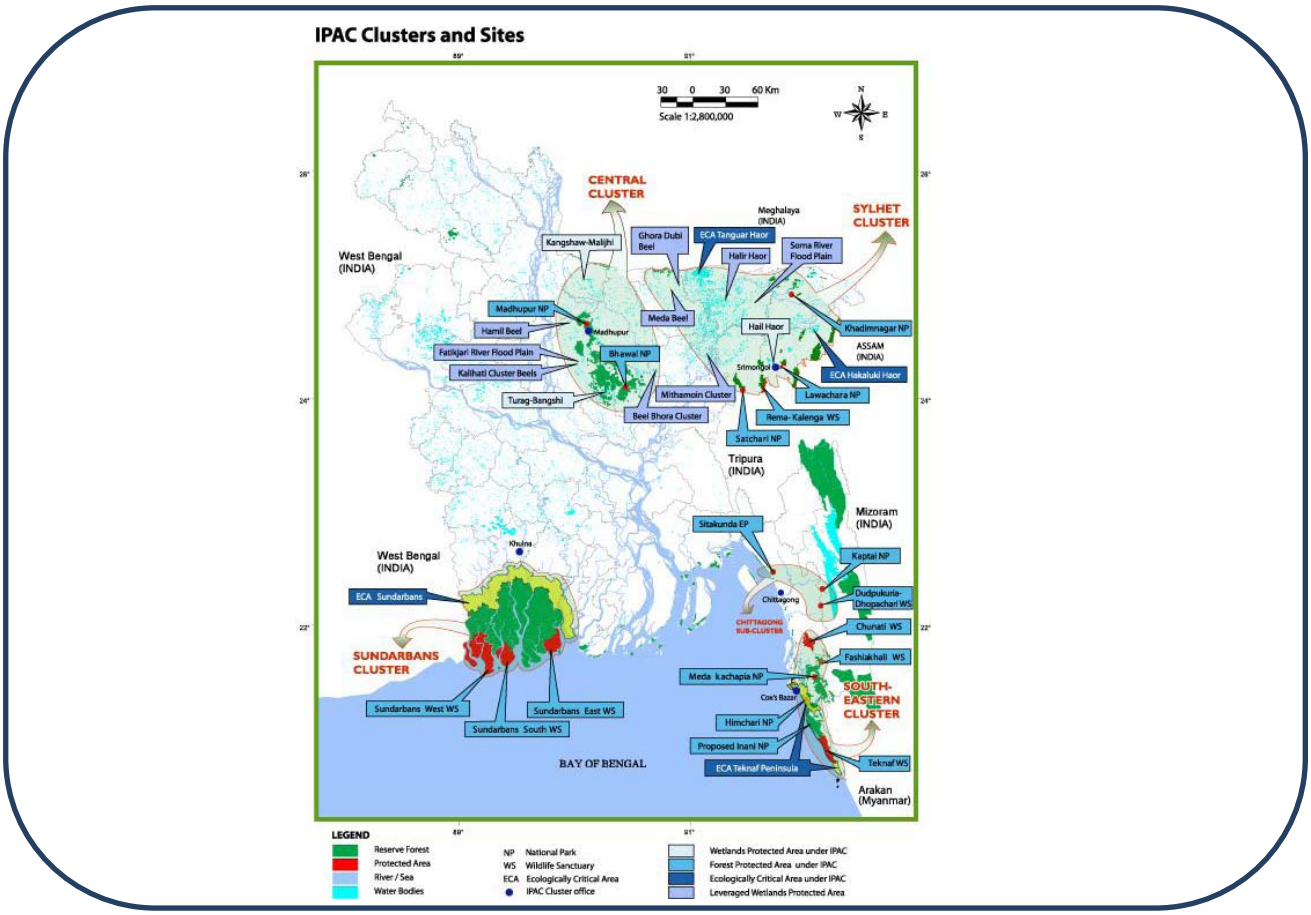
Action Plan for Implementing the Convention on Biological Diversity's

Programme of Work on Protected Areas



(BANGLADESH)

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Protected area information:

PoWPA Focal Point:

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Lead implementing agency:

Forest Department and Department, Ministry of Environment and Forests.

Multi-stakeholder committee:

Forest department, Department of Environment and Department of Fisheries are coordinating among themselves for implementation of PoWPA. No multi-stakeholder committee has yet been formed. Forest Department has taken initiatives to form a multi-stakeholder committee with Fisheries Department, Environment Department, Research Institutes, Universities and relevant organizations.

Description of protected area system

National Targets and Vision for Protected Areas

Target;

In Millennium Development Goals Bangladesh government has set a target of bringing 5% of the country area under PA system by 2015. Admitting the Aichi target Bangladesh is planning to conserve 17% of it's terrestrial and inland water; and 10% of coastal and marine areas potential for biodiversity and ecosystem services under protected area network within 2020.

Vision;

Improve ecosystem quality through conservation of forests and biodiversity hotspots, and enhance multiple service benefits of ecosystems with active participation of people, dependent on forests and natural resources for their livelihood.

Coverage

At present there are 34 Forest Protected Areas covering 2654.03 Square kilometers which is about 1.80 percent of country area.

But there are about 1.6 million hectares of forests in Bangladesh, which is protected by restricting biotic interferences. Such forests are maintaining status almost similar to the criteria set for different protected area Category by IUCN, but so far have not been declared as protected area through existing regulations. Such forests are managed mainly for conserving the biodiversity through protection of ecological integrity and others are managed for providing sustainable flow of goods and services to meet the community needs. Considering such criteria set by IUCN more forest area already obtained protected area status in Bangladesh. Moreover there are 12 Ecological Critical areas (ECA) in the country. Necessary rules are being framed to regulate different activities inimical to conservation of biodiversity in ECAs. Bangladesh has diverse ethnic communities, who conserve natural resources as part of their traditional and cultural practice. Such areas need to be surveyed and identified for inclusion in the protected area system.

Fisheries department have declared a Marine protected area in the year 2000. Forest Wildlife Sanctuaries and National Parks of coastal area can be counted as the marine protected area of Bangladesh. The marine area of Sundarbans is of outstanding importance for biodiversity conservation. Therefore, Integrated Resource Management Plan (IRMP) of Sundarbans proposed for including 12 nautical miles in Bay of Bengal to the south of Sundarbans as marine area. Such extension will add more 1,603 sq km and thereby Sundarbans itself will account 7620 sq.km. Marine and coastal Protected area. Ongoing emphasis on coastal afforestation plantation under climate change integration program will contribute a lot towards achievement of Aichi Target for coastal PA.

Description and background;

Bangladesh is situated in the northeastern part of the South Asia region, lying between 20° 25' and 26° 38’ north latitude and 88°01' and 92° 40' east longitude. Total area of the country is about 14.75 million hectares with three broad physiographic regions, plain land alluvium, Pleistocene terraces, and tertiary hills, occupying about 80, 8 and 12 percent respectively. Most of the area is 12 meters above mean sea level, and the hilly regions on the northeast and southeast with an average elevation of 244m and 610m respectively. The highest peak (1230m) is located at the southeastern extreme of the country.

The country is bordered by India to the north, north-east and west, Myanmar to the southeast and the Bay of Bengal to the south with a coastline of 710 km. The climate of Bangladesh is tropical, with maximum summer temperature rising between 32 degree Celsius and 38 degree Celsius, and in January the coldest month, the average temperature of the country is nearly 10 degrees Celsius. Annual rainfall ranges between 200 to 400cm. Bio-geographically the country lies at the junction of the Indian and Malayan sub-regions of the Indo-Malayan Realm and is located very near to the western side of Sino-Japanese region.

RAMSAR sites: Bangladesh is signatory of Ramsar Convention and Tanguar Haor and entire Sundarbans have been designated as RASMAR Site. Three Sanctuaries of Sundarbans also has been declared as World Heritage Site.

Protected Areas of Forest Ecosystem;

In Bangladesh Protected Areas declared under Article 23 of the Bangladesh Wildlife (Preservation) Order, 1973 (henceforth Wildlife Order), Protected areas include Wildlife Sanctuary, National Park and Game Reserve.
"Wildlife Sanctuary means an area closed to hunting, shooting or trapping of wild animals and declared as such under Article 23 by the government as undisturbed breeding ground primarily for the protection of wildlife inclusive of all natural resources such as vegetation soil and water" (paragraph) (p) of Article 2).
"National Park means comparatively large areas of outstanding scenic and natural beauty with the primary object of protection and preservation of scenery, flora and fauna in the natural state to which access for public recreation and education and research may be allowed" (paragraph) (p) of Article 2).
"Game Reserve means an area declared by the government as such for the protection of wildlife and increase in the population of important species wherein capturing of wild animals shall be unlawful (paragraph) (c) of Article 2)".
Wildlife Order has provisions for regulations prohibiting activities in the Protected Areas.

With the enactment of Forest Act, 1927 in British India, Bangladesh started Protected Area management under the coverage of Reserve Forest system. With the emergence of Bangladesh in 1971 National wisdom felt that more appropriate laws, rules and regulations are needed to steer protected areas for wildlife and biodiversity conservation. Hence, in 1973 Wildlife Preservation Order was promulgated. Both the acts aids in conservation wildlife, biodiversity and eco-system complementing each other. Realizing the present need in 2003 Government has initiated peoples' participation for better conservation of protected areas. USAID funded Nishorgo Support Project played a pivotal role for introduction collaborative management. The project has established Co-management platforms which includes Co-management committee (CMC), peoples forums (PF), nature clubs, youth clubs, forest resources user groups (FRUG), and community patrol group (CPG). To build up rapport and sensitize people in Protected Area Management system, the project implemented various alternative income generation activities (AIGA) like promoting eco-

guides, developing plant nurseries, dairy farming, and building eco-tourism facilities like lodges, and dormitories. Primarily the result found very encouraging and for the sustenance of the project the authority will have to stabilize continuous monitoring and evaluation mechanism. It should be tagged with Research and development system under management control. The co-management strategy has been extended to 19 PAs across the country. The Department of Environment is also implementing Co-management for conserving Ecological Critical areas.

This document proposes more forests under protected status, which has not been declared as National Park, Wildlife Sanctuaries or Game Reserve, but being maintaining conditions similar to the criteria, mentioned for protected area by IUCN. Government of Bangladesh has imposed ban on extraction of trees from Natural Forests for biodiversity conservation. Such forests exists almost unmodified natural systems and providing sustainable flow of natural products and services to meet the community needs. Considering such criteria additional forests, wetlands and Community conserved area (As shown in governance matrix) added to protected area system of Bangladesh. More forest is expected to qualify the protected status after restoration of the ecosystems through large scale plantation and implementation of proposed actions with the participation of adjacent people in near future.

Wetlands:

Wetlands in Bangladesh are the source of scenic beauty and those also provide livelihood for millions of people. Total area of inland wetland is about 4.6 million hectares of which nearly 70% constitutes of the floodplains which are seasonally inundated to a depth of 30 cm or more. Hundreds of thousands of big rivers and tributaries, Estuaries, Mangrove swamp, haors, baors, beels, tanks and fish ponds are providing a unique mosaic of habitats with extremely rich diversity of flora and fauna. Wetlands in Bangladesh supports diverse income generation to local communities like fishing, collecting honey and thatching materials and fuel wood. Wetlands outside the notified forest areas are controlled by land Administration and Fisheries Department. There are Acts, rules and regulations being practiced by Forest and Fisheries and Environment Department for sustainable flow of wetland resources of the country.

Marine and Coastal Areas:

It is estimated that Bangladesh has a total Marine area of about 2.2 million sq. Km. At the southern Ridge of the country has 710 km coast line which is very prone to natural disaster as well as provides opportunities for livelihood for the local communities. Due to enabling Ecological system this site provides ample food for aquatic flora and fauna.

Governance Matrix of Bangladesh Protected Areas (Categories of different PAs below have been proposed depending on the management objectives as mentioned in IUCN classifications)

Matrix of the Protected Area Category and Governance; (Terrestrial and wetland)

Governance types/ Protected Area Category	A. Governance by Government	B. Shared Governance	C. Private Governance	D. Governed by indigenous People and local communities
Ia Strict Nature Reserve	Nil	Nil	Nil	Nil
Ib. Wilderness	*1,58,421.23 ha.	1,39,699 ha.	Nil	Nil
II National Park	10,135.56 ha.	26,928 ha.	Nil	Nil
III. Natural Monument	293.75 ha.	Nil	Nil	Nil
IV Habitat/Species management	95,825.13 ha	17,232.47 ha.	Nil	Nil
V. Protected Landscape/Seascape	264.12 ha. 11055 ha(ECA)	808 ha.	Nil	Nil
VI. Protected Area with Sustainable Use of Natural Resources	4,61,030 ha 100 ha.	33,505 ha.(ECA) 380 Fish Sactuary and 350 km Hilsha Sanctuary	Nil	41 CCA 7523 Ha

Forests- 9,52,882 ha. ECA- 33,505 ha. Wetland- 50,000 ha. CCA-7523 ha. **Total 1.00 million ha = 6.79%**

Ib. A: Nijum Dweep NP and Pablakhali WS. Part of *Kassalong-Mainimukh, *Raingkhong, *Mathamuhuri and *Sangu Reserve forests slightly modified but no exploitation of resources (1,00,000 ha).

Ib. B; East, West and South WS of Sundarbans (Proposed co-management IPAC), unmodified no extraction of resources.

II.A: Shangu,Sonarchar and Tengragiri WS and Himchari NP.

II B:, Kaptai, Lawachara, Bhawal, Modupur, Satchari NP; Rema-Kelanga, Dudh Pukuri-Dhopachari WS.

III.A: *Madhabkundu Ecopark and Ramsagar NP

IV.A: Baroyadhala, Kuakata, Nababganj, Singra, Kadigorh, Birganj NP, Char Kukrimukri, Hajarikhil, Chandpai, Dudhmukhi & Dhangmari WS, Sal forests of Central and North western region (8,000 ha), Manmade forest of southern and southeastern region (37,000). Coastal Plantation (30,000 Ha.) National Botanical Garden; Banskhali, Modhutila, Tilagarh and Barshijora Ecopark; Dulahazra Safari park.

IV.B: Chunati & Fashiakhali WS; Inoni, Medha Kassapia & Khadimnagar NP.

V.A: Altadighi NP, Teknaf peninsula (ECA);St. Martin Island (ECA)

V.B : Sitakundu Ecopark,

VI.A: Sundarbans (NTFP exploited sustainably for community, 4,61,030 ha) And Baikka Beel (100 ha.)

VI.B: Co-managed ECAs (Haile, Tanguar, Hakaluki Haor, Turag Bangshi and Kangsha-malijhi) Resources exploited sustainably. Hilsha and Other wetland Sanctuaries under Fisheries Department

VI.D: Community Conserved Areas.

Matrix of the Protected Area Category and Governance; (Marine and Coastal)

Governance types/ Protected Area Category	A. Governance by Government	B. Shared Governance	C. Private Governance	D. Governed by indigenous People and local communities
Ia Strict Nature Reserve	Nil	Nil	Nil	Nil
Ib. Wilderness	16,352.23 ha	1,39,699 ha.	Nil	Nil
II National Park	6074.58 ha	Nil	Nil	Nil
III. Natural Monument	**Nil**	Nil	Nil	Nil
IV Habitat/Species management	32,723 ha.	Nil	Nil	Nil
V. Protected Landscape/Seascape	69,800 ha 11,055 ha (ECA)	Nil	Nil	Nil
VI. Protected Area with Sustainable Use of Natural Resources	4,61,030 ha.	Nil	Nil	Nil

Forests- 6,55,779 ha. ECA- 11,055 ha. Marine- 69,800 ha. **Total = 7,36,634 ha.**

Ib A: Nijhum Dweep

Ib B: Sundarbans East, West and South Wildlife Sanctuaries, Selected Integrated Protected Area Co-management IPAC).

II A: Sonarchar, Tangragiri WS.

IV A: Established Coastal Plantation, No extraction. (30,000 ha) Char Kukrimukri, Chandpai, Dudhmukhi and Dhangmar WS, Kuakata NP,

V A: Declared as Marine Protected Area by Fisheries Department; Teknaff Peninsula and St. Martin Island, (ECA)

VI A: Sundarbans Reserved forests, managed to maintain biodiversity with a sustainable flow of NTFP for local community.

Key threats

Main threats to Protected Area conservation emanate from the degradation of forests and wetlands. The anthropogenic pressures on natural resources caused ecosystem depletion. Anthropogenic pressures include population pressure from a large, growing and ultra-poor population, and are indicated by un-sustainable extraction of timber, over harvesting of fish, water pollution, encroachment, firewood for cooking fuel, as well as a broad range of non-timber forest products (NTFPs). Biotic pressures are exacerbated by climate change and include sea level rise, increase soil salinity, and increase incidence and severity of cyclones (for low-lying and coastal PAs), and change in rainfall patterns and temperatures, disturbing the regular seasonality of fruit and flower blooms. This impacts regeneration of important flora and fauna species and disrupts food chain.

Barriers for effective implementation

The high and rapidly growing population of Bangladesh places great strain on all natural resources, and PAs are no exception. The situation in Bangladesh is not a typical; the major barriers responsible for effective implementation of action plan for PA management in Bangladesh are:

Poverty and unemployment: Poverty and unemployment are two root causes of degradation in Bangladesh. Around 30 percent people of the country live below the poverty line. Many rural poor people living adjacent to forests collect forest resources (e.g., food, fodder, medicine, fire wood, timber, house building materials) to sustain their livelihoods in unsustainable ways. Further, unemployment drives rural people to various illegal forest practices (e.g., illegal logging or poaching of wild animals).

Tenure insecurity: Transfer of forest land for use of other purposes becoming a threat for implementing program of works. The land ownership and land tenure practices are incompatible with conservation of forests and wetlands.

Lack of people's awareness: Most of Bangladesh people are still ignorant about PAs and their contribution towards Ecosystem services. People’s knowledge regarding biodiversity conservation and sustainable resource management is inadequate.

Other pressures and issues: Fuel wood collection for domestic cooking is a major resource pressure impacting on sound PA management. Sawmills and brickfields located in and around PAs indirectly threaten the existence of PAs by encouraging local people in illegal logging. Inadequate law enforcement is another significant factor responsible for deterioration of Bangladesh PAs.

Status of key actions of the Programme of Work on Protected Areas

Status of key actions of the Programme of Work on Protected Areas	Status
• Progress on assessing **gaps in the protected area network** (1.1)	1
• Progress in assessing **protected area integration** (1.2)	1
• Progress in establishing **transboundary protected areas** and **regional networks** (1.3)	2
• Progress in developing **site-level management plans** (1.4)	2
• Progress in assessing **threats** and opportunities for **restoration** (1.5)	2
• Progress in assessing **equitable sharing** of benefits (2.1) • Progress in assessing protected area **governance** (2.1)	2 2
• Progress in assessing the **participation** of indigenous and local communities in key protected area decisions (2.2)	3
• Progress in assessing the **policy environment** for establishing and managing protected areas (3.1) • Progress in assessing the **values** of protected areas (3.1)	2 1
• Progress in assessing protected area **capacity** needs (3.2)	2
• Progress in assessing the **appropriate technology** needs (3.3)	1
• Progress in assessing protected area **sustainable finance** needs (3.4)	3
• Progress in conducting **public awareness** campaigns (3.5)	2
• Progress in developing **best practices and minimum standards** (4.1)	1
• Progress in assessing **management effectiveness** (4.2)	1
• Progress in establishing an **effective PA monitoring system** (4.3)	1
• Progress in developing a **research program** for protected areas (4.4)	1
• Progress in assessing opportunities for **marine** protection	1
• Progress in incorporating **climate change** aspects into protected areas	2

Status: 0 = no work, 1 = just started, 2 = partially complete, 3 = nearly complete, 4 = complete
(Insert notes as appropriate)

Priority actions for fully implementing the Programme of Work on Protected Areas:

National Biodiversity Strategy and Action Plan for Bangladesh, National Programme of Action for Protection of the Coastal and Marine Environment from Land-Based Activities, Bangladesh Climate Change Strategy and Action Plan, Nishorgo Vision 2010 and State of Protected Areas has undergone a participatory process to identify programs to be undertaken for biodiversity conservation in Bangladesh.

The National Report of Biodiversity Program of action 2020 (BPA 2020) has addressed most of the burning conservation issues of the country and identified program areas and activities with the phase of implementation and budget under 9 focal areas. Following activities of the BPA have been identified for Priority actions for full implement of the Program of Work on Protected Areas:

Priority; Gap analysis.

Key steps	Timeline	Responsible parties	Indicative budget (in million BDT*)
Establishment of geospatial database of coastal and marine biodiversity to address information gap in NRM	2013-2016	Forest /Fisheris Department	100.00
Conduct detailed study to identify the biodiversity rich forest ecosystems declared and managed as protected areas and periodic monitoring.	2013-2015	Forest Department/ Universities	100.00
Identification and Mapping of Key Biodiversity Areas and Ecosystems in inland water and steps for conservation.	2013-2015	Forest /Fisheris Department	100.00
Community based conservation as nature reserve at Mouza level with appropriate legal mechanism to be established.	2013-16	Forest Department Hill District Council CHT	300.00

Priority : Assessing Values

Key steps	Timeline	Responsible parties	Indicative budget (in million BDT*)
Quantify the Impact of Sudarbans Ecosystems in the National Economy of Bangladesh.	2014-2016	BAU/ CU/ IUCN/FD/ BFRI	300.00
Study on Ecosystem services derived from the protected area networks from different forest Ecosystems on Bangladesh.	2013-2015	BFRI/ Forest Department/BAU/ IUCN	100.00

Priority ; Management Effectiveness;

Key steps	Timeline	Responsible parties	Indicative budget (in million BDT*)
Updated inventory of forest resources and demarcation of forested areas all over the country	2013-2017	Forest Department SPAARSO/ BFRI	500.00
Development of Forest management System with application of modern information technology for divisional offices to central level	2013-2018	Forest Department	200.00
Collection of information and prioritize strategies and Preparation of Management Plan for Sustainable Forest management of protected areas.	2013-2015	Forest Department	300.00
Monitoring impacts of invasive alien species on forest ecosystems and develop regulatory measures to control their further spread	2013-2016	Forest Department/ National Harbarium	40.00

Priority; Climate Change Aspect

Key steps	Timeline	Responsible parties	Indicative budget (in million BDT*)
Identification of species threatened due to climate change, adoption of conservation strategies and implementation of long -term management plan for their survival	2013-2015	Forest Department/ IUCN/ IFESCU	100.00
Integration of Climate Change consideration in Protected Area Management and other conservation efforts	2013-2014	Forest Department/ UNDP	15.00

Priority; Developing Research programs;

*Ke*y steps	Timeline	Responsible parties	Indicative budget (in million BDT*)
Establishment of National Plant Genetic Research Institute	2013-2017	Forest Department/ National Harberium/ BARC/ BAU/ CU	500.00
Development of Guidelines and Monitoring Indicators in order to apply ecosystem approach towards forest biodiversity conservation	2010-2012	Forest Department /BFRI/CU/ KU	20.00
Preparation of country Report of Forest Genetic Resources.	2012-2014	Forest Department/ BARC/BAU	10.00

Priority; Assessing opportunities for Coastal and Marine Protection

Key steps	Timeline	Responsible parties	Indicative budget (in million BDT*)
Conservation of globally threatened important marine species through establishment of a network of coastal protected including the Swatch-of-No Ground submarine canyon	2013-25	Forest /Fiseries Department/ CU/ Institute of Marine Sc./WCS	500.00

Priority; Best Practices and Minimum Standard and raise Public awareness.

Key steps	:Timeline	Responsible parties	Indicative budget (in million BDT*)
District -wise inventory of habitats, ecosystems and biological resources leading to develop national database and maps using GIS and Remote Sensing techniques	2013-2015	Forest Department/ IUCN	200.00
Develop a handbook(s) on best practices in management of ecosystems/habitats in relation to wildlife, cultural heritage and landscape conservation	2013-2014	Forest Department/ IUCN	20.00
Publication of printing materials on benefit and services derived from protected area network	2014-2020	Forest Department/ DMC	50.00

Priority 5: Protected Area Integration

Key steps	Timeline	Responsible parties	Indicative budget (in million BDT*)
Study on distribution and behavior of flagship Wildlife and threats for their survival	2013-2015	Forest Department	20.00
Establish the connectivity of the protected areas through corridor and stepping stones for safe movement of flagship wildlife.	2014-2020	Forest Department/IUCN	500.00
Study the impacts of habitat fragmentation on biodiversity and documentation for public awareness.	2013-2015	Forest Department/IUCN/ DMC	10.00

More activities will be needed to implement after formation of multi-stakeholder committee for which initiative has been taken.

Key assessment results

Ecological gap assessment;

To conserve biodiversity, the PA system must be representative of all ecosystem types. At present the PAs of Bangladesh represent most of the ecosystems, and thus include all habitats and species important for conservation. The ecosystem integrity of Bangladesh PAs is vulnerable because they are part of reserved forests which have, in most cases, only been declared after being degraded heavily by illegal logging, land clearing and other alternative land uses. Few of country mammals, birds and reptiles have already been lost. The population size and number of the remaining wild fauna are also not satisfactory and these are confined and distributed irregularly in limited forest patches. IUCN listed a further 40 mammalian species, 41avian species, 58 reptilian species and8 species of amphibians are under various degrees of threat extinction. Although data regarding the country's threatened flora is not complete, it has been assumed that 10% of it is already extinct due to over-exploitation. The Bangladesh National Herbarium (BNH) has reported 106 vascular plant species at varying degrees of risk of extinction.

Management effectiveness assessment;

To arrest forest PA degradation, the Forest Department has taken attempts to develop scientific management plans and tried implementation with the following milestones.

1. Establishing Protection Working Circles along with Production Working Circles‘ in the Management Plans of Sylhet, Chittagong and Cox‘s Bazar Forest Divisions.
2. Developing and implementing approved Conservation Management Plans for the 9 PA including Wildlife Sanctuaries in the Sundarbans.
3. Guidelines for preparation of Conservation Management Plans
4. Participatory Management Plans for Chunati Wildlife Sanctuary, Rema-Kalenga Wildlife Sanctuary, Teknaf Wildlife Sanctuary, Lawachara National Park and Satchari National Park under Nishorgo Support Project (NSP).
5. Bangladesh Tiger Action Plan (2009-2017).
6. Integrated ResourceS Management Plans for the Sundarbans.

Sustainable finance assessment;

Realizing the importance of co-management Government of Bangladesh have established a recurring budget line for co-management committee in PAs development. Recently Government has decided to share revenue earnings from non timber forest produce as a source of sustainable financing for PA in the Sudarbans. Such earning will be shared with the communities living surrounding the PAs so that they can take part in the management activities more effectively. Bangladesh has become a global leader for embracing co-management, bringing together a diversity of stakeholders and perspectives to ensure sustainable development is built on a foundation of ecological conservation. One of the co-management committee Chunati CMC

owned the UNDP Equator Award for 2012. Out of 800 competitors 25 such global award will be handed over in Rio+20 summit in June 2012.

Capacity needs assessment.

The Forest Department of Bangladesh has long suffered a number of limitations, such as inadequate staffing, logistics and facilities, and traditional mindset of management of PAs. This is manifested in a number of ways, including the lack of proper management plans and of their implementation. Capacity needs assessment of Forest Department is now under preparation with the technical and financial assistance of FAO.

Policy environment assessment;

To have a better legal framework for PA management, the Government is going to enact new wildlife conservation act replacing the Wildlife (preservation) (amendment) Act of 1974, taking into account the important issues like an updated CITES species lists, collaborative management of PA, provision to declare more PAs including community conserved areas, enhance punishment for committing offences pertaining to wildlife trafficking. With the emerging issues like climate change, REED+, co- management of protected areas, eco-tourism development, etc. A new forest policy- is needed to formulate prioritizing conservation forestry cover production forestry.

Protected area integration and mainstreaming assessment;

Integrated Protected Area Co-management (IPAC) approach has been initiated to empower the community through partnerships between relevant government agencies and forest and wetland dependent communities. Nishorgo Network is trying to establish a co-management federation for all protected areas (forest, wetland & fisheries) of the country.

Protected area valuation assessment;

Unquestionably the government and various public and civil groups of Bangladesh are now much more aware about PAs and their potential conservation value. IUCN Bangladesh categorized the PAs long before but in rapidly changing situation the PAs need to be categorized afresh on the basis of present and future potentials and ecosystem services they provide.

Climate change resilience and adaptation assessment;

According to NAPA (2009) the following strategies have been set for climate change resilience and adaptation activities:

The country has set a pioneer example in disaster management particularly addressing cyclones and floods. The role of the government and nongovernment organizations during the pre- and post- disaster periods reduce the number of casualties. To reduce the affect of Natural disasters Forest Department has implemented a Green Belt Project in the coastal areas with community

participation. This afforestation program aimed at reducing the adverse impacts of natural disasters, particularly cyclones and storm surges in the coastal regions. By accelerating the process of land accretion, the coastal plantation can reduce the risks of sea level rise. As adaptation measures, the GOB has constructed to date nearly two thousand cyclone shelters, 200 flood shelters 3,931 km of coastal embankments and 4,774 km drainage channels.

Strategic natural resources management has been identified as one of the important adaptation measure by National Adaptation Plan of Action. Climate resilient sustainable land (eco-system) management would also include expansion and protection of forested areas and wise use of mineral resources. Forestry may be used as a tool for adaptation activities to leverage mitigation benefits also through sequestrating carbon and reducing emission of GHGs.

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Contribution of the officers listed below is greatly acknowledged in preparation of this plan of Action.

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