams use only one country boat provided by two locally working NGOs named IDF and PKSP. The NGOs are also paying the teams at the rate of BDT 1000 per person per month.

The teams are now covering a length of 10km of the river from Sattarghat to Kalurghat at a frequency of 2-3 days of patrol each month. The team has captured and destroyed more than 100,000 ft of legally banned fishing net (locally known as current net) this year. Carp egg collected in 2018 is around 22,680 kg against 1760 kg in the preceding year. This increased production is partly credited to the patrolling team assuming that egg production is associated to a set of other environmental factors. Thus, the Halda community and researchers believe in enhancing the size and capacity of the current patrolling team.

Proposed scenario

As outlined in the FGD conducted on the river bank with the participation of the local people, the Halda patrolling teams should be made more effective to provide strong conservation service to the river. Major steps needed should include the following:

- The patrolling team should be legally empowered with all-time-visible ID cards;
- Patrolling length of river should increase from existing 10 km to 30 km from Peshkarghat to Kalurghat to bring the entire river under effective watch;
- Patrolling frequency should increase from exiting 2-3 days/month to 10 days/month;
- A total of at least 120 people should be in the patrolling teams in place of existing 30;
- Logistics need: 2 more country boats equipped with hand mikes and flash light.
- Cost of the proposed facilities was estimated $311180. The particulars are as follows:
  * Two country boats cost $16400; at the rate of $8,200 per boat;
  * Cost of three hand mike = 3*$200 = $600; at the rate of $200/mike
  * Monthly honorarium= 120*12*4*3 = $218,880; at the rate of $38/per person per month over a period of four years.
  *
  * Rain coat= 120 piece *$15/piece = $1,800
  * Flash light = 6 piece*$50/piece = $300

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* Maintenance cost = 100*3*4 = $1,200

♣ Halda Research Center development

There is a research lab on Halda, "Halda Research Lab", located in the Chittagong University campus. However, the lab is not running to its full capacity - it needs to be closer to the Halda and should be housed in its own land building and operation facilities - the existing director of the lab described. He proposed that existing Halda Research Lab should be expanded to a larger research facility like "Halda Research Center" to accomplish the following:

- ♣ Constant measurement and monitoring of the river morphological status with special highlights on water quality data;
- ♣ Study of the socioeconomic and climatic factors affecting the quality of the river and its resources,
- ♣ Maintaining a database of all relevant data at the perusal of all the researchers interested to work with Halda Issues;
- ♣ Scientific response to any unwanted incident like fish or dolphin mortality;
- ♣ Certifying the eggs and fries available from the Halda which is expected to ensure better fish production and a price premium for Halda-Brand.

The establishment of this proposed facility involves a large amount of financial investment. It is not clear if the UNDP support is willing or good enough to support such infrastructural requirement. Nevertheless, a cost estimation was conducted to highlight on how much the Halda Research Center might cost. It was around $366,400 for a period of four years. The break-down of the cost is as follows:

- ♣ Infrastructure= $31,000
- ♣ Land= $13,000/decimal * 4 decimal = $52,000
- ♣ Equipment = $125,000 (lump sum)
- ♣ Operation cost = $3,000/month*48 months = $144,000
- ♣ Manpower = $300*48 = $14,400 (one security guard (@$100/month and one lab assistant (@200/month, for a period of 4 years)

♣ Development and implementation of fishing plan

Since Halda is soon-to-be an ecologically critical area (ECA), open fishing probably would be restrictive. The fishermen who are heavily dependent on Halda fishes for their livelihoods should be allowed to catch small fish (locally known as *kachki*) for 4 days/month. Currently, fishing in Halda is completely prohibited. This might cause problems on their livelihoods. Thus, a subsistence level support system should be in place. The exact quantity and type of supports need are a matter of intensive research. Expenses of such research is discussed in the following section.

♣ Research for scientific management of the Halda

It is important to conduct a number of research to ensure scientific and better management of the Halda river. The discussion with the current director of the Halda Research Lab came up with the following research idea.

- ***Estimating total economic value (TEV) of the Halda***

Even though the Halda is said to have great environmental and economic significance, there is no scientific and reliable estimate of the ecosystem services the river is producing. If we knew the river's economic contribution to the nation, the importance of its conservation efforts would have been augmented many folds. Such a study is likely to require a budget of $30,000.

- ***Estimating the impacts of climate change and economic activities on river morphology and fish habitat and preparation of potential adaptation prescriptions***

This study is important from many points of view. Without preparing a complete scientific profile of the river, it is not possible to prepare a comprehensive management plan of this unique river. This study might require a financial involvement of $30,000

- ***Designing a subsistence program for fishing ban in Halda***

This is a socioeconomic study of how to support the Halda-dependent community while a complete shut-down of fishing activity will be en

3. REPORT ON MORJAT BAOR FROM ROKEYA KHATUN

22/10/2018 – 24/10/18 and 20 November 2018

Field Visit findings: Morjat Baor, Jhenaidah, Jashore

Methods: Focus Group Discussion at the community levels, consultation with Project Directors at the District Fisheries Office, consultation with the Executive Director, Banchte Shekha and meeting with the Additional District Commissioner (Revenue), Jessore.

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- *Huge quantity of water hyacinth is polluting water, causing decreased harvesting and decreased income of the fish farmers; And also siltation has happened in both the end of the baor;*
- *Main source of livelihood is fishing and fish related day laboring; some do share cropping; women are mostly confined at home; some women do livestock rearing, earn some money from selling milk, no control over that income; duck rearing by women is a possibility but will need strong market link for selling eggs and ducks;*
- *Only 150 men from 14 villages are engage in fish cultivation;*
- *Women are not directly involved in fish cultivation;*
- *Women do not represent in the Baor Management Committee;*
- *Some women are involved in fishing net-making;*
- *During dry season when the water level goes down, there appears cultivable land on both the sides of the Baor. Women can get allotment of small pieces of land for doing vegetable cultivation;*
- *Women can get training modern technologies with respect to vegetable cultivation above water (hydroponics);*
- *Women should get access to fishing of Rani fish (small indigenous fish) but seems they are prohibited culturally;*
- *Some of the men were suggesting for establishing appropriate factory for which they are ready to donate land; The fear is that if not properly managed this will cause environment pollution;*
- *Fisherman community needs to be made aware on gender and fish-culture;*
- *DoF Engineering Cell will be able to remove aquatic weed (water hyacinth);*
- *Community people are in favor of Eco-park which has already been established in Boluhor Baor.*
- *There is possibility that if women get trained, they will be involved as small trader and relevant maintenance work of eco-park.*
- *NGO named Banchte Shekha once own the bidding and received opportunity to do fish cultivation in another Baor. But in the face of strong opposition by male leads of the community, they had to step down from this innovative intervention.*
- *It was transparent that local leaders are kind of monopolizing the fish cultivation in the Baor. They hire laborers from their community for fish cultivation, nurturing and harvesting and pay daily wages. Women do not have any access.*
- *Women received micro-credit from local level NGOs mostly for doing poultry and cow rearing. They sell milk and repay credit installment.*

Some thoughts towards gender and development

(vii)	*Local leaders, political elites and influential persons (mostly men) need to be made gender aware. HE4SHE approach to be applied.*
(viii)	*Women engagement in Eco-park management is a good possibility. There are many educated women and youths there. Both boys and girls go to nearby school and college. Again their involvement in Eco-park will depend on motivation of the male.*
(ix)	*There is a good possibility that women will be able to do baor-side agriculture during winter season when the water level goes down. But again that agriculture at the moment strongly dominated by local leaders. If these leaders are aware about gender development, they will allow or allocate some portions of the land for women to produce vegetables for earning money.*
(x)	*ADC (Revenue), Jessore requested visibility of NGOs and District level Department of Women Affairs Officials at the Coordination meetings. They should be able to highlight situations and come up with concrete recommendations.*

4. Visit Report on Halda River from Rokeya – Gender Dimensions

Dates: 16-17 November 2018

Halda river is 81 kilometres long merges with Karnaphuli to Bay of Bengal. Water pollution due to release of industrial waste from nearby paper mills, tannery, tobacco processing, dying industry and agricultural pollution due to use of pesticide and insecticides is happening. Furnace oil released from power plant creates breathing problem for fish. Sluice gates are not operated properly and the connected canals have now huge siltation which together with rubber dam that slows water flow during spawning time at the end of dry season has a negative effect on the lives of fish habitat. River dredging horrifies fish and some of them die. The river had been straightened by cutting curves for better water traffic but that created problem for mother fish to breed egg. People do not adhere to the ban on catching mother fish.

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Discussion with fish egg business community revealed the fact that women engagement in fish culture is not socially and religiously acceptable. Though strong patriarchal attitude prevails, school going young girls were found aware of the problems that are caused by factories and by non-functional sluice gates. Community men informed the visiting team that there is a Halda Rakkha Committee where fisherman, fish specialists, journalists and people living on the bank of Halda are representing. They opine that at least local women representatives and women from fishermen community can be included in that committee. This will give women opportunity for their voices to be heard as they will receive opportunity to know the socio-economic and environmental problems better.

Both Noujuwan and IDF provide micro-credit to community women and men where men are the receivers and women are the utilizers of the credit money. To ensure women entrepreneurship, cool chain and strong market link are obvious necessity. Women are engaged in small scale agriculture.

Some thoughts towards gender and development

(xi) *Local leaders, political elites and influential persons (mostly men) need to be made gender aware. HE4SHE approach to be applied.*

(xii) *Women engagement as watchperson for fish catching and sluice gates operators is a possibility though will need community motivation.*

(xiii) *Participation of women leaders (lead women entrepreneur, UP Member, etc.) in Halda Prevention Committee should be ensured.*

(xiv) **A brief account of Morjat Baor, Bangladeh**

(xv) Morjat is a 10km crescent shaped baor situated in Kaliganj upozila of Jhenaidah district. The baor has an official area of 625 acres, which is debated by the local people to be 787 acres. The baor bear economic and environmental importance in the area.

(xvi) [Notes: A Baor is an arc shaped lake formed at a bend of a dear river. But the water at the bend of the river is still prominent and thus, a baor is sometimes termed as oxbow lake. Normally a baor is an arc, however, it never takes the shape of a complete circle. Since it is a locked water body, its likelihood of getting polluted is higher.]

(xvii) Management history

(xviii) Morjat baor was under a 30-year lease from 1989 to 2009 to the local lease-owner. However, this lease was not economically so productive since the management system was not people-oriented. Later on, the baor was left just as a fallow khas land (water body) during the fiscal years from 2009-2010 through 2011-2012. Many people were cultivating maize in the silted portion of the haor with no specific accounts of fishing. Nonetheless, to maximize benefits both for the government (revenue) and the local fishermen, the existing 6-year term leasing system entered in fiscal year 2012-2013. The baor will enter into the second round of this system in 2019 (2009-2025).

(xix) **Economic Value of Morjat Baor**

(xx) The baor is co-managed by local Fishery Department and the 150 member fishermen cooperative. The benefit from artificial fish farming with carps are distributed at a ratio of 60:40 for the government and fishermen. In the 2017-2018 fiscal year, this share was BDT 3,180,000 for the government and BDT 2,072,000 for the fishermen. This translates into an annual benefit of BDT 13,813 per fisherman.

(xxi) It is important to describe the total fishing benefits from the baor. The carps they produce in the baor are termed as *Raja Mach* (King Fishes). All the other fishes that are naturally growing the baor are called *Rani Mach* (Queen Fishes). Government doesn't have any share in the Queen Fish benefit; that is, 100% benefit available through Queen Fish goes to the fishermen. In FGDs conducted in this study, the fishermen stated that the benefit obtained from Queen Fish is at least 4-5 times (let's take the minimum average, 4.5) the benefits available through King Fish. That means the annual benefit per fisherman from Morjat Baor is BDT 75,973. That is, the total annual benefit for the fishermen cooperative is about BDT 11.40 million. Combined with the government share from the King Fishes, the total annual economic return just from fishes is BDT14.58 million.

(xxii) Existing scientific studies on efforts to estimate the value of natural capital show that, on an average, the value a biodiversity or natural resource can produce is 2.5 -3.0 times the value of the marketable good and services it can produce. Taken this, a rough estimate of Morjat Baor's annual economic worth can be visualized to be around BDT 36.44-43.73 million. However, this is not a debate-beyond estimate.

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This number is estimated just to highlight on the significance of this baor on the local economy in particular and national economy as a whole.

(xxiii) **Problems identified**

(xxiv) Morjat baor has been suffering a couple of natural and anthropogenic threats:
1. Water hyacinth infestation
2. Excessive and increasing rate of siltation
3. Water pollution and fish mortality
4. Eutrophication and algal growth

(xxv) The problems are discussed in brief below:

1. Water hyacinth

This is the most hazardous and cost-intensive problem of this baor. Of the 10km length of the baor, 4km water surface is completely and continuously covered by water hyacinth at any point of time. It has been assumed by the local fishermen and fishery department professional that 95% of the water hyacinth is webbed together while the remaining 5% of is scattered across the baor. The fleet of water hyacinth is frequently forced to travel by strong wind from place to place in the baor. The main problem water hyacinth has been creating is the reduction of baor's water depth. The depth of the baor has been reduced from 40-45 ft in 1984 to just 10-20 ft in 2018. This tremendous reduction of water depth is considerably reducing the fish production rate and the diversity of aquatic flora and fauna, let alone the local environmental impacts.

[Notes: Why is hyacinth-based agriculture not favourite in this area? Answer: Queen Fishing is terribly popular and financially rewarding compared to any other form of agriculture. The demand for other agriculture diminished by the income coming from Queen fishing.]



A complete eradication of water hyacinth is expected to increase fish production, fish breeding, reduced fish mortality, reduced fish production cost. So, how is a complete eradication possible? The fishermen and the local fishery department officials opined that at least three consecutive complete removal of water hyacinth is needed to get rid of this infestation. As explained in the FGDs, at least BDT1,000,000 is needed for each cycle of manual removal of hyacinth at rate of BDT400/labor. It can be noted that some farmers present in the FGD were opting for chemical control of the hyacinth. However, others were protesting as saying - such a control is detrimental not only to the hyacinth but also to all the living beings and local environment. Evidently, the latter is correct.

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2. Excessive and increasing rate of siltation

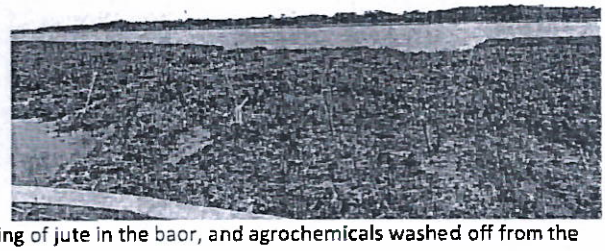
As said in the preceding section, water hyacinth is mainly causing this problem. In addition to this, the siltation is caused by the erosion from adjacent agricultural activities done by the non-fishing community. The removal of the muddy substrate from the baor floor is excessively cost-intensive. The existing record as available from Water Development Board shows that the removal of this settled mud requires about BDT5.7 million.

[Notes: What if the fishermen are proposed to reove water hyacinth and mud on a voluntary basis since their main source of income is Morjat Baor? Answer: They say it is a government property. Why should we offer free labor for its management?]

3. Water pollution and fish mortality



Overall, the baor has pleasing water quality. However, it is sometimes so polluted that the DO (Dissolved Oxygen) level is no more supportable to many aquatic life forms. This is



caused by: rotting of water hyacinth, rotting of jute in the baor, and agrochemicals washed off from the adjacent agricultural land.

(xxvi)

The immediate and devastating impact of such pollution is the mortality of fish in the baor. The baor faces two counts of fish mortality in a year: once during October-December when water level is lowered to a risky level and water hyacinths are dried and rotten, and another during March-May when agrochemicals are washed off the adjacent agricultural fields. As again, water hyacinth is a major cause here. However, agrochemicals don't have any immediate alternatives - as explained by the locals.

4. Eutrophication and algal growth

The agrochemicals washed off from the adjacent agricultural land are causing serious algal growth in the baor. Growing algae has both beneficial and detrimental impacts on the baor. However, its detrimental impacts are likely to be more weighed than its beneficial impacts. Algae provides food and shelter for the fishes. However, their growth in some places is so severe that it often threatens the boar in the following way: causing raising of baor floor with acumulationg of muddy residues, rotten residues are lowering down the DO level, hindering the fishing process, removal of them involves money that ultimately increasing fish production cost.

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(xxvii) **Possibility of private-public partnership**

Overall, the baor has beautiful natural set up. It can be a wonderful ecotourism or Eco-resort. However, that possibility is constrained to a number of factors including removal of hyacinth and excessive algal growth, forbidding of jute rotting (through providing alternative space for jute rotting), and implementing a planned transportation network. This involves a huge investment in infrastructure, which is possible through a public-private partnership. The returns against such investment is highly promising. For example, the district administration has installed two floating bridges on an adjacent baor- Jhapa Baor. These have created tremendous business out turn. Given this, it can be concluded that Morjat Baor has tremendous economic potential which conserving it in an efficient manner.

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Ministry of Environment, Forests & Climate Change
Govt. of the People's Republic of Bangladesh

Dr. Sirat Mahmuda
Deputy Secretary
Economic Relations Division
Ministry of Finance
Govt. of the People's Republic of Bangladesh

Subarna Mosaraf
Assistant Director
Department of Environment
Government of the People's Republic of Bangladesh

Programme Schedule of

Stakeholder consultation on Preparation of "Implementing Ecosystem based Management in Ecologically Critical Areas in Bangladesh" project

Venue: Channel Conference Room, DOE

Date: 28.07.2018

Time	Activity	Responsible Facilitator/Resource Person
09:00–09:30	Registration	
09:30–09:40	Welcome Address with Objective, Main Components of the Project EbMECA and the GEF Requirements of Prodoc	Mohammed Sulaiman Haider, Director (Planning), Department of Environment
09:40–09.50	Purpose of the consultation and outline of the program and expectation from the consultation	Mr. Arif M. Faisal, Programme Specialist (Environment Sustainability & Energy), UNDP
09.50–10:20	Presentation on the proposed project	Dr. Michael B. Green, Team Leader, Project Preparation
10.20–10.40	Morning Refreshments	
10.40–11.40	Group Exercise on the problems and ecosystem based solutions/ activities to be taken in the different ECAs: Hakaluki Haor, Marjat Baor, Jaflong Dawki, Halda River and in general all ECAs	Moderated by the Focal Point, Team Leader, Consultant and UNDP experts
11.40–12.40	Presentation of the Groups	Moderated by the Director General Department of Environment
12.40–13.00	Expert Remarks from the Guest Speaker	1. Mr. Md Mozahed Hasnan, Additional Secretary (Development), MoEFCC 2. Dr. S.M. Manjurul Hannan Khan, Additional Secretary (Environment), MoEFCC
13.00–13.10	Remarks from the Chair	Director General, DOE
13.10–13.30	Lunch and Closing	

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Stakeholder Consultation Workshop (28 July 2018): Summary of Feedback

Issues/Threats/Opportunities	Potential Interventions/Solutions
Topic 3: Defining special features (natural and cultural)	
• Main issue is destroying river ecosystem and biodiversity by extraction of stone using machine (locally called bomb machine). This is threatening the whole ecosystem as well as put detrimental effect on overall environment both natural and cultural. Even more, there is no proper ecological model for valuation of different opportunities. There is a big opportunity open here. Implement of different ecosystem valuation method for selection of best model and customized for different ECAs (Jaflong Dawki River).	• Implementation of strong legal regulation. • Center for Environment and Geographical Information System (CEGIS) conducted a study and prepare action plan for Department of Environment (DOE), which can be used for conserving the ecosystem. • Manual and controlled extraction of stone and follow the action plan
• Halda is unique in nature, being a natural breeding ground for Indian major carps is now under threat of different elements of pollution.	• Sanctuary to be established and maintained by community
• Natural gene bank and traditionally unique river need to be preserving for future generations, as well as protect huge infiltration of mixed carps (Halda River).	• Conservation is required and should properly executed. Halda should be declared an ECA. Should be considered carefully. Participatory and joint effort needed. Should consider as especial inclusion of monitoring system including traditional practices. Monitoring should be conducted by increased involvement of related occupational groups. Should implement activities. Should be executed and continue. Intervention should be finalized with consultation with relevant ministries/stakeholders.
• Fish breeding areas not effectively protected from fishing, even in close seasons.	• Perform an exhaustive and participatory site level appraisal, and harvest local knowledge. • Embankments should be raised and managed and silt can be removed time to time. • Critical ecological features should be included in management plan • Upazila land zoning maps By Ministry of Land (MoL) can be used to develop individual ECA management plan. Spatial data is supposed to be with MoL • Avoid excessive catching of brood fish, no dredging. • Embankments should be raised and managed.

Topic 4: Multi-sector coordination and its institutionalization

- Lack of proper ECA Monitoring Body
- Week institutional linkages among agencies
- Follow-up of meeting discussions and decisions
- Lack of coordination mechanism
- Coordination at the apex level is important
- Community-led management
- Coordination focal point
- Inter-Project coordination

- Two-tier Coordination Committee is needed: Steering Committee and Implementation Monitoring Committee. Formal monitoring plan is needed.
- Institutional linkages among all the stakeholders to be established and strengthened.
- Responsibilities of stakeholders to be defined clearly and meetings should be objective-specific.
- Coordination mechanism among stakeholders to be clearly defined at the design stage of the Project.
- Village, Upazila, District and district level and apex level coordination to be ensured.
- Community should have representation at the DoE Coordination meeting.
- There should be coordination focal point at each level and these focal points need to work in a coordinated manner.
- Coordination among agencies (e.g. DoF) working in the same area should be established.
- River basin institution to be established.
- Effective community participation to be ensured.

Topic 5: Sustainable financing

- 3-5 years financing from donor and GoB
- Inadequate financing to explore the potentials
- No such mechanism exists.
- Complementary funding needed from the Government
- Donor/Project-based funding
- Lack of private sector financing

- PPP based financing mechanism to be developed
- Modality to be developed for public-private financing
- CSR fund can be sought
- Ecotourism development involving local people
- After project completion, there should be some arrangements for long term financing from the Government to manage the ECA.
- Develop a revolving loan fund for poor HH. It should be community led. Project grant must match with savings of community.
- Community fund mobilization
- Private sector engagement strategy needs to be developed

Topic 6: Legal and policy reforms

- Involvement of local community
- Marginalized areas
- Conservations issues are less emphasized or not included-no mentions
- Act/Rules/Policies
- Implementation of existing policies and laws
- Different in sectoral approaches
- Capitalize the ECA Rules

- Bottom up Approach
- Harmonization of policy frameworks
- Halda should be declared as ECA!!
- Introduce new laws and policies
- Act/Rules/Policies- Stakeholders Ministries need to be well coordinated in line with ECA
- ECA Rules should be revised to include conservation issues, local communities involvements in ECA management

• Policy implementation - site specific River Basin Approach	• Review the laws and policies to remove the conflict at local level implementation Need to check contradictory Rules which applicable to ECA • Bottom up-need based policy frameworks • Integrate River Basin management • Ensure Enforcement
Topic 7: Environmental and economic assessment	
• Component wise valuation of freshwater ecosystem (Halda River).	• Module for valuation of ecosystem services.
• Assessment not regular and consistent (Halda River and Morjat Baor).	• Regular and science-based need to be introduced. • Need to perform full length study
• Consideration of ecosystem service/valuation	Evaluation of ecosystem services
• Must raise awareness about contribution of ECAs at local and national level	• Base line data collection and impact study
• Assessment of ecosystem services / assessment valuing of ecosystem component	Assess the value of ECAs: either economic, environmental or biodiversity. Active plan development of individual ECA training.
• Limited access to resources/regulations	
Topic 8: Participatory planning, management and monitoring	
• Planning system is there but not institutionalized among local government and community.	• Different planning and monitoring system should be developed for different ecosystem.
• Limited initiative/steps.	• There is no formal monitoring plan. Existing monitoring plan need to be assessed and re-examined.
• Both in planning and monitoring stage real beneficiaries are not effectively involved.	• Community-led participatory planning and monitoring should be introduced. • Participatory and joint efforts are needed. • Must take participatory planning process particularly in designing and implementing project interventions.
• It's not community led.	• Both in planning and monitoring stage real beneficiaries are not effectively involved. Through PRA, real beneficiaries can be identified. Planning should be done at root level.
• Over estimation of livelihood and gender issue may jeopardize the objectives of conservation.	• Only people who are in threat of losing livelihood should be considered.
• Past ECA-VCGs experiences	• Need to use past ECA-VCGs (e.g. Hakaluki *Haor*) and their experiences.
• Less participation of proper local stakeholders	
Topic 9: Local livelihoods and socio-economy	

- Involvement of local communities in different innovative technologies (Halda, Morjat)
- Inadequate Social Safety Net programs (Morjat)
- Locally suitable livelihoods
- Community discussion
- Sustainable livelihood is very important
- Limited access to resources.
- Dependency of community on local resources
- Inadequate livelihood opportunity/diversity (Halda)

- Capacity building of communities on alternative livelihood options including cost benefit analysis (Halda, Morjat).
- SSNP to be introduced for poor community.
- For ensuring sustainability locally suitable livelihood to be promoted.
- Community discussion must be ensured to determine appropriate livelihood options.
- Engage competent NGOs to implement livelihood component.
- Livelihood component should be coupled with appropriate income generation training and financial support.
- Livelihood should be seen in totality – skill, finance, market, etc.
- Alternative livelihoods and sustainable use of resources.
- Enhance eco-system services, diversify livelihood opportunities (Halda).

Topic 10: Monitoring and compliance

- Existing policy roles, innovative technologies are not implemented.
- No holistic monitoring approach.
- Biodiversity monitoring and ECA auditing are absent.
- Result-Based Management (RBM) is not present.
- Lack of ample input and monitoring based on Sustainable Development Goal (SDG).
- There is no monitoring from local level to national level.
- A strong monitoring and evaluation mechanism should be incorporated from the beginning.
- Ecosystem M&E vs Project M&E
- There is a lack of monitoring and compliance.
- Monitoring framework should be at ecological/policy level.

- Existing policy roles, innovative technologies should be implemented.
- ECA focused monitoring system, citizen scientist should be introduced.
- Need to include biodiversity monitoring and ECA auditing in the new project.
- SDG indication can be a resource.
- Monitoring should be done both at local level and national level.
- Baseline surveys are prerequisite.
- Both ecosystem M&E and project M&E are needed during project implementation. But the first one should go beyond project tenure.
- Monitoring and knowledge generation sharing should be an integrated part of project design and throughout project implementation-not only as 'end-of-project' activity.
- Strong tool of provision for monitoring and compliance mechanism is needed.
- Monitoring framework should consider ecology at scale.

Topic 11: Communication

[No significant discussion]

Topic 12: Capacity building and training

- Training needs at three tiers – Policy makers/decision makers, local government, and community.
- Not adequate
- Experience sharing

- Appropriate training modules to be developed and implemented.
- Needs-based skills and knowledge development programs to be implemented.
- Relevant government officials and other stakeholders should be properly trained.
- Experience of completed projects to be reviewed and consulted for designing appropriate and need based capacity building programs.
- Training needs to be determined for community, government, various committees, district and upazila authorities in connection with the objectives of the Project.
- Community capacity building on livelihoods and life skills are important.
- Trainings should be practical and hands on not just academic.

Topic 13: Social inclusion (women, youth, minorities, elderly)

- Further emphasis on social inclusion (Morjat)
- Vulnerable women to be given specific attention.
- Inadequate and improper representation of women and youth in different forums.
- Social institutions
- Participatory planning will reduce social discrimination. (Morjat)
- Gender issues of the Project should be clearly addressed.
- Social inclusion and gender development strategy of the Project should be consistent with Government Policy objectives and SDGs.
- Equal importance and access of women and youth to be ensured in appropriate forums of the Project including monitoring activities.
- Capacity building to be ensured to enable women and youth to deliver their responsibilities.
- Existing social institutions to be included to benefit the Project from past experiences

Topic 14: Private sector

- No private sector involvement
- Need to handle private sector involvement because private sector is profit oriented
- What is private sector's incentive to get engage into ECA management?
- No active engagement of private sector
- Private sector should be brought on board, especially for eco-tourism
- PPP projects can be considered
- Benefit of beneficiaries must not be compromised while involving private sector
- Private sector could be involved in eco-tourism, but with caution that no massive infrastructure development would be there.
- Encourage and engage private sector who have committed
- Promote private sector financing on maintaining basin.

Topic 15: Lessons from previous and ongoing initiatives

[No significant discussion]

Wrap up / concluding remarks re: selection of project target sites

- Consensus that project should target one or at most two sites.
- DG concluded that Halda River and Morjat Baor should be the focus of this project.; others under consideration (i.e. Jaflong-Dawki and Hakaluki Haor) should be given a light touch only (as appropriate).

ANNEX 22: CO-FINANCING LETTER

সচিব
পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
বাংলাদেশ সচিবালয়, ঢাকা-১০০০

Secretary
Ministry of Environment, Forest & Climate Change
Government of the People's Republic of Bangladesh
Bangladesh Secretariat, Dhaka-1000

No.22.00.0000.078.14.002.19-95

Date: 29.05.2019

Subject: Co-financing commitment for the Global Environment Facility (GEF) funded project on "Implementing Ecosystem-based Management in Ecologically Critical Areas in Bangladesh"

Dear Mr. Mukerjee.

I am pleased to note that the Global Environmnetl·acility (GEF) has approved agrant of US$ 3,046,347 for the capttioned project.

In support of the project objective and outcomes, Ministry of Environment, Forest and Climate Change pleased to commit an amount of US$10million as parallel project co-finacing from "Sustainable Forest and Livelihood (SUFAL) Project" being implemented by the ministry. The co-fnacing amount represents Ministry's contribution to the GEF financed project for the duraton of the project.

The ministry would like to thank UNDP for the kind cooperation and support extended in developing full project proposal, and extend our fullest cooperation in the smooth implementation of this project.

Yours sincerely,

29.5.2019

Abdullah Al Mohsin Chowdhury
Secretary
and
GEF Operational Focal Point

Mr. Sudipto Mukerjee
Resident Representative.a.i.
United Nations Development Programme
Dhaka, Bangladesh

Cc:

1. Chief Conservator of Forest, Bangladesh Forest Department, Ban Bhaban, Agargaon, Dhaka 1207
2. Director General, Department of Environment, Agargaon, Dhaka 1207
3. Additional Secretary(Development), Ministry of Environment, Forest and Climate Change, Bangladesh Secretarit, Dhaka

পরিবেশ বন ও জলবায়ু পরিবর্তন মন্ত্রণালয় বাংলাদেশ সচিবালয় ঢাকা ১০০০ (১৪ তলা) ফোন-৯৫৫৫৫৫

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Dr. Sirat Mahmuda
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ANNEX 23: MINUTES OF TRIPARTITE MEETING (02 JUNE 2021)

Government of the People's Republic of Bangladesh
Ministry of Finance
Economic Relations Division, UN Branch-5
Shere Bangla Nagar, Dhaka-1207
www.erd.gov.bd

Number: 09.00.0000.105.04.003.21.17 **Date: 16/06/2021**

Subject: Minutes on the 'Tripartite meeting on the project titled 'Implementing Ecosystem-based Management in Ecologically Critical Areas in Bangladesh.'

Reference: MoEFCC's letter No: 22.00.0000.081.14.001.21.53: **Date: 09/05/2021**

Chairperson: Dr Nahid Rashid, Additional Secretary & Wing Chief, UN Wing, ERD

Time and Date: 11:00 am, 2 June 2021

With the permission of the Chair, Deputy Secretary of the UN Wing started the meeting. Consequent to his request, the Chairperson Dr. Nahid Rashid, Additional Secretary, ERD, opened the meeting by welcoming all the participants. She appreciated UNDP for bringing project aid from Global Environment Facility. She requested the representatives of the Ministry of Environment, Forest, and Climate Change (MoEFCC) to initiate the discussion. Later, the representatives of the Department of Environment (DoE), UNDP, and other GoB officials made their valuable comments and insights on the project document (ProDoc) and Technical Assistance Project Pro forma (TAPP). After that a general discussion was held on some of the unresolved issues of the project and to get the Prodoc signed.

Ms. Zakia Afroz, Deputy Chief, MoEFCC, informed the meeting that DoE had sent the ProDoc and TAPP in the ministry. She also praised ERD for convening the meeting to bring all stakeholders on board to resolve their differences. She mentioned that there had been a few discrepancies between the ProDoc and TAPP. Henceforth, the contents of the ProDoc could not be adequately reflected in the TAPP. To expedite the signing of the ProDoc by ERD, UNDP had been requested to bring some changes which would better reflect the provisions of the ProDoc to the TAPP.

Echoing with Ms. Afroz, Director (Planning) of the DoE Mr. Mohmmed Solaiman Haider stated that the allocation for this project had been a part of the GEF6 cycle. He informed the meeting that despite getting 1.5 hundred thousand USD for the preparation of the document, UNDP took a long time to prepare the ProDoc. The project was finally approved by GEF last December. UNDP single-handedly prepared the ProDoc & TAPP. Pointing to the deviation in the TAPP, he opined that dredging of the Morjat Baor would fall under Physical Works and could not be conducted by NGOs. Moreover, a detailed breakup of the training programs and workshops including contract documents, budget estimates, number of participants, and resource persons should be included in the TAPP.

Mr. Khurshid Alam, Assistant Resident Representative of UNDP, thanked the Chair for acknowledging UNDP's support to Bangladesh over the last two decades. He also reiterated that UNDP would continue the cooperation with the Government of Bangladesh in future. He agreed with proposed changes in the TAPP in line with the ProDoc and requested to take necessary initiatives so that the ProDoc could be signed by the deadline. Responding to the proposal, Mr. Mohmmed Solaiman Haider opined that the process relating to the

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approval of the ProDoc could be initiated by ERD. Meanwhile, TAPP would be reviewed as per the outcome of the meeting.

Mr. Arif Faisal of UNDP expressed his highest gratitude to the MoEFCC and DoE for their support during the preparation stage of the ProDoc. Stressing on the requirement to stick to the templates of GEF, he agreed to the proposed changes in the TAPP as decided by the meeting. He stipulated that confirming details of the workshops and seminars at the initial stage would be difficult. He also pointed out that in the inception workshop there had been a provision of rigorous consultation on workshop/seminar, civil works, and any other related issues which could be determined based on the recommendations of the floor. Henceforth, fixing everything, at the beginning, would thwart required flexibility for successful implementation. Moreover, a concerned policy of GEF did not entail detailing the discussed issues.

Mr. Faisal informed the meeting that for physical works UNDP usually takes help from local administration especially UNO, Upazila engineer, and an appointed architect who work in a team to implement the physical works. Experience shows that Public Works Department or Local Government and Engineering Department do not give much importance to small-scale physical works and hence causing delayed delivery.

Mr. Mohmmed Solaiman Haider stated that as per the requirement of the Planning Commission, the TAPP templates must be properly filled in with appropriate information for smooth implementation of the project at the field level. Therefore, he suggested that following the ProDoc to be signed by the ERD, the draft TAPP should be revised anyway. He also highlighted that the inception workshops usually run for three hours, and detailing out all components of seminars/workshops in that inception workshop will not be practically reasonable. In response, Mr. Faisal replied that under the GEF7 cycle there were instructions for conducting a 1-2 days detail inception workshop for threadbare discussion.

Mr. Shamsul Islam, Deputy Secretary of Planning Commission, applauded the project as a well-designed and crucial for Bangladesh. Refering to the issue pointed out by Mr. Mohmmed Solaiman, he added that contribution in-kind would not be acceptable to the Planning Commission and therefore it should be dropped from the ProDoc and TAPP. The agencies should follow the four-by-four matrix of a log frame as suggested by the Planning Commission. He also stipulated that around 67% of the project cost entailed expenditure for consultancy, whereas only 5% had been allocated for training and capacity-building issues. He opined to increase budget allocation for expenditures relating to capacity building. In response Mr. Faisal of UNDP mentioned that capacity building had been a continuous process and in every GEF project there were capacity building components. So, there was little scope to change budget breakups of an approved project by GEF. However, during the Project Steering Committee (PSC) and Project Implementation Committee (PIC) meeting a little bit of change could be possible as per government requirement. At this point Mr. Islam of Planning Commission suggested that the local administration and other local bodies should be included in the monitoring of the project implementation. He also asked to involve the Department of Fisheries and the Ministry of Industries in the project.

Mr. Khurshid Alam of UNDP requested the representative of the Planning Commission to keep a certain level of flexibility in the project planning stage so that necessary adjustments could be made as per the guidance and directives of PSC and PIC concerning steering of the project during implementation.

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ANNEX 24: RESPONSE MATRIX OF THE TRIPARTITE MEETING:

Recommendation of the Meeting	Response
1. As soon as ERD receives the revised ProDoc, it will convene an inter-ministerial meeting;	-
2. Breakdown of the physical and financial component of trainings, workshops, seminars will be included in the ProDoc and TAPP;	Estimated cost of trainings, workshops, seminars are included in annex XVI.
3. UNDP, MOEFCC and DoE will solve their differences through discussions;	Recommendation will be followed.
4. The changes in ProDoc shall adequately reflected in the TAPP;	TAPP has been updated according to ProDoc.
5. ERD emphasizes quick submission and approval of TAPP to shorten the lag period between the singing the Financing Agreement and commencement of implementation;	Measure has been taken according to the recommendation.
6. Upon receiving the final ProDoc from MoEFCC, ERD will ensure approval of the project at the earliest possible time.	-

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Ministry of Finance
Govt. of the People's Republic of Bangladesh

ANNEX 25: LETTER OF ENDORSEMENT

Secretary
Ministry of Environment & Forest
Government of the People's Republic of Bangladesh

D. O. No: 22.00.0000.073.07.001.2013(Part-1) 222 Dated the: 31.08.2017

To: Ms. Adriana Dinu
UNDP-GEF Executive Coordinator
UNDP, One Nations Plaza, NY 10017 USA

Subject: Endorsement for the project of Implementing ecosystem-based management in Ecologically Critical Areas in Bangladesh

In my capacity as GEF Operational Focal Point for Bangladesh, I confirm that the above project proposal is (a) in accordance with my government's national priorities and our commitment to the relevant global environmental conventions, and (b) was discussed with relevant stakeholders, including the global environmental convention focal points.

I am pleased to endorse the preparation of the above project proposal with the support of the United Nations Development Programme (UNDP) as GEF Agency for this project. If approved, the proposal will be prepared and implemented by the Department of Environment. I request the GEF Agency to provide a copy of the project document before it is submitted to the GEF Secretariat for CEO Endorsement.

The total financing from GEF TF being requested for this project is US$ 3,500,000 inclusive of project preparation grant (PPG) and Agency fees for project cycle management services associated with the total GEF grant. The financing requested for Bangladesh is detailed in the table below:

Trust Fund	GEF Agency	Focal Area	Amount (in US$)			
			GEF Project Financing	Expected PPG	Agency Fee	Total GEF Financing
GEF TF	UNDP	Biodiversity	3,046,347	150,000	303,653	2,000,000
GEF TF	UNDP	Climate Change Mitigation(CCM)				1,500,000
Total Financing			3,046,347	150,000	303,653	3,500,000

I consent to utilization of Bangladesh allocations in GEF-6 as defined in the System for Transparent Allocation of Resources (STAR). I have used the marginal flexibility mechanism to transfer US$ 1.5 million from the remaining funds in STAR CC focal area allocation to BD focal area of US$ 2.0 million to make a total of US$ 3.5 million allocated to Biodiversity.

Sincerely,

Istiaque Ahmad
Secretary
Ministry of Environment and Forests
Govt. of the People's Republic of Bangladesh
and
Operational Focal Point
GEF, Bangladesh

Dr. Sirat Mahmuda
Deputy Secretary
Economic Relations Division
Ministry of Finance
Govt. of the People's Republic of Bangladesh

Copy to:
Convention Focal Point for UNFCCC
Convention Focal Point for UNCBD
Convention Focal Point for UNCCD
Convention Focal Point for Stockholm (POPs)
Convention Focal Point for Minamata Convention