Bangladesh

6TH National Report for the Convention on Biological Diversity

15 November 2019
Dhaka, Bangladesh

UN environment

Convention on Biological Diversity

The Clearing-House Mechanism of the Convention on Biological Diversity

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Section I. Information on the targets being pursued at the national level

National Targets

National Target 1: By 2021, relevant stakeholders will be aware on the value of biodiversity and play an active role in ensuring sustainable use

Rationale for the National Target

The country is obligated to enhance awareness to conserve biodiversity as delineated in the constitution of Bangladesh. As a biodiversity rich country, Bangladesh is committed to continue its efforts to enhance awareness of the stakeholders towards ensuring their engagement into the process of conservation and sustainable use of biodiversity.

Relevant documents and information

The key targets of the updated National Biodiversity Strategy and action Plan (NBSAP, 2016-2021) has been integrated into the Seventh Five Year Plan. National targets are also linked with the obligations of other two Rio Conventions (UNFCCC and UNCCD), Ramsar Convention and Convention on International Trade in Endangered Species(CITES).

Other relevant website address or attached documents

http://www.chmbd.org/bdchm/admin/uploadsdoc/83919-nbsap2016-2021.pdf
https://moef.gov.bd/site/news/c2cd4153-1ce7-4323-a4d4-4ddb24c95016/Country-Investment-Plan-for-MoEF

National Target 2: By 2021, Assessment of valuation of goods and services of major ecosystems will be furnished towards integration into national accounting system

Rationale for the National Target

The life and livelihoods in Bangladesh and the economic stability of the country is -dependent on the goods and services provided by its diverse ecosystems. Integration of ecosystem values in the national accounting system has been recognised in the Seventh Five Year Plan of the country and it is stated that the values of major ecosystems will be assessed towards integration into GDP calculation.

Relevant documents and information

Economic valuation of ecosystem goods and services of the country is at its primary stage.

Other relevant website address or attached documents

National Target 3: By 2021, Studies on the impacts of incentives or subsidies on biodiversity, as well as development of policy roadmaps for phasing out of

incentives or subsidies harmful to biodiversity will be completed towards mainstreaming the relevant ministry for implementation of the policy roadmap

Rationale for the National Target

Government of Bangladesh is putting its efforts to ensure the food security providing incentives to the communities that may have indirect impacts on biodiversity. On the other hand, incentives and subsidies are provided to the communities dependent on natural resources to reduce the pressures on biodiversity and enhance conservation. In order to reduce the impacts of harmful incentives, government has taken measures like increase the price of N-fertilizer and decreasing the same for P-fertilizer.

Relevant documents and information

The National Agriculture Policy 2018 has emphasized on sustainable natural resource management in enhancing agricultural productivity of the country. In order to reduce the negative impacts of the use of chemical fertilizers and insecticides, it has given due focus towards integrated and organic pest management, and use of organic fertilizers.

Other relevant website address or attached documents

Report published in the Newspaperon subsidy in agriculture IPM Policy_2002.pdf

Integrated Pest Management Plan bwdb.pdf

Press Coverage on National Agriculture Policy 2018 (The policy is in Bengali)

Impact of agrochemicals on fish production in two important beels of Bangladesh.pdf

National Target 4: By 2021, Policy on Sustainable and Consumption Production (SCP) to maintain safe ecological limit of natural resources of major ecosystems will be furnished and disseminate the policy to all the stakeholders will be done towards implementation.

Rationale for the National Target

Government of Bangladesh is emphasizing on the SCP to maintain ecological functions of major ecosystems. In addition, this national target will help to achieve SDG 12.

Relevant documents and information

The National Environment Policy 2018 assures protection of environment for sustainable consumption and production of resources. Some initiatives have been taken particularly in energy sector. Clean Stoves, expansion of liquefied petroleum gas (LPG) and solar home system (SHS) are some sustainable consumption initiative adopted to protect environment in Bangladesh. It is also linked with Sustainable Development Goals (SDG#12.1, and SDG#12.2).

Other relevant website address or attached documents

Roadmap for 10 Year Framework of SCP_SDG12.pdf

Action Plan of MoEF by targets in the implementation of SDGs aligning with 7th Five Year Plan and Beyond (MoEF 20018)
Energy Efficiency and Conservation Master Plan up to 2030 (SREDA 2015)
National Environment Policy 2018 (DoE 2018)
Country Action Plan for Clean Cookstoves (Power Division 2013)

National Target 5: By 2021, studies on the rate of habitat loss will be furnished towards promoting implementation of land use policy and enforcement of relevant legislation on conservation of natural habitats

Rationale for the National Target

Government of Bangladesh is committed to prevent the loss of natural habitat and land degradation. This target has been taken to achieve the Aichi Biodiversity Target 5 in the context of Bangladesh perspective.

Other relevant website address or attached documents

Master Plan of Haor Area 2012
National Land zoning Reports
National Action Programme (NAP) for Combating Desertification
River Master Plan 2018
Bangladesh Biological Diversity Act 2017

National Target 6: By 2021, stock assessment of fish, invertebrate stocks and aquatic plants will be undertaken keeping in mind the safe ecological limit and awareness raising of the stakeholders will be enhanced so that aquatic biodiversity will be managed and harvested sustainably, legally taking into account of ecosystem based approach towards avoidance of overfishing and conservation of threatened species and vulnerable ecosystems.

Rationale for the National Target

This Target has been taken to enhance sustainable management of aquatic resources that will facilitate to achieve the Aichi Biodiversity Target 6 and SDG targets 14.4 and 14.5.

Other relevant website address or attached documents

Department of Fisheries
Sustainable Coastal and Marine Fisheries Project Fisheries Statistical Yearbook 2016-17.pdf
Fisheries resources of Bangladesh.pdf
Fisheries Act

Fisheries management and governance in Bangladesh
National Marine Fisheries Policy 2015 (In Bengali)
Blue Economy of Bangladesh: Opportunities and Challenges for Sustainable Development Toward a Blue Economy: A Pathway for Sustainable Growth in Bangladesh 2018

National Target 7: By 2021, development of Integrated Management Plan will be completed for areas under agriculture, aquaculture and forestry towards ensuring conservation and sustainable use of biodiversity.

Rationale for the National Target

The target has been taken to ensure integrated management approach/plan in the area of agriculture, aquaculture and forestry.

Relevant documents and information

Bangladesh Forest Department (BFD 2010) developed Integrated Resources Management Plans for the Sundarban, 2010 – 2020. Ministry of Agriculture with technical assistance from Food and Agriculture Organization (FAO) in 2013 has prepared Master Plan for Agricultural Development in the Southern Regions of Bangladesh. It covers 14 coastal districts, and had been developed in accordance with, and a logical consequence of several policies and programmes that are on board.

Other relevant website address or attached documents

IntegratedResourcesManagementPlansfortheSundarban,2010–2020:
http://nishorgo.org/wp-content/uploads/2017/02/5-44-NN_SRF_IRMP_Volume-1.pdf
Master Plan for Agricultural Development in the Southern Region of Bangladesh:
http://www.fao.org/3/a-au752e.pdf

National Environment Policy 2018

The National Agricultural Policy 2018 (in Bengali)

National Fisheries Policy 1998.pdf

Draft National Forest Policy 2016 (in Bengali)

National Land Zoning Project

ICZMP 2005

National Target 8: By 2021, study on impact of pollution and excess nutrient on functioning of major ecosystems will be conducted and enforcement drive for controlling pollution will be strengthened.

Rationale for the National Target

This target has been taken to bring pollution to the levels that are not detrimental to ecosystem functions and biodiversity conservation.

Relevant documents and information

Other relevant website address or attached documents

EIA Guidelines for Industries
Bangladesh Environment Conservation Act 1995 (Amend 2010)
National 3R Strategy for Waste Management
Clean Air Act 2019 (Draft)
NOSCOP 2019
National Integrated Pest Management Policy 2002
Air Quality Index Report
Water Quality Report
Ship breaking and hazardous waste rules
Environmental Assessment and Action Plan For the Health, Population and Nutrition Sector Development Program (HPNSDP)
E-waste Management Rules 2017
DOE Annual report 2017-2018.pdf
Fertilizer Recommendation Guide 2012

National Target 9: By 2021, study on the impact of IAS will be furnished, regulations towards control of IAS will be developed and capacities at the port-of-entries will be enhanced to regulate IAS.

Rationale for the National Target

This target has been taken to prevent introduction, multiplication and propagation of Invasive Alien Species (IAS).

Relevant documents and information

In Bangladesh a total of 92 varieties of exotic fishes under 53 species, 17 families and 5 orders were recorded (Galib and Mohsin, 2011).

The National Agriculture Policy 2018, the National Fisheries Policy 1998, the draft National Forest Policy 2016 and the National Environment Policy 2018 have emphasized on sustainable production and natural resource management, and thus do not support the import of invasive species. The Plant Quarantine Act 2011, and Animal and Animal. Feed Quarantine Act 2005 are the legal instruments to prevent the introduction of alien invasive species.

Other relevant website address or attached documents

Exotic Fishes of Bangladesh
The National Agriculture Policy 2018

National Fisheries Policy 1998
National Forest Policy (draft)
National Environment Policy 2018
The Plant Quarantine Act 2011,
Animal and Animal Feed Quarantine Act
Wildlife Conservation Rules
Biosafety Rules 2012
Biological Diversity Act 2017

National Target 10: By 2021, multiple pressure on coral associated island (St. Martin) and Sundarban mangrove ecosystem will be reduced through implementation of management plan of the ecosystems.

Rationale for the National Target

This target has been taken to address multiple pressures on the St. Martin Island and the Sundarban mangrove ecosystem that will facilitate to achieve SDG targets 14.2 and 14.5.

Relevant documents and information

Integrated Resources Management Plans for the Sundarban

http://nishorgo.org/wp-content/uploads/2017/02/5-44-NN_SRF_IRMP_Volume-1.pdf
Conservation Management Plan of St. Martin Island

National Target 11: By 2021, Bangladesh's 3% area under terrestrial ecosystem (forests), 3% area under inland wetlands and coastal ecosystems and 5% of total marine area will come under PAs or ECAs with development and implementation of management plan for these areas.

Rationale for the National Target

This target has been taken to conserve important ecosystems that will contribute to the global target in the perspective of Bangladesh. Considering baseline status of Protected Area (PA) assessed under the 5th National Report (5NR) in 2015 alongside the present status of population density and per capita land, **3% area under terrestrial ecosystem (forests), 3% area under inland wetlands and coastal ecosystems and 5% of total marine area** Has been considered to be protected as PAs.

Relevant documents and information

Co-management is functioning in 26 forest Protected Areas (PAs) and two wetland Ecologically Critical Areas (ECAs). Twenty six forest PA Co- management Committees (CMCs), 18 wetland Community Based Organizations and 3 wet land/ECA committees are functioning towards sustainable management of biodiversity.

Other relevant website address or attached documents

Protected Area Management Rules 2017

Policy, Law and Administration for Protected Area Management in Bangladesh

ECA Gazette for Nijhum Dwip

CBA ECA management book

National Target 12: By 2021, the extinction of known threatened species will be prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Rationale for the National Target

This national target has been taken to prevent the extinction of the threatenedspecies that will contribute to achieve the Aichi Biodiversity Target 12 and SDG target 15.5.

Relevant documents and information

Government of Bangladesh, with the help of IUCN Bangladesh assessed status of species under seven groups of wildlife (Mammals, Reptiles, Amphibians, Birds, Freshwater Fishes, Crustaceans and Butterflies) for red listing. The Red Listing in 2015 arrived at a consensus list that covered a total of 1,619 species that included 138 mammals, 566 birds, 167 reptiles, 49 amphibians, 253 freshwater fishes, 141 crustaceans and 305 species of butterflies when vast majority of the invertebrates and estuarine and marine fishes are left out.

Other relevant website address or attached documents

Action Plan for the Management of Birds of Bangladesh 2015.pdf
Action Plan for the Management of Herpetofauna in Bangladesh 2015.pdf
Mammal Management Strategy 2015-2025.pdf
Red list of Bangladesh 2015;
https://portals.iucn.org/library/sites/library/files/documents/RL-549.3-003-v.1.pdf
Tiger Action Plan
Dolphin Conservation Management Plan 2019 (Draft)
Bangladesh Vulture Conservation Action Plan 2016-2025Bangladesh ElephantConservation Action Plan2018-2027

National Target 13: By 2021, capacity of in-situ and ex-situ conservation facilities will be strengthened to conserve the genetic diversity of cultivated plants, indigenous livestock and poultry resources.

Rationale for the National Target

This target has been taken to safeguard the genetic diversity of species of cultivated plants and farm and domesticated animals, underutilized crops and wild relatives of crop plants that will help to achieve the SDG Target 15.6.

Relevant documents and information

Government has taken various initiativesfor in-situ and ex-situ conservation of species of cultivated plants, farm and domesticated animals, underutilized crops and wild relatives of crop plants.

Other relevant website address or attached documents

Department of Agricultural Extension

National Target 14: By 2021, develop and implement restoration plan for degraded wetlands and rivers taking into account the needs of vulnerable people and local communities.

Rationale for the National Target

This target has been taken to restore the degraded wetland and rivers that will help contribute to Aichi Biodiversity Target14andachieveSDGtarget14.5.

Relevant documents and information

Bangladesh Water Development Board has undertaken a project for re-excavation of inland small rivers, canals and wet lands over 64 districts during2018- 2020. That will help restoration of wetland habits, thus reducing habitat degradation.

Other relevant website address or attached documents

River Master Plan

Protecting the Meghna River a Sustainable Water Resource for Dhaka 2019

Haor Master Plan

Community Based Ecosystem Conservation and Adaptation in Ecologically Critical Areas of Bangladesh

Ecology and Bio-diversity of the Tanguar Haor

Wetland inventory

National Target 15: By 2021, initiate implementation of restoration plan for degraded ecosystems, especially, forestlands and wetlands for addressing climate change mitigation, adaptation and combating desertification.

Rationale for the National Target

This target has been taken to restore degraded ecosystems, especially, forestlands and wetlands that will contribute to AichiBiodiversityTarget15 and to achieve SDG targets 15.2 and 15.3.

Relevant documents and information

The United Nations Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) Bangladesh National Programme 2016-19 is in progress.

Other relevant website address or attached documents

UN-REDD Bangladesh National Programme.pdf

Community Based Ecosystem Conservation and Adaptation in Ecologically Critical Areas of Bangladesh

National Action Programme (NAP) for Combating Desertification National Land Degradation Neutrality Targets

Nationwide Climate Vulnerability Assessment in Bangladesh Climate Resilient Participatory Afforestation and Reforestation Project Bangladesh Climate Change Strategy and Action Plan

National Target 16: By 2016, Bangladesh Biological Diversity Act addressing the issues of ABS will be finalized and the instrument of ratification for the Nagoya Protocol on ABS will be submitted to the secretariat ofCBD.

Rationale for the National Target

This target has been taken to ensure fair and equitable sharing of benefits arising out of utilization of genetic resources that will help to achieve SDG target 15.6.

Relevant documents and information

Bangladesh Biodiversity Act, 2017 (Act No. II) [In Bengali]
http://bdlaws.minlaw.gov.bd/bangla_pdf_part.php?act_name=&vol=%E0%A7%AA%E0%A7%AD&id=1203

Other relevant website address or attached documents

https://www.ecolex.org/details/legislation/bangladesh-biodiversity-act-2017-act-no-ii-lex-faoc165299/Access to genetic resources and benefit sharing [News article]

National Target 17: By 2016, Bangladesh will develop, adopt and update NBSAP and commence implementation of the document in an effective and participatory manner.

Rationale for the National Target

This target has been taken to put in place the updated Biodiversity Strategy and Action Plan as per Bangladesh's global commitment towards ensuring mainstreaming biodiversity activities.

Relevant documents and information

Government of Bangladesh has already updated NBSAP in 2016. Implementation activities are on-going through various development projects, programs and policies of the government.

Other relevant website address or attached documents

National Target 18: By 2021, traditional knowledge, innovations and practices of local communities or ethnic groups will be recognized and documented.

Rationale for the National Target

This target has been taken to promote traditional knowledge, innovations and practices of local communities or ethnic groups.

Relevant documents and information

Practices and traditional knowledge of local communities are being promoted under various development activities under PAs and ECAs. The National Cultural Policy 2006 states that the cultural institutes will conserve extension and develop the culture and traditions of respective small ethnic communities living different parts of the country. Seven cultural institutes were established in the country along with enacting the Small Ethnic Groups Cultural Organization Act, 2010.

Other relevant website address or attached documents

Small Ethnic Groups Cultural Organization Act, 2010.

Ministry of Chittagong Hill Tract Affairs

National Cultural Policy, 2006[In Bengali]

Bangladesh Biological Diversity Act, 2017

National Environment Policy, 2018

UNESCO Report on Bangladesh.pdf

National Target 19: By 2021, Agencies responsible for Biodiversity and Natural Resources Management will be adopting modern information technology like GIS and RS and information on biodiversity will be shared through Clearing House Mechanism (CHM).

Rationale for the National Target

This target has been taken to promote application of modern information technology towards efficient management of biodiversity along with sharing of information and decision making.

Relevant documents and information

Forest Department has already set up a spatial data management centre named as Resource Information Management System (RIMS). Department of Environment (DoE) has established a Geographic Information Systems (GIS) lab. The lab is in the process of collecting data and information for future analysis on biodiversity status and trend of

the country. Clearing House Mechanism (CHM) has been developed. It is in the process of up gradation. It will be interconnected with CBD portals.
In addition, other government agencies like LGED, SPARRSO, SRDI, BWDB, etc. have in house capacity of using GIS and RS technologies.

Other relevant website address or attached documents

Forest Department

Department of Environment

CHM of Bangladesh

Local Government Engineering Department (LGED)

Department of Fisheries (DoF)

SRDI

SPARRSO

National Target 20: By 2017, financial resources will be mobilized towards accelerated implementation of targets and activities of updated NBSAP.

Rationale for the National Target

This target has been taken to ensure mobilization of financial resources to implement NBSAP.

Relevant documents and information

Government has allocation from internal resources to implement activities taken under NBSAP. There are also financial resources mobilized from ODA for various biodiversity management projects.

Other relevant website address or attached documents

Annual Development Program (ADP)

Seventh Five Year Plan, 2016-21

Bangladesh Country Investment Plan for Environment, Forestry and Climate Change (2016 – 2021)

Section II. Implementation measures, their effectiveness, and associated obstacles and scientific and technical needs to achieve national targets

Awareness Raising and Knowledge Management

Measures taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Awareness raising activities are being undertaken in the country in many ways such as: celebrating International Day for Biological Diversity, International Coastal Cleanup Day, International Day of Forest, World Environment Day, World Water Day, World Day to Combat Desertification and Drought, World Ozone Day, Global Tiger Day, International Freshwater Dolphin Day, International Vulture Awareness Day, World Elephant Day, World Migratory Bird Day, World Wildlife Day, World Wetlands Day and other related events at national and regional level and ensuring media outreach.

A month-long National Tree Fair and Week-long National Environment Fair,National Agriculture Fair, National Fisheries Week and Fish Fair during the last week of June or first week of July are held at national level in Dhaka and regional fairs at district and upazila (sub-district) levels. All these activities are enhancing mass awareness onbiodiversity conservation and sustainable consumption of resources.

Bangabandhu Award for Wildlife Conservation, National Environment Award, Prime Minister's National Award for Tree Plantation are being awarded every year as part of recognition at national level for environment and biodiversity conservation.

Bangladesh Cricket Board (BCB) use the symbol of 'Tiger' in their official logo that carries a message to raise awareness for the conservation of the Royal Bengal Tiger. Rallies are also held on the occasion of different days.

Print and electronic media publish features on the importance of biodiversity and ecosystem conservation. Social media campaign contributes to raise awareness on the importance of biodiversity. A good number of knowledge products has been published on biodiversity conservation. Clearing House Mechanism (CHM) for biodiversity has been developed.

CREL develop five curricula and teaching materials on Climate Change, REDD+, Forest Carbon Measurement and Monitoring, Climate-Resilient Ecosystem Conservation and Co-management of Natural Resources.

Actors involved in implementation: MoEFCC and other associated ministries, DOE, FD, DOF, IUCN, non-government organizations, civil societies, academic and research institutions and media.

Outcomes achieved: Information on biodiversity conservation has been disseminated to millions of people through print, electronic, social media and mobile messages.

Training Manual on Sustainable Protected Area Co-management for Biodiversity Conservation, Training modules on 35 subjects ranging from natural resource definition, co-management, climate resilient livelihood to account management, and success stories mostly on Alternative Income Generation (AIG) through different initiatives.

National Target(s)

National Target 10: By 2021, multiple pressure on coral associated island (St. Martin) and Sundarban mangrove ecosystem will be reduced through implementation of management plan of the ecosystems.

National Target 12: By 2021, the extinction of known threatened species will be prevented and their conservation status, particularly of those most in decline,

National Target 19: By 2021, Agencies responsible for Biodiversity and Natural Resources Management will be adopting modern information technology like GIS and RS and information on biodiversity will be shared through Clearing House Mechanism (CHM).

National Target 1: By 2021, relevant stakeholders will be aware on the value of biodiversity and play an active role in ensuring sustainable use

National Target 2: By 2021, Assessment of valuation of goods and services of major ecosystems will be furnished towards integration into national accounting system

National Target 8: By 2021, study on impact of pollution and excess nutrient on functioning of major ecosystems will be conducted and enforcement drive for controlling pollution will be strengthened.

Tools or methodology used for the assessment of effectiveness above

- Number of people's participation in different events;
- Reports in media;
- Television programmes, documentaries and commercials.

Relevant websites, links, and files

National Tree Fair
Dolphin Fair
International Freshwater Dolphin Day
Nature lovers gathering in Khulna tree fair

Other relevant information

FD and DoE developed numbers of communication materials. People were also made aware through posters, stand banners, 'dos' 'don'ts' signage, and video documentaries.

Obstacles and scientific and technical needs related to the measure taken

- Inadequate communication strategies on biodiversity conservation;
- Inadequate resources and capacity of respective organizations.
- Inadequate research on level of awareness and outreach.

Relevant websites, 7 web links and files

Fifth National Report of Bangladesh to the CBD

Habitat Restoration

Measures taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Responding to the CBD decision, Bangladesh has taken initiatives for habitat restoration in hill forest, swamp forest and mangrove forest, assisted natural regeneration, wetland re-excavation, creation of fish sanctuary and threatened species protection (e.g. turtle nesting grounds).The biological condition of forest and wetland was improved through participatory initiatives (regeneration, protection).

Habitat restoration through Climate Resilient Participatory Afforestation and Reforestation Project (CRPARP) comprised of block plantations of a large mix of species to reduce soil erosion and increase the water retention capacity in the hills of Chittagong and Cox's Bazar.

Actors involved in implementation: Forest Department (FD), Arannayk Foundation (AF), Non-Government Organizations (NGOs), Local communities.

Outcomes achieved:

- Through CREL project about 951,000 ha forest land came under improved natural resource management;
- About 1,650ha of forest and wetland with improved biological condition.
- About 10,015 ha block plantations in hills of Chittagong and 7,485 ha of primarily mangrove and Jhau plantations at Cox's Bazar covered under CRPARP project.
- Moving away from traditional monoculture plantations to multispecies plantations increased the species' richness, including the diversity of the regenerated plants within the project-supported plantations and also because of enhanced protection. Natural regeneration increased in hill and coastal forests.

National Target(s)

National Target 14: By 2021, develop and implement restoration plan for degraded wetlands and rivers taking into account the needs of vulnerable people and local communities.

National Target 15: By 2021, initiate implementation of restoration plan for degraded ecosystems, especially, forestlands and wetlands for addressing climate change mitigation, adaptation and combating desertification.

National Target 5: By 2021, studies on the rate of habitat loss will be furnished towards promoting implementation of land use policy and enforcement of relevant legislation on conservation of natural habitats

Tools or methodology used for the assessment of effectiveness above

In order to assess the effectiveness, field visits, stakeholders' consultation and project completions reports were taken into consideration.

Relevant websites, links, and files

Climate Resilient Ecosystems and Livelihoods (CREL) Project
Implementation Completion and Results Report of the Climate Resilient Participatory Afforestation and Reforestation Project

Other relevant information

The Small Scale Water Resources Development Projects implemented by Local Government Engineering Department (LGED) include re-excavation of small waterbodies, maintenance of

irrigation canals, and management of fish pass, development of beels for creating fish sanctuaries, excavation of feeder canals, and fresh water swamp species (hijol-koroch) plantations in haor areas, thus improving the wetland habitats. Bangladesh Water Development Board has undertaken a project for re-excavation of inland small rivers, canals and wet lands over 64 districts during 2018- 2020. That will help restoration of wetland habits, thus reducing habitat degradation.

UN-REDD Bangladesh National Programme 2016-19 is in progress. One of the outcome of the programme will be National Forest Emission Level (REL) and/or Forest Reference Level. It has already mapped threats in seven PAs. Mapping of degraded areas is under process.

Obstacles and scientific and technical needs related to the measure taken

The major challenge or obstacle in implementing the NBSAP towards achieving the national goals.

- Capacity on economic evaluation of ecosystem goods and services and integrating them in national accounting system

Expansion of Conservation Areas

Measures taken to contribute to the implementation of your country's national biodiversity strategy and action plan

The NBSAP 2016 -2021 target is to bring country's 3% areas under terrestrial ecosystem (forests), 3% area under inland wetlands and coastal ecosystems and 5% of total marine areas under PAs conservation. In addition to previous PAs, one special conservation area at Ratargul, one National Park at Inani Cox's Bazar and one ECA in Jaflong-Dawki River and Nijhum Dwip Seascape Marine Protected Area have been established.

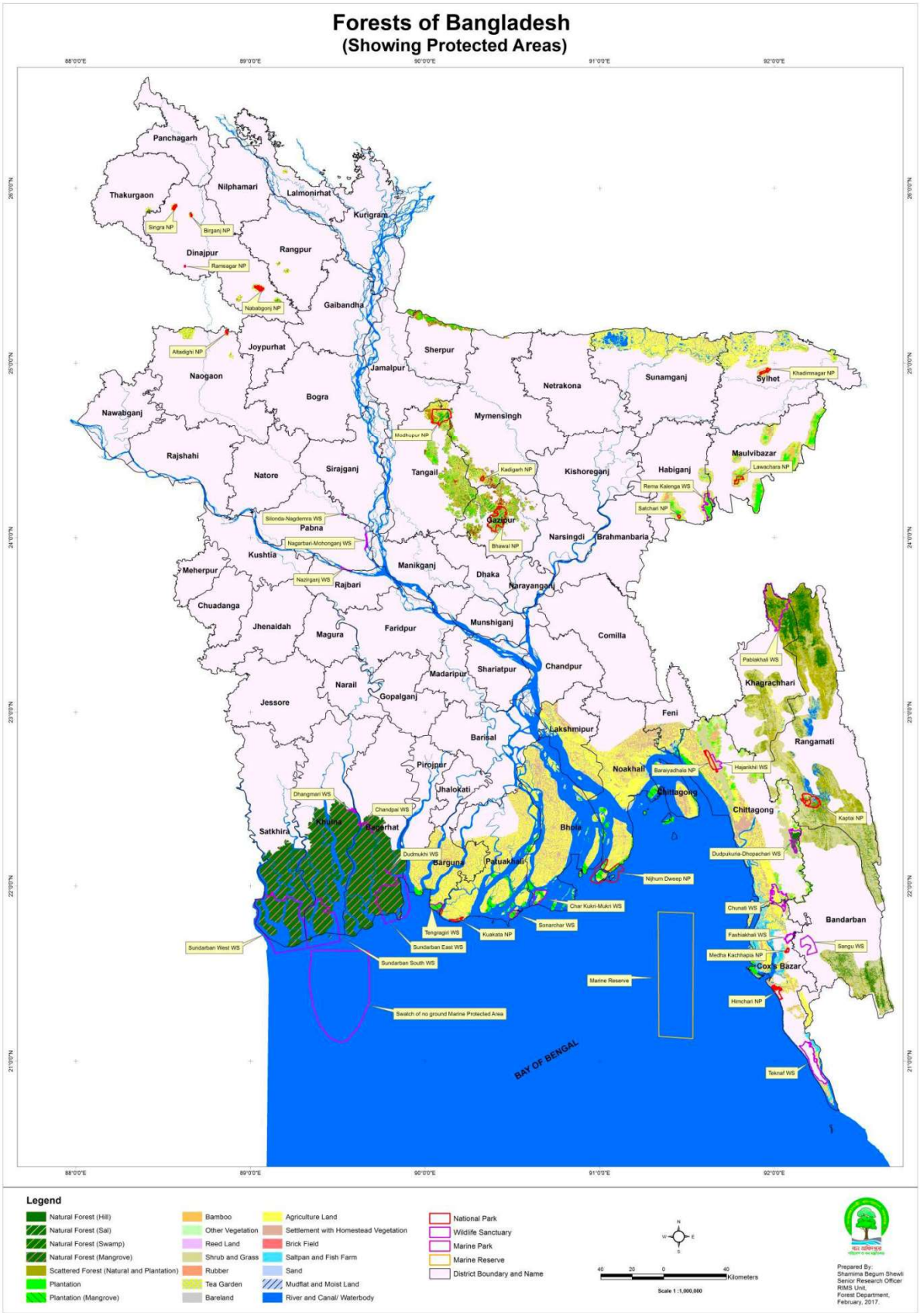


Figure 1: Protected Areas of Bangladesh

Table 1: List of Protected Areas (PAs) in Bangladesh

No.	Category	Location	Area (ha)	Year of Declaration
Wildlife Sanctuary				
1	Rema-Kalenga Wildlife Sanctuary	Habigonj	1,796	1996
2	Char Kukri-Mukri Wildlife Sanctuary	Bhola	40	1981
3	Sundarban (East) Wildlife Sanctuary	Bagerhat	122,921	2017
4	Sundarban (West) Wildlife Sanctuary	Satkhira	119,719	2017
5	Sundarban (South) Wildlife Sanctuary	Khulna	75,310	2017
6	Pablakhali Wildlife Sanctuary	Rangamati	42,069	1983
7	Chunati Wildlife Sanctuary	Chattogram	7,764	1986
8	Fashiakhali Wildlife Sanctuary	Cox's Bazar	1,302	2007
9	Dudh Pukuria-Dhopachari Wildlife Sanctuary	Chattogram	4,717	2010
10	Hazarikhil Wildlife Sanctuary	Chattogram	1,178	2010
11	Sangu Wildlife Sanctuary	Bandarban	2,332	2010
12	Teknaf Wildlife Sanctuary	Cox's Bazar	11,615	2009
13	Tengragiri Wildlife Sanctuary	Barguna	4,049	2010
14	Sonar Char Wildlife Sanctuary	Patuakhali	2,026	2011
15	Dhangmari Wildlife Sanctuary	Sundarban, Bagerhat	340	2012
16	Chandpai Wildlife Sanctuary	Sundarban, Bagerhat	560	2012
17	Dudmukhi Wildlife Sanctuary	Sundarban, Bagerhat	170	2012
18	Nagarbari–Mohanganj Dolphin Sanctuary	Pabna	408	2013
19	Nazirganj, Dolphin Sanctuary	Pabna	146	2013
20	Shilanda-Nagdemra Dolphin Sanctuary	Pabna	24.17	2013
National Parks				
1	BhawalNational Park	Gazipur	5,022	1982
2	Madhupur National Park	Tangail/ Mymensingh	8,436	1982
3	Ramsagar National Park	Dinajpur	28	2001
4	Himchari National Park	Cox’s Bazar	1,729	1980
5	Lawachara National Park	Moulavibazar	1,250	1996
6	Kaptai National Park	Rangamati	5,465	1999
7	Nijhum Dweep National Park	Noakhali	16,352	2001
8	Medha Kachhapia National Park	Cox’s Bazar	396	2004
9	Satchari National Park	Habigonj	243	2005
10	Khadim Nagar National Park	Sylhet	679	2006
11	Baraiyadhala National Park	Chattogram	2,934	2010
12	Kuakata National Park	Patuakhali	1,613	2010
13	Nababgonj National Park	Dinajpur	518	2010
14	Shingra National Park	Dinajpur	306	2010
15	Kadigarh National Park	Mymensingh	344	2010

16	Alta Dighi National Park	Naogaon	264	2011
17	Birgonj National Park	Dinajpur	169	2011
18	Sheikh Jamal National Park, Inoni	Cox's Bazar	7,085	2019
19	National Botanical Garden, Mirpur	Dhaka	87	2018
Eco-park				
1	Madhabkunda Eco-park	Moulavibazar	266	2019
2	Tilagarh Eco-park and Wildlife Breeding Center	Sylhet	45	2019
3	Char Muguria Ecopark	Madaripur	4	2015
Special Conservation Area				
1	Ratargul Swamp Forest	Sylhet	204	2015
2	Altadighi	Naogaon	17.34	2016
Marine Protected Area				
1	Swatch of No Ground	Bay of Bengal at the head of a submarine canyon	173,800	2014

Ecologically Critical Areas (ECAs) are declared and managed by the Department of Environment (DoE) (Table 2).

Table 2: List of Ecologically Critical Areas (ECAs) of Bangladesh

No	Name of ECA	Ecosystem Type	Location	Area (ha)
1	Cox's Bazar-Teknaf Peninsula	Coastal-Marine	Cox's Bazar	20,373
2	Sundarban (10 km landward periphery)	Coastal-Marine	Bagerhat, Khulna Barguna, Pirojpur and Satkhira	292,926
3	St. Martin's Island	Marine Island with coral reefs	Teknaf Upazila, Cox's Bazar	1,214
4	Hakaluki Haor	Inland Freshwater Wetland	Moulavi Bazar	40,466
5	Sonadia Island	Marine Island	Maheshkhali, Cox's Bazar	10,298
6	Tanguar Haor	Inland Freshwater Wetland	Tahirpur Upazila, Sunamgonj	9,727
7	MarjatBaor	Oxbow Lake	Kaliganj Upazila, Jhenaidah, a Jessore	325
8	Gulshan-Baridhara Lake	Urban Freshwater Wetland	Dhaka City	101
9	Buriganga River	River	Around Dhaka City	1,336
10	Turag River	River	Around Dhaka City	1,184
11	Sitalakhya River	River	Around Dhaka City	3,771
12	Balu River	River	Around Dhaka City	1,315
13	Jaflong-Dawki River	River	Jaflong, Sylhet	1,493
			Total	**384,529**

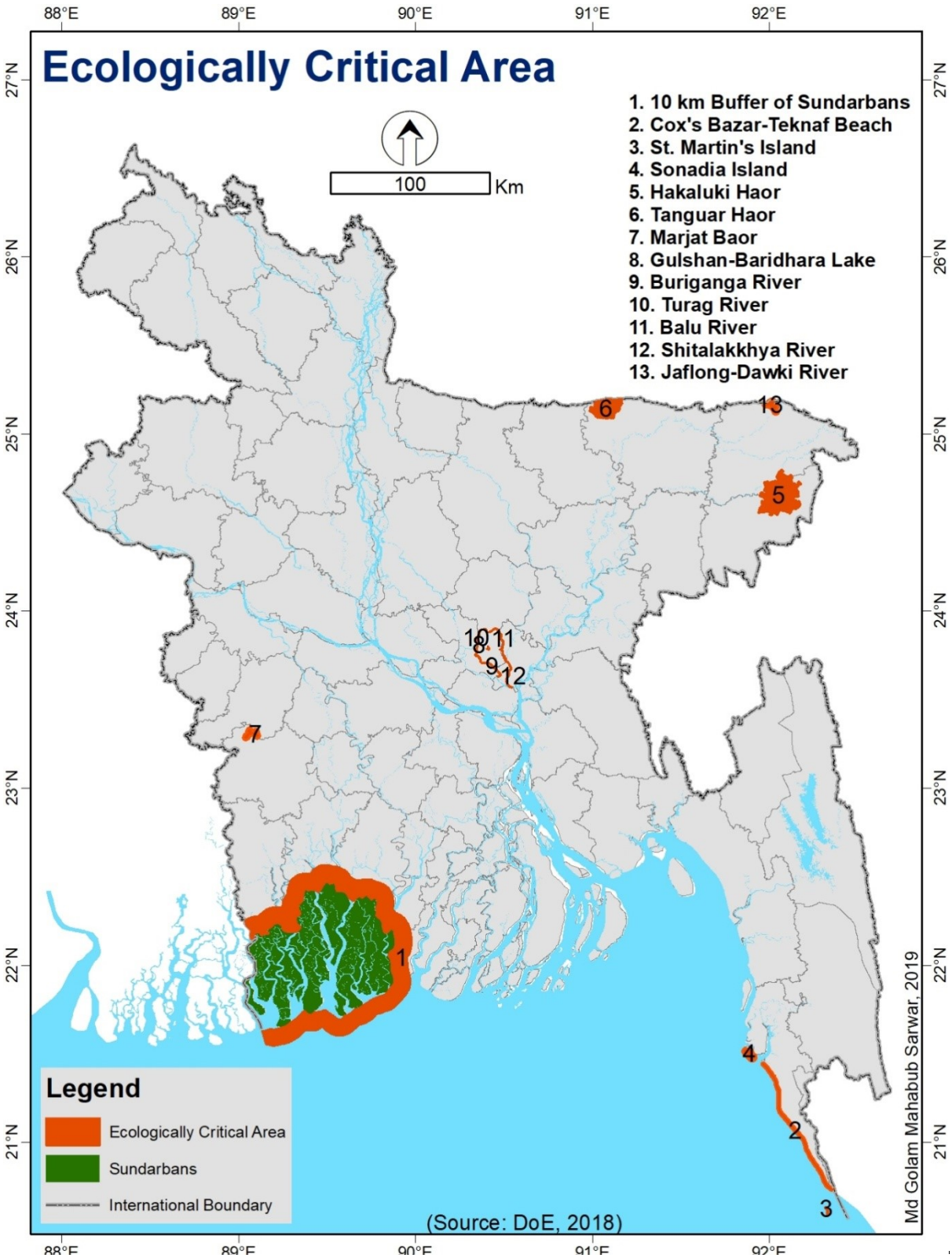


Figure 2: Ecologically Critical Areas (ECA) of Bangladesh

Actors involved in implementation: MoEFCC, DoE, FD and local communities.

Outcomes achieved: Management plans of 12 PAs and 11 ECAs have been developed. New conservation areas established and further expansion process is in progress. Quite a good number of VCG, CMC, FRPG, ECA Committees are currently operational.

National Target(s)

National Target 11: By 2021, Bangladesh's 3% area under terrestrial ecosystem (forests), 3% area under inland wetlands and coastal ecosystems and 5% of total marine area will come under PAs or ECAs with development and implementation of management plan for these areas.

National Target 14: By 2021, develop and implement restoration plan for degraded wetlands and rivers taking into account the needs of vulnerable people and local communities.

National Target 15: By 2021, initiate implementation of restoration plan for degraded ecosystems, especially, forestlands and wetlands for addressing climate change mitigation, adaptation and combating desertification.

National Target 5: By 2021, studies on the rate of habitat loss will be furnished towards promoting implementation of land use policy and enforcement of relevant legislation on conservation of natural habitats.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes
Measure taken has been partially effective

Tools or methodology used for the assessment of effectiveness above

- Annual reports
- Experts consultations
- ECA Management Plan

Relevant websites, links, and files

Ecosystem Based Sustainable Management of a Marine Protected Area in the NijhumDwip Seascape

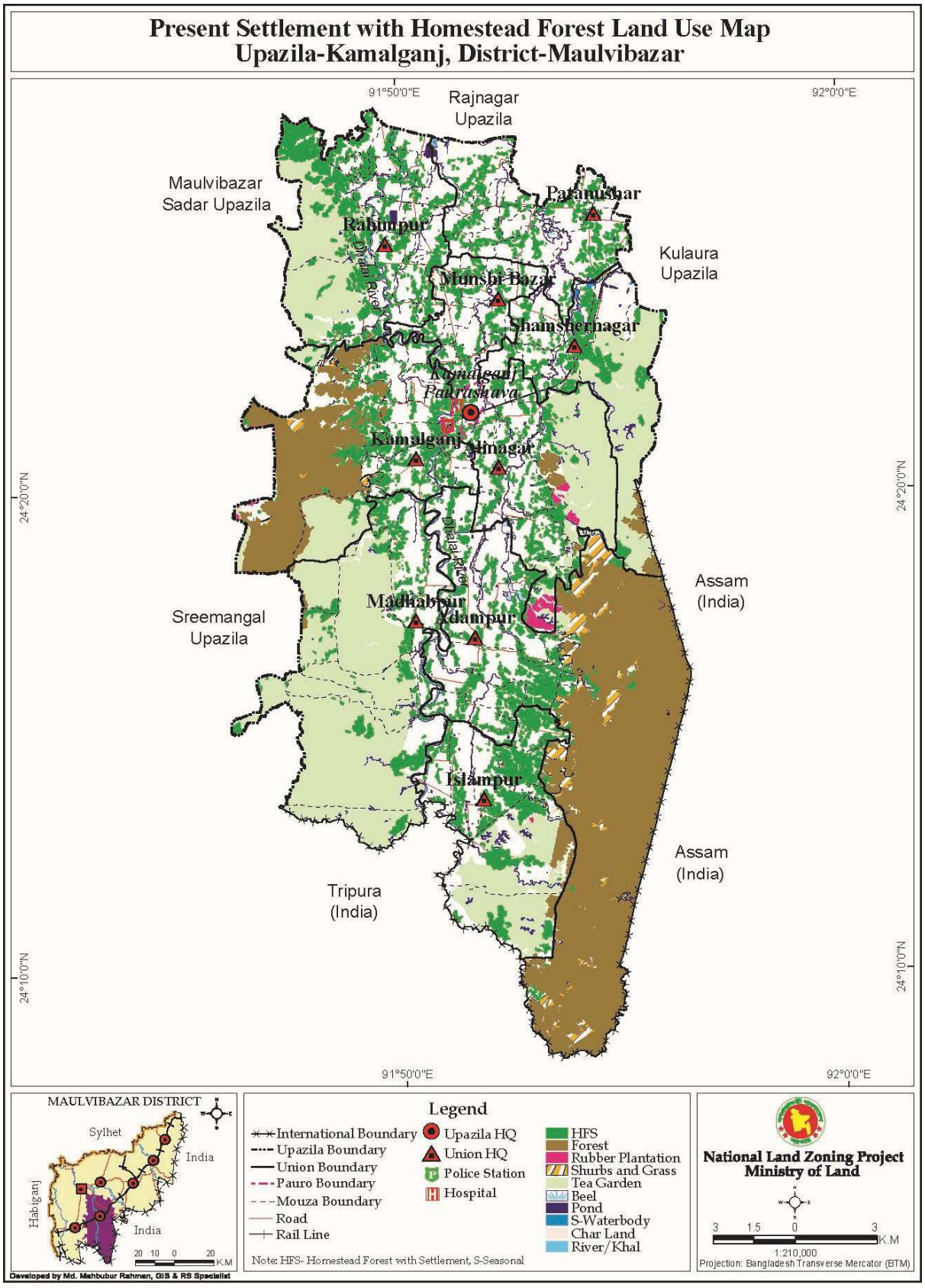
Wildlife Sanctuary (In Bengali)

Special Biodiversity Conservation Area (In Bengali)

DOE Annual report 2017-2018.pdf (Annual Report of DoE 2017-18 (on Halda ECA))

Other relevant information

Ministry of Land prepared upazila level (sub-district) land use maps all over the country. The land zoning report contain chapters on environment agriculture and forestry. The forest chapter has emphasized on the status of biodiversity of the upazila, its conservation prospects and potentials, along with spatial data and map. Kamalganj upazila under Moulavibazar district gives an example, as presented in Figure 3.



Present Forest Land Use Map of Kamalganj Upazila

Figure 3: Land Use Map of Kamalganj Upazila, Moulavibazar District

Other relevant website address or attached documents

Land zoning of Kamalganj Upazila, Moulvibazar district

National Land Zoning Project

Obstacles and scientific and technical needs related to the measure taken

- Inadequate knowledge on ecosystem goods and services and their economic values.
- Spatial information gap regarding biodiversity and ecosystems.
- Inadequate financial, technical, human resources and technological capacity of respective organizations for implementing the NBSAP.

Ecosystem Conservation and Sustainable Management

Measures taken to contribute to the implementation of your country's national biodiversity strategy and action plan

A total of 26 CMCsin PAs, 72 Village Conservation Groups (VCGs) in ECAs and 54 VCFs in Chittagong Hill Tracts are existent towards sustainable management of biodiversity. Six Hilsa Sanctuaries have been declared (Figure 4).

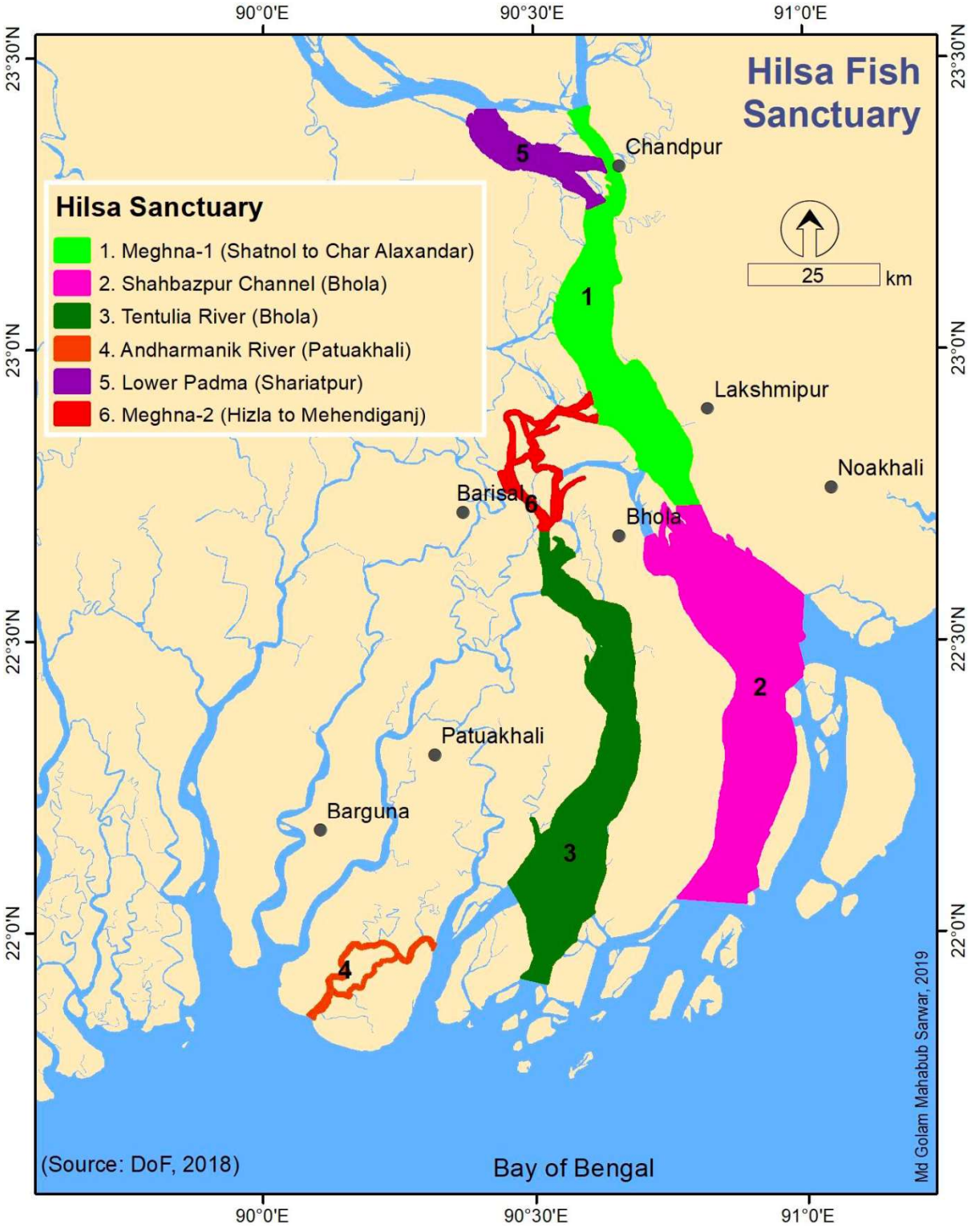


Figure 4: Hilsa Fish Sanctuaries in Bangladesh (DoF 2018)

Bangladesh Sustainable Coastal and Marine Fisheries Project (2019-24) has been initiated for stock assessment and to improve management of coastal and marine fisheries.

Actors involved in implementation: MoEFCC, MoFL, Ministry of Chittagong Hill Tracts Affairs, DoE, FD, DoF, Communities, NGOs, Civil societies, Development partners.

Outcomes achieved: CMCs are operating in 26 selected PAs. A total of 54 Village Common Forests in the Chittagong Hill Tracts have been brought under co-management. At present, there are 426 fish sanctuaries has been declared in different selective water bodies of the country.

National Target(s)

National Target 11: By 2021, Bangladesh's 3% area under terrestrial ecosystem (forests), 3% area under inland wetlands and coastal ecosystems and 5% of total marine area will come under PAs or ECAs with development and implementation of management plan for these areas.

National Target 14: By 2021, develop and implement restoration plan for degraded wetlands and rivers taking into account the needs of vulnerable people and local communities.

National Target 15: By 2021, initiate implementation of restoration plan for degraded ecosystems, especially, forestlands and wetlands for addressing climate change mitigation, adaptation and combating desertification.

National Target 17: By 2016, Bangladesh will develop, adopt and update NBSAP and commence implementation of the document in an effective and participatory manner.

National Target 18: By 2021, traditional knowledge, innovations and practices of local communities or ethnic groups will be recognized and documented.

National Target 1: By 2021, relevant stakeholders will be aware on the value of biodiversity and play an active role in ensuring sustainable use

National Target 2: By 2021, Assessment of valuation of goods and services of major ecosystems will be furnished towards integration into national accounting system

National Target 5: By 2021, studies on the rate of habitat loss will be furnished towards promoting implementation of land use policy and enforcement of relevant legislation on conservation of natural habitats

National Target 6: By 2021, stock assessment of fish, invertebrate stocks and aquatic plants will be undertaken keeping in mind the safe ecological limit and awareness raising of the stakeholders will been enhanced so that aquatic biodiversity will be managed and harvested sustainably, legally taking into account of ecosystem based approach towards avoidance of overfishing and conservation of threatened species and vulnerable ecosystems

National Target 7: By 2021, development of Integrated Management Plan will be completed for areas under agriculture, aquaculture and forestry towards ensuring conservation and sustainable use of biodiversity.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

Measure taken has been partially effective

Tools or methodology used for the assessment of effectiveness above

Annual reports, project implementation reports, evaluation reports, news in public media, news and comments in social media, physical verification of different signage posts and infrastructures, scanning of resource materials, video documentaries were used to assess the effectiveness of the implementation measures.

Relevant websites, links, and files

Fisheries Statistical Yearbook 2016-17.pdf (Fisheries Statistical Yearbook 2016-17 of Department of Fisheries)

Management of the Sundarban Mangrove Forests for Biodiversity Conservation and Increased Adaptation to Climate Change

Impact Assessment of Twenty-Two Days Fishing Ban in the Major Spawning Grounds of *Tenualosailisha*

Other relevant information

The SDG Action Plan of MoEFCC adopted in 2018 has identified targets related to SDG targets and indicators with action plans up to 2020, new programmes/projects needed in addition to those indicated in 7 FYP and new projects with action plans beyond 2020. It has also indicated the Policy/Strategy if needed for implementing action plans beyond 2020. This could be called a, 'living document'. An integrated approach of implementing SDG Action Plan of MoEFCC with NBSAP targets could be useful for achieving biodiversity related SDGs and Aichi biodiversity Targets. The integrated approach needs a Road Map to achieve Aichi Biodiversity Targets beyond 2020 and SDG targets by 2030.

Obstacles and scientific and technical needs related to the measure taken

- Inadequate study on ecosystem goods and services and their economic values.
- Inadequate resources for the implementation of existing legislative mechanism or framework.
- Climate change induced hazards are taking heavy tolls on conservation initiatives.
- Spatial information gap regarding biodiversity and ecosystems related issues.
- Mainstreaming biodiversity conservation in development programming and budgeting.

Species Conservation

Measures taken to contribute to the implementation of your country's national biodiversity strategy and action plan

- Plant Genetic Resources Centre (PGRC) of the Bangladesh Agricultural Research Institute currently maintains 11,012accessions of 138 different agri-horticultural crops in the gene bank.
- Bangladesh Agricultural University Germplasm Center (BAU- GPC) conserved about 11,528 germplasm of fruit plants (Figure 5) over about last three decades.
- Bangladesh Forest Research Institute (BFRI), Chittagong is conserving and maintaining medicinal germplasm. BFRI has centralized germplasm of 126 species ranging from herb to trees. The institute has established a Bamboo setum (1.5ha) at its campus and the arboretum contains 33 bamboo species, including 6 exotic one.

Studies on four species have been completed under 'Strengthening Regional Cooperation for Wildlife Protection (SRCWP) Project, implemented during 2011-2016:

i. Gharial (*Gavialis gangetica*) Conservation in Bangladesh;

ii. Globally Threatened Water bird Conservation in the Coastal Areas;

iii. Population Assessment, Protection and Conservation of Saltwater Crocodile (*Crocodylus porosus*) in the Sundarban Reserve Forest;

iv. White-rumped Vulture (*Gyps bengalensis*) conservation in Bangladesh: Establishment of toxic drug free Vulture Safe Zones and Monitoring of the Population trend

Figure 5: Germplasm Centre at Bangladesh Agricultural University

Actors involved in implementation:
FD, Academic institutions, IUCN, NGOs and local communities.

Outcomes achieved: Management plans on birds, herpetofauna and mammals prepared by FD in 2015 created the opportunity created a further development to conserve these species. Animal red list published in seven volumes gives the updated status of animals from Bangladesh. Government of Bangladesh has declared two Vulture Core Zones and Safe Zones as special landscape, i.e., (1) the areas of Sylhet, parts of Dhakaand Chattogram consisting of 19,633 km^2 (1,966,318 ha) as Vulture Safe Zone 1and (2) the areas of Khulna, Barishal and parts of Dhaka with an area of 27,717.26km^2(2,771,726 ha) as Vulture Safe Zone 2 (Figure 6) that will facilitate the conservation of these threatened species (Gazette Notification, January 28, 2015).

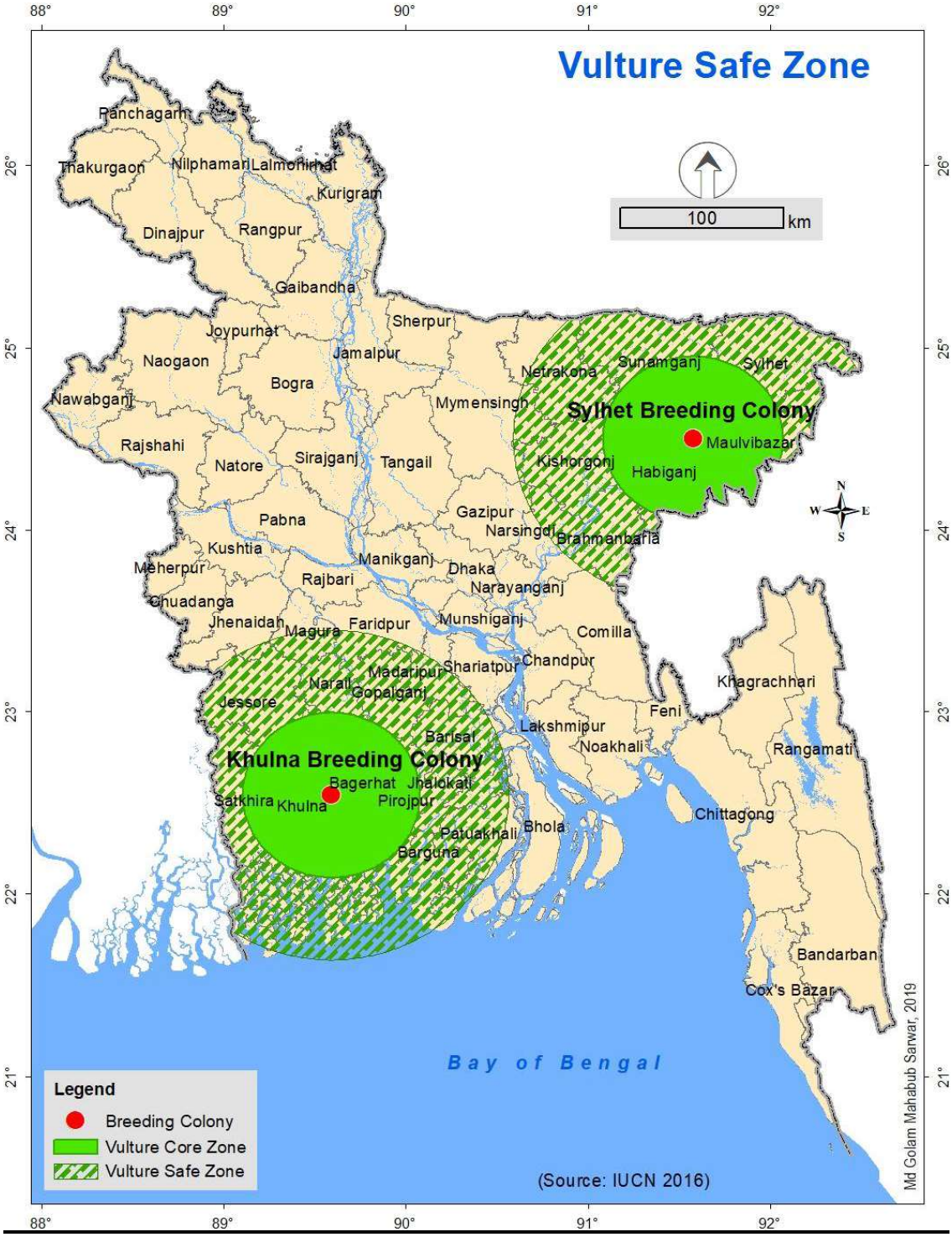


Figure 6: Vulture Safe Zone

National Target(s)

National Target 12: By 2021, the extinction of known threatened species will be prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

National Target 13: By 2021, capacity of in-situ and ex-situ conservation facilities will be strengthened to conserve the genetic diversity of cultivated plants, indigenous livestock and poultry resources.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

Measure taken has been partially effective

Tools or methodology used for the assessment of effectiveness above

Reviewing project outputs and analysis of outcomes

Relevant websites, links, and files

Action Plan for the Management of Birds of Bangladesh 2015.pdf (Action Plan for Bird Management)

Action Plan for the Management of Herpetofauna in Bangladesh 2015.pdf (Action Plan for the Management of Herpetofauna)

Mammal Management Strategy 2015-2025.pdf (Mammal Management Strategy)

Vulture Safe Zone (In Bengali)

Gharials of Bangladesh

Status of Asian Elephants in Bangladesh

Obstacles and scientific and technical needs related to the measure taken

- Inadequate study on species;
- Limited policy harmonization within sectoral policies, plans and strategies;
- Spatial information gap regarding species distribution;
- Mainstreaming biodiversity conservation in development programming and budgeting.

Mainstreaming Biodiversity Conservation and Governance

Measures taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Emphasising protection and improvement of biodiversity, Bangladesh Constitution has included the Article 18A that states,

> *"The state shall endeavor to protect and improve the environment and preserve and safeguard the natural resources, biodiversity, wetlands, forests and wildlife for the present and future citizens".*

Since the preparation of revised National Biodiversity Strategy and Action Plan (NBSAP) in 2016 following Acts, Rules/Regulations, Policies came up:

- The Ecologically Critical Areas Management Rules, 2016;
- The Bangladesh Biological Diversity Act, 2017;
- The Protected Area Management Rules, 2017;
- The National Environment Policy 2018;
- The National Agriculture Policy 2018;

Seventh Five Year Plan (2016-2021) of GoB recognized environment and climate change as a development sector of the country. Chapter 8 of the national planning document included mainstreaming of the NBSAP as a development (Issue 14, page 443) of the document. Furthermore, the planning document highlighted the issues like ECAs and wetland management, Protection of river and river bank, Coastal pollution and Marine resource management, Management of dryland ecosystem, Protection of the Sundarban and coastal afforestation, Protected area, Watershed management, Equitable sharing of benefits of biodiversity.
National Environment Policy 2018integrated biodiversity, ecosystem conservation and biosafety as a subsection of the document.

- The country developed and adopted National Biodiversity Strategy and Action Plan of Bangladesh (NBSAP) 2016-21.
- The National Environment Policy 2018 assures protection of environment for sustainable consumption and production of resources for future generations.
- The National Agriculture Policy 2018 has emphasized on sustainable natural resource management in enhancing agricultural productivity of the country.
- Biodiversity conservation and monitoring committees constituted from central to local government level under Biological Diversity Act 2017 will further enhance mainstreaming biodiversity in various tiers of government.

National Target(s)

National Target 16: By 2016, Bangladesh Biological Diversity Act addressing the issues of ABS will be finalized and the instrument of ratification for the Nagoya Protocol on ABS will be submitted to the secretariat of CBD.

National Target 17: By 2016, Bangladesh will develop, adopt and update NBSAP and commence implementation of the document in an effective and participatory manner.

National Target 19: By 2021, Agencies responsible for Biodiversity and Natural Resources Management will be adopting modern information technology like GIS and RS and information on biodiversity will be shared through Clearing House Mechanism (CHM).

National Target 20: By 2017, financial resources will be mobilized towards accelerated implementation of targets and activities of updated NBSAP.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes
Measure taken has been effective

Tools or methodology used for the assessment of effectiveness above
The Bangladesh constitution, biodiversity related polices, strategies and legal documents, national planning document and expert consultation.

Relevant websites, links, and files
The Constitution of the People's Republic of Bangladesh
The Seventh Five Year Plan of Bangladesh
Bangladesh Biodiversity Act, 2017 (Act No. II)

Obstacles and scientific and technical needs related to the measure taken

- Implementation of the NBSAP and biodiversity acts, rules/regulations need a concerted effort from respective development ministries, agencies and other relevant stakeholders.
- Adequate financial resources have to be mobilized to address the issues of conservation and sustainable use identified in various documents.

Enhancing Institutional and Stakeholders' Capacities

Measures taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Recent projects initiatives under MoEFCC have enabled the management capacities of personnel on biodiversity conservation.

- The SMART (Spatial Monitoring and Reporting Tool) has been developed to collect, store, communicate and analyse ranger-collected data on illegal activities, biodiversity, patrol routes, and management actions to understand necessary intervention.
- Capacities of VCF management committees in the CHT were enhanced in terms of local level planning development, mini watershed management, conflict resolution and alternative livelihood options.
- For enhancing training and research on wildlife conservation, an institution named as Sheikh Kamal Wildlife Center (WC) has been established.
- More than 200 government officials have been trained up on biodiversity conservation and CBD under a training of the trainers (ToT) programmes taken up by the Rio Project of the Department of Environment.
- Upazila wise land zoning has been completed by the ministry of land.
- Through CRPARP a total of 33,676 forest users were trained, out of which 13,710 were women and included 1,605 from ethnic minority groups. Technical training on homestead vegetable cultivation, poultry rearing, different AIGAs, leadership development, and financial management were provided to the communities.
- Co-management is functioning and moving to sustainability in 26 forest PA CMCs, 18 wetland CBOs, and 3 wetland/ECA committees. Many co-management bodies are developing annual and long-term plans, and successfully managing grants.
- At present more than 31,000 stakeholders are using climate-change information in decision-making.

Actors involved in implementation:

MoEFCC, MoCHTA, DoE, FD,the National training institutes for Government officials, Community members, NGOs, Development partners.

Outcomes achieved:

The capacity of the community, officials/staffs have been enhanced through the hands on training on various biodiversity conservation and management training.

National Target(s)

National Target 14: By 2021, develop and implement restoration plan for degraded wetlands and rivers taking into account the needs of vulnerable people and local communities.

National Target 15: By 2021, initiate implementation of restoration plan for degraded ecosystems, especially, forestlands and wetlands for addressing climate change mitigation, adaptation and combating desertification.

National Target 1: By 2021, relevant stakeholders will be aware on the value of biodiversity and play an active role in ensuring sustainable use

National Target 7: By 2021, development of Integrated Management Plan will be completed for areas under agriculture, aquaculture and forestry towards ensuring conservation and sustainable use of biodiversity.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

Measure taken has been partially effective

Tools or methodology used for the assessment of effectiveness above

- Stakeholders' consultation,
- Review of project consultation reports,

The Bangladesh constitution, biodiversity related polices, strategies and legal documents, national planning document and expert consultation.

Relevant websites, links, and files

Strengthening Regional Cooperation for Wildlife Protection Project

Management of the Sundarban Mangrove Forests for Biodiversity Conservation and Increased Adaptation to Climate Change

World Bank supported Afforestation/ Reforestation Project of Bangladesh (Project ID: P127015)

Project Appraisal Document on a Proposed Credit for a Sustainable Forests and Livelihoods (SUFAL) Project.pdf (Appraisal Document of (SUFAL) Project)

Obstacles and scientific and technical needs related to the measure taken

- Inter-sectoral communication and coordination.
- Inadequate knowledge on ecosystem goods and services and their economic values
- Implementation of existing legislative mechanism or framework to halt the conversion of biodiversity rich ecosystems into commercial, industrial and settlement purposes.
- Climate change induced hazards are taking heavy tolls on conservation initiatives.
- Inadequate awareness about values of biodiversity
- Inadequate financial, technical, human resources and technological capacity of respective organisations.

Lack of capacities or inadequate capacities of the biodiversity management professionals and institutions have been identified as an obstacle towards biodiversity conservation and management.

Alternative Livelihoods for Forest and Aquatic Ecosystem Dependent People and Gender Issues

Measures taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Alternative livelihoods have been implemented by various development projects of DOE, FD and DOF. Various projects (CREL, CRPARP, ECOFISH) intervention enhanced environmentally sustainable and resilient to climate change livelihood of forest and aquatic ecosystem dependent people, and that prevented them from indiscriminate harvesting of natural resources.

CREL supported livelihood activities increased incomes of resource-dependent households living in or near forest and wetland protected areas (PAs) by identifying alternative income-generating opportunities that are climate resilient as well as environmentally sustainable.

The CRPARP supported targeted 6,000 households selected from the poor forest dependent communities in 200 targeted villages for alternative income generating activities in the hills and wetlands. Women are now more empowered indecision making and biodiversity management process. Unlike the male members of the households who often work outside the village, the female beneficiaries were readily available to take up household-based AIGA allowing them to continue their traditional household responsibilities, while generating income.

Department of Fisheries (DoF) has undertaken Enhanced Coastal Fisheries (ECOFISH) Project in Bangladesh to enhance the resilience of hilsa populations through improved co-management of the fishery and build the capacity of partners and fishing communities to improve enforcement in fish sanctuaries. In addition, the project aims to support the improved livelihoods of fishers, especially women.

Actors involved in implementation: FD, DoE, DoF, local communities, NGOs, development partners.

Outcomes achieved:

- More than 50,000 farms are using improved climate-resilient technologies and 353,000 people (including 7,300 women) have received training on new financial/entrepreneurial skills, resulting in an increased economic benefits.
- About 300 local service providers were supported who served 50,000 households.
- Through CRPARP a total of 33,676 forest users, including 13,710 were women were trained. A total of 5,160 women benefited from AIGAs, which accounted for 86 percent of the beneficiaries.

- Supporting local communities with training and AIGs has resulted in the reduction of cases of non-sustainable and illegal use of forest resources. Awareness building has resulted to reduce harvesting of forest resources.
- Co-management through CREL support has enabled over 50% women membership in Village Conservation that played a strong role in women empowerment. More than 7,300 women developed with financial & entrepreneurial skills.
- Use of Clean Cooking Stoves as an alternative energy has improved health status of >4,600 women.
- Co management SMP has ensured equal participation of women in project activities and their access to benefits derived from the Sundarban.

National Target(s)

National Target 14: By 2021, develop and implement restoration plan for degraded wetlands and rivers taking into account the needs of vulnerable people and local communities.

National Target 15: By 2021, initiate implementation of restoration plan for degraded ecosystems, especially, forestlands and wetlands for addressing climate change mitigation, adaptation and combating desertification.

National Target 1: By 2021, relevant stakeholders will be aware on the value of biodiversity and play an active role in ensuring sustainable use

National Target 5: By 2021, studies on the rate of habitat loss will be furnished towards promoting implementation of land use policy and enforcement of relevant legislation on conservation of natural habitats.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

Measure taken has been partially effective

Tools or methodology used for the assessment of effectiveness above

- Stakeholders' consultation,
- Review of project reports,

Relevant websites, links, and files

Support to Co-Management in the Sundarban.pdf (Support to Co-Management in the Sundarban Mangrove Forest)

Resources Produced by the CREL Project

Spatial Monitoring and Reporting Tool.pdf (SMART Tool)

Management of the Sundarban Mangrove Forests.pdf (Management of the Sundarban Mangrove Forests for Biodiversity Conservation and Increased

Adaptation to Climate Change Project (SMP))

Project Appraisal Document on a Proposed Credit for a Sustainable Forests and Livelihoods (SUFAL) Project.pdf

ECOFISH BD.pdf (ECOFISH Project)

Enhanced Coastal Fisheries in Bangladesh

Obstacles and scientific and technical needs related to the measure taken

- Inter-sectoral communication and coordination;
- Inadequate knowledge on ecosystem goods and services and their economic values;
- Inadequate awareness about biodiversity;
- Limited policy harmonization within sectoral policies, plans and strategies;
- Mainstreaming biodiversity conservation in development programming and budgeting.

Section III. Assessment of progress towards each national target

National Target 1: By 2021, relevant stakeholders will be aware on the value of biodiversity and play an active role in ensuring sustainable use

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
02 Dec 2018

Summary of the assessment of progresses toward the implementation of the selected target

Awareness raising programmes are going on and measures taken has become effective. Now more people are getting information on the importance of biodiversity and ecosystems services. Relevant agencies of the government in collaboration with various NGOs and CBOs are celebrating International Day for Biological Diversity, International Coastal Cleanup Day, International Day of Forest, World Environment Day, World Water Day, World Day to Combat Desertification and Drought, World Ozone Day, Global Tiger Day, International Freshwater Dolphin Day, International Vulture Awareness Day, World Elephant Day, World Migratory Bird Day, World Wildlife Day, World Wetlands Day and other related events at national and regional level and ensuring media outreach. These fair/day observance are creating mass awareness on conservation of biodiversity and sustainable use.

Similarly,National Environment Fair (Figure 7), National Tree Fair and National Fisheries Weekare organized every year that enhance awareness on biodiversity. Butterfly Fair and Bird Fair are observed annually.

Figure 7: Prime Minister HE Sheikh Hasina is inaugurating Environment Fair-2019 of Bangladesh

The text books in primary, secondary and higher secondary educational level included the issues of biodiversity and the importance of conservation in respective text books.

Community people became aware of the importance of biodiversity through outreach materials, training programs and awareness raising events.

About 36% of women VCG members in Hakaluki Haor ECA and 29% in Cox's Bazar-Teknaf Peninsula and Sonadia Island ECAs have become empowered through training, AIG activities under development project, leading to reduce dependency on natural resources.

Electronic and print media publish articles on biodiversity conservation on the occasion of different international days. Many television channels telecast programmes on biodiversity conservation. The Channel-episodes Banglar Bon Banglar Prani (Forests of Bangladesh and Animals of Bangladesh) telecast important programs on forest and animals. Social media and many blogs disseminate news, facts, figures and knowledge products on the awareness of biodiversity conservation.

People have become more aware of biodiversity conservation. People tend to conserve biodiversity, particularly through tree plantation, protecting bird colonies, and preventing capturing fish fries.

Indicators and Activities

Indicator(s)used in this assessment

1. Number of events;
2. Number of trainee;
3. Number of women participation;
4. Number outreach materials;

Relevant websites, links, and files

SRCWPP Reports
Shushuk Mela to raise mass awareness on dolphin conservation
National Capacity Development for Implementing Rio Conventions through Environmental Governance
IUCN Reports
Resources Produced by the Climate Resilient Ecosystems and Livelihoods (CREL) Project
National Tree Fair 2018

Level of confidence

Level of confidence of the above assessment

Based on partial indicator information and expert opinion

Level of confidence of the above assessment
People are becoming aware through different project activities, but there had been no systematic assessment of level of awareness. The indicators are very limited. So, assessment drawn are heavily on stakeholders' consultation, expert opinion and news from different public and social media.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target

- Level of perception among the stakeholders;
- Number of events, outreach materials and participants;
- Values of biodiversity included in text books;
- Number of training, motivation program and participants;
- Biodiversity included in the training modules;
- Number of documentaries aired and air time;
- Number of news/ articles in print media.

Other relevant website address or attached documents
National Tree Fair 2019
National Tree Fair 2018
Bangladesh's month-long national tree fair held in capital Dhaka

National Target 2: By 2021, Assessment of valuation of goods and services of major ecosystems will be furnished towards integration into national accounting system

2018 - Progress towards target but at an insufficient rate

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
Progress towards target but at an insufficient rate

Date the assessment was done
14 Oct 2018

Summary of the assessment of progresses toward the implementation of the selected target

Bangladesh has accomplished a few studies under various projects for valuation of ecosystem services. However, the country has yet to accomplish comprehensive studies on economic value of ecosystem.

According to the Haor Master Plan, the contribution of haor region is 6% of total GDP.A recent study shows that total economic value of a 71 km segment of the Meghna River (Bhairab Bridge toMeghna Bridge) is USD 182.94 million.

Project based valuation have been completed for some ecosystems with inherent limitation of the studies in terms of comprehensiveness. Limited level valuation studies were undertaken in case of wetlands like Hakaluki Haor and Tanguar Haor; the Sundarban Mangroves; the Meghna and the Halda River. It has been assessed that the Sundarban contribution to the economy is about US$ 646.5 million per year (Figure 8). A study by Food and Agriculture Organization (FAO) suggests that 3.5 million people depend onSundarban for timber and non-timber resources covering 22 services from the forest resources.

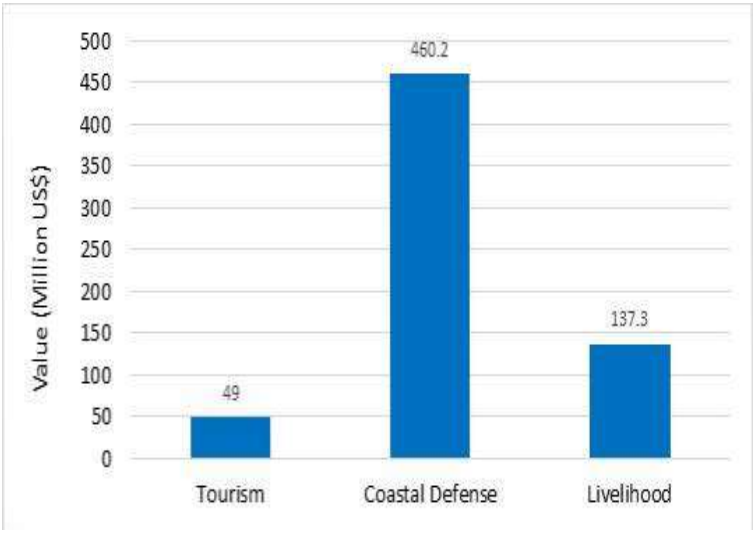


Figure 8: Economic valuation of annual services provided by the Sundarban.

Hilsa fish contributes about 11 percent of the total fish production of the country. Around half a million fishermen are directly dependent on Hilsa production for their livelihood, and another two million indirectly depend on Hilsa.

Indicators and Activities
Indicator(s)used in this assessment
• Project document
• Valuation study reports;

Relevant websites, links, and files

SRCWPP Reports

Sundarban' economic contribution to Bangladesh exceeds Tk5,450cr

Haor Master Plan Volume 1.pdf

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Explanation on the Level of confidence of the above assessment
Assessment furnished are based on limited scale studies.

Adequacy of monitoring information to support assessment

Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of valuation will be assessed by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 3: By 2021, Studies on the impacts of incentives or subsidies on biodiversity, as well as development of policy roadmaps for phasing out of incentivesor subsidies harmful to biodiversity will be completed towards mainstreaming the relevant ministry for implementation of the policy road map

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target

Progress towards target but at an insufficient rate

Date the assessment was done
14 Oct 2018

Summary of the assessment of progresses toward the implementation of the selected target

The National Agriculture Policy 2018 has emphasized on sustainable natural resource management to enhance agricultural productivity of the country. To reduce the negative

impacts of the useof chemical fertilizers and insecticides, it has given due focus towards integrated and organic pest management, and use of organic fertilizers.

National Integrated Pest Management Policy 2002 states IPM as the major focus of pest management in the country. Its objective is to enable farmers to grow healthy crops in an increased manner and thereby increase their income on a sustainable basis while improving the environment and community health.

Yearbook of Agricultural Statistics-2016 (28th Series) shows a trend of annual decrease of pesticide use (44,357.33 metric tons in 2011 to 33,371.60metrictons in 2016). This indicates a good initiative of Bangladesh government to reduce incentives or subsidies on substances harmful to biodiversity.

Use of w organic fertilizers, especially the vermi-compost is increasing and being extended by different non-government organizations. Use of pheromone traps are also increasing. For example, the number of pheromone traps used in 2015-2016 by the farmers of Chattogram was 32,000 metric tons that was almost double (62,000 metric ton) in 2016-17. Draft National Forest Policy emphasized control and management of exotic and invasive species.

Distribution of Hilsa that came down to 91riverine upazilas in 2007 is now available in 160 upazilas of the country as a result of various efforts on conservation ofHilsa. Fishermen of 147 upazilas received livelihood supports for stopping Hilsa fishing in the spawning period of the fish. About 1,000 fishermen in the Sundarban have been provided livelihood support that helped positively in saving dolphin of the rivers of the Sundarban.

Indicators and Activities

Indicator(s)used in this assessment

- Project document
- Valuation study reports;
- Trends in decrease of pesticide use;
- Implementation of integrated pest management by Department of Agriculture Extension;
- National Environment Policy 2018
- National Agriculture Policy 2018;
-

Any other tools or means used for assessing progress

Please describe any other tools or means used for assessing progress
Documents on project appraisals,

Expert opinion

Relevant websites, links, and files

National Environment Policy 2018

National Agriculture Policy 2018;

Yearbook of Agricultural Statistics, 2016

Report on National Agriculture Policy

Pheromone trap method for pest control gaining popularity in Chattogram

Vermi compost

Hidden Treasure- Worms.pdf

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
Assessment furnished is based on limited scale studies.
Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 4: By 2021, Policy on Sustainable and Consumption Production (SCP) to maintain safe ecological limit of natural resources of major ecosystems will be furnished and disseminate the policy to all the stakeholders will be done towards implementation.

2018 - Progress towards target but at an insufficient rate

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
Progress towards target but at an insufficient rate

Date the assessment was done
18 Oct 2018

Summary of the assessment of progresses toward the implementation of the selected target

The National Environment Policy 2018 emphasized sustainable consumption and production of resources for future generations. SCP practices have already taken the ground in energy sector with installation of about 3.5 million improved cookstoves. In average, a stove saves around 500 kg of wood per year. About 95% of the users of improved cook stoveswith chimneys reported a significant reduction of smoke in their kitchens and reduction in eye infections and respiratory diseases compared to when they were using traditional stoves.

The market of liquefied petroleum gas (LPG) has been experiencing a 45% annual growth for last couple of years. Solar Home System (SHS) is asustainable consumption initiative adopted to protect environment from pollution.

For sustainable consumption of resources, liquid waste producing industries are obligated by the Department of Environment to provide zero discharge plan. Extension of energy efficient brick manufacturing programmes is being implemented by DoE. The energy efficient improved brick manufacturing technologies are promoted by the government to replace the traditional brick kilns.

The private sector has initiated recycling of plastic wastes following the 3R(reduce, reuse and recycle) strategy.

General Economics Division, Government of the People's Republic of Bangladesh with technical support from UNDP has prepared a 'Roadmap for Developing Bangladesh Framework of Sustainable Consumption and Production Aligned to SDG-12 Implementation' (GED, 2018)in 2018.

Government of Bangladesh (GoB) has taken Zero Discharge Policy for industrial effluent.

Indicator(s) used in this assessment

- Project document
- Policy documents;
- National Environment Policy 2018
- National Agriculture Policy 2018;
- IPM

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
Activities identified in the NBSAP are in the process of implementation.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target

Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 5: By 2021, studies on the rate of habitat loss will be furnished towards promoting implementation of land use policy and enforcement of relevant legislation on conservation of natural habitats

2018 - Progress towards target but at an insufficient rate

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
Progress towards target but at an insufficient rate

Date the assessment was done
10 Dec 2018

Summary of the assessment of progresses toward the implementation of the selected target

Potapov et al. (2017) estimated the total national tree canopy cover area as 3,165,500 ± 186,600 ha in the year 2000, with trees outside forests making up 54% of total canopy cover during 2000–2014 (Figure 9). Bangladesh exhibits a national tree cover dynamic, where net change is rather small, but gross dynamics is significant and variable by forest type.

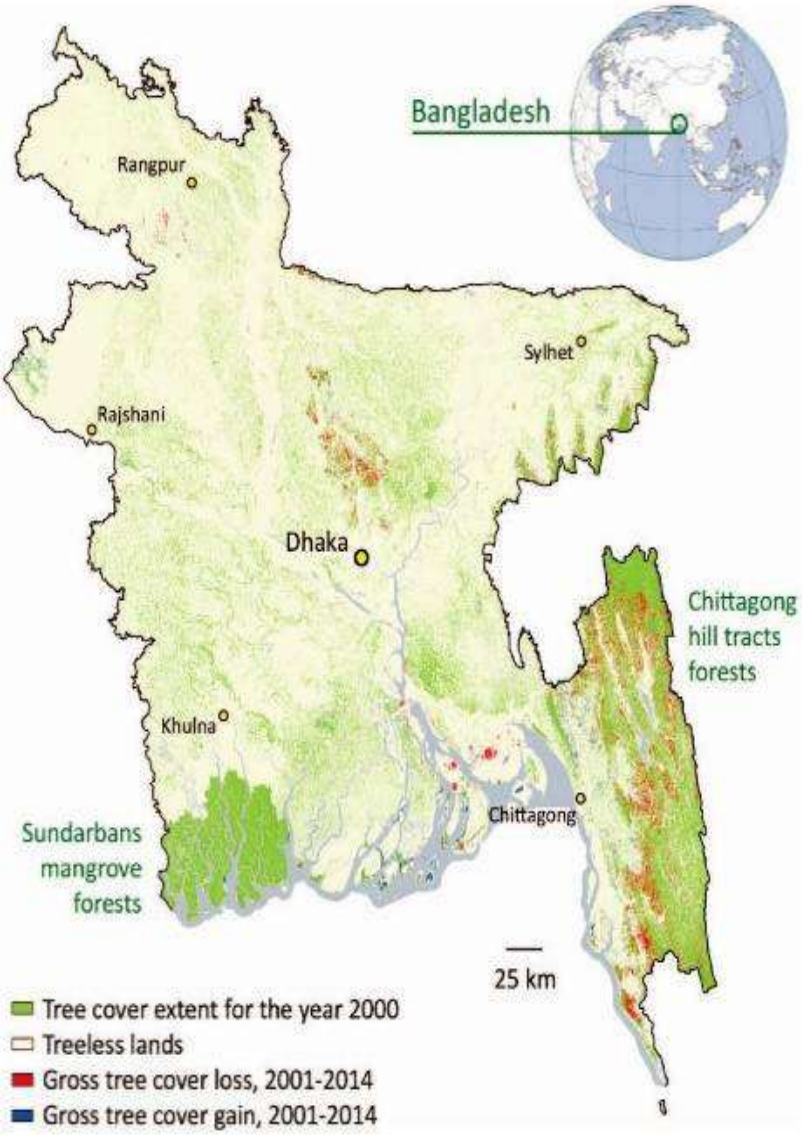


Figure 9: Tree Cover Changes in Bangladesh in 2000-2014 (Potapov et al. 2017)

The vegetation map of 2016 (Figure 11) shows tree coverage, apart from conventional forested areas (central Sal forests, the Sundarban, Hill forests of Sylhet, Chittagong and Chittagong Hill Tracts), mostly homesteads forest coverage.

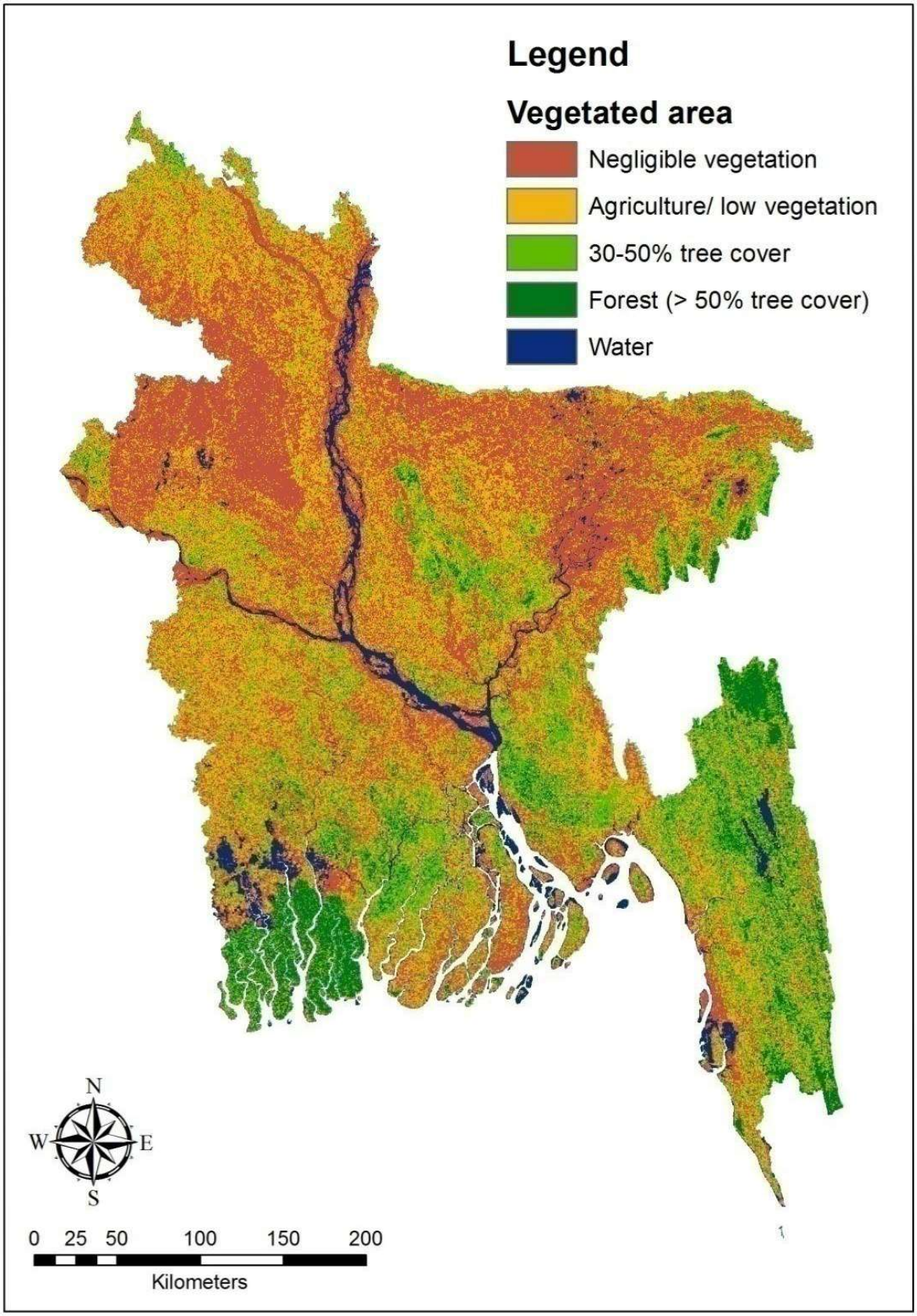


Figure 11: Map of vegetated area of Bangladesh (2016) derived from MODIS satellite data. The value depicts percent tree cover (Source: FD, 2017)

At the national level, the key direct drivers of forest degradation are fuelwood and illegal and excessive harvesting (FD, 2017).Increasing population with different sector development is creating competitive demands for various land uses and thus making land use conflicts. In Bangladesh major pressure is being continuously depleting in terms of both area and quality because of human and social factors. Between 1990 and 2015, Bangladesh annually lost 2,600 hectares of primary forest Land Zoning of Anowara and Mirasarai Upazilas of Chittagong districts and Moheshkhali Upazila of Cox's Bazar district were prepared based on data collected during 2009 - 2010 under "Land Project" and published the Reports in January 2011. During this project "National Land Zoning Project (2 Phase)" these upazilas were revisited in October 2016 to document the changes that in Anowara, Mirasarai and Moheshkhali hill plantations, there is tree cover reduction by 49.20%, 43.19% and 80% respectively over 2010 to 2016.

Rohinga refugees from Myanmar living in Bangladesh is a serious cause to the degradation of forest land in cox's Bazar and a threat to forest biodiversity. As of December 2017, to Bangladesh since 25 August 2017, to avoid ethnic and religious persecution by Myanmar's security forces. Most of the refugees are located along the Teknaf-Cox's Bazar highway, major Nations Development Programme (UNDP) assessment, the Rohingya influx has "influenced" some 26,600 hectares of the total 60,000 hectares of the forest land in Cox's Bazar. Establishment areas has made a "substantial direct impact" on the available forest resources in Ukhia range, which is the worst affected area.

Kutupalong of Ukhia, Cox's Bazar, where the largest refugee camp is now established, is well known for the important habitat corridor of Asian Elephants and is an important forest area frequently elephants from Myanmar to Bangladesh and vice versa to cover food and shelter. Behaviorally, elephants always follow their traditional routes and corridors for regular movement. If they that, human-elephant conflicts have already happened on the edge of the refugee camp in Ukhia, causing several human deaths since September 2017.

A recent study indicates rapid deforestation in Rohingya refugee camps. Comparative study of satellite images indicates the area of Kutupalong Refugee camp was 146 ha in 2016 that jumped kilometer buffer of the camp indicates that forest cover reduced to 9,740 hectares in 2017 from an area of 11,800 hectares in 2016. Analysis of NDVI in the buffer area also indicates quality Rohingya Camp (1-13) indicates a rapid destruction of forest in settlement location and surrounding area during the period of January 17 and December 2018 (Figure 12, 13).

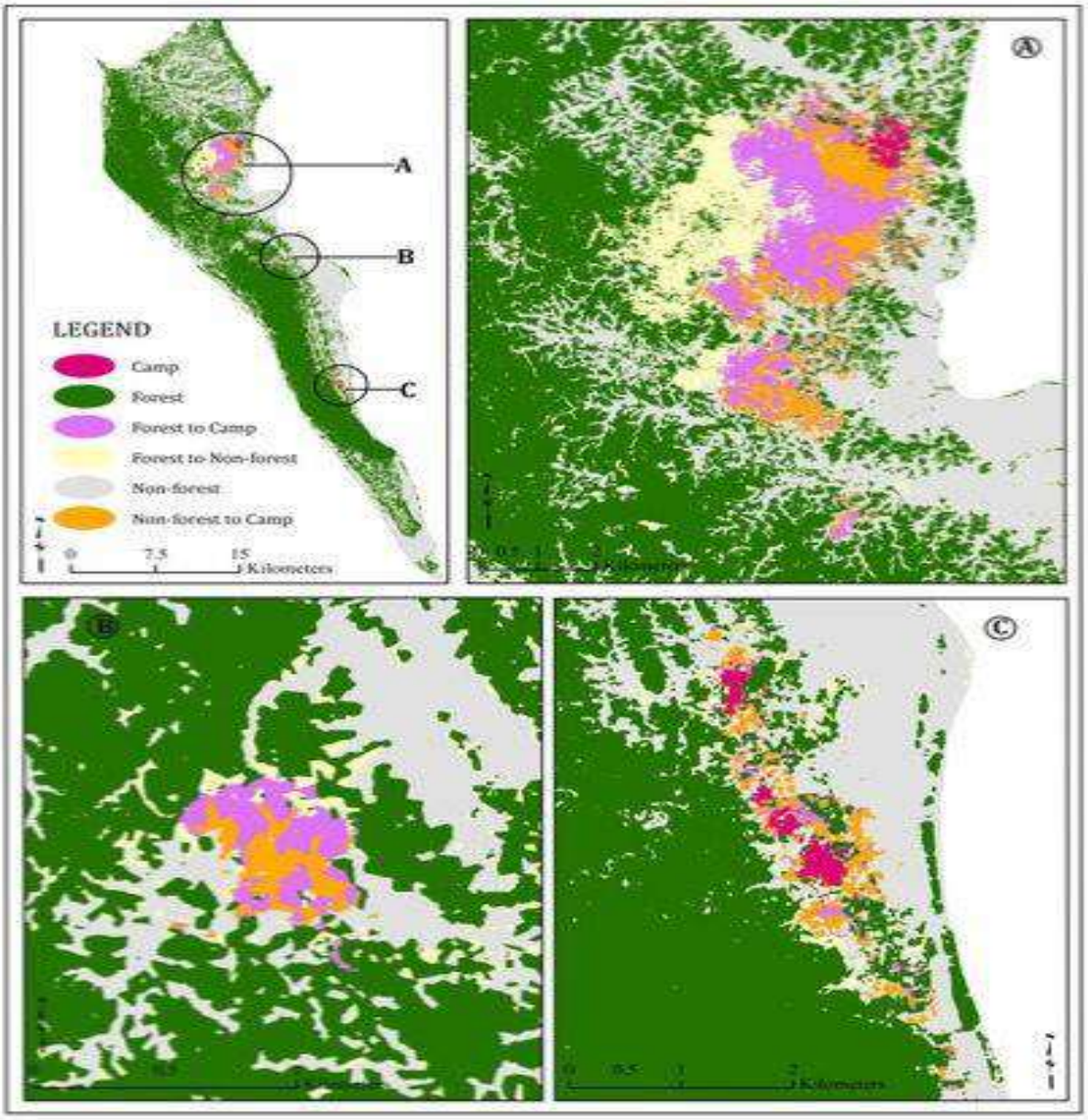


Figure 12: Environmental Impacts of Rohingya Influx (Hasan et al. 2018)

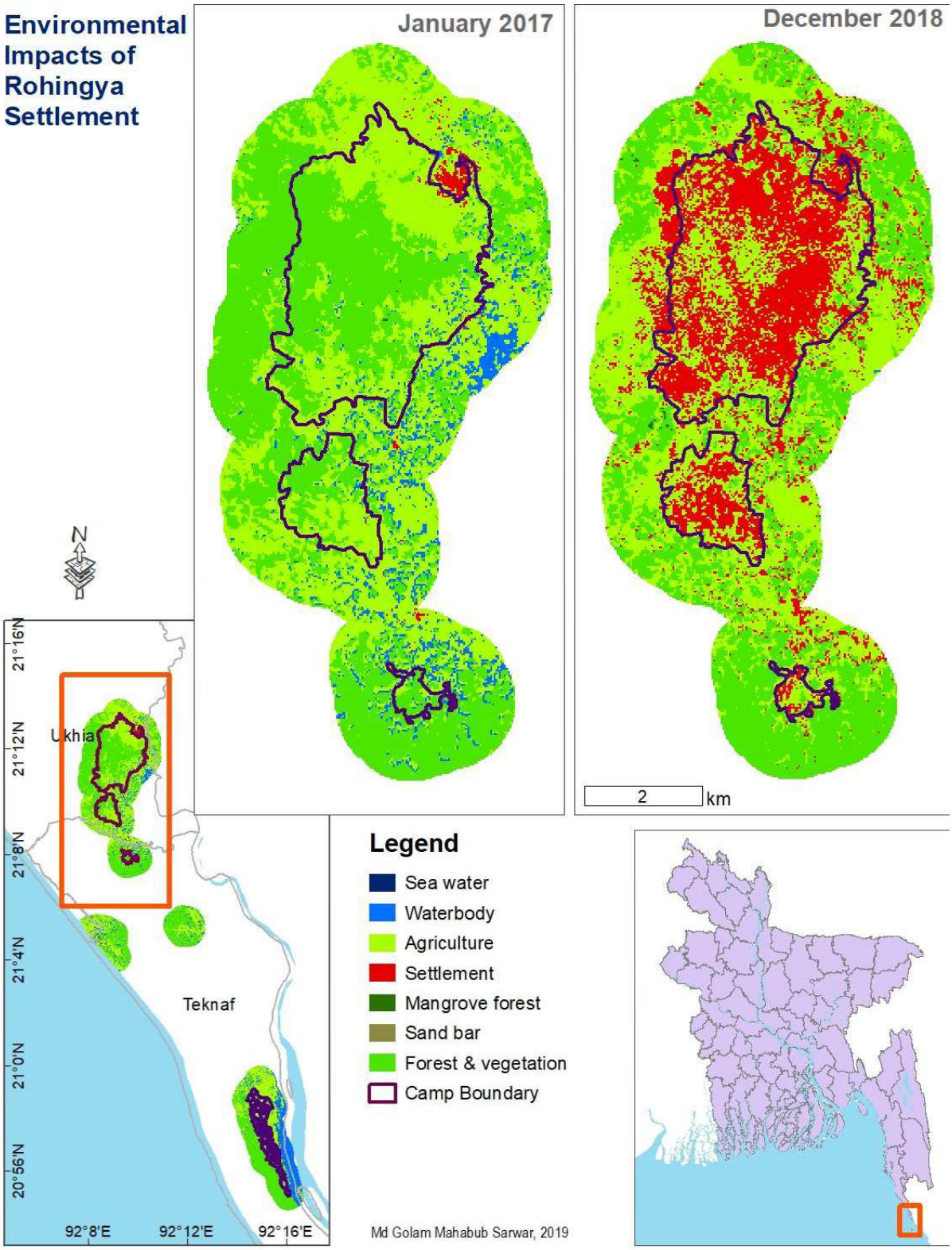


Figure 13: Forest destruction in Rohingya Camp and surrounding areas

Biodiversity Intactness Index (BII) has been developed by Newbold et al. (2016), which is expressed as 'the modeled average abundance of originally-present species, relative to their abundance archived by UN Biodiversity Lab (2018), the Sundarban and the CHT region represent the most intactness of biodiversity compare to other parts of the country.

Generally, southern parts (Sylhet division) indicate better intactness than northern and central parts of the country (Figure 14).

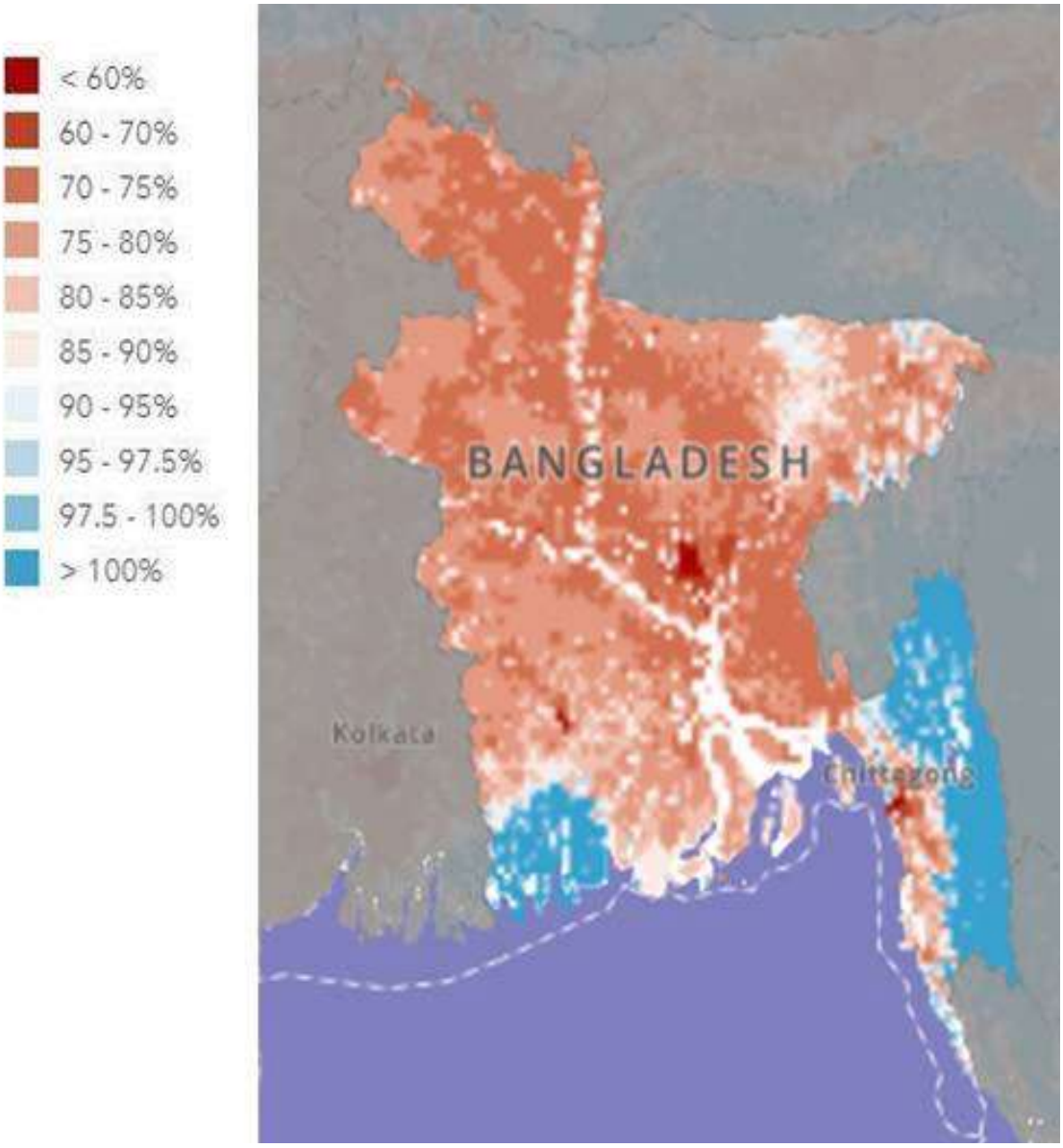


Figure 14: Biodiversity Intactness (Source: UN Biodiversity Lab, 2018)

A recent study by Haque and Basak (2017) calculated land cover change in the Tanguar Haor indicating about 14% of vegetation and 8% of deep-water area converting to Shallow water (were 7% and 4%, respectively. About 2% of Shallow water area converted to Deep water too (Figure 15).

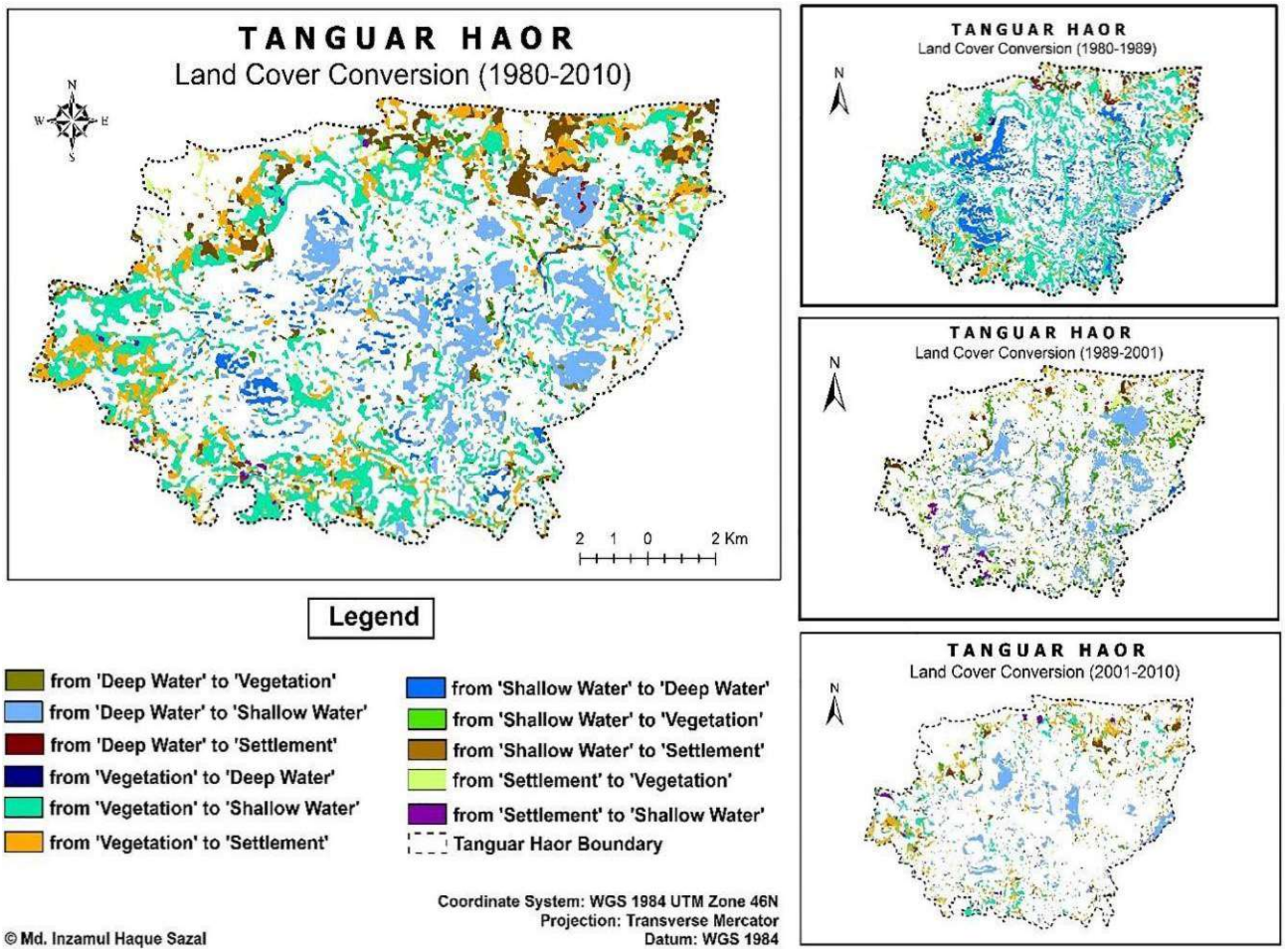


Figure 15: Land use change and habitat degradation in Tanguar Haor from 1980 – 2010 (Haque and Basak 2017)

Sundarban South PA

A little change in dense vegetation has been observed in Sundarban South PA (Figure 16, Table 3). It has been increased by 0.65%. However, Low Vegetation area decreased by 36%. Vegetation in the bank area was eroded that changed to water body.

Table 3: Forest change in the Sundarban South Protected Area

	Area in 2015 (ha)	Area in 2018 (ha)	Change(2015-2018) in area(ha)	Change (2015-2018) in (%)
Dense Vegetation	18,122.00	18,240.00	118.00	0.65
Low vegetation	3,873.00	2,470.00	-1,403.00	-36.23
Water	23,424.00	24,709.00	1,285.00	5.49
Total	45,419.00	45,419.00		

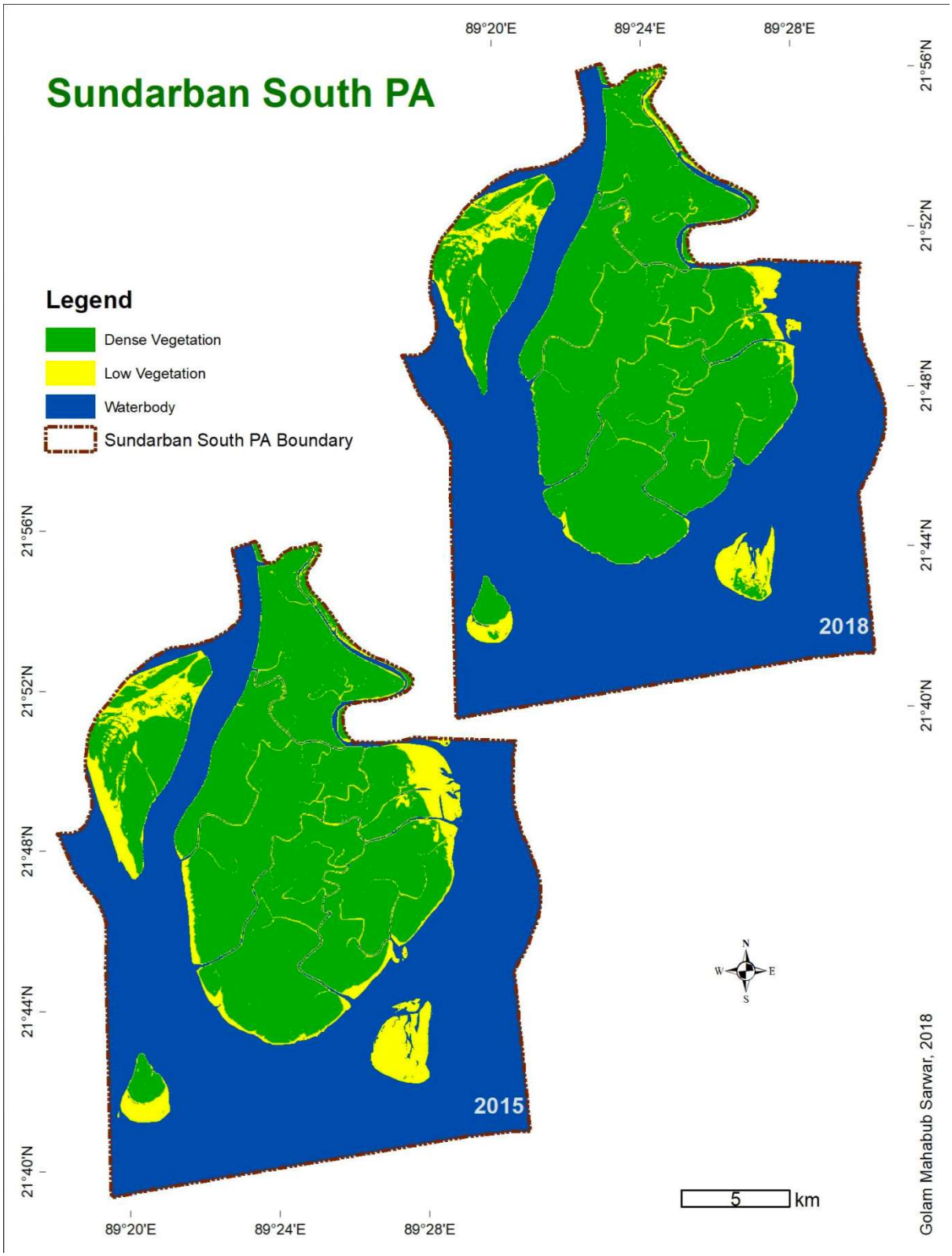


Figure 16: Forest Change in the Sundarban South Protected Area

About 17,519 ha forest land had been re/afforested through implementation of CRPAR project, what has helped in restoring habitat. Employment as labor was generated for 72,803 male workers of man-days of work generated for poor vulnerable people as daily labor in

re/afforestation program that had driven them from indiscriminate resource harvesting. It ultimately reduced habitat.

The Small-Scale Water Resources Development Projects by LGED include re-excavation of small water bodies, maintenance of irrigation canals, and management of fish pass, development and freshwater swamp species (hijol-koroch) plantations in haor areas, thus improving the wetland habitats.

It reveals from above that habitats have been degraded, but the rate of degradation had decreased during the recent years. Land zoning have been completed but land use act has yet been source points, habitat degrading sites like hill cutting, filling of water bodies and illegal soil cutting for brick fields. During 2015-16, 2016-17 and 2017-18 enforcement drives

Indicators and Activities

Indicator(s)used in this assessment

- Project document
- Study report on rate of loss of natural habitats
- Overlay of spatial data on forest degradation, biodiversity intactness, population distribution, distance of biodiversity rich areas from human habitats.
- Spatial data on land use change
- Spatial data on tree cover change
- Management plans on Protected Areas
- Comparative study reports on land zoning of selected areas over time

Any other tools or means used for assessing progress
Different documents on project appraisals

Relevant websites, links, and files
Development Projects of Forest Department (FD)
Haor Master Plan (Volume 1-3)
Forestry Sector Master Plan
Bangladesh Country Environment Analysis 2018.pdf
Comprehensive monitoring of Bangladesh tree cover.pdf
Five Development Projects of Haor Development Board (In Bengali)

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
The indicators are mostly study reports, project completion reports and limited ongoing activities. So, assessment drawn are heavily on stakeholders' consultation, expert opinion and news from different public and social media.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target

Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 6: By 2021, stock assessment of fish, invertebrate stocks and aquatic plants will be undertaken keeping in mind the safe ecological limit and awareness raising of the stakeholders will been enhanced so that aquatic biodiversity will be managed and harvested sustainably, legally taking into account of ecosystem based approach towards avoidance of overfishing and conservation of threatened species and vulnerable ecosystems

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
20 Dec 2018

Summary of the assessment of progresses toward the implementation of the the target

Bangladesh is one of the world's leading fish producing countries with a total production of 41.34 lac MT in 2016-17 fiscal year (Figure 17), where aquaculture contributes 56.44% of total 2016, Bangladesh is ranked 5th in world aquaculture production. Bangladesh hasrecorded surplus fish production against a demand of 40.50 lakh MT in 2016-17.production, but their share has been declined, from 38.68% in 2000- 2001 to only 27.79% in 2014 - 2015. The contribution of marine fisheries over the same period has dropped from 21.30% 2003-2014 reveals the declining trend of capture fishery habitat area (a decrease of 0.16 million ha), while the trend of culture fishery habitat area is increasing (by 0.35 million ha

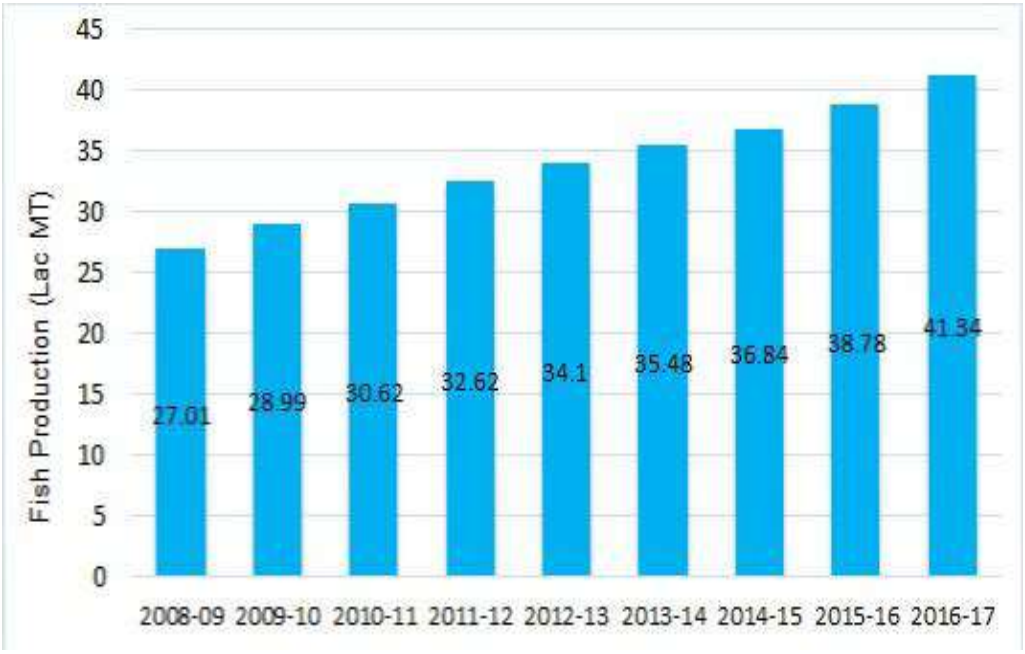


Figure 17: Fish Production of Bangladesh (2008-2017)

The Bay of Bengal is blessed with rich coastal and marine eco-systems, hosting a wide range of biodiversity, such as fishes, shrimps, mollusks, crabs, mammals, seaweeds, etc.

Bangladeshi waters. Marine fisheries production is only 16.28% of the national fish production (DoF, 2017). In 1983-84, the contribution of inland capture and culture fisheries to total fish respectively; whereas in 2016-17, inland capture fisheries contributes only 28.14 percent and inland culture fisheries contributes 56.44 percent to total fish production.

“Technical Support for Stock assessment of Marine Fisheries Resources in Bangladesh” funded by FAO has been taken by DoF in marine stock assessment and conducted 16 surveys including shrimp surveys, demersal surveys, pelagic surveys and one biodiversity survey in the Bay of Bengal with the technical and financial support of FAO. The surveys identified crabs and cephalopods. There are studies on the planktons of fresh water and marine ecosystems. About invertebrates about 10 major groups/taxa were identified viz.; Polychaetes, Oligochaetes, Isopods, Prawn larvae and Copepod.

Subcomponent 1.1: Stock assessment and development of national fishery management plans.

DoF has continued the program as regular activity under revenue and development budget in various low-lying rice field, floodplain, beel, haor, canal, river and increase natural production in these areas along with surrounding linked waterbodies. During 2016-17, 1229 beel nurseries were successfully established in sanctuary approach for fisheries resource conservation opened up a new horizon for sustainable use of valuable fish species. Establishment of aquatic sanctuary is one of the effective tools increasing fish production.

At present, there are 426 fish sanctuaries in different selective water bodies (DoF official record on December 2018) (Figure 18). More than a quarter of the sanctuaries are located in

Divisions represents 19%, 18% and 14% of the sanctuaries, respectively. Fish sanctuaries in Barisal Division is as little as 1% (Figure 19).

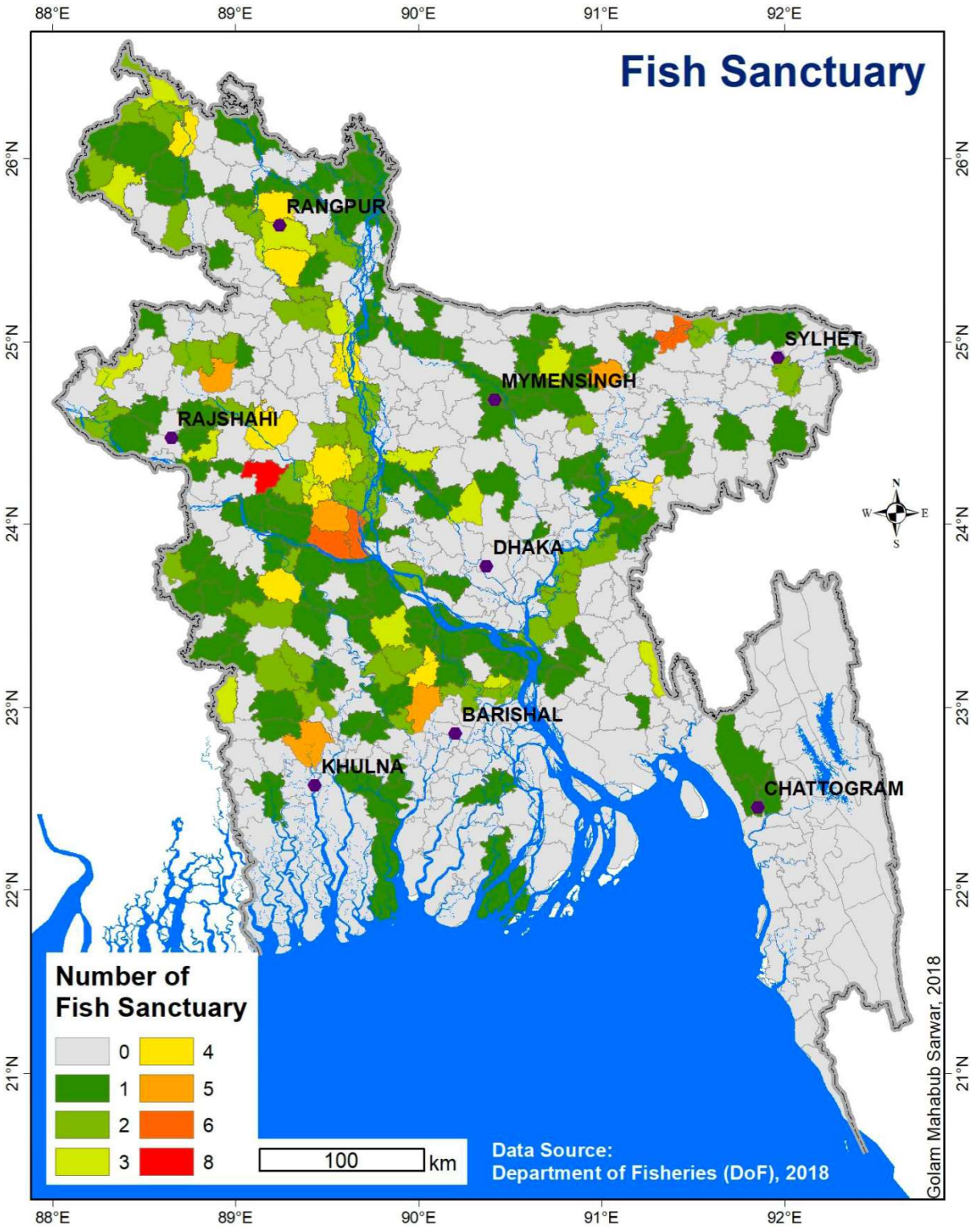


Figure 18: Fish Sanctuary of Bangladesh (data source: Department of Fisheries, 2018)

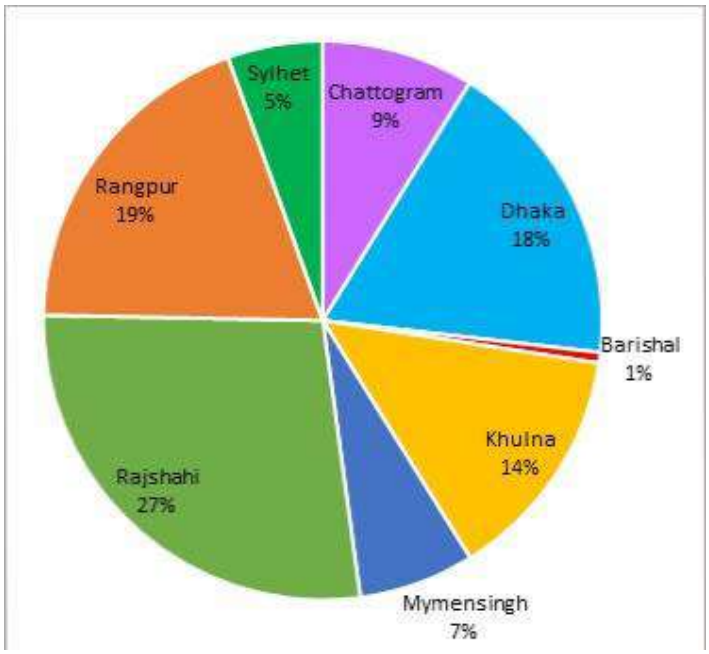


Figure 19: Division wise Fish Sanctuaries in Bangladesh (DoF 2018)

Management approaches of marine fisheries management include control mesh size of nets. Mesh size of trawl nets and gears are controlled for industrial trawlers. Minimum mesh size nets and 60 mm for the fish trawl nets. ESBN (Estuarine Set Bag Net) has been banned (Prohibition in operating illegal estuarine set begs net throughout the year has been declared on 7 of marine fisheries resources, fishing has been banned for 65 days from 20 May to 23 July each year, for industrial fishing. The government has adopted coordinated program to conserve spawning season. For smooth spawning, catch of brood Hilsa has been prohibited for 22 days every year in 7000 square km in the coastal waters (Figure 20).

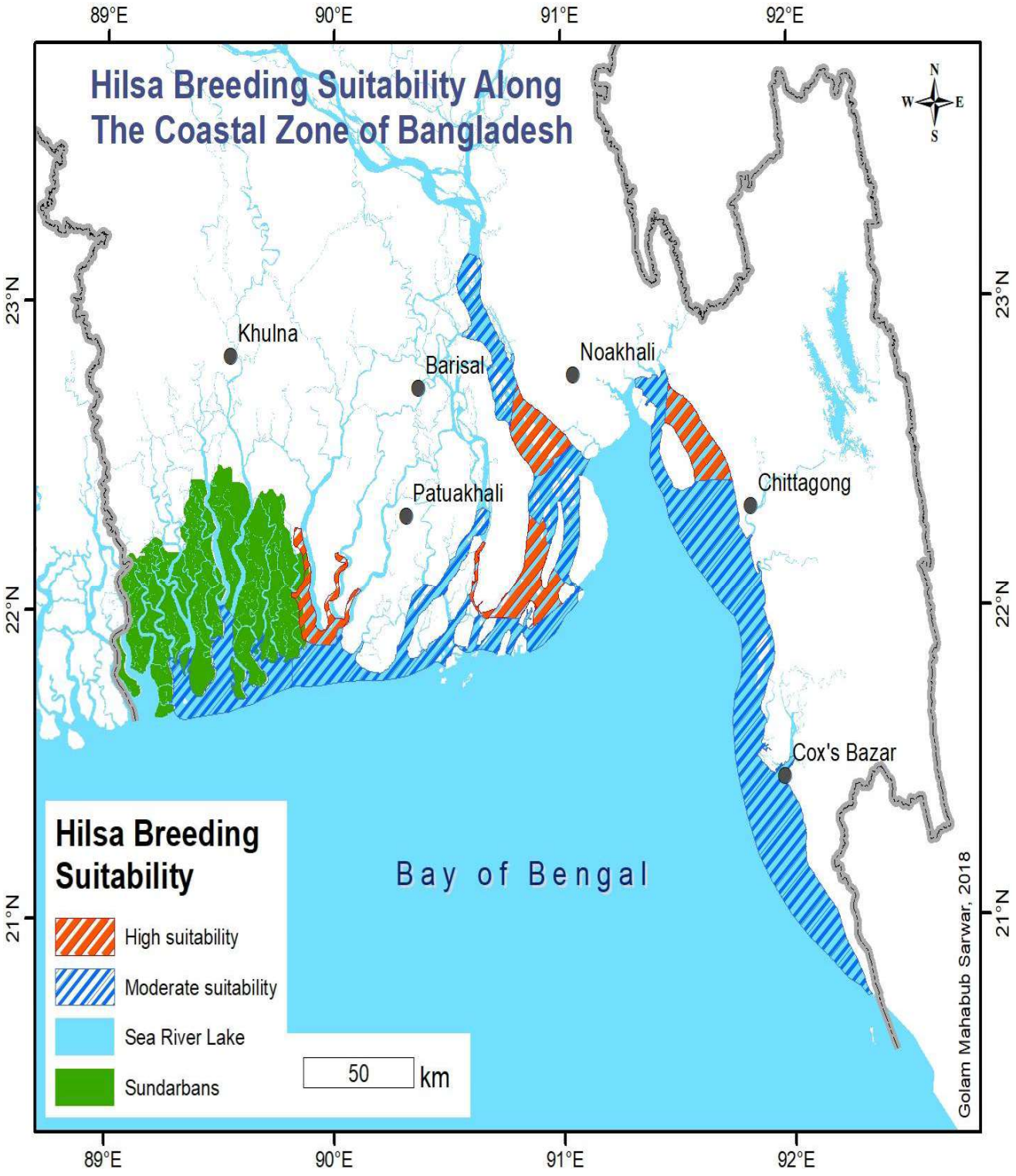


Figure 20: Hilsa Breeding Ground

Under The Marine Fisheries Ordinance-1983, 40 meter water depth is reserved for small-scale fisheries to minimize the conflict between industrial vessels and artisanal fishers.
depth from the coastline where artisanal boats operate; (2) from 40 m to 200 m in depth where industrial trawlers operate; and (3) from 200 m in depth to the end of the EEZ (Figure 21) for by the industrial fishing trawlers is completely prohibited by Marine Fisheries Rule 1983. iv. A gazette notification on 07 April 2013 has made a prohibition not to fishing by any means

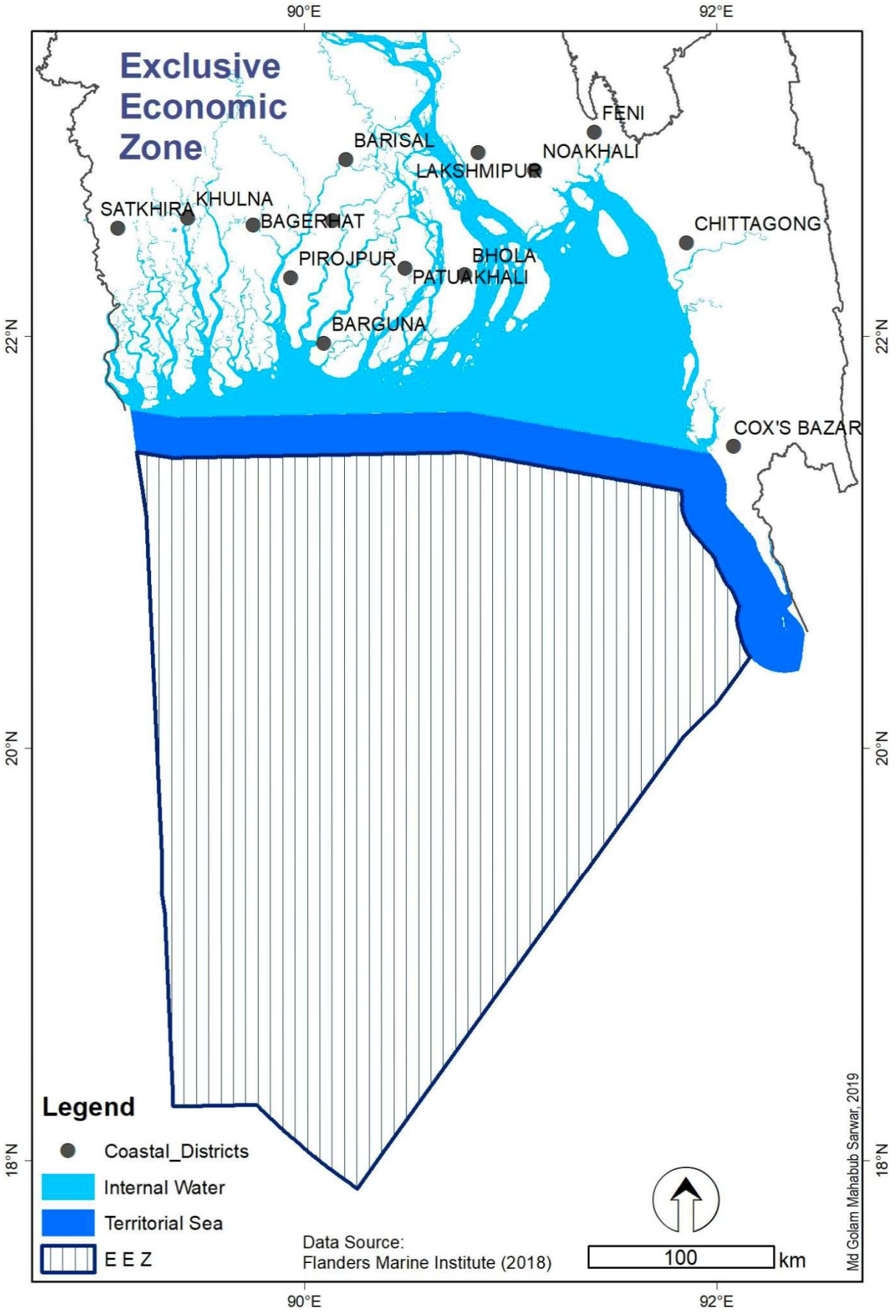


Figure 21: Exclusive Economic Zone (EEZ) of Bangladesh

Indicator(s)used in this assessment

- Number of fish sanctuaries;
- Production reports;
- Stock assessment report;
- Hilsa conservation/management plan;

Any other tools or means used for assessing progress

• Periodic reports by the Department of Fisheries;
• Project completion reports;
• Media reports.

Relevant websites, links, and files

Fisheries resources of Bangladesh

Sustainable Coastal and Marine Fisheries Project

https://fisheries.portal.gov.bd/sites/default/files/files/fisheries.portal.gov.bd/page/03bc8d43_aab0_4518_8c1e_4bc5ec64483f/Annual%20report%20cover%202017.jpg

https://fisheries.portal.gov.bd/sites/default/files/files/fisheries.portal.gov.bd/annual_reports/64428d1f_dccc_486c_9b77_a15d25b1b927/Annual%20Report%202017.pdf

https://fisheries.portal.gov.bd/sites/default/files/files/fisheries.portal.gov.bd/page/4cfbb3cc_c0c4_4f25_be21_b91f84bdc45c/Fisheries%20Statistical%

20Yearboook%202016-17_Final.pdf

Annual Performance Agreement

Composition and Abundance of Benthic Macro-invertebrates in Freshwater Earthen Ponds of Noakhali District.pdf

Bangladesh-Sustainable-Coastal-and-Marine-Fisheries-PAD-P161568-2-09182018.pdf

Fisheries Statistical Yearbook 2016-17.pdf

Impact of fisheries co-management interventions.pdf

Management of Single Fish Species of Hilsa Shad Resources of Bangladesh.pdf

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
Activities identified in the NBSAP are being implemented. The indicators are limited. So, assessment drawn are heavily on stakeholders' consultation, expert opinion and news from different public and social media.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 7: By 2021, development of Integrated Management Plan will be completed for areas under agriculture, aquaculture and forestry towards ensuringconservation and sustainable use of biodiversity

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
06 Dec 2018

Summary of the assessment of progresses toward the implementation of the target
The National Agriculture Policy 2018, the National Fisheries Policy 1998, the draft National Forest Policy 2016 and The National Environment Policy2018 have emphasized on sustainable production and natural resource management. The National Land Use Policy 2001 also highlighted the need, the importance and modalities of National Land Zoning for integrated planning and sustainable management of land resources of the country.
FD (2010) developed Integrated Resources Management Plans for the Sundarban, 2010 – 2020. Ministry of Agriculture with technical assistance from FAO in 2013 has prepared Master Plan for Agricultural Development in the Southern Regions of Bangladesh. It covers 14 coastal districts, and had been developed in accordance with, and a logical consequence of several policies and programmes that are on board. The objective of this Master Plan is to provide a road map for an integrated agricultural development in the coastal districts of Bangladesh aiming at sustainable food security, poverty reduction and livelihood development for the poor.
Ministry of Water Resources has adopted Haor Master Plan in 2012 with implementation period for 20 years. The plan spells out the means for optimizing available resources for future development by incorporating social and environmental considerations. Under the plan, a total of 154 projects portfolio were prepared for 17 sectors.
Integrated Coastal Zone Management provides strategic documents on integrated management of physical, biological and policy issues of coast lines of Bangladesh. The Char Development and Settlement Project (CDSP) is designed to reduce vulnerability of people living in char lands and enhance their livelihood through integration resources. DoF has taken initiatives to maximize fish production from paddy fields (DoF, 2017) which an example of integrated management of agriculture and fisheries.
Nationwide land zoning was completed through National Land Zoning Project by the Ministry Land. The project identified the lands suitable for agriculture, fisheries, forestry and other land uses. The zones are prepared based on remote sensing data. It has covered the whole country and upazila based land zoning maps have been prepared. Before finalizing the maps, about 30 percent were validated through multi-stakeholders' consultation. Land zoning

maps are available in the website listed below. National Land Use Policy was framed in 2001 that strictly guides prohibiting the conversion of agricultural land to other uses.
Bangladesh Forest Department has 30m and 5 m scale, and Haor and Wetland Department has 5m scale GIS maps. 'Bangladesh Forest Inventory Project 2016-18' by FD and 'Study of Interaction Between Haor and River Ecosystem Including Development of Wetland Inventory and Wetland Management Framework, 2015-18'by Department of Bangladesh Haor and Wet Land Development will develop GIS based maps. Many GIS based maps are available with CEGIS, WARPO, IWM, FD, SRDI, BARC and many other agencies. Through upcoming projects and activities dissemination process and stakeholder's awareness will be undertaken.

Indicators and Activities

Indicator(s)used in this assessment
• PA management plans;
• Land zoning reports/maps;
• Spatial data on land use land cover;

Any other tools or means used for assessing progress
Different target related national documents

Relevant websites, links, and files

National Land Zoning Project, Ministry of Land

Bangladesh Agricultural Policy 2018 (In Bengali)

National Fisheries Policy

https://bforest.portal.gov.bd/sites/default/files/files/bforest.portal.gov.bd/page/238fc41d_700a_489d_9758_e80b7efdb2ef/Forest%20Policy%202016%28Bangla%20version%29%20%281%29.PDF

Master Plan for Agricultural Development in Southern Region of Bangladesh

Integrated Resources Management Plans for the Sundarban 2010 – 2020

Forestry Policy 2016.pdf

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
Summary of activities given above are from previous and other national activities.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017.

Other relevant website address or attached documents
Integrated Resource Management Plan- Sundarban

National Land Zoning Project

National Target 8: By 2021, study on impact of pollution and excess nutrient on functioning of major ecosystems will be conducted and enforcement drive for controlling pollution will be strengthened.

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
04 Dec 2018

Summary of the assessment of progresses toward the implementation of the selected target

Department of Environment is mandated by Bangladesh Environment Conservation Act 1995 for the conservation of environment, biodiversity and pollution control. DoE issues environmental clearance as a measure to control pollution. Establishment of effluent treatment plant (ETP) is mandatory liquid waste generating industries. It is reported that about 77.5% of the eligible industries have installed ETPs by June 2018 (DoE, personal communication). Since 2014 to June2018 zero discharge plans for 368 liquid discharging industrial plants have been approved. A total of 15 industries have already adopted zero discharge plan so far.

GIS based river water monitoring system is in operation to monitor pollution loads in rivers. Previously there was only one sewerage treatment plant. Recently, four treatment plants have been installed by Dhaka water Supply and Sewerage Authority (WASA) to discharge the treated water in the river

DoE has installed four eco-friendly waste management compost plants to produce compost from household wastes. The Government of Bangladesh has established 100 Economic Zones throughout the country. Government will not permit to establish any industry outside the designated area of Economic Zone

A total number of 2104 enforcement has been driven to different pollution source points by DoE over the period 2015 to 2018 and about US$4.4 million compensations has beenrealized.

Use of organic fertilizers especially the vermi-compost is increasing and being extended by different non-government organizations. Use of pheromone traps are also increasing. Excessive use of imbalanced fertilizer are degrading soil fertility and causing pollution of terrestrial, aquatic and atmospheric environments. Fertilizer Recommendation Guide– 2012 provides crop based fertilizer doze for different types of soils.

Indicators and Activities

Indicator(s)used in this assessment

- Installation of ETP;
- Zero discharge plan;
- Number of municipal bodies adopted eco-friendly waste management (production of compost from household wastes);
- Number of enforcement drives;
- Amount of compensation.

Any other tools or means used for assessing progress

- Annual reports of Department of Environment;
- Reports on pertinent scientific studies;

Relevant websites, links, and files

Fertilizer Recommendation Guide 2012

http://doe.portal.gov.bd/sites/default/files/files/

doe.portal.gov.bd/annual_reports/ea3c059f_0c0d_435a_9195_ba3e4989ac12/Annual%20report%202017-2018%20%20(1).pdf

Annual report of DoE 2017-2018.pdf

Contamination of Soil and Plant by the Hazaribagh Tannery Industries.pdf

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
Activities identified have been partially implemented

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

Other relevant website address or attached documents
DoE Reports

National Target 9: By 2021, study on the impact of IAS will be furnished, regulations towards control of IAS will be developed and capacities at the port-of-entries will be enhanced to regulate IAS

2018 - Progress towards target but at an insufficient rate

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
Progress towards target but at an insufficient rate

Date the assessment was done
14 Oct 2018

Summary of the assessment of progresses toward the implementation of the selected target

Studies show that a good number of alien plant species have become a part of our flora. Many of them became invasive. However, the intensity of invasiveness depends on ecological situations. Hossain and Pasha (2001) provided a long list of alien and invasive alien plant species from Bangladesh. Among which *Eichhornia crassipes* (Kachuripana) is a notorious weed of fresh water ecosystems; *Eupatorium odoratum* (Ayapan) and *Mikania cordata (*Assam lota) are two invaders of terrestrial ecosystems that overtop the canopy of shrubs and young tree saplings. *Croton bonplandianum* (Bon khira) and *Lantana camara* (Nakphul) grow along the edges of forest and waste lands and invade local vegetation. *Parthenium hysterophorus* a recent invader is found along railway tracks, roadsides and fallow lands. It is prolific seed producer and spreading rapidly and its growth reduce the associated species (Akter and Zuberi, 2009).

Among the invasive animals fish occupy a remarkable position and threat to our local fish fauna. Table 4gives a list of invasive fish species of Bangladesh (Rahman, 2005). The introduction of alien animals particularly fish, started in the early 1950s. Over the years, Bangladesh has experienced a number of transfers/introductions/translocation of finfish species primarily for aquaculture development.

Table 4: Invasive Alien Species (Exotic) fishes of Bangladesh (Barua et al., undated; Rahman, 2005)

Common Name	**Scientific Name**	**Source**	**Year of Introduction**
Siamese gourami	*Trichogaster pectoralis*	Singapore	1952
Goldfish	*Carassius auratus*	Pakistan	1953
Tilapia	*Oreochromis mossambicus*	Thailand	1954
Gubby	*Poecilia reticulata*	Thailand	1957
Common carp	*Cyprinus carpio*	India, Nepal	1960
Mirror carp	*Cyprinus carpio var.specularis*	India, Nepal	1979
Scale carp	*Cyprinus carpio var. communis*	India, Nepal	1965
Leather carp	*Cyprinus carpio var.nudus*	India, Nepal	-
Grass carp	*Ctenopharyngodon idella*	Hong kong	1966
Silver carp	*Hypophthalmichthys molitrix*	Hong kong	1969
Nilotica	*Oreochromis niloticus*	Thailand	1974
Thai sarpunti	*Barbonymus gonionotus*	Thailand	1977
Bighead carp	*Hypophthalmichthys nobilis*	Nepal	1981
Black carp	*Mylopharyngodon piceus*	Chaina	1983
African magur	*Clarias gariepinus*	Thailand	1990
GIFT(Genetically Improved Farmed	*Oreochromis niloticus*	Philippines	1994

Tilapia)			
GeneticallyImproved Scale carp	*Cyprinus carpio var.communis*	Vietnam	1995
Thai pangas	*Pangasius hypophthalmus*	Thailand	1990
Giant pangus	*Pangasius gigus*	Thailand	-
Mosquito fish	*Gambusia affinis*	India	-
Sucker mouth catfish	*Hypostomus plecostomus*	Hong kong, Singapore	-
Red piranha	*Pygocentrus nattereri*	Hong kong, Singapore	2003
Pirapatinga	*Piaractus brachypomus*	Hong kong, Singapore	2003

In Bangladesh a total of 92 varieties of exotic fishes under 53 species, 17 families and 5 orders were recorded. The decision to introduce the alien species was primarily to increase productivity. Among the exotics, tilapia, consisting of two species, *Oreochromis mosambicus* and *O. niloticus* are of greatest concern because these species have invaded all available habitats, including estuaries. Other damaging alien invasive fishes are African magur *(Clarias gariepinus)*, Pangas *(Pangasius sutchi)*, and Giant Pangas *(Pangasius giganticus*),

African Magur were introduced for commercial purposes as they can grow quickly in any closed water body with wide range of food (including decomposed faecal matter) but due to its devastating carnivorous nature, it has been banned. Government banned importing and farming of Piranha fish in March 2008.

Ballast water from marine vessels is also a source of alien invasive microorganisms. Bangladesh is a ratifying country to Ballast Water Management Convention. The National Agriculture Policy 2018, the National Fisheries Policy 1998, the draft National Forest Policy 2016 and the National Environment Policy 2018 have emphasized on sustainable production and natural resource management, and thus do not support the import of invasive species. The Plant Quarantine Act 2011, and Animal and Animal Feed Quarantine Act 2005 are the legal instruments to prevent the introduction of alien invasive species. There are plant quarantine desk in almost all ports of the country. In case of IAS, upcoming development projects under MoEFCC will address the activities like required study to be conducted, regulations to be formulated and capacity of the personnel to be enhanced under. As this target is directly associated with implementation of SDG target 15.8, government will be keenly following the progress of the target.

Indicators and Activities

Indicator(s)used in this assessment

- Project document
- Study reports
- Legal and policy documents

Any other tools or means used for assessing progress
Reports on pertinent scientific studies

Relevant websites, links, and files

National Fisheries Policy 1998

Exotic fishes of Bangladesh

CITES

Plant Quarentine Act 2011.pdf

Alien Invasive Species: A Threat to Fisheries Biodiversity

Invasive alien species in Northern Bangladesh.pdf

Status of Alien Invasive Species in Bangladesh.pdf

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
Activities identified in the NBSAP had not been fully implemented

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 10: By 2021, multiple pressure on coral associated island (St. Martin) and Sundarban mangrove ecosystem will be reduced through implementation of management plan of the ecosystems

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
30 Jun 2018

Summary of the assessment of progresses toward the implementation of the selected target

Department of Environment has undertaken a project namely, 'Ecosystem based development, management and conservation of natural resources of St. Martin Island. An

action plan for integrated development and conservation of the ecosystems and biodiversity of the St. Martin's Island has been developed.

The SMART (Spatial Monitoring and Reporting Tool) approach combines a cutting edge biodiversity conservation management tool with capacity building and a set of communicate and analyse ranger-collected data on illegal activities, biodiversity, patrol routes, and management actions to understand where efforts should be given in the Sundarban. Additionally, the SMART approach is applicable to other Pas of the country.

Indicators and Activities

Indicator(s)used in this assessment

- Study reports, Project Documents
- SMART patrol information database;

Any other tools or means used for assessing progress
Survey reports of flora, flora and socio-economic activities

Relevant websites, links, and files
Environmental Profile of St. Martins Island.pdf

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment

- Social and natural resource survey of St. Martins Island in progress;
- Integrated Plan has been drafted

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017.

National Target 11: By 2021, Bangladesh's 3% area under terrestrial ecosystem (forests), 3% area under inland wetlands and coastal ecosystems and 5% of total marine area will come under PAs or ECAs with development and implementation of management plan for these areas

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target
Date the assessment was done

06 Dec 2018

Summary of the assessment of progresses toward the implementation of the selected target

Bangladesh has so far declared 44 terrestrial PAs covering an area of 4,626 km^2. The country has got 13 coastal and inland wetlands ECAs covering an area of 698 km^2. The total area of terrestrial PAs (5,324 km^2) in proportion to the area of the country (147,570 km^2) stands 3.61%. The country has got 3 Marine Protected Area (MPAs) covering an area of 5,624 km^2. The total area of MPAs in proportion to the marine area (111,672 km^2) of the country stands 5.04%.

Expanding of Protected Areas (PAs) spreading over different ecosystems are in progress. Three PAs, along riverbodies of the country has been established in last 8 years to protect dolphins. Additionally, one special conservation area at Ratargul, one national park in Inani of Cox's Bazar district and one ECA in Jaflong-Dawki River have been established.

Study has been completed to expand PA coverage (by 51,000 ha) and strengthen the management effectiveness of a cluster of existing PAs (1,070 ha) in the Sundarban. Also, seven Dolphin hotspots have been identified (Figure 22). Management plans for 12 forest PAs and 11 ECAs have been prepared.

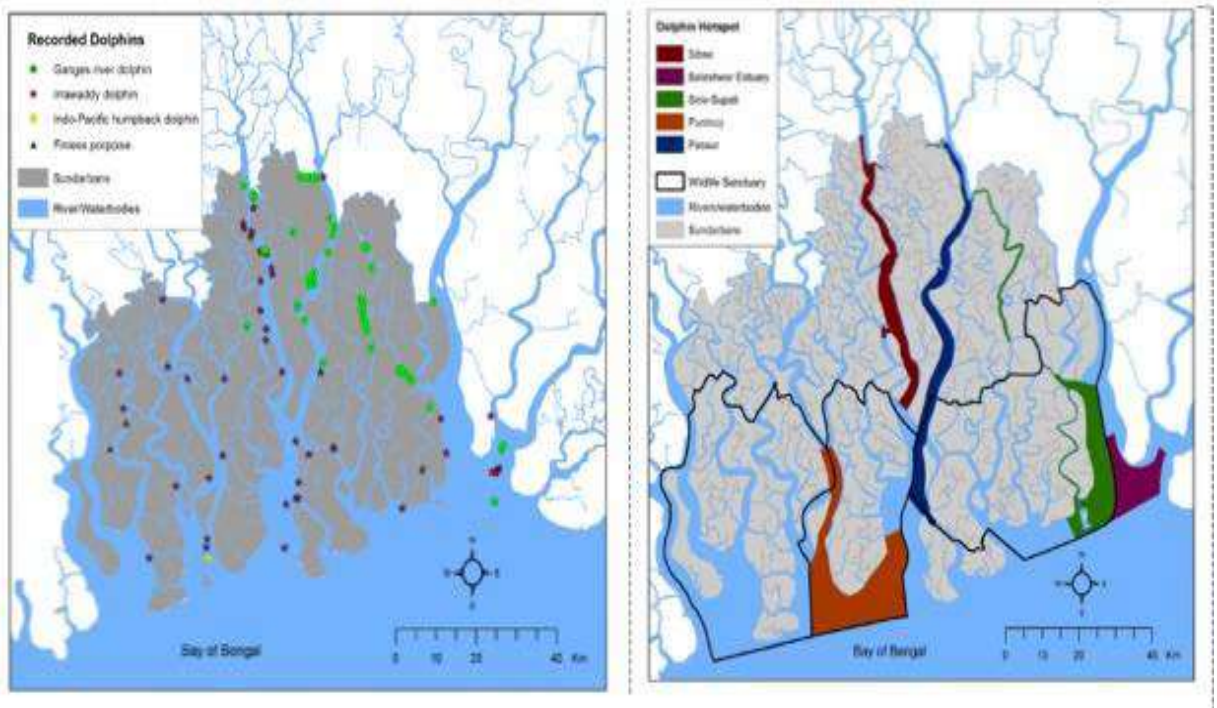


Figure 22: Recorded Dolphin Sites (left) and Dolphin Hotspots (right) along the Southwest Coastal Zone of Bangladesh (FD 2018)

Tourism management plan for three forest PAs have been prepared. Co-management are functioning and moving to sustainability in 26 forest PAs and 2wetland ECAs. Co-management structures are further strengthened in Chandpai Range of the Sundarban. The co-management intervention is being undertaken in partnership with traditional institutions and with the participation of resource dependent communities to sustain local natural resources, restore biodiversity, improve and develop local traditional institution capacity and enhance livelihoods for the poor in 54 Village Common Forests in the Chittagong Hill Tracts.

Co-management is functioning in 26 forest PAs and two wetland ECAs see CBA-ECA. Twenty six forest PA CMCs, 18 wetland CBOs and 3 wetland/ECA committees are functioning towards sustainable management of biodiversity. A total of 72 village conservation group has been established for two ECAs under the CBA-ECA project as a following up best practice of CWBMP.

In order to implement the management plans for PAs and ECAs, GoB has enacted theBangladesh Environment Conservation Rules (ECR), 1997; Wildlife (Conservation and Security) Act, 2012; and Bangladesh Biological Diversity Act 2017. Bangladesh Biological Diversity Act 2017sets out committees from grass root to national level for the proper management of Biodiversity. The Act also has the section on maintaining biodiversity register by various local government institutions and the committees.

Indicators and Activities

Indicator(s)used in this assessment

- Gazette notifications declaring the ECAs/PAs;
- Number of ECA/PA Management Plan;
- Percentage of PAs and PA coverage maps;
- Proposal for notification for new sites;
- Number of VCG/CMC.

Any other tools or means used for assessing progress.

Stakeholders' consultation, expert opinions and published news in print media;

Relevant websites, links, and files

Co-managed Protected Areas

Protected Area Governance

Ecosystem Based Sustainable Management of a Marine Protected Area in the NijhumDwip Seascape

How to Revive a Village Common Forest: With Passion, Commitment and Community

http://www.regionalwildlife.gov.bd/about-the-project/reports/ecotourism-management-plan.html

https://www.iucn.org/asia/countries/bangladesh/ecosystem-based-sustainable-management-marine-protected-area-nijhum-dwip-seascape

Altadighi Ecotourism Management Plan 2015-2025.pdf

Bhawal Ecotourism Management Plan 2015-2025.pdf

Nijhum-Dwip Ecotourism Management Plan 2015-2025.pdf

Level of confidence

Level of confidence of the above assessment

Based on partial indicator information and expert opinion

Level of confidence of the above assessment

Measures identified in the NBSAP are in the implementation process. However, some measures in place. Therefore, some information and indicators exist for assessing progress towards the achievement of the target.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 12: By 2021, the extinction of known threatened species will be prevented and their conservation status, particularly of those most in decline, has been improved and sustained

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
14 Oct 2018

Summary of the assessment of progresses toward the implementation of the selected target

The second volume of Redlist Book of Vascular Plants of Bangladesh describes 120 species in different categories (Ara et al., 2013). Out 120 threatened species, a total of 34 have been noted as Critically Endangered (CR), 52 as Endangered (EN) and 34 as Vulnerable (VU). The Government of Bangladesh in technical collaboration with IUCN Bangladesh (IUCN, 2015) assessed status under seven groups of wildlife (Mammals, Reptiles, Amphibians, Birds, Freshwater Fishes, Crustaceans and Butterflies) for red listing as mentioned under Section II. Of the 1,619 species covered by the 2015 evaluation of the Updated Species Red List, 2% were Regionally Extinct and 24% were assigned under the Threatened Categories as stated below:

- 31 species or 2% Regionally Extinct;
- 56 species or 3.45% Critically Endangered;
- 181 species or 11.18% Endangered; and
- 153 species or 9.45% Vulnerable

Out of 1,619, the remaining species, 90 or 6% species were assessed under the Near Threatened Category and 802 species or 50% as Least Concern.

Another 278 species or 17% were being assessed as Data Deficient, meaning no threatened could be assigned to those species due to lack of information. Of the 31 species of animals that have become extinct in the country, only three species, the Sloth Bear, Sarus Crane and White-winged Duck, have been lost between 1972 and 2014, when almost all have vanished from the present territory of Bangladesh before 1971.

The assessments of 1,619 species from the butterflies, crustaceans, freshwater fishes, amphibians, reptiles, birds and mammals revealed that 0.32% of butterflies, 0.56% of fishes, 1% of reptiles, 0.6% of birds and 1% of mammals were Critically Endangered when no Crustacean was evaluated as Critically Endangered, which is no doubt a good sign for the group.

However, 6.9% butterflies, 1.85% fishes, 0.75% each of birds and mammals, 0.6% reptiles and an insignificant number of crustaceans and amphibians have been considered as Endangered. The most Vulnerable group appeared to be the Butterflies. 1.5 % of fresh water fishes, 1% of reptiles and an insignificant number of other groups are considered as vulnerable.

The assessment has been published in seven volumes. Conservation activities on animals including fish are being done based on this report. Strengthening Regional Cooperation for Wildlife Protection (SRCWP 2011-2016) project included studies on species conservation as discussed under Section II.

Species conservation and recovery activities for *Batagur baska (*Northern river terrapin), Asian giant tortoises *(Manouriaemys), Saltwater Crocodile, Spoon-billed Sandpiper, Bengal Tiger, Vulture, Gharial, Ganges river Dolphin including other Dolphins in Bangladesh, Two Raptor species (Pallas's Fish Eagle and Indian Spotted Eagle), Asian Elephant,* Pangolin and Burmese python are in place.

Marine Turtle conservation Program has been undertaken in St. Martin island. Government declared two Vulture Safe Zones as special landscape, i.e., (1) the areas of Sylhet, parts of Dhaka and Chattogram consisting of 19,633 km^2 (1,966,318 ha) as Vulture Safe Zone-1 and (2) the areas of Khulna, Barishal and parts of Dhaka with an area of 27, 717 km^2 (2,771,726 ha) as Vulture Safe Zone-2.

Some initiatives have been taken under forest department, such as dolphin conservation and crocodile conservation. Waterfowl and mangroves protection activities has been undertaken under CBA-ECA project.

Three Conservation Action Plans for Vulture, Tiger and Elephant have been prepared and already approved by the Government of Bangladesh. Furthermore, two more action plans on Gharial and Dolphin have been prepared.

RED list of flora will be updated by SUFAL project. However, it might be completed beyond 2021.

Indicators and Activities

Indicator(s)used in this assessment

- Red list index;
- Encyclopedia of Flora and Fauna for Bangladesh;
- Vulture Safe Zones with maps;
- Species management action plan/ strategy prepared for management of birds in Bangladesh;
- Herpetofauna management strategy and mammal management strategy;
- Conservation action plans

Any other tools or means used for assessing progress
Stakeholders' consultation and expert opinions

Relevant websites, links, and files

IUCN reports on Species Conservation
http://www.regionalwildlife.gov.bd/about-the-project/reports
Action Plan for the Management of Birds in Bangladesh.pdf
Action Plan for the Management of Herpetofauna in Bangladesh.pdf
Mammal Management Strategy of Bangladesh .pdf
The IUCN Red List of Threatened Species

Level of confidence

Level of confidence of the above assessment
Based on comprehensive indicator information

Level of confidence of the above assessment
Sufficient and readily available information, including indicators, exist to allow for allelements of the target to be assessed.

Adequacy of monitoring information to support assessment
Monitoring related to this target is adequate

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017
Other relevant website address or attached documents
Red List of Bangladesh Volume 1- Summary 2015.pdf

National Target 13: By 2021, capacity of in-situ and ex-situ conservation facilities will be strengthened to conserve the genetic diversity of cultivated plants, indigenous livestock and poultry resources

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target
Date the assessment was done
09 Dec 2018

Summary of the assessment of progresses toward the implementation of the selected target

Germplasm of cultivated crops, medicinal plants, timber trees, animal resources are conserved as a part of their regular work by public research organizations and universities. Many non-government organizations is working with farmers and conserving crop germplasm of rice, bean and other vegetables in farmers' filed. The Plant Genetic Resources Centre (PGRC) of Bangladesh Agricultural Research Institute (BARI) currently maintains 11,012 accessions of 138 different agri-horticultural crops in the gene bank and in the field gene bank. Bangladesh Rice Research Institute maintain a gene bank of about 8,272 accession of rice. About blast fibres a total of 6,012 accessions comprising 4,180 accessions of Corchorus (15 species), 1,461 accessions of Hibiscus (22 species), 252 accessions of 15 allied genera and 119 accessions of inter-specific hybrid derivatives have been conserved in the gene bank of Bangladesh Jute Research Institute.

A total of 516 tea germplasm have been collected and maintained (ex- situ conservation) in the BangladeshTea Research Institute (BTRI) gene bank. Bangladesh Agricultural University (BAU) Germplasm Center (BAU- GPC) has conserved about 11,528 germplasm. Other than major fruits like, mango, litchi, guava, citrus, jack fruits it has about 3, 514 germplasm of minor fruits. It has also about 1, 014 collections of medicinal plants in its credit. Along with

fruit plants, it has also indigenous plants it has also about 1,925 germplasm of exotic plants collected from 44 countries.

Bangladesh Forest Research Institute, Chittagong has been collecting and maintaining germplasm of medicinal plants since 1990 decade. Till date ithas centralized germplasm of 126 species ranging from herb to trees. Bangladesh Resource Center for Indigenous Knowledge (BARCIK) an NGO isworking with farmers and preserving crop germplasm in farmers' field. Till date it has preserves 820 local germplasm comprising of 653 rice germplasm,18 local beans, 10 chilies, nine bananas, 14 brinjal. The national progress is on track to achieve the global target. The agro-biodiversity of jhum (shifting cultivation) fields is at risk of degeneration from shifting of hill farming towards permanent horticulture and farming.

Some wild relatives of common farm animal genetic resources (FAnGR) like wild pig, Red Jungle Fowl, wild quail and Goyal (*Bosfrontalis*) live in specific forest areas as shown in Table 5, below:

Table 5: Some wild relatives of common farm animal genetic resources (FAnGR) from Bangladesh

Species	Local name	Distribution	Population status
Bos frontalis	Goyal	Forests of Bandarban district	Endangered
Sus scrofa scrofa	Wild pig	Forests of southeast and northeast	-
Gallus domesticus murgi	Red Jungle fowl	Forests of northeast, hill forest in the southeast and the Sundarban	Normal
Coturnix coromandelica	Wild quail	Hill forests of southeast and northeast	-

Indicators and Activities

Indicator(s)used in this assessment

- Number of strengthened gene banks;
- Number of species in the gene banks under conservation;
- Number of farmers and community gene banks.

Any other tools or means used for assessing progress

- Different reports;
- Stakeholders' consultation,
- expert opinions published news in print media

Relevant websites, links, and files
Bangladesh Agricultural Research Institute (BARI) Annual Report 2017-18
Germplasm Center of Bangladesh Agricultural University
Video Documentation on Germplasm Center of Bangladesh Agricultural University

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment

Measures identified in the NBSAP could not be implemented. However, some measures in place. Therefore, some information and indicators exist for assessing progress towards the achievement of the target.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 14: By 2021, develop and implement restoration plan for degraded wetlands and rivers taking into account the needs of vulnerable people and local communities

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
26 Nov 2018

Summary of the assessment of progresses toward the implementation of the selected target

The ecosystems of Bangladesh can be placed under four broad types namely, coastal and marine ecosystem, inland freshwater ecosystem, terrestrial ecosystems and man-made ecosystems. Economic benefits of wetland ecosystems are linked with fish resources. The fisheries sector is contributing significantly in food security through proving safe and quality animal protein; almost 60 percent animal protein comes from fish. It contributes 3.61percent to our national GDP and around one-fourth (24.41 percent) to the agricultural GDP. People depending on forest and aquatic ecosystems are vulnerable to poverty, nutrition deficiency and wellbeing. Access to pure drinking water of hill people is of major concern.

Community based conservation of ecosystems and restoration of degraded habitats, especially of wetland is one of the approaches of improving ecosystem health. Hakaluki Haor, Hail Haor, the Sundarban were brought under better management through Conservation of Wetland and Biodiversity Management Project (CWBMP), Management of Aquatic ecosystems through Community Husbandry (MACH) and CREL projects. DoE has developed Master Plan for four rivers around Dhaka city. Development of management plans for Morzad Baor, an ECA of the country is in progress.

The Small Scale Water Resources Development Projects by LGED include re-excavation of small water bodies, maintenance of irrigation canals, and management of fish pass,

development of beels for creating fish sanctuaries, excavation of feeder canals, and fresh water swamp species (hijol-koroch) plantations in haor areas, thus improving the wetland habitats.

Bangladesh Water Development Board has undertaken a project for re-excavation of inland small rivers, canals and wet lands over 64 districts during2018- 2020that will help restoration of wetland habits, thus reducing habitat degradation.

The River Master Plan has been developed focusing the current situation and degraded pollution levels of the rivers and its socio-economic consequences in the rivers surrounding the Dhaka city. The Master Plan has been organized into 3 parts i.e. Encroachment, Pollution and Navigability.

Indicators and Activities

Indicator(s)used in this assessment

- Project document
- Restoration plan

Any other tools or means used for assessing progress
Published reports in scientific journals and news media

Relevant websites, links, and files
Small scale water resources development program
Fisheries Statistical Yearbook 2016-17.pdf
Economic Valuation of Tangible Resources from the Halda River.pdf

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
Activities identified in the NBSAP are being implemented.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 15: By 2021, initiate implementation of restoration plan for degraded ecosystems, especially, forestlands and wetlands for addressing climate change mitigation, adaptation and combating desertification

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
10 Dec 2018

Summary of the assessment of progresses toward the implementation of the selected target

Bangladesh adopted a good number of initiatives for restoration and conservation of ecosystem during last seven to eight years implementing a number of projects, namely: Community Based Adaptation in the Ecologically Critical Areas through Biodiversity Conservation and Social Protection Project (CBA-ECA Project 2011−2015), Community-led biophysical improvements under Climate-Resilient Ecosystems and Livelihoods (CREL) Project 2012 –2018, Climate Resilient Participatory Afforestation and Reforestation Project (CRPARP, 2013community-based biodiversity conservation and management approach of Village Common Forests (VCF) or Mouza Reserves in Chittagong Hill Tracts under Chittagong Hill Tracts Watershed Co-Management Activity (CHTWCA) Chittagong Hill Tracts Development Facility (CHTDF) 2016-2021, Management of the Sundarban Mangrove Biodiversity Conservation and Increased Adaptation to Climate Change (SMP) project 2015-2019, Strengthening Regional Cooperation for Wildlife Protection (SRCWP 2011

2016) project.

Habitat restoration had been achieved adopting measures through swamp forest and mangrove plantation, assisted natural regeneration; wetland re-excavation, creation of fish sanctuary and threatened species protection (turtle nesting grounds). Some progress about restoration of degraded habitats, particularly of forest habitats have been achieved through various development projects.

Enhanced economic benefits have driven the people away from indiscriminate harvesting of forest resources thus protecting and improving the habitat. About 17,519 ha forest land had been re/afforested by FD that helped towards restoration of habitat.

A community-based biodiversity conservation and management approach of Village Common Forests (VCF) or Mouza Reserves has been undertaken in 54 VCFs in Chittagong Hill Tracts under Chittagong Hill Tracts Development Facility (CHTDF) Programme (Figure 23). VCFs with nearly 4,200 ha have been brought under improved management along with small streams and associated watersheds.

The CBA-ECA Project took initiatives for swampforest reforestation and restoration in two ECAs. In Hakaluki Haor region, an area of 17 hectares were planted with indigenous species at 10 different canals and beels, along with protection of 685 hectares of existing forest land. Watersheds were also brought under the management of the project in the Hakaluki Haor where more than 15,000 saplings have been planted in degraded hill slopes and riparian areas.

In Nuniarchhara, Cox’s Bazar, more than 400 acres (162 ha) of mangrove forest were recreated and regenerated beside the Bakkhali River. In Sonadia Island, a total of 361 hectares of mangrove and in Cox’s Bazar, 62 hectares of sand dunes were reforested with

indigenous local species, along with the protection of about 500 hectares of natural vegetation.

Through implementation of SUFAL project, using the collaborative forest management (CFM) approach forest restoration and planting on nearly 79,000 ha will take place along the coast, hill forests, and central and northern plains. Management and conservation of Morzad Baor will be addressed under EBM- ECA project is in progress. Ecosystem based management of Barind and Hakaluki Haor is going to be initiated soon.Programmes for the development of Gulshan -Baridhara lakes (ECA) has been undertaken by Rajuk.

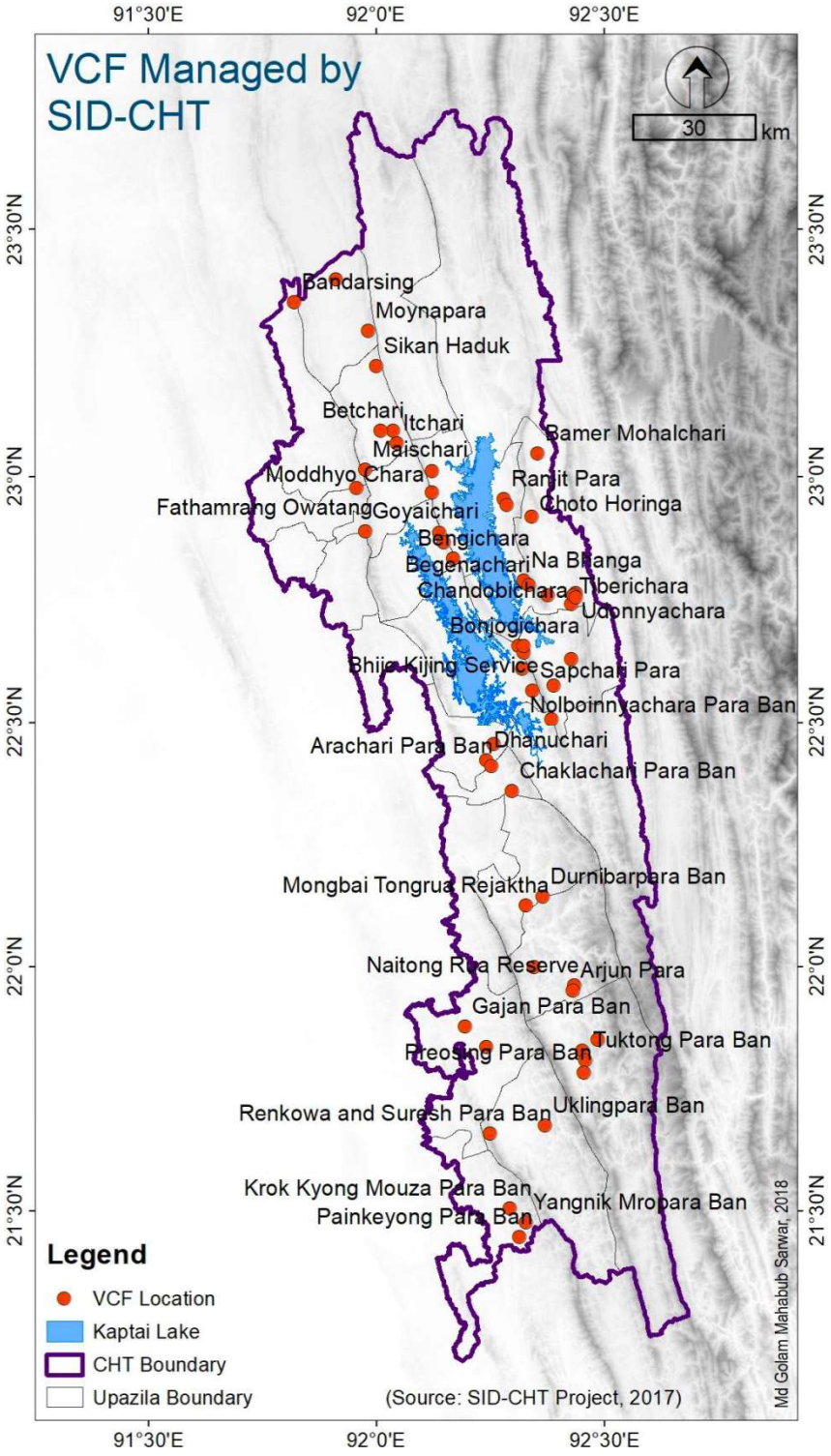


Figure 23: Location Map of VCF managed by SID-CHT (2017)

Restoration/ reforestation of approximately 40 thousand hectares will be completed by 2021. LGED has re-excavated 921 khas canals (2,372 km) and 1,611 institutional ponds (1,702 acres) throughout the country. Re-excavation of these abundant wetlands will create favourable environment and ecosystems for aquatic organisms.

Indicators and Activities

Indicator(s)used in this assessment

- Project document
- Study reports;
- PA Management plans;

Any other tools or means used for assessing progress
Previous project implementation reports

Relevant websites, links, and files
http://www.bforest.gov.bd/
Sustainable Forests & Livelihoods (SUFAL) Project
Projects of Forest Department (FD)
The submission of Bangladesh's Forest Reference Level for REDD+ under the UNFCCC

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
Activities identified in the NBSAP had not been implemented methodically. The indicators are very limited.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 16: By 2016, Bangladesh Biological Diversity Act addressing the issues of ABS will be finalized and the instrument of ratification for the Nagoya Protocol on ABS will be submitted to the secretariat of CBD

2017 - On track to exceed target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to exceed target

Date the assessment was done
19 Feb 2017

Summary of the assessment of progresses toward the implementation of the selected target

'The Bangladesh Biodiversity Act 2017' was enacted on 19 February 2017 as Act 2 of 2017to meet the obligations of the Constitution and the obligations of the CBD. The Act reflects the aims of the CBD to promote the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources. The Act regulates the biodiversity assessment and conservation through management committees from the village to the national level, preparation and periodical amendments of the biodiversity conservation strategy and planning, and sharing of benefits arising from its components.

Instrument of ratification for Nagoya Protocol ensuring ABS is in process.

Indicators and Activities

Indicator(s)used in this assessment
• Gazette Notification of 'The Bangladesh Biodiversity Act, 2017

Any other tools or means used for assessing progress
N/A

Relevant websites, links, and files
Gazette Notification

Level of confidence

Level of confidence of the above assessment
The Act has been passed by the Parliament, approved by the President and circulated through government gazette notification

Adequacy of monitoring information to support assessment
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 17: By 2016, Bangladesh will develop, adopt and update NBSAP and commence implementation of the document in an effective and participatorymanner

2018 - On track to exceed target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to exceed target

Date the assessment was done
10 Nov 2018

Summary of the assessment of progresses toward the implementation of the selected target

Bangladesh has prepared has its revised second NBSAP in 2016through rigorous consultation at national and regional level. It has taken ABTs in consideration, and 20 national targets with activities and indicators have been proposed in the light of ABTs, to be implemented during the fiscal years 2015- 2016 to 2020 – 2021.The revised NBSAP is in the process of implementation.

It is aligned with the SDG 14 and 15 Action Plans of respective ministries of the country. Progress of the NBSAP has been achieved through implementation of some conservation projects like, Nishorgoo, IPAC, CREL, MACH, CWBMP, CBA-ECA, Tiger Project, SEALS, SRCWP and many activities by research organizations and universities. Worthy to be mentioned are development of management plans for forest PAs, important wetlands like Tanguar Haor, Hakaluki Haor, Hail Haor, innovative co-management for PAs involving local communities, restoration of brood fish grounds in many wetland through establishment of fish sanctuaries, expansion of PAs, restoration of hill ecosystems, revitalization of community managed Village Common Forests in Chittagong Hill Tracts, documentation traditional knowledge and ex-situ conservation of crop germplasm and wild genetic resources.

Many targets and actions identified in the NBSAP have been included in upcoming projects. National Capacity Development for Implementing Rio Conventions through Environmental Governance project by Department of Environment (DoE) and UNDP has developed Training Manual on three Rio Conventions to enhance capacity of civil service personnel on Rio Conventions. The project also documented the best practices on biodiversity conservation of the country. For further mainstreaming the project also developed an Analytic Framework for Rio Conventions in the planning process of Bangladesh. More than 100 government officials from government departments those are engaged in the field with development activities made aware about importance, threats and good practices on biodiversity conservation. The project also shared views with media persons from different print and electronic media.

Remarkable progress achieved since the ratification of the CBD is mainstreaming of biodiversity and CBD through enactment of Bangladesh Biological Diversity Act, 2017, adoption of Bangladesh Ecological Critical Area Rules, 2016, integration of the NBSAP in 7th Five Year Plan of the country, and expansion of PAs and ecosystem rehabilitation and restoration process and Environment Policy 2018 in the light of CBD commitments.

The SDG Action Plan of MoEFCC adopted in 2018 has identified actions towards achieving SDG targets and indicators with action plans up to 2020, new programmes/projects needed in addition to those indicated in 7th Five Year Plan and new projects with action plans beyond 2020. 'The Bangladesh Biological Diversity Act 2017' has addressed the issues of the fair and equitable sharing of benefits arising from the use of genetic resources. Instrument of ratification for Nagoya Protocol ensuring ABS is in process.

In the Seventh Five Year Plan (2016-2021) a separate Sector, Sector 8 has been dedicated on Environment and Climate Change. Issues 14, 15 and 16 under Sector 8 are on Biodiversity. Issue 14 with the heading Biodiversity conservation and sustainable use have the focus on implementation of updated NBSAP in the Seventh Five Year Plan (2016-2021). It has been mentioned in the seventh plan as an issue under forestry and biodiversity (issue no. 14, p492) with the heading Mainstreaming National Biodiversity Strategy and Action Plan (NBSAP).

About the financing, Ministry of Environment, Forest and Climate Change has prepared the Country Investment Plan (CIP) for Environment, Forestry and Climate Change (2016 - 20210 in 2017 which includes four pillars. The Pillar 1 is on Sustainable Development and Management of Natural Resources. Cost estimated for Pillar 1 is 2460.01 million USD, where the resource exists for 642.3 n million USD and exists a gap for 1817.8 million USD.

Indicators and Activities

Indicator(s)used in this assessment
• The revised NBSAP;
• The Biodiversity Conservation Act 2017;

Any other tools or means used for assessing progress
N/A

Relevant websites, links, and files
http://www.parliament.gov.bd/images/pdf/acts_of_10th_parliament/14th_Session/Act-.pdf
https://moef.gov.bd/
http://www.doe.gov.bd/
The 7th Five Year Plan
NBSAP 2016-21.pdf
Bangladesh Country Investment Plan
SDG Action Plan of MoEFCC.pdf

Level of confidence

Level of confidence of the above assessment
Based on comprehensive indicator information

Level of confidence of the above assessment
All the indicators are available, and implementation is visible.

Adequacy of monitoring information to support assessment
Monitoring related to this target is adequate

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 18: By 2021, traditional knowledge, innovations and practices of local communities or ethnic groups will be recognized and documented

2018 - Progress towards target but at an insufficient rate

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
Progress towards target but at an insufficient rate

Date the assessment was done
05 Nov 2018

Summary of the assessment of progresses toward the implementation of the selected target

The National Cultural Policy 2006 states to that the cultural institutes will conserve, the culture and traditions of respective small ethnic communities living different parts of the country. Seven cultural institutes were established in the country. There are a number of research and academic studies those documented some traditional knowledge, innovations and practices from the CHT and other parts of the country. Comprehensive study will be undertaken in the upcoming development projects of the government

The hill people of in the CHT developed and practices different farming practices by their own effort. In most cases it is location and sometimes community specific. A good number of research and academic studies have documented some traditional knowledge and innovation practices from theCHT and other parts of the country (Alam, 1996; 1997; 1998;2002; Alam and Khisa, 2000; Alam and Mohiuddin, 2001; Mohiuddin, 2009, Mohiuddin and Alam, 2011).

The role of indigenous people and traditional knowledge on natural resource management of Chittagong Hill Tracts have been well focused (Khisa. 1997a,1997b, 1998; Millat-e-Mustafa 1998; ADB, 2001). There is no systematic effort by the government to document and integrate these knowledge in any sector plan or biodiversity conservation planning. Recently an effort has been taken on the rehabilitation of Village Common Forest through Chittagong Hill Tracts Development Facility (CHTDF) programme.

Village Common Forests (VCFs) are common property resources of the villages in the CHTs. These are the community conserved areas. VCFs are generally small, averaging from 20 to 120 ha in size and consisting of naturally grown or regenerated vegetation. They play an important role in conserving forest resources and are usually very rich in biodiversity, harboring rare plant and animal species that are not usually found in state-owned reserves or unclassified forests due to continued deforestation and land degradation. The VCF system is still used today; in many cases VCF are theonly remaining natural forests in the surrounding area. A community-based biodiversity conservation and management approach of VCFs has been undertaken in 54 VCFs in Chittagong Hill Tracts under Chittagong Hill Tracts Development Facility (CHTDF) programme. VCFs with nearly 4,200ha have been brought under improved management along with small streams and associated watersheds.

Some of the indigenous practices on natural resource management still practiced by indigenous people are briefly described below.

Land use zoning: Generally hill people consider landscape of the hills in land use planning. This is local, specific and ecologically sound. They follow some sorts of zoning for land use planning. Hill Slope differentiation is considered for different crop cultivation. The moisture content and nutrients of the hills vary with slope differentiation and generally is higher in foothill than hilltop. Using the traditional knowledge the hill farmers differentiate slopes for different crop cultivation practices. They plant crops of different habits such as annual crops (like aroids, gingers) towards the lower slopes and foothills. In the mid-slopes they plant fruit trees. Toward the hilltop they prefer to plant timber trees. ADB (2001) reported flat to moderately steep sloping land (0-35% slopes) can be utilized for annual crops and thus reduce the soil loss.

Local climate condition as an indicator for crop selection: Climate of an area is an important parameter for selecting crops for that particular area. The Murang community of Empu Para, Bandarban district has their own “climatic” knowledge for selecting crops for the area. Farmers select crops considering the climatic-conditions such as thanda (coldness) and gorom (warmness) of a locality depending on altitudinal variation. The farmers ofEmpu Para of Bandarban district at a higher altitude in Chimbuk hill range (about 875 meter) grow citrus fruits like orange (*Citrus reticulata*), malta (*Citrus sinensis*), jambura (*Citrus grandis*), and Satkora (*Citrus macroptera*) etc. in addition to jhum farming.

They do not go for pineapples though the farmers near Bandarban and Ruma grow pineapples. Empu Para is situated at higher elevation than Bandarban and Ruma. The climate is comparatively cooler in Empu Para and this condition is locally called as thanda and considered as suitable sites for citrus cultivation and not suitable for ginger cultivation. Foggy weather during flowering time is considered to be suitable for good citrus fruit setting. On the other hand, Sharon Para is comparatively hotter (gorom) than Empupara, and, considered suitable for ginger cultivation. Climate is considered comparatively warmer (gorom) in Ruma and Bandarban than Empu Para, and farmers grow here pineapples, mango, banana, lichi, boroi and papaya. Use of this knowledge will helps in species selection for farming practices of a particular sites based on local climate.

Crop selection by farmers based on altitude and wind velocity: Altitude and wind velocity of an area are also considered as important criteria for crops selection of an area. The hill people of Empu Para and Rwangchari have their traditional knowledge for crop selection based on the altitude and wind velocity of the locality. The farmers of the Empupara do not cultivate til (*Sesamum indicum*) in jhum at high altitudes, because when the til fruit ripe, the pods split up and disperse for high wind velocity.

Cashew nut (*Anacardium occidentalis*) is an important cash crop of the Bawm community of the Rowangchari. But farmers of Sharon Para do not cultivate cashew nut. Sharon Para is situated at high elevation than Rwangchari. Farmers of Sharon Para reported that high wind velocity during flowering season in the areas causes less fruit setting than Rwangchari. It is considered that in low wind velocity fruit setting is good. This practice provides site-specific crop selection information and thus ensures higher productivity.

Seed collection using traditional knowledge: Traditional knowledge of seed sorting and seed storage is very simple. The hill people select healthy and disease-free plant for seeds as seed plants. They collect seeds from mature and bigger sized fruits. In case of upland paddy, desired seed crops are harvested in a sunny day and threshed immediately after harvests. In case of fleshy cucurbit fruits for seeds, farmers put some rice straw beneath the fruit in the field, so the fruits do not touch the soil. After collecting seeds farmers dry seeds in sun for 7-10 days and store them in bamboo tubes or hallow gourd pots. To protect insect attack and to keep moisture at optimum levels seed jars are stored near fireplace or hung under roof

over stoves. It is easy method of seed collection and to maintain the local germplasm of different crops.

Maintenance of vegetation at the catchment's areas: The hill people maintain vegetation cover at the upper catchments without any disturbance of the vegetation. The vegetation at the catchments area ensures continuous flow of stream water. Even when they prepare jhum land they keep a strip of vegetated land along the foothills to protect soils from erosion and adjacent land from jhum fire.

Wild yam collection by the Mandi community people in Madhupur area is a good example of sustainable harvest. The Mandi people during lean period in the months from November to February depend to extent wild food plants. During the months of December – January they collect wild yams from forests. In collecting wild yams, they dig out soils from around the yam tubers by shovel or spade. Then they cut the yam tuber keeping few centimetres of yam below the collar zone of yam tuber and the basal part of the stem and take out the tuber. Then again, they fill the dugout whole with soils where the new yam tuber develops. Because of digging tuber, a soil work is done that make the emerging tuber to grow easily. The Mandi people report that if the matured yam tuber is not collected then it is rotten under the soil. So, it indicates that this harvest is a sustainable mode of production and consumption.

Indicators and Activities

Indicator(s)used in this assessment

- Project documents.
- Study reports

Relevant websites, links, and files
https://www.adb.org/sites/default/files/project-document/70472/tacr-ban-3328.pdf

Level of confidence

Level of confidence of the above assessment
Based on indicators and expert opinion

Level of confidence of the above assessment
Assessment done on the basis of stakeholders' consultation, expert opinion and review of different reports.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 19: By 2021, Agencies responsible for Biodiversity and NaturalResources Management will be adopting modern information technology like GIS andRS and information on biodiversity will be shared through Clearing House Mechanism (CHM)

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
14 Oct 2018

Summary of the assessment of progresses toward the implementation of the selected target

Bangladesh Forest department, Department of Environment, Department of Fisheries, Department of Bangladesh Haor and Wetland Development are major agencies responsible for biodiversity and natural resource management. Other departments like Local Government Engineering Department, Department of Agriculture Extension, agricultural, fishery and forestry research organizations are also concerned with biodiversity research and management.

Forest Department (FD) has completed Remote Sensing (RS) & GIS based land cover/forest cover maps of 2000, 2005, 2010 and2015. FD has completed first ever National Forest Inventory (NFI). Thus, both RS-GIS based and sample-based forest monitoring ensured. Outputs are being used for resource management.

Decision support for mainstreaming and scaling up of sustainable land management (DS-SLM)" is focusing on better information and understanding of land degradation and the generation of decision support tools to promote sustainable land management. Many of the organizations have their GIS facilities. Most of the organizations get their services through outsourcing. Following table gives an idea about the GIS and RS situations of the country (Table 6).

Table 6: GIS activities of organizations involved in activities related to biodiversity

Organizations	Descriptions	References
Survey of Bangladesh (SoB)	Survey of Bangladesh is a national institute of Mapping. It has some projects related to GIS. Like Topographical survey,cantonmentsurvey,boundarydemarcation,geographical/politicalmap, Arial photography, special map, large scale contour survey, operational assistant, digital database of base map of 1:50,000 scale, Trigonometric and Geodetic Control Survey etc.	http://www.sob.gov.bd/site/page/b90704d1-b45a-4f15-914b-c9fe980f7eaa/কাযাব লীhttp://www.sob.gov.bd/site/page/e124ad44-68f8-4d1d-bc52-852139c93153/পটভূমি
Space Research and Remote Sensing Organization	SPARRSO is engaged in use of space science and remote sensing technology of Bangladesh. This organization is engaged in research work of space science and remote	http://www.sparrso.gov.bd/site/page/2e25fc8a-d381-4b9f-be97afde3425f308/ারেসা'র-পিরিচিত

(SPARRSO)	sensing technology, forest and environment, agriculture, fisheries, geology, mapping, water resources, land use, weather, geography, oceanography etc.	
Forest Department (FD)	Department of Forests engaged in the management of forest resources and watershed management and conservation with the development of forest resources. BFD uses GIS and RS Technology for the management and monitoring of forest resources.	http://www.bforest.gov.bd/site/page/f130144e-978a-4931-b7d0-959dc93eecf1/কাযাব লী-
Department of Environment (DoE)	DoE does not have any established wing/section on GIS. However, the organization has recently established a GIS lab under a project of GIZ. DoE has used GIS in some technical studies.	http://www.doe.gov.bd
Soil Resources Development Institute (SRDI)	This organization analyze Arial photography, land sat image and topographical map for survey of soil and land use and also soil survey of the whole Bangladesh based on the result of the analysis of Arial photography, field survey and research of soil sampling. Based on the surveys, various types of maps and reports are prepared and distributed.	http://www.srdi.gov.bd/site/page/db5258ab-5321-4aed-a049-aa34dd8f55bd/এসআরডিআই-এর-কাযাব লী
Local Government Engineering Department (LGED)	LGED adopted the technological advantages of Geographic Information System (GIS) and Management Information System (MIS) in early 90s. The GIS Unit of LGED is the first setup of its kind in any public sector offices in Bangladesh. The main purpose of GIS Unit is to develop local government infrastructure database in GIS platform to facilitate local level planning and participation with modern planning tool. Geo-spatial database in different thematic layers becomes essential basic information for project planning and monitoring.	http://www.lged.gov.bd/UnitAbout.aspx?unitID=%205

Bangladesh Agricultural Research Council (BARC)	BARC is a national organization which is analyze GIS relatedproject	http://www.barc.gov.bd/site/page/40e34682-c10b-46c0-965f-fb1eab57e76e/ডৌশ7-এবং-কাযাব´লী
Department of Fisheries (DoF)	Uses of GIS at the DoF is minimum	http://fisheries.gov.bd/site/page/43ce3767-3981-4248-99bd-d321b6e3a7e5/হিতহাস-ও-কাযাব´িল
Palli Karma Sahayak Foundation (PKSF)	PKSF is a public foundation that use GIS for some projects	http://pksf-bd.org/web/#
Department of Agricultural Extension (DAE)	DAE has a GIS wing but its activities related to GIS is very basic	http://dae.gov.bd/site/page/0d4043b8-8f9c-414d-8f6a-c4f5107028c5/চলমান-ffক¶সমুহ
Bangladesh Haor and Wetland Development Board (BHWDB)	BHWDB has an established wing of GIS. This is the organization that is using high resolution images for wetland mapping and planning	http://dbhwd.gov.bd/site/page/e7835a2a-1e25-4786-8639-a74b4e7c05cd/চলমান-ffক¶
Bangladesh Water Development Board (BWDB)	BWDB is a national organization that uses GIS for planning and mapping.	http://www.bwdb.gov.bd/#
University of Dhaka	The department has two well-equipped GIS and Remote Sensing laboratories with a total number of 60 computers. There are ArcGIS and ERDAS IMAGINE software. Both vector and raster data can be operated.	http://geoenv.du.ac.bd/gis-rs-lab/
University of Rajshahi	This department is one of the oldest and largest departments in the University. The department is well equipped in respect of technical equipments and staffs. The teachers of this department are actively engaged in research activities in different areas of the discipline including GIS and Remote Sensing.	http://www.ru.ac.bd/geography/
Jahangirnagar University, Savar	Geography is one of the four early academic departments at Jahangirnagar University under the faculty of Social Sciences. Departing from the traditional	http://www.geography-juniv.edu.bd

	geography, the department placed emphasis on the modern applied approaches in its academic curricula and research activities suited to the study of humans and environment in a third world setting.	
University of Chittagong	Chittagong University has department of geography with academic research on GIS. Institute of Marine Sciences and Fisheries of the university uses GIS and RS technology in its research and academic activities.	http://cu.ac.bd/ctguni/index.php?option=com_cudata&task=geography%20and%20environmental%20studies
Jagannath University	Keeping in harmony with the long drawn glorious history of the Jagannath University, the Department of Geography and Environment has earned a golden past with remarkable present contributing to the nation. Department of Geography and Environment is contributing significantly with 20 dedicated teachers to the national and international scientific community through a wide spectrum of scientific studies and researches. The RS- GIS lab of the department is aided with modern spatial tools e.g. Remote Sensing and GIS to help facilitate students, teachers and researchers to draw solution to the spatial problem through geospatial analysis, database preparation and visualization.	http://www.jnu.ac.bd/dept/portal/web/geography_environment/overview.html
Begum Rokeya University, Rangpur	Founded in 2010, the Department of Geography and Environmental Science under the faculty of Life and Earth Sciences at Begum Rokeya University Rangpur is one of the leading center of geographical and environmental study as well as research in northern part of Bangladesh. This department is fortunate to enjoy a superb teaching and research environment in a newly declared city corporation area, with Physical and GIS & Remote Sensing laboratory.	http://www.brur.ac.bd/index.php?option=com_content&view=article&id=153&Itemid=65

Institute of Water and Flood Management (IWFM)	The Remote Sensing and GIS Laboratory of the Institute began in 2004.The hardware of the Laboratory includes: 15 high-speed computers for image processing and geospatial analysis, hand-held stereoscopes for visual image interpretation, printer and scanner.	http://iwfm.buet.ac.bd/student_activity/project-work-is-going-on-in-the- remote-sensing-and-gis-laboratory
Institute of Water Modeling (IWM)	IWM has a long history of implementing Geographic Information System (GIS) along with modeling tools and techniques for providing professional services in the field of Integrated Water Resources Management. The division started its journey as a unit back in 1994, at the beginning of Surface Water Simulation Modeling Project Phase-III. Over the years it has gained experience on providing GIS solutions to different public and private organizations. As time goes on the demand of this unit had been increasing from both in-house and to the external clients. The unit gained experiences with good reputation in the fields of development of Detail Topographic maps, Digital Elevation Models, Flood/Inundation Maps etc. using the state of the art tools & technologies.	http://www.iwmbd.org/iwmwebsite/ictgis.php
Center for Environmental and Geographic Information Services (CEGIS)	CEGIS is a scientifically independent organization and performs integrated environmental analysis using technologies like GIS, RS, IT and databases. It provides solutions to issues and problems in a wide range of sectors, such as– but not limited to – water, land, agriculture, meteorology, forestry, fisheries, morphology, ecology, environment, climate change, archeology, socio-economy, power, transportation and disasters.	http://www.cegisbd.com/GenInfo

Indicators and Activities

Indicator(s)used in this assessment
• CHM Website;
• Websites of different working organizations on the application of GIS/RS;
• Published reports.

Any other tools or means used for assessing progress
• Stakeholders' consultation

Relevant websites, links, and files
Clearing House Mechanism of Bangladesh

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
The indicators are limited. Assessment was drawn mostly from web links. It also included stakeholders' consultation, expert opinion and review ofdifferent reports.

Adequacy of monitoring information to support assessment
Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017

National Target 20: By 2017, financial resources will be mobilized towards accelerated implementation of targets and activities of updated NBSAP

2018 - On track to achieve target

Category of progress towards the implementation of the selected target

Rate of progresses toward the implementation of the selected target
On track to achieve target

Date the assessment was done
10 Nov 2018

Summary of the assessment of progresses toward the implementation of the selected target

Fund allocation through annual development programme, Bangladesh Climate Change Trust Fund and from overseas development assistance are mostly the source of funds. Annual

investment (in lakh taka) for biodiversity conservation through MOEFCC, BFD and DoE for 2015-16 was 31,325; for2016-17 was 25, 524; for 2017-18 was 5,471, and for 2018- 19 is 7,657.00. There is a decrease of resource allocation from 2015-16 to 2017-18, but increase from 2017-18 to 18-19. The decline may be due to the ending of donor driven development projects.

The Ministry of Environment, Forest and Climate Change has prepared the Country Investment Plan (CIP) for Environment, Forestry and Climate Change (2016 - 20210) in 2017 which includes four pillars. Most of biodiversity projects comes under Pillar 1: Sustainable development and management of natural resources where estimated funding requirement has shown as 2460.1 million USD with an existing fund of 642.3 million USD indicating a gap of 1817.8 million USD (74%). In terms of percentage it the highest compared to other three Pillars.

The currently two investment projects, one is Sustainable Forest and Livelihood (SUFAL) Project with a budget of US$175 million(WB-IDA) and another is Protection of Sundarban Mangrove Forests (SURAKSHA) project with a budget of about US$95 million(GoB fund) are in the process of approval.

There is no remarkable investment from private sector on biodiversity management. Recently there was a financing for a project power plant project in Khulna. The800 MW combined-cycles power plant is proposed for Khalishpur Sub-district of the Khulna District in Bangladesh, along the Bhairab River by North-West Power Generation Company Limited (NWPGCL). The company is financing IUCN Bangladesh Country Office for the period of June2017- February 2018 for Biodiversity Assessment for Rupsha 800 MW Combined-Cycle Power Plant Project along the Bhairab River.

Regarding the environmental accounting Bangladesh Bureau of Statistics (BBS, 2017) published “Bangladesh Environmental Statistics Framework (BESF) 2016-2030”, the document first of its kind, to develop a framework to generate environment and climate data and information. The overall aim of the BESF is to provide with a general understanding and guidelines on the importance of environmental resources, poverty and environment nexus and systematic data collection for Environmental Statistics in order to develop the compendium of environmental statistics, the environmental economic accounts as well as natural resource accounts like water, forest, land, energy, environment poverty accounts, experimental eco-system accounts, fish, agriculture etc.

“Greening Public Financial Management for Sustainable Development: A Green Fiscal Framework for Bangladesh” a tool developed for government to plan for and act on green development delivering its development goals (Khan, 2018).

Indicators and Activities

Indicator(s)used in this assessment
- Annual Development Programmes;
- Project documents;
- Published reports.

Relevant websites, links, and files
https://moef.gov.bd/
http://www.doe.gov.bd/
http://www.plancomm.gov.bd/
Bangladesh Climate Change Trust
Biodiversity Assessment for Rupsha 800 MW Combined-Cycle Power Plant Project
Greening_public_financial_management_for_sustainable_development.pdf
Project Appraisal Document on a Proposed Credit for a Sustainable Forests and Livelihoods (SUFAL) Project.pdf

Country Investment Plan for MoEFCC

Level of confidence

Level of confidence of the above assessment
Based on partial indicator information and expert opinion

Level of confidence of the above assessment
The indicators are limited. So, assessment drawn are heavily on stakeholders' consultation, expert opinion and review of different reports.

Adequacy of monitoring information to support assessment
Monitoring related to this target is adequate

Monitoring system for the target
Progress of the target will be monitored by the National Committee on Biological Diversity under the Biological Diversity Act 2017. Annual Development Programmes and Annual Performance Agreement (APA) are good source of monitoring systems of the indicators.

Other relevant website address or attached documents
http://www.plancomm.gov.bd/

Section IV. Description of national contribution to the achievement of each global Aichi Biodiversity Target

1. Awareness of biodiversity values

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Awareness raising is a continuous process and going through of related international days and events. Media coverage by print and electronic media, video snapshots in you tube propagate the awareness more effectively. Many television channels have their regular programmes on nature and biodiversity. Many voluntary organisations are also making people aware about the importance of biodiversity conservation.

About one million people are aware about biodiversity each year. Good number of community level stakeholders at grassroots are made aware about the importance of biodiversity through different project initiatives. People were also made aware through posters, stand banners, 'dos' 'don'ts' signage, billboards, videos. People are taking many initiatives in by biodiversity conservation particularly in identifying and managing bird colonies from their own.
The national progress is on track to achieve the target.

2. Integration of biodiversity values

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Values of the ecosystems were considered in developing Master Plan of Haor Area; National Aquaculture Development Strategy and Action Plan of Bangladesh 2013–2020; Master Plan for Agricultural Development in the Southern Region of Bangladesh; Bangladesh Forestry Master Plan 2017 – 2036(draft final). There had been forest carbon inventory for 13 PAs under CREL project. Around half a million fishermen are directly dependent on Hilsaproduction for their livelihood, and another two million are indirectly dependent on fishing. This gives an indirect value of ecosystem.

Bangladesh Bureau of Statistics (BBS, 2017) published "Bangladesh Environmental Statistics Framework (BESF) 2016-2030", to develop theenvironmental economic accounts as well as natural resource accounts like water, forest, land, energy, environment-poverty accounts, experimental ecosystemaccounts, fish, agriculture etc. The national contribution to global progress is in an insufficient rate. But Bangladesh is going to undertake studieson economic valuation of ecosystems in upcoming projects, viz. SUFAL and EBM-ECA. Calculated ecosystem values will be sent forward to theMinistry of Finance and General Economic Division of the Planning commission to integrate in the national accounting system.

3. Incentives

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Bangladesh will conduct study on impacts of incentives or subsidies harmful to biodiversity as identified as National Target 3 in the NBSAP by 2021. National Agriculture Policy 2018 has emphasized on sustainable natural resource management in enhancingagricultural

productivity of the country. To reduce the negative impacts of the use of chemical fertilizers and insecticides, it has given due focus towardsintegrated and organic pest management, and use of organic fertilizers. The extent of national contribution to global progress is in an insufficient rate.

4. Use of natural resources

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

The National Environment Policy 2018 assures protection of environment through sustainable consumption and production of resources. Already some initiatives have been taken particularly in energy sector. The improved cookstoves, solar home system (SHS) are sustainable consumption initiatives adopted to protect environment from pollution. For sustained consumption of resources zero discharge process has been initiated. Use of improved stoves, liquid petroleum gas has increased.

General Economics Division, Government of the People's Republic of Bangladesh with technical support from UNDP has prepared in 2018 a 'Roadmap for Developing Bangladesh Framework of Sustainable Consumption and Production Aligned to SDG-12 Implementation'. The extent of national contribution to global progress is in an insufficient rate.

5. Loss of habitats

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Bangladesh exhibits a national tree cover dynamic where net change is rather small, but gross dynamics significant and variable by forest type. Increasingpopulation with different sector development is creating competitive demands for various land uses and thus making land use conflicts. In Bangladeshmajor pressure is being exerted on forest land. Forest resources in the country have been continuously depleting in terms of both area and quality becauseof human and social factors.

FAO assessment in 2015 indicates that between 1990 and 2015, Bangladesh annually lost 2,600 hectares of primary forest. Some progress about restoration of degraded habitats, particularly of forest habitats have been achieved through implementation of CREL and CRPAP projects. Habitat have been restored through swamp forest and mangrove planting, assisted natural regeneration; wetland re-excavation, creation of fish sanctuary and threatened species protection (turtle nesting grounds). Thus habitat loss has been reduced. Total tree canopy cover increased by 135,700 (± 116,600) ha(4.3%) during the 2000–2014 time interval. Co-management of PAs coupled with alternative livelihood opportunities had given impacts biodiversity conservation. CREL data shows that rate of degradation from 2001 to 2012 is much less than the previous rate.

Tree cover monitoring 2000-2014 (FD 2017) show a decrease of 80 thousand hectares in Hill forest, little increase for mangrove plantation and Trees outside Forests (village areas, rural settlements) showed highest increase in tree cover. The result shows an overall tree cover increase of 135 thousand hectares in 15 years, thus resulted Bangladesh tree cover reaching 22% of country area.

A map generated during this report shows the scenario of water body loss in Sylhet Division during 2000- 2018 (Figure 24). Re-excavation of small water bodies, maintenance of irrigation canals, and management of fish pass, development of beels for creating fish sanctuaries, excavation of feeder canals, and fresh water swamp species plantations in haor areas are improving the wetland habitats. Emphasis to halt habitat degradation and its restoration has been given in upcoming projects. The extent of national contribution to global progress is in an insufficient rate. Land degradation is severe in Bangladesh. A total of 10.76 million hectare (m ha) of land has been affected by salinity intrusion, fertility loss or by degradation in hill slopes (Table 7).

Table 7: Land degradation

Land Degradation	**Area (million ha)**
Salinity affected	1.06
Fertility loss	8
Degraded soil in hilly area	1.7
Total	**10.76**

Water body also changed in different parts of the country. Figure 24 demonstrates the change in water bodies in Sylhet Division during2000-2018.

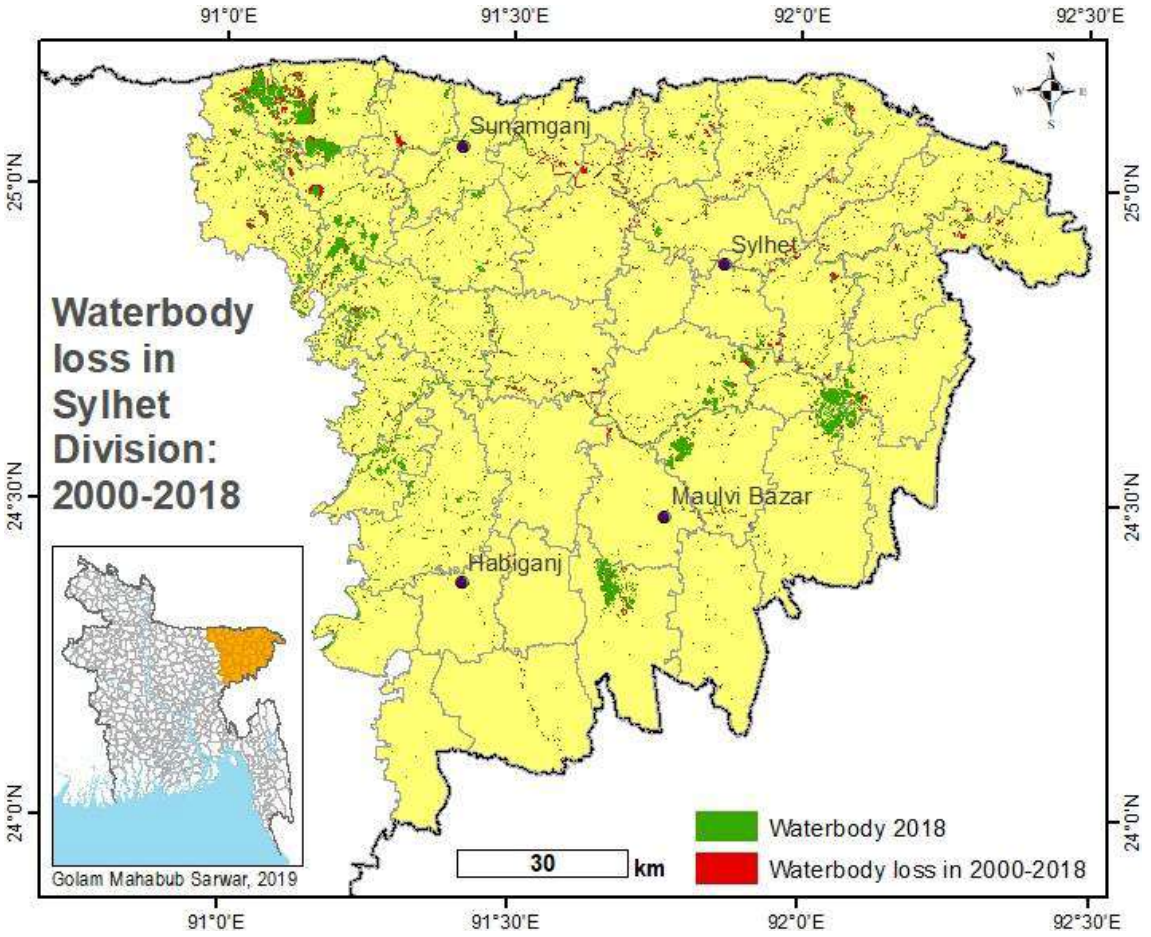


Figure 24: Water body loss in Sylhet Division during 2000-2018

6. Sustainable fisheries

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

The inland open water fisheries of Bangladesh are still a major source of the total fish production. Figure 25shows the position of water bodies in Bangladesh. An analysis of time series data for 2003 - 2014 reveals the declining trend of capture fishery habitat area (a decrease of 0.16 million ha), while the trend of culture fishery habitat area is increasing (by 0.35 million ha). In 1983-84, the contribution of inland capture and culture fisheries to total fish production were 62.59 percent and 15.53 percent, respectively; whereas in 2016-17, inland capture fisheries contributes only 28.14 percent and inland culture fisheries contributes 56.44 percent to total fish production and marine fisheries to 15. 42 percent of total fish production. Figure 26shows district base magnitude of fish production in 2015.

Figure 25: Water bodies of Bangladesh

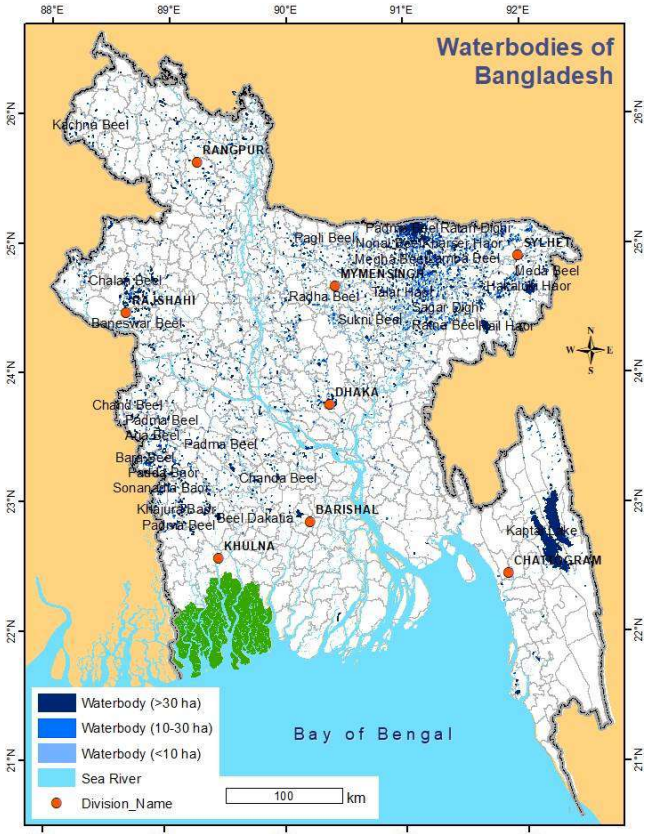
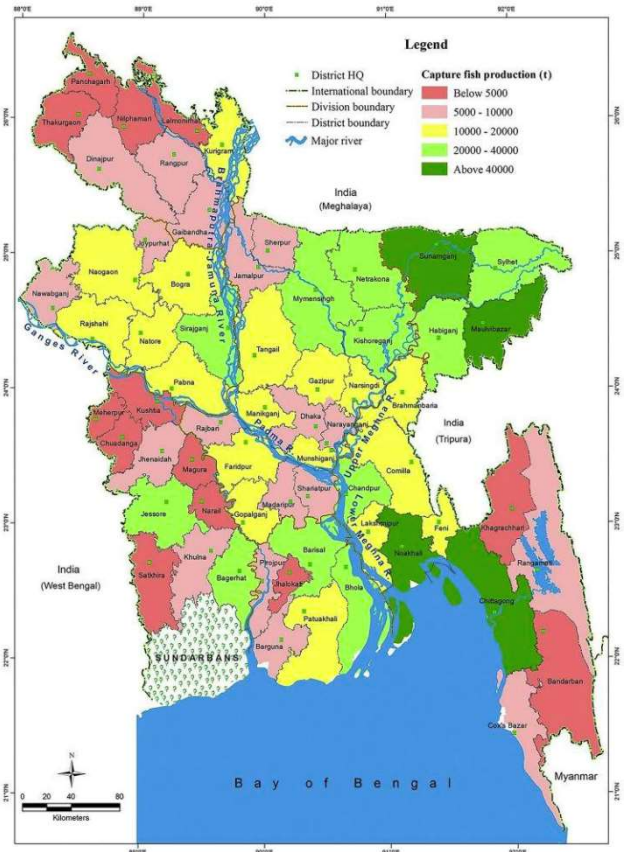


Figure 26: District wise fish production in 2015 (DoF 2018)



In order to stop the degradation of aquatic biodiversity specially species diversity of fish and other aquatic species in open water, a set of technical interventions like establishment of fish sanctuaries, beel nurseries, fish habitat restoration have been undertaken during the past years. Establishment of aquatic sanctuary is one of the effective tools for conserving fish stock, protecting biodiversity and increasing fish production.

Established fish sanctuaries in different selective water bodies has resulted a substantial increase in production and conserving fish diversity in those waterbodies. “Technical Support for Stock assessment of Marine Fisheries Resources in Bangladesh” funded by FAO has been cooperating DoF in marine stock assessment. Management approaches of marine fisheries management include control mesh size of nets. Mesh size of trawl nets and gears are controlled for industrial trawlers. In order to facilitate spawning and conservation of marine fisheries resources, fishing has been banned for 65 days from 20 May to23 July each year, for industrial fishing. The Marine Fisheries Ordinance-1983, 40 meter water depth is reserved for small-scale fisheries to minimize the conflict between industrial vessels and artisanal fishers. Although, with the total catch volume is increasing, the catch per unit of effort (CPUE) along the coastal zone has continued to decline except for the Hilsa fishery (World Bank 2018).

Sustainable Management of Hilsa Fish

The Department of Fisheries (DoF) has undertaken various activities for the conservation of fisheries resources. Eight major activities can be listed as Hilsa fish conservation effort (Table-8).

Table 8: Hilsa fish protection conservation measures taken by DoF

SI	Activities	Time frame	Mode of action
1.	Seasonal ban of juvenile hilsa (Jatka) catch	November to June	Food assistances were given to fisher’s family at the rate of40 kg/ family under Vulnerable Group Feeding (VGF) program.
2.	Seasonal ban on fishing mother (Gravid) hilsa	October (around full moon period of Laxmi puja)	Assistance in the form of AIGA, including small trade, cow/goat fattening, poultry rearing, rickshaw/van, sewing machine, fishing net and cage culture activities were created among affected fisher’s family.
3.	Ban on use of monofilament net “Current Net”	Round the year	Awareness building and mobile court operation in major hilsa catching area
4.	Combined operation for eradicating the destructive fishing gear operation	Special program	Combined operation for eradicating the destructive fishing gear operating through forming special team in the concerned area.
5.	Observation of conservation week Jatka (juvenile hilsa)	March	To create awareness for protection and conservation of Jatka.
6.	Observation of National Fish Week	July/August	To create awareness for protection and conservation of fish including Hilsa.
7.	Ban on hilsa fishing in 6 Hilsa sanctuary	March- April	Six Hilsa sanctuaries were established in the potential hilsa abundant area with seasonal ban of all type of fishing.
8.	Special operation for Hilsa conservation act 1985 by operating mobile court in the riverine area.	Round the year (as and when necessary)	Operation of mobile court with the help of Judicial Magistrate and law enforcing agency throughout the reverine area.

Red list Index of Fisheries

During 2000-2015, IUCN observed a decrease of Critically Endangered species of freshwater fishes by 25%. However, the Endangered and Vulnerable species showed an increase by 21.4% and 78.5%, respectively (Figure 27). A total of 9, 30 and 25 species have been identified as 'Critically Endangered', 'Endangered' and 'Vulnerable', respectively (IUCN 2015). Additionally, 27 species have been assessed as 'Near Threatened' category.

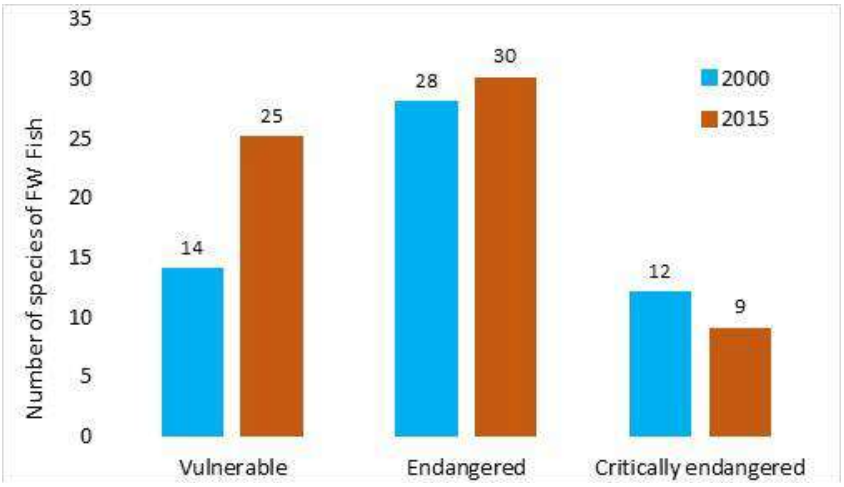


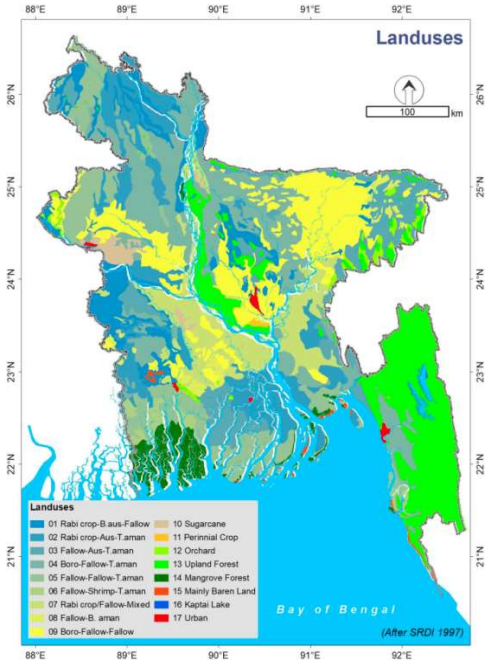
Figure 27: Red list of freshwater fishes in 2000 and 2015 (IUCN 2015)

7. Areas under sustainable management

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

The biodiversity related sector policies emphasized on sustainable production and natural resource management. Land uses of the country can be divided into 17 broad classes (Figure 28). AEZs and Bioecological zones have been shown in Figure 29 and 30, respectively.

Figure 28: Landuses of Bangladesh



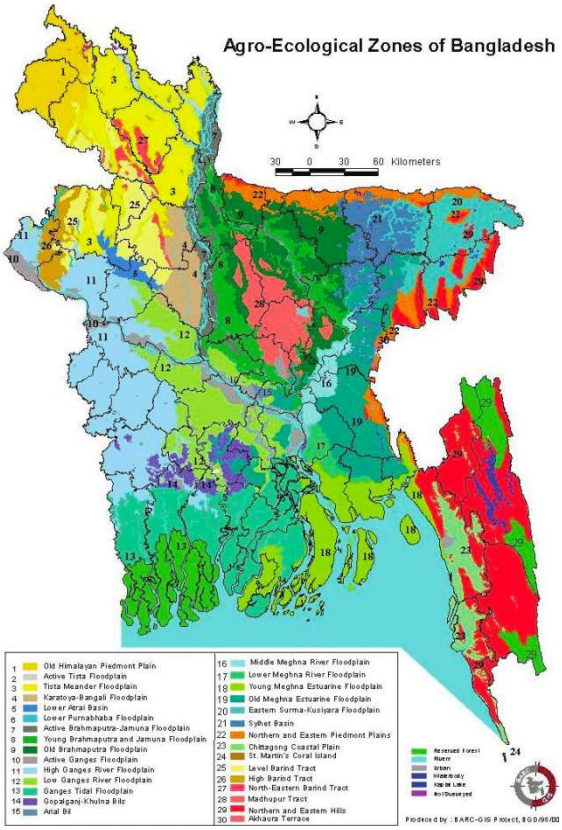


Figure 29: Agro-ecological zones of Bangladesh

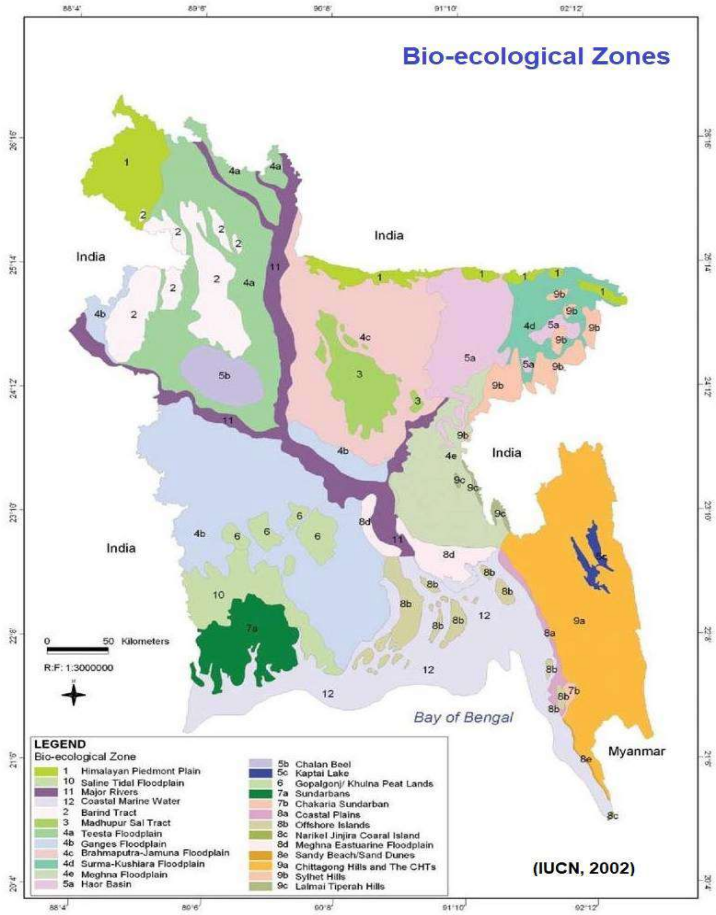


Figure 30: Bio-ecological zones of Bangladesh

National Land Zoning Project by the Ministry Land identified the lands suitable for agriculture, fisheries, forestry and other land uses. The zones are prepared based on remote sensing data. Upazila based land zoning maps have been prepared. Following the NBSAP implementation integrated management plans for agriculture, fisheries and forestry have not yet been implemented. Resources Management Plans for the Sundarban, 2010 – 2020.

Ministry of Agriculture with technical assistance from FAO in 2013 has prepared Master Plan for Agricultural Development in the Southern Regions of Bangladesh with an objective of integrated reduction and livelihood development for the poor. Integrated Management Plans for 14 forest PAs were prepared during implementation of CREL project. Department of Fisheries has taken of agriculture and fisheries.

8. Pollution

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Industrial effluents, municipal wastes, indiscriminate of pesticides and chemical fertilizer are causing pollution to our environment. Wetland particularly rivers are major victims of pollution. A large chunk of the country's 160 million people depend on them for a living and for transportation. Four major rivers near Dhaka are the Buriganga, Shitalakhya, Turag and Balu. About 7,000 industrial units are located in surrounding areas of Dhaka city and surrounding area (Figure 31). These industries through untreated effluent to the water bodies around the city.

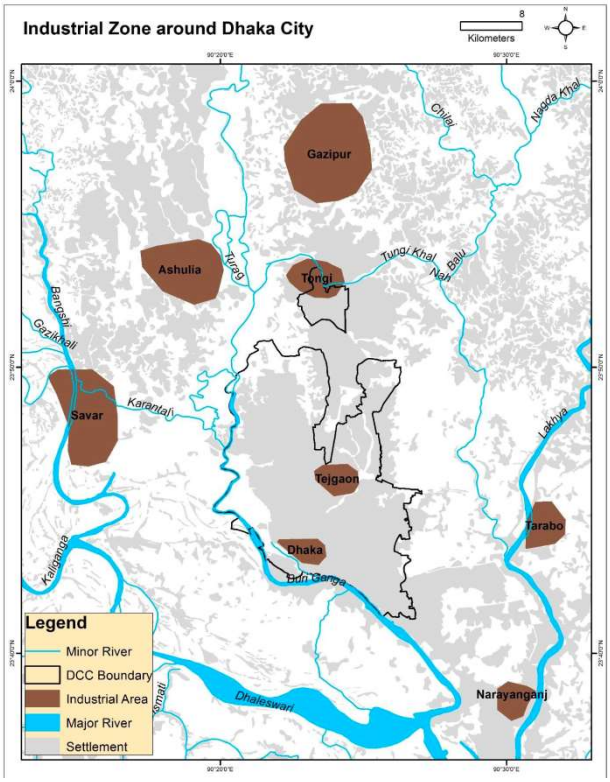


Figure 31: Industrial cluster around Dhaka (2030 WRG, 2015)

Water bodies of the country is polluted by various industrial pollutants. Figure 32 illustrates Chromium contents of sediments of the riverbed of the country.

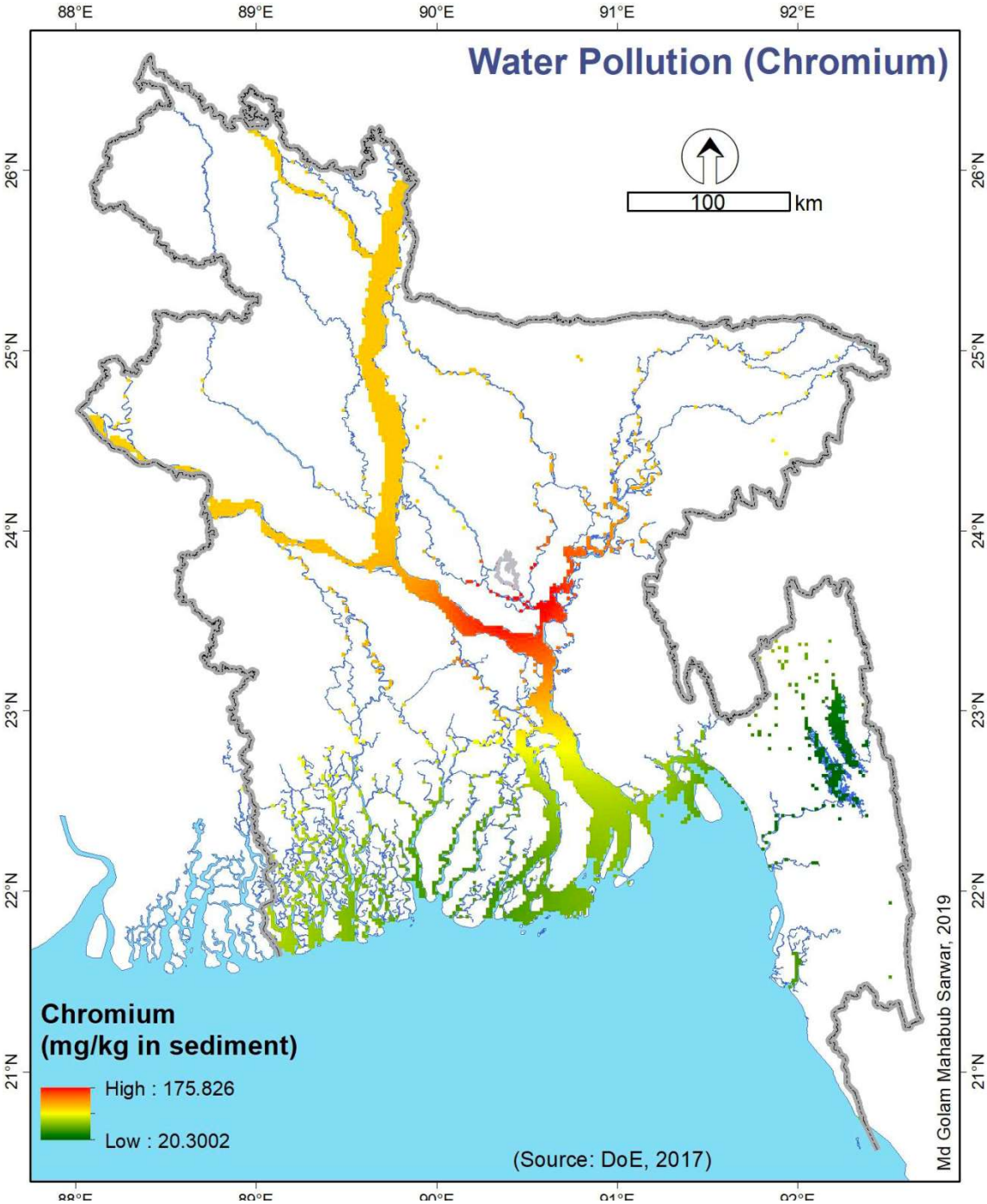


Figure 32: Chromium pollution in the sediments in Bangladesh (Source: DoE 2017)

Biological Oxygen Demand (BOD) of different water bodies of the country is very high for most of the country (Figure 33). It is generally high in the central part of the country because of existing industrial Effluent released from these industries find its way to the nearby water body because of inadequate treatment of the industrial waste.

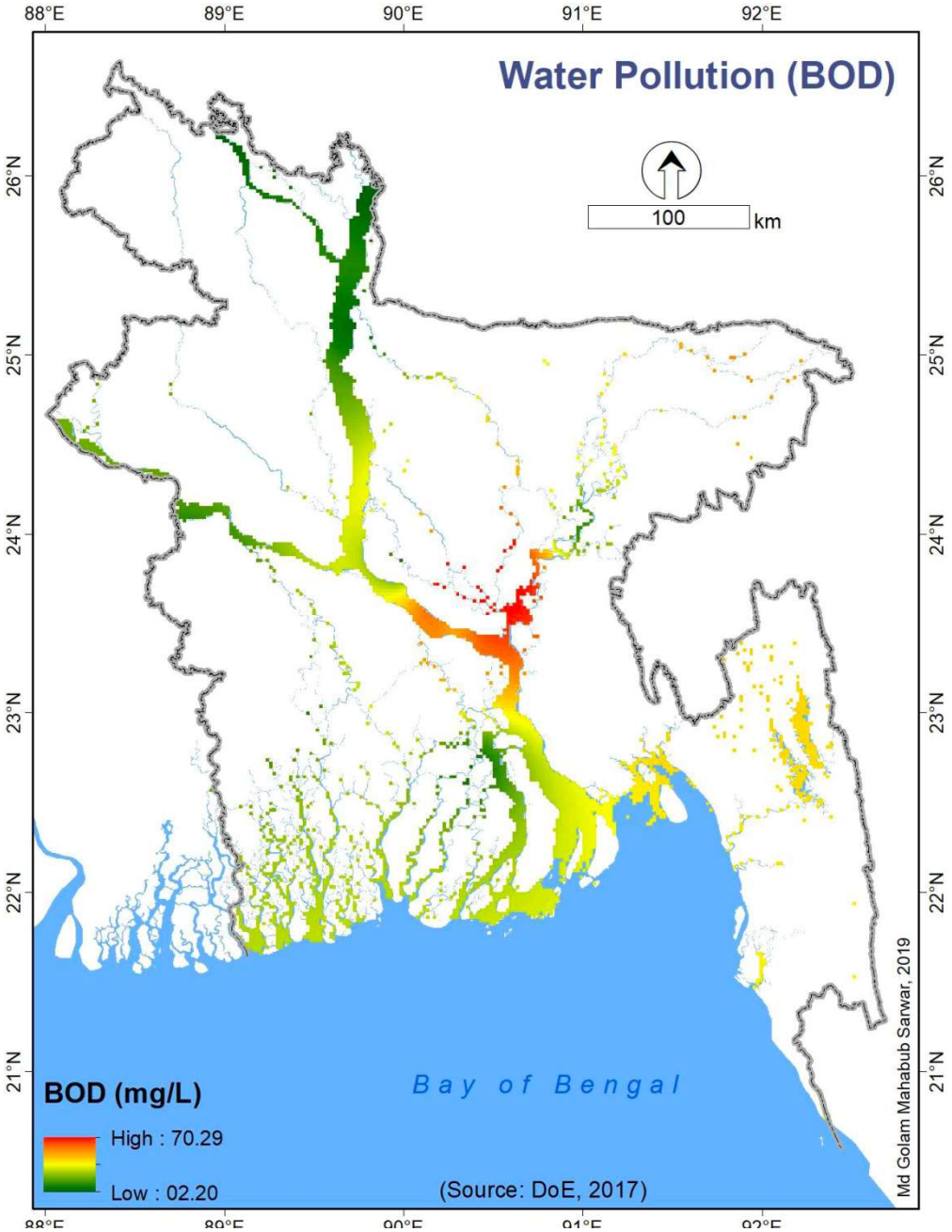


Figure 33: Biological Oxygen Demand (BOD) in river water of Bangladesh (Source: DoE 2017)

DoE is mandated by Bangladesh Environment Conservation Act 1995 to control pollution. As a regulatory authority to regulate pollution control it takes different measures. Zero discharge plans for 368 liquid discharging industrial have been approved. Three industries have already installed zero discharge plants. GIS based river pollution loads in rivers. With objective to develop eco-friendly waste management through production of compost from household wastes, installation of compost production plants have regulate pollution by DoE. Integrated pest management and use of pheromone traps are helping in reducing use of pesticides. Use of organic manure is increasing. Yearbook of Agricultural trend of annual decrease of pesticide use. Fertilizer Recommendation Guide – 2012 provides crop wise fertilizer doze for Bangladesh soils. Use of organic fertilizers especially the vermi-compost non-government organizations. Use of pheromone traps are also increasing.

9. <u>Invasive Alien Species</u>

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Among invasive alien plants, *Eichhornia crassipes* (Kachuripana) is a notorious weed of fresh water ecosystems; *Eupatorium odoratum* (Ayapan) and *Mikania cordata* (Assam lota) are two invaders of terrestrial ecosystems that overtop the canopy of shrubs and young tree saplings. *Parthenium hysterophorus* a recent invader is found along railway tracks, roadsides and fallow lands. Among the invasive animals, fish occupy a remarkable position and threat to our local fish fauna. Among the exotics, tilapia, consisting of two species, *Oreochromis mosambicus* and *O. niloticus* are of greatest concern because these species have invaded all available habitats, including estuaries. However, tilapia is a good source of protein for poor community of the country.

Invasive Alien Species (IAS) has been addressed mostly through legal instruments. The National Agriculture Policy 2018, The National Fisheries Policy1998, Draft National Forest Policy 2016 and The National Environment Policy 2018 have emphasized on sustainable production and natural resource management, and thus do not support the import of invasive species. The Plant Quarantine Act 2011, and Animal and Animal Feed Quarantine Act 2005are the legal instruments to prevent the introduction of alien invasive species. There are plant quarantine posts in almost all ports of the country. Management of forest invasive species has been taken into consideration under World Bank supported 'Sustainable Forests & Livelihoods (SUFAL) Project2018 - 2023'. However, the rate of national progress to achieve the global target needs to be accelerated.

10. Vulnerable ecosystems

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Climatic change has been identified as one of the causes of biodiversity depletion in Bangladesh. People think that draught and erratic changes in precipitation have caused in changing vegetation in the environment like rainfall variability, frequent natural disasters, increase in temperature, sea-level rise, reduced upstream flow, salinity increase, sedimentation etc. have an underlying Bangladesh.

Sea-level rise causes salinity intrusion along the coastal zone of Bangladesh. It has been found that the Sundarban are getting more saline closer to the land area and the natural areas of The highest salinity (>15 ds/m) affected areas have been observed in theSouthwest part covering the Sundarban and a small area covering southern parts of Patuakhali and Bhola districts ds/m) in coastal parts of Barguna, Patuakhali, Noakhali and Cox's Bazar Districts and Sundarban Impact Zones (SIZs) of Khulna and Satkhira districts (Figure 34). Inner parts of Satkhira, Khulna, Bagerhat, Noakhali districts and coastal area of Chattogram district covers low salinity area (Source: SRDI 2010).

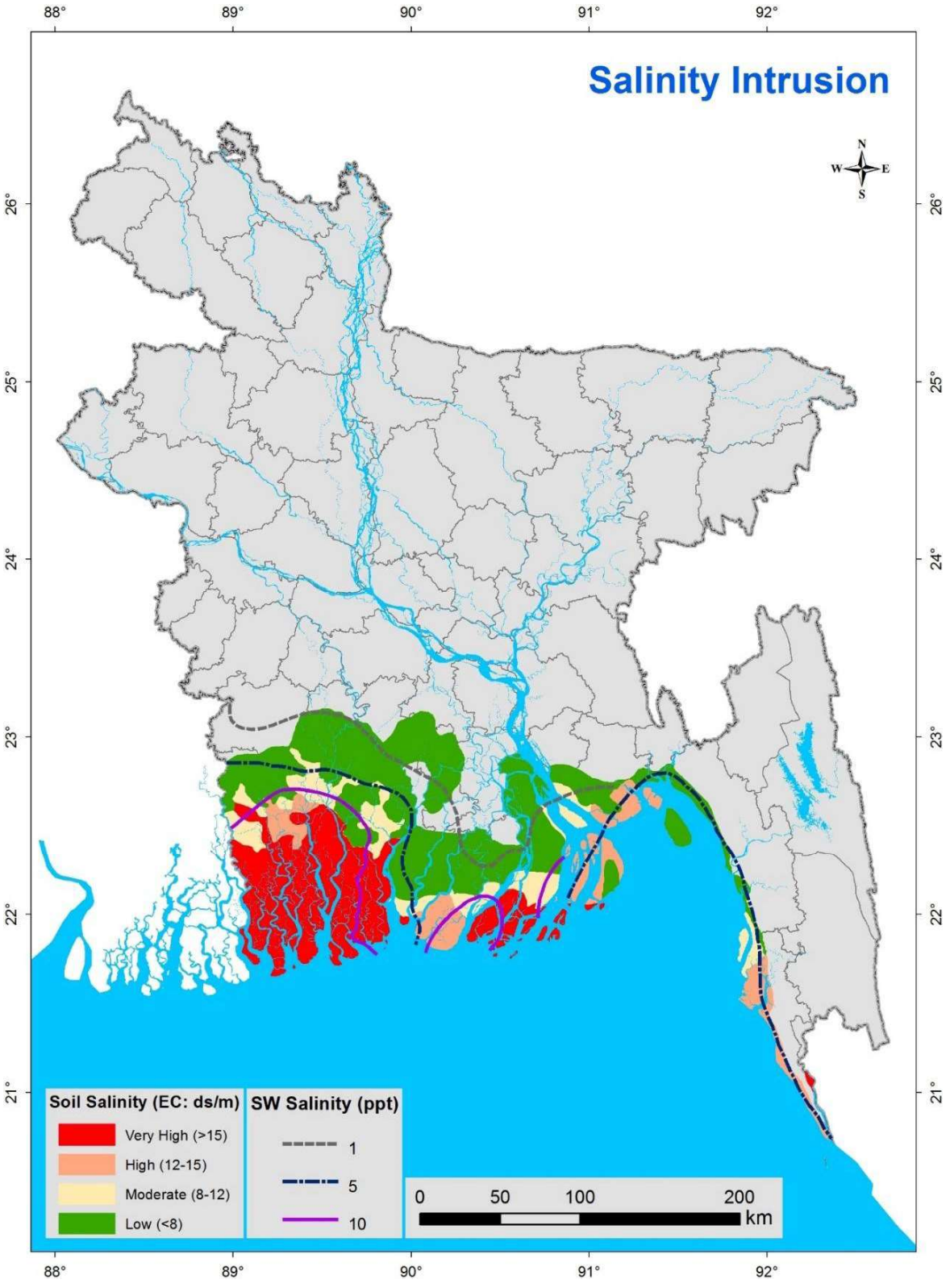


Figure 34: Salinity Intrusion along the Coastal Zone of Bangladesh (after SRDI 2010)

The Barind tract in the northern and north-eastern side of Bangladesh faces frequent drought. Generally, western part of the country is more vulnerable to droughts than eastern side (Figure 35).

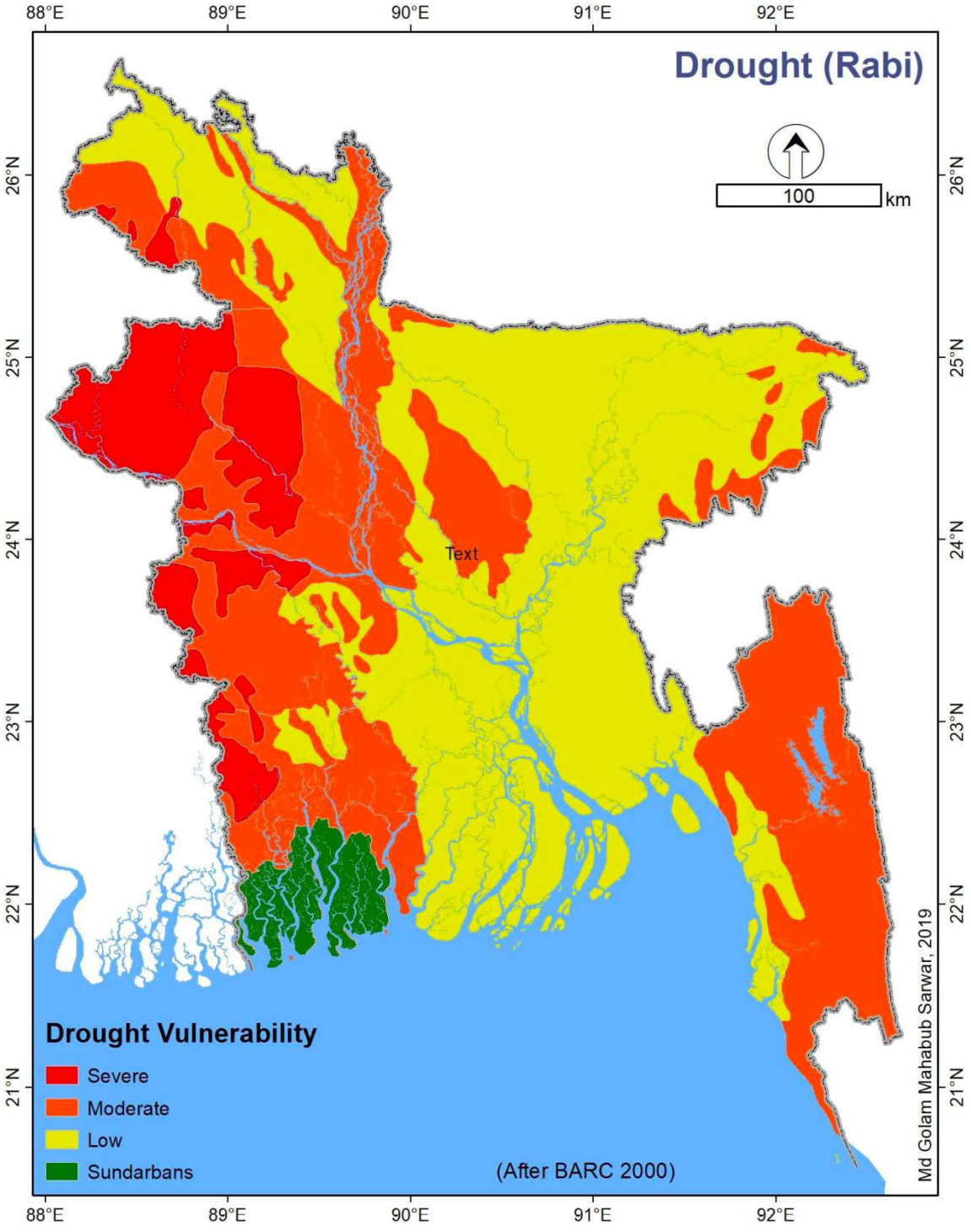


Figure 35: Drought Vulnerability of Bangladesh

Mangrove and coastal ecosystems including coral associated island are most vulnerable ecosystems to climate change. Measures have already been initiated to cope with climate change projects. About 17,519 ha forest land had been re/afforested through implementation of CRPAR project, what has helped in restoring habitat. Afforestation of five coastal districtsof the Bay of Bengal are in progress. To conserve St. Martin's, the coral associated island, the Department of Environment has undertaken a project namely, 'Ecosystem based development, island' and action plans have been drafted.

The national progress is on the track to achieve the global target. However, Coral Crab (Shilakankra) has been identified as vulnerable species in the Red List Index (RLI) of Government (IUCN, 2015a).

11. Protected Areas

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Terrestrial PAs cover about 17.40% of forest land of the country. There are five sites in the coastal areas of the country those are declared as hilsa fish sanctuaries under the Protection and Conservation of Fish Act 1950. Two Vulture Safe Zones as special landscape, i.e., (1) the areas of Sylhet, parts of Dhaka and Chattogram consisting of 19,633 km^2 (1,966,318 ha) as Vulture Safe Zone 1and (2) the areas of Khulna, Barishal and parts of Dhaka with an area of 27,717.26 km^2 (2,771,726 ha) as Vulture Safe Zone 2. Two marine PAs cover about 24, 36,000 ha along coastline of the Bay of Bengal. New Marine Protected Area and Ecologically Critical Areas have been (ECA) identified.

Village Common Forests (VCFs) are common property resources of the villages in the CHTs. VCFs are generally small, averaging from 20 to 120 ha in size and consisting of naturally grown or regenerated vegetation. About 314 Village Common Forests (VCFs) existing in the CHTs covers an area of 12,530 ha.

A community-based biodiversity conservation and management approach of VCFs has been undertaken in 54 VCFs in Chittagong Hill Tracts under Chittagong Hill Tracts Development Facility (CHTDF) programme.

12. Preventing extinctions

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

An assessment for red listing of animals was completed by GoB and IUCN Bangladesh (IUCN, 2015) that covered seven groups of animals (Mammals, Reptiles, Amphibians, Birds, Freshwater Fishes, The most Vulnerable group appeared to be the Butterflies with 4.63% animals under this category and 1.5 % of freshwater fishes, 1% of reptiles and an insignificant number of other Vulnerable.

Species conservation and recovery activities for *Batagurbaska (*Northern river terrapin), Asian giant tortoises *(Manouriaemys), Saltwater Crocodile, Spoon-billed Sandpiper, Bengal Tiger, Vulture, Gharial, Ganges river Dolphin including other Dolphins in Bangladesh, Two Raptor species (Pallas's Fish Eagle and Indian Spotted Eagle), Asian Elephant,* Pangolin and Burmese python in place.

Three Conservation Action Plans for Vulture, Tiger and Elephant have been prepared and already approved by the Government of Bangladesh.Furthermore, two action plans on Gharial and Dolphin have been prepared.

Red list of Threatened Species of mammals, birds, amphibian, reptiles, butterflies, crustaceans and Freshwater fishes have been mapped by GoB with technical supports from IUCN (2015), as indicated in Figure36.

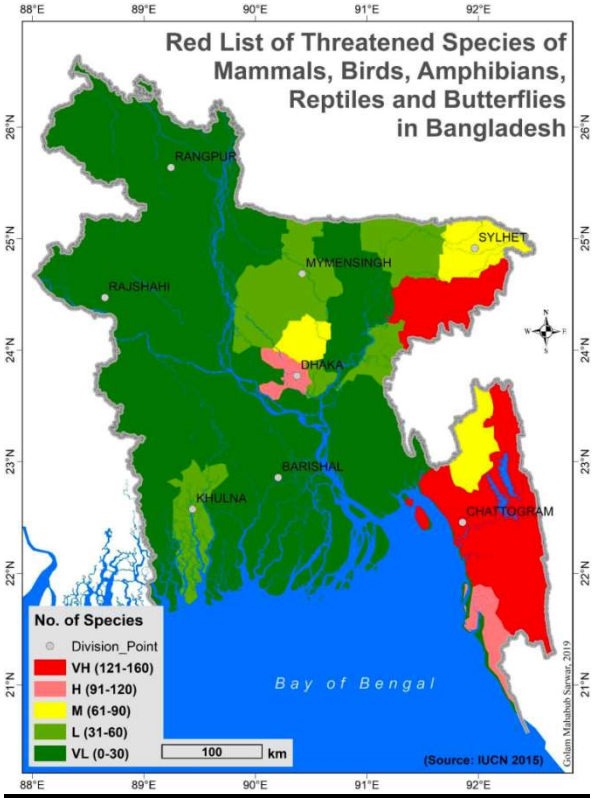


Figure 36:
Red list of Threatened Species of mammals, birds, amphibian, reptiles and butterflies (IUCN 2015)

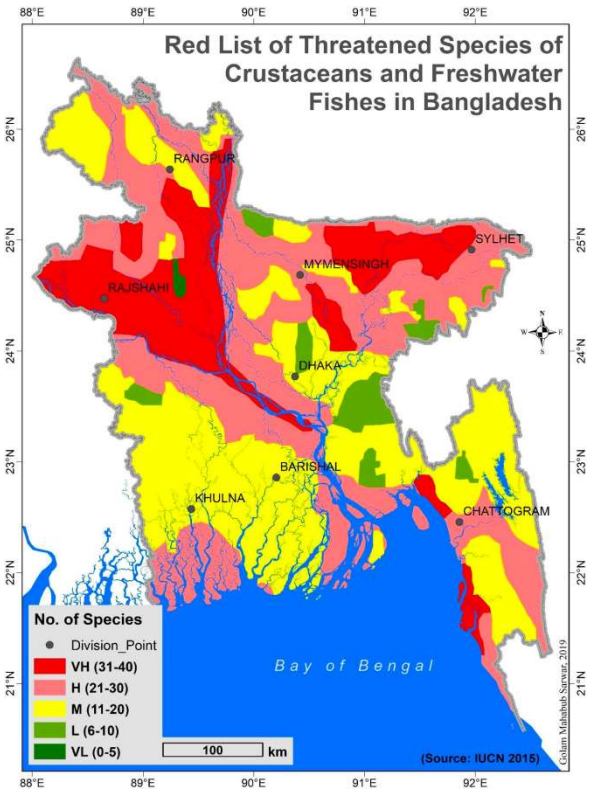


Figure 37: Red list of Threatened Species of crustaceans and Freshwater fishes (IUCN 2015)

13. Agricultural biodiversity

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Germplasms of cultivated crops, medicinal plants, timber trees, animal resources are conserved as a part of their regular work by public research organizations and universities. Many non-government organizations is working with farmers and conserving crop germplasms of rice, bean andother vegetables in farmers' filed. The Plant Genetic Resources Centre (PGRC) of Bangladesh Agricultural Research Institute (BARI) currently maintains11,012 accessions of 138 different agri-horticultural crops in the gene bank and in the field gene bank. Bangladesh Rice Research Institute maintains a gene bank of about 8,272 accession of rice. About blast fibres, a total of 6,012 accessions comprising 4,180 accessions of Corchorus (15 species), 1,461accessions of Hibiscus (22 species), 252 accessions of 15 allied genera and 119 accessions of interspecific hybrid derivatives have been conserved in thegene bank of Bangladesh Jute Research Institute.

A total of 516 tea germplasms have been collected and maintained (ex- situ conservation) in the Bangladesh Tea Research Institute (BTRI) gene bank. Bangladesh Agricultural University (BAU) Germplasm Center (BAU- GPC) has conserved about 11,528 germplasms. Other than major fruits like, mango, litchi, guava, citrus, jack fruits it has about 3, 514 germplasms of minor fruits. It has also about 1, 014 collections of medicinal plants in its credit. Along with fruit plants it has also indigenous plants it has also about 1925 germplasms of exotic plants collected from 44 countries.

Bangladesh Forest Research Institute, Chittagong has been collecting and maintaining germplasms of medicinal plants since 1990 decade. Till date it has centralized germplasms of 126 species ranging from herb to trees. Bangladesh Resource Center for Indigenous Knowledge (BARCIK) an NGO is working with farmers and preserving crop germplasms in farmers' field. Till date it has preserves 820 local germplasms comprising of 653 rice germplasms, 18 local beans, 10 chillies, nine bananas, 14 brinjals. The agro-biodiversity of jhum (shifting cultivation) fields is at risk of degeneration from shifting of hill farming towards permanent horticulture and farming.

Areas of occurrence of some wild relatives of common farm animal genetic resources (FAnGR) like wild pig, Red Jungle Fowl, wild quail and Goyal (Bosfrontalis) are identified.

14. Essential ecosystem services

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Ecosystems' valuations considering ecosystem functions and services have not yet been completed at national basis. Ecosystem functions and services contribute significantly to country's economy. For example about 50 percent of the population still derives its livelihood from primary production in agriculture. The stabilization of accreted lands and protection from storm surges in coastal areas and watershed management and protection from soil erosion in hilly areas are especially important. Forests and related services are contributing 1.7 percent of GDP and their value growing annually by about 5percent. An estimate of ecological services value of Bangladesh Sundarban ranges from US$ 105.07-840.59 per ha per year. Wetland ecosystem rangingfrom coastal to inland, source of fish contributes 3.61 percent to our national GDP and around one-fourth (24.41 percent) to the agricultural GDP. More than11 percent of total population of Bangladesh are engaged with this sector on full time and part time basis for their livelihoods.

Bangladesh coast supports more than 10 globally threatened migratory shorebirds, including Spoon-billed Sandpiper, Asian Dowitcher, Spotted Redshank, Nordman's Greenshank, Goliath Heron and Indian Skimmers. The west coast, on the other hand, supports breeding ground for Batagur baska, Masked finfoot, the Bengal Tiger, Saltwater Crocodile, King Cobra, White bellied Sea Eagle, and Ganges River Dolphin to name a few. The newly accreted lowlying intertidal islands in the estuary, coast and at Bay having the mudflats as the wintering ground of migratory shorebirds, the channels in the central coast are plentiful in macro-benthos and other invertebrates.

Ecosystem services has yet not been taken into national accounting system. Measures so far taken on ecosystems are mostly on conservation of biodiversity components, mostly on species and habitats. The national progress is on tract but at an insufficient rate to achieve the global target.

15. Ecosystem resilience

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Habitat restoration had been achieved through swamp forest and mangrove planting, assisted natural regeneration in hill forests; co-management and aided natural regeneration intervention 192,395 ha mangrove forest have been created along the coastal zone of Bangladesh (Figure 38). The central coastal zone is highly suitable for mangrove plantation.

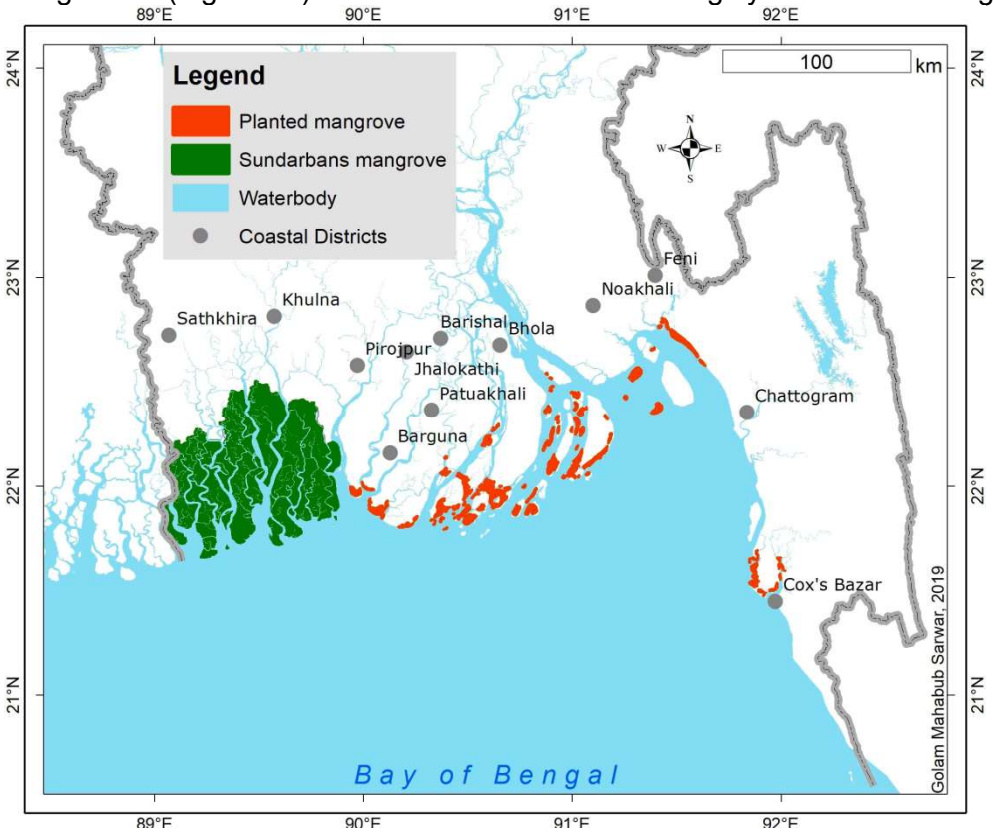


Figure 38: Planted mangrove along the coastal zone of Bangladesh.

In addition to planted mangrove, a total of 8,690 ha area has been covered with non-mangrove plantation and 2,873 ha area was covered by Nypa plantation. Additionally, a total of 127 km coastal planted forests, respectively (Figure 39).

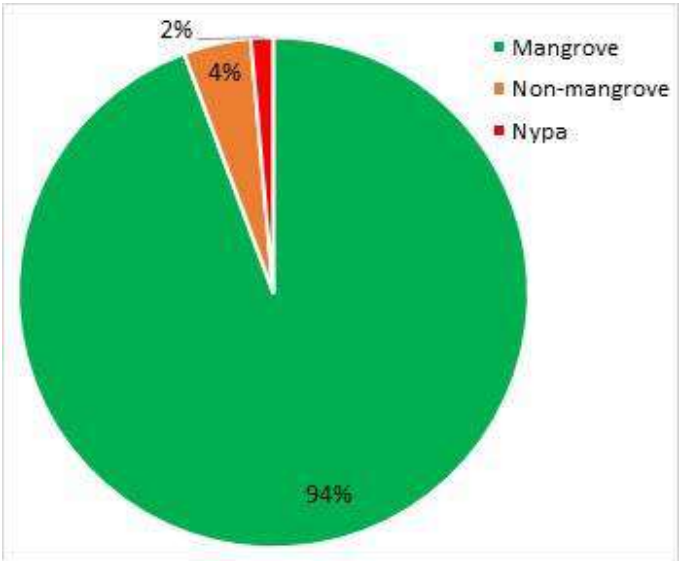


Figure 39: Coastal plantation ratio

FAO assessment 2015 shows that a total 127.28 million tonnes carbonstock in above and below ground biomass including dead wood, litter and forest in Bangladesh.

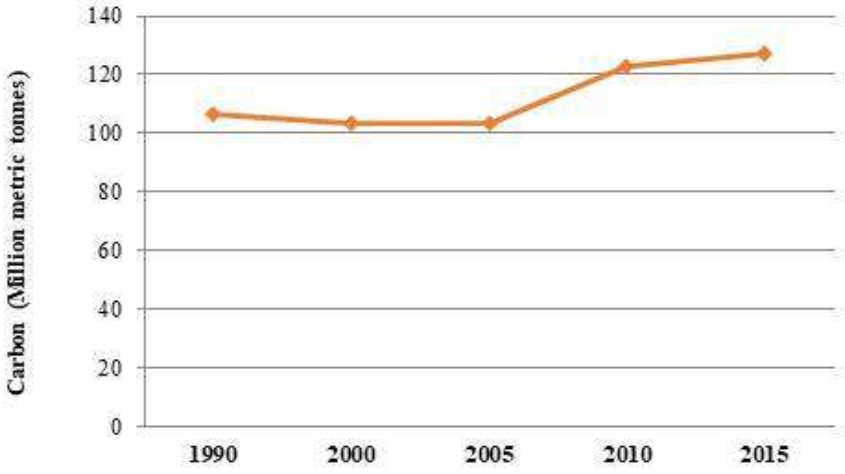


Figure 40: Bangladesh forests stocked carbon by the year

Bangladesh has submitted FREL-FRL to UNFCCC. The proposed FREL of Bangladesh is 1,122,861 tCO_2 e/year and FRL is -827,410 tCO_2 e/year. The net change is 295,451 tCO_2. UN-REDD Bangladesh National Programme 2016-19 is in progress. One of the outcome of the programme will be National Forest Emission Level (REL) and/or Forest Reference Level. Above and below ground carbon in different forested area have been presented in Figure 41.

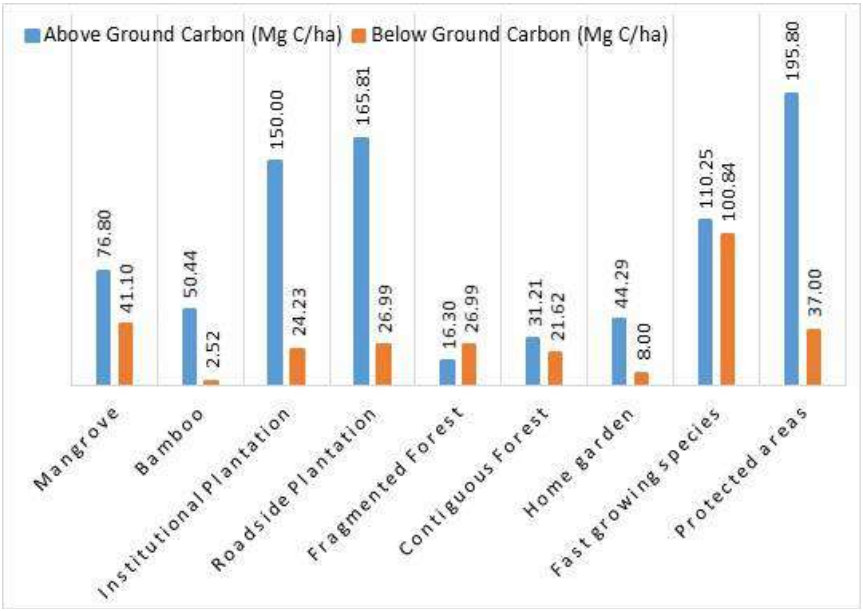


Figure 41: Above and below ground carbon

16. Nagoya Protocol on ABS

Description of how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target

'The Bangladesh Biodiversity Act 2017' was passed by the Parliament on 19 February 2017 to meet the obligations of her Constitution and the obligationsof the CBD and will work as an instrument of ratification for Nagoya Protocol ensuring access and benefit sharing. The national progress is on track toachieve the global target.

17. NBSAPs

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Revised second NBSAP titled, "National Biodiversity Strategy and Action Plan of Bangladesh 2016 -2021" prepared in 2016 is now under implementation process. Twenty national targets with activities and indicators have been proposed in the light of ABTs. The seventh five year plan (2016-2021) includedimplementation of NBSAP as an issue in the document. The NBSAP has linkages with the SDG 14 and 15 Action Plans of respective ministries of thecountry. The extent of national progress has contributed to achieve the global target.

18. Traditional Knowledge

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

The National Cultural Policy 2006 and the Small Ethnic Groups Cultural Organisation Act 2010 exists. The policy states to that the cultural institutes will conserve, extension and develop the culture and traditions of respective small ethnic communities living different parts of the country. Seven cultural institutes were established in the country enacting the Small Ethnic Groups Cultural Organisation Act 2010. A good number of research and academic studies have documented some traditional knowledge and innovation practices from the CHT and other parts of the country. Traditional knowledge and practices are gender balanced. Women take part in farming practices and farm management. Generally the women perform the jobs of seed collection and storing activities, and thus are the traditional custodians of crop germplams.

Community consultation meeting in Sunamganj explored the several initiatives of local people for the protection of biodiversity and ecosystems, including but not limited to the formation of 28 conservation group formation in Hakaluki haor area, stopping of the uses of fine mesh net (Current jaal), Stopping of hunting of birds during winter, roadside tree plantation, banning of cutting of trees in wetland, introduction of solar irrigation for cultivation, Declaration of wetland sanctuaries, and Practicing Integrated Pest Management (IPM). The extent of national progress is on track to achieve the global target but at an insufficient rate.

19. Biodiversity Knowledge

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Bangladesh Forest department, Department of Environment, Department of Fisheries, Department of Bangladesh Haor and Wetland Development are major agencies responsible for biodiversity and natural resource management. Other departments like Local Government Engineering Department, Department of Agriculture Extension, Bangladesh National Herbarium, agricultural, fishery and forestry research organizations, university departments are also concerned with biodiversity research and management.

Websites of respective organizations are furnished with biodiversity related information and activities of the respective organization. Research reports by academia are shared through publication available through google search. Clearing House Mechanism (CHM) has been initiated. It is updating the information. Website (http://www.chmbd.org/bdchm). The extent of national progress is on track to achieve the global target.

20. Resource mobilization

Description how and to what extent the country has contributed to the achievement of this Aichi Biodiversity Target

Fund allocation through annual development programme and from overseas development assistance are key sources of fund. The Ministry of Environment, Forest and Climate Change has prepared the Country Investment Plan (CIP) for Environment, Forestry and Climate Change (2016 - 20210) in 2017 which includes four pillars.

Most of biodiversity projects comes under Pillar 1: Sustainable development and management of natural resources where estimated funding requirement has shown as 2460.1 million USD with an existing fund of 642.3 million USD indicating a gap of 1817.8 million USD (74%).

Regarding the environmental accounting, Official development assistance funds are also available and utilized for biodiversity conservation and sustainable management. GEF

funding are utilized in capacity development. The extent of national progress is on track to achieve the global target.

Description of country's contributions to the achievement of the Aichi Biodiversity Targets, please describe how and to what extent these contributions support the implementation of the 2030Agenda for Sustainable Development and the Sustainable Development Goals:

The Bangladesh government is committed to fulfil SDG targets before 2030. The importance of biodiversity for the 2030 Agenda is directly recognized SDG 14 and SDG 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). An interdependence exists between biodiversity and SDG 12 (sustainable consumption and production). Linkages of national targets with Aichi Biodiversity Target and SDG targets are shown in Table 9, below:

Table 9: Linkages of National Targets with Aichi Biodiversity Targets and the targets of SDGs.

National targets	Aichi Biodiversity Target	SDG Target
1	1, 2, 19	12.8, 12.9
2	2, 3, 7, 11, 13, 14	15.9
4	3, 4, 6, 7	12.1, 12.2
5	5, 10, 11, 14, 15	15.4, 15.5
6	6, 7, 14, 15	14.4, 14.5
7	7, 3, 4, 9, 14, 15	12.2, 15.2
8	8, 7, 14	6.3, 12.4, 14.1
9	6, 6, 7	15.8
10	10, 6, 11	14.2, 14.5
11	11, 7, 9, 14	14.5, 15.1
12	12, 11, 6	15.5
14	14, 5, 6, 18	6.6, 14.5
15	15, 14, 5, 7	15.2, 15.3, 15.4
16	16	15.6
19	19, 10, 11, 12, 13, 14	12.8
20	20	15.10, 15.11

The government developed a mapping document including all ministries, division and agencies and target for fast track implementation. Following the mapping document the respective ministries/divisions have initiated the process of devising action program interventions to achieve the targets by phases. The SDG Action Plan of MoEFCC and MoFL adopted in 2018 has identified targets related to SDG targets and indicators with action plans up to 2020, new programmes/ projects needed in addition to those indicated in 7 FYP and new projects with action plans beyond 2020. It has also indicated the Policy/Strategy if needed for implementing action plans beyond 2020. An integrated approach of implementing SDG Action Plan of MoEFCC and MoFLwith NBSAP targets could be useful for achieving biodiversity related SDGs and Aichi biodiversity Targets.

Section V. Description of the national contribution to the achievement of the targets of the Global Strategy for Plant Conservation

Bangladesh does not have national targets related to the GSPC Targets

1. An online flora of all known plants
2. An assessment of the conservation status of all known plant species, as far as possible, to guide conservation action
3. Information, research and associated outputs, and methods necessary to implement the Strategy developed and shared
4. At least 15 per cent of each ecological region or vegetation type secured through effective management and/or restoration
5. At least 75 per cent of the most important areas for plant diversity of each ecological region protected with effective management in place for conserving plants andtheir genetic diversity
6. At least 75 per cent of production lands in each sector managed sustainably, consistent with the conservation of plant diversity
7. At least 75 per cent of known threatened plant species conserved in situ
8. At least 75 per cent of threatened plant species in ex situ collections, preferably in the country of origin, and at least 20 per cent available for recovery and restoration programmes
9. 70 per cent of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved, while respecting, preserving and maintaining associated indigenous and local knowledge
10. Effective management plans in place to prevent new biological invasions and to manage important areas for plant diversity that are invaded
11. No species of wild flora endangered by international trade
12. All wild harvested plant-based products sourced sustainably
13. Indigenous and local knowledge innovations and practices associated with plantresources maintained or increased, as appropriate, to support customary use,sustainable livelihoods, local food security and health care
14. The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes
15. The number of trained people working with appropriate facilities sufficient according to national needs, to achieve the targets of this Strategy
16. Institutions, networks and partnerships for plant conservation established or strengthened at national, regional and international levels to achieve the targets of this

Section VI. Description of the national contribution to the achievement of the targets of indigenous peoples and local communities

Village Common Forests (VCFs) or Community Reserve for Common Resource Management in Chittagong Hill Tracts:

Conservation and management of natural resources as a common resource is a tradition of many tribal communities in the Chittagong Hill Tracts (CHTs).The community managed common natural resource is generally called Village Common Forest or Para Reserve or Mouza Reserve. This is a commonproperty resource of the village. The VCFs are natural forests that the indigenous people traditionally conserved, managed and treat as forest commons ofthe community. Indigenous practices of forest conservation through the centuries have kept these forests alive. The Chittagong Hill Tracts WatershedCo-managementActivity (CHTWCA) project along with CHTs communities and traditionalleaders have so far identified 314 Village Common Forests (VCFs)existing in the CHTs with coverage of 12530 ha (30,951 acres).

These are managed by own community rules. Generally the villagers cannot individually extract any timber from this natural forest. The communitymembers generally extract timber and /or bamboo for community use, such as construction of school or religious houses like church, pagoda etc. Membersof the village only can harvest timber / bamboo for private construction purposes if they get prior permission from the community at large. Herbs, fire wood,non-timber forest products can be harvested by the community members. None of them are allowed to extract timber or bamboo for selling purpose.

Maintenance of vegetation at the catchments areas:

The tribal people in the CHT maintain vegetation cover at the upper catchments without any disturbance of the vegetation. The vegetation at thecatchments area ensures continuous flow of stream water. The hills receive rainwater in the rainy season and release it in the form of seepage waterthroughout the year. This water goes downwards through the streams. During dry season the tribal people of Chittagong Hill Tracts make earthen crossdam for reserving water out along the streams, which is locally called Goda. The tribal people use this water for irrigation and domestic purpose.

Other than this when the tribal people prepare shifting cultivation field (locally known as jhum) by slash and burn they keep a strip of vegetated land alongthe foothills to protect soils from erosion and adjacent land from jhum fire.

Planting bamboo along stream banks for soil conservation:

Indigenous people plant baijja bans (Bambusa vulgaris) along the canal banks to conserve soil from erosion. These initiatives by the indigenous people help in maintaining banks of canals and streams. Protection of canals and stream also protect biodiversity in the respective area.

Water harvesting ditches:

Establishment and lasting of tribal people in an area depend on the availability of water in that area. The tribal farmers of the hilly areas have traditional knowledge of harvesting seepage water at the base of the hills. The seepage water of hills moves downwards-through small water channels (jhiri). The tribal peoples who are at the upper altitude dug small rectangular shaped ditches at the base of the hills for reserving seepage water of the hills. The water comes through the streams are reserved in the ditches and the excess water are out let through a small hole. The tribal people use this water for domestic uses, drinking and other purposes. For steady supply of seepage water in the streams the tribal people keep the vegetation at the top of the hill. The vegetation ofthis area is kept intact and nobody is allowed to harvest any timbers and fuel wood form the area.

Religious institutions based conservation involving local communities:

A Pagoda or Buddha Bihar, locally known as Kiang is considered as a sacred place and people do not destroy vegetation in its premises. Most of the *kiangs* in theCHT have fallow areas surrounding its campus. Many kiangs have good portion of its compound under tree cover. Nirbanpur Buddha Bihar is situated at Nirbanpur Headmanpara in Duluichari Mouza of Kutubchari Union under Rangamati Sadar Upazila. This kiang has about 68 ha land surrounding it having patches with natural tree species. Out of 68 ha land 48 ha are in degraded condition. Bangladesh Forest Research Institute, Chittagong (BFRI) imitated a Kiang based tree biodiversity at Nirbanpur Buddha Bihar during 2008 – 2009 (Figure 42).

Figure 42: Kiang based biodiversity conservation initiative

Under the leadership of the chief monk (Bhantee) with the technical and seedling support from BFRI the local community members planted about 60thousand seeding of about 20 indigenous species in the fallow degraded land of the kiang. In addition to forestation this is

also an initiative towards in-situconservation of tree genetic resources. This success brought Bangabandhu National Agriculture Awards-1419 (Figure 43) for Nirbanpur Buddha Bihar forindigenous tree species plantation around the Bihar area.

Figure 43: Bangabandhu National Agriculture Award

Conservation through domestication of desired plants in and around homesteads:

People use to grow and cultivate many fruit and food plants in and around homesteads or easy access to resources. Many traditional healer and practitioners cultivate many herbal plants in their house premises. Thus they conserve many plants through use and domestication.

Manipulated fallow management:

Temporary clearing and burning of forest vegetation for cropping is characteristic for shifting cultivation and is seen as an alternative nutrient management strategy. Clearing and burning releases the nutrients in the vegetation. After cropping, the fallow quickly recovers into secondary forest from coppices, underground rhizomes, root suckers and the soil seed bank. Tribal people in the Chittagong Hill Tracts practice jhum in an area for one year and keep the land fallow after that to allow it to rejuvenate. The most frequent cycle involves one year of cropping and 4 to 5 years fallow.

But most farmers acknowledge that there has been a 50 percent decline in productivity of jhum land over the past 10 to 12 years, even though more than half of the farmers use pesticides and fertilizers. With decreasing yields, the average 4 to 5 years fallow seems to be too short to be sustainable. Fallows of5 years or less do not allow for sufficient vegetation growth and biomass production, while mineralization of organic matter occurs rapidly due to the open conditions. Soil quality recovery is therefore incomplete. Not surprisingly, the jhum system is commonly blamed for land and forest degradation.

The use of “manipulated” or improved fallows provides a range of techniques which make better use of the ecological processes, leading to more sustainable practices. These improvements are based on farmers own knowledge and experience. Some of the improved techniques that have been observed being used by farmers in the Chittagong Hill Tracts are using mulch for soil protection. This technique is used by farmers growing ginger and taro in hilly areas. According to farmers, mulch controls weeds, minimizes soil erosion and adds humus after decomposition. The use of mulch safeguards the topsoil against excessive soil temperatures and favours seed germination.

Some farmers keep important plants like Ficus, Derris, Albizia and other leguminous trees while clearing away other vegetation during the preparation of their fields. Maintaining trees in the field, in combination with cover crops, helps reduce soil erosion, and contributes to plant conservation. Leguminous plants enhance crop growth. While preparing their fields, farmers cut the trees about one metre above ground height to coppice it. The coppice shoots produce marketable timber within six to seven years.

Seed collection using traditional knowledge:

Traditional knowledge of seed sorting and seed storage is very simple. The hill people select healthy and disease-free plant for seeds as seed plants. They collect seeds from mature and bigger sized fruits. In case of upland paddy, desired seed crops are harvested in a sunny day and threshed immediately after harvests. In case of fleshy cucurbit fruits for seeds, farmers put some rice straw beneath the fruit in the field, so the fruits do not touch the soil. After collecting seeds farmers dry seeds in sun for 7-10 days and store them in bamboo tubes or hallow gourd pots. To protect insect attack and to keep moisture at optimum levels seed jars are stored near fireplace or hung under roof over stoves. It is easy method of seed collection and to maintain the local germplasm of different crops.

Traditional seed storage system:

Existing traditional seed storage systems are almost similar among the tribes. After collection, seeds are stored using traditional seed storage technique given in Table 10. This is an economic and sustainable system of seed management for the hill areas.

Table 10: Traditional crops storage process practiced by hill people of CHT

Seeds types	**Traditional storage process**
Paddy	Stored in bamboo made baskets locally called *turong*. Seeds are covered with dried leaves of banana (*Musa* sp.), teak (*Tectonagrandis*), moos (*Pterospermum acerifolium*) or palm (*Caryota*sp.) to maintain moisture.
Cucurbits seeds	Washed thoroughly with water and sun dried for seven to ten days and stored in locally made bamboo small baskets (*Turong*).
Other Vegetable seeds	Stored in earthen pots or in *toyea* (*hard shell of gourd*) and keep them in a warm dry place usually attached with the kitchen wall.
Maize seeds	5□10 bunches are knotted together and kept hanging from kitchen roof to keep seeds viable and free from insect and fungal attack.
Ladies finger, Borboti	Tide up together and kept hanging from roof of kitchen roof to avoid insect and fungal attack.
Tulsi (*Ocimum*sp.)	The whole plant is dried and kept beneath the house roof.
Root crops	Tubers or roots are stored in dry places covering with soils near their house. Aroids stored in field or in bamboo basket (*Turong*) covered with grass and placed in shade near their house.

Seed exchange and sharing:

Community based seed sharing system still exists among the Marma peasants for the conserving and maintaining the indigenous rice varieties. There are more than ten varieties of rice cultivated in the hilly areas of CHT as reported by the Marma farmers. One family generally maintains 3-4 varieties. They share among themselves the different varieties of rice according to their choice of cultivation. This community based sharing of seeds had been maintaining agro-biodiversity over time and localities. This also helps in maintaining community seed security and reduced the storage risk.

Betel leaf farming by Khasi communities:

The Khasia community, living within reserve forests of Sylhet division mostly in Moulvibazar district. Traditionally they grow betel-leaf on trees which is different from plain land betel-leaf cultivation. Tree based betel-leaf cultivation is a productive and sustainable agro-forestry system. In this betel leaf production system the Khasi people use forest trees as support of piper betel vines. The standing trees are the main nucleus of this production system. So,a farm site is selected based on the density of standing trees. And during farm management process the farmers keep the standing trees and let the generating tree seedling to grow. From their experience they maintain a tree density per unit area. This agro-forestry practice of the Khasi community playsan important role in biodiversity conservation, particularly of tree diversity. A study by Haider et al. (2013) recorded 86 plant species in Khasia betel-leaf farms as support tree. Stocking density of trees in farmland is 1452 trees per hectare excluding seedlings and saplings, with a wide variety of diameter classes.

Indigenous sustainable harvest of non-wood forest products:

The forest dwelling people of different ethnic communities have a strong linkages with local biodiversity. A wide variety plant occupy a good portion of their dietary ration. When they pluck or harvest from the nature they maintain a harvest limit a practice of their experience inherited from generation to generation. For some species they follow and maintain some techniques that conserve the crop in its sustainable state.

Wild yam collection by the Mandi community people in Madhupur area is a good example of sustainable harvest. The Mandi people during lean period inthe months from November to February depend to extent wild food plants. During the months of December – January they collect wild yams from forests. In collecting wild yams they dig out soils from around the yam tubers by shovel or spade. Then they cut the yam tuber keeping few centimetres of yam below the collar zone of yam tuber and the basal part of the stem and take out the tuber. Then again, they fill the dugout whole with soils where the new yam tuber develops. Because of digging tuber, a soil work is done that make the emerging tuber to grow easily. The Mandi people report that if the matured yam tuber is not collected then it is rotten under the soil. So, it indicates that this harvest is a sustainable mode of production and consumption.

Traditional poultry rearing and livestock husbandry practices of traditional country breeds:

Most animals are raised by small-scale farmers. Many farmers both in the plains and hills rear country breeds of chickens, ducks, black Bengal goats, Chittagong Red cow and other local breeds in small scale family farming level. Thus, the domesticated diversity and their genetic diversity are still being maintained.

People's Initiatives at Local Level

People are taking many initiatives in by biodiversity conservation particularly in identifying and managing bird colonies from their own. Initiatives of many nature loving persons and voluntary organizations made this endeavour possible. In addition, Premtali in thePadma Char along Godagari and Poba Upazila, Rajshai district has been proposed as a prospected bird sanctuary.

List of bird colonies in northern part of the country (Source BFD, 2014)

1. Bhalukgachi Shamukkhol Colony, Chawkpara, Puthia, Rajshahi
2. Alidewna Pakhi Gram, Khajur, Mohadebpur, Naogaon
3. Shomoshkholshi Pakhi Colony, Naldnagha, Natore
4. Panchamaria Pakhi Colony, Puthia, Rajshahi
5. DakhinMoinom Pakhigram and Community Nature Palli, Manda, Naogaon
6. Jhikrapara Pakhi Colony, Godagari, Rajshahi
7. AraniPiyadapara Pakhi Colony, Bagha, Rajshahi
8. AagparaSherkool Pakhi Colony, Singra, Natore
9. BhatinaPakhi Colony, DinajpurSadar, Dinajpur
10. Kazisharifpur Pakhi Colony, Bera, Pabna
11. Madhabdangha Pakhi Colony, Dhunat, Bogra
12. Hassanpur Pakhigram, amohadebpur, naogaon
13. Jogvoga Pakhi Colony, Gabtali, Bogra
14. TalukKanupur Uttarpara, Pakhi Colony, Gobindaganj, Gaibandha
15. Kunjaban Pakhigram, Mohadebpur, Naogaon
16. Shomnagar Pakhi Colony, Borogram, Porsha, Naogaon
17. TalukUpashu Pakhi Colony, Mahimganj, Rangpur
18. Kanipukur Pakhi Colony, Khetlal, Jaypurhat
19. Alhaj Textile Mills Pakhi Colony, Ishwardhi, Pabna
20. Rajshahi University Campus Pakhi Colony, Binodpur, Rajshahi
21. ShorshoniparaPakhi Colony, Kakonhat, Godagari, Rajshahi
22. Akubari Pakhi Colony, Mohanpur, Rajshahi
23. Rajshahi Central Jail Pakhi Colony, Rajshahi
24. Biharhat Pakhi Colony, Shibganj, Bogra
25. KismatKoodandi Pakhi Colony, Budhapara, Matihar, Rajshahi
26. Joanpur Pakhi Colony, Mohadebpur, Naogaon
27. Bagbari Pakhi Colony, Naogaon
28. Chanpur Mission Pakhi Colony, Mallickpur, Patnitala, Naogaon
29. Gobindapur Pakhi Colony, Manda, Naogaon

30. Jholmolia Pakhi Colony, Puthia, Rajshahi
31. HatipotaKhagorkuri Pakhi Colony, Boalia, Naogaon
32. Rajshahi Govt. Girls' College Pakhi Colony, Kadirganj, Rajshahi
33. Jaypurhat Pakhi Colony, Jaypurhat
34. Kadamkuri Pakhi Colony, Madhainagar, Patnitala, Naogaon
35. Raigaon PakhiCollny, Matajihat, Naogaon
36. Binodpur (North and East Para) Pakhi Colony, Manda and Mohadebpur, Naogaon
37. Gaherpur Pakhi Colony, Intitala, Naogaon
38. UtralManikbeel Pakhi Colony, Daluabari, MManda, Naogaon
39. Kandia Bazar Pakhi Colony, Gobindaganj, Gaibanda
40. Singhari Pakhi Colony, Birganjhat, Haripur, Thakurgaon
41. Goona Pakhi Colony, Goona, Raninagar, Naogaon
42. Bandaikhara Pakhi Colony, Dhanpara, Atrai, Naogaon
43. Jamalganj Pakhi Colony, Akkelpur, Jaypurhat
44. Mahabbatpur Pakhi Colony, Khetlal, Jaypurhat
45. Baludanga Bus stand Pakhi Colony, Naogaon
46. BaliharPakhi Colony, Naogaon
47. Perindipakhi Colony, Gobindaganj, Gaibanda
48. Mareya Forest, debiganj, Panchagar
49. Srinagar, manda and Mohadebpur, Naogaon
50. Gopinathpur, Badurtala, Khetlal, Jaypurhat

Bangladesh Biodiversity Conservation Federation (BBCF):

A federation of about 118 voluntary organizations and local level non-government organizations throughout the country was established in 6 December2014. Members are of the federation always search for new bird colonies, animal refuges or sites of special conservation interest in the country. The members of these organizations are also making people aware about the importance of biodiversity conservation. The face book address of the Federationis: Bangladesh Biodiversity Conservation Federation (BBCF).

Section VII. Updated biodiversity country profile

Biodiversity facts : Status and trends of biodiversity, including benefits from biodiversity and ecosystem services and functions:

Bangladesh supports a diverse set of ecosystems, notwithstanding its relatively small geographical area. Land uses of the country can be divided into 17 broad classes. The country is divided into 30 agroecological zones (AEZs). Taking agro-ecological zones into consideration the country Bangladesh can be placed under four broad types namely, coastal and marine ecosystem, inland freshwater ecosystem, terrestrial ecosystems and man-madeecosystems.

Coastal/marine ecosystems

Bangladesh is a part of the Bay of Bengal Large Marine Ecosystem (BOBLME) which is one of world's 64 large marine ecosystems. Its coastline extends 710 kilometres. Bangladesh's maritime nautical miles of Territorial Sea and an Exclusive Economic Zone (EEZ) extending up to 200 nautical miles into the high seas.

Inland Freshwater Ecosystem

The majority of the natural ecosystems of Bangladesh are wetlands that mostly include flood plains, wet land and mangrove (what has been treated under forest ecosystem). Intricate network ecosystems in the country. Surface water is the most severely impacted natural resource in the country. The haors (depressed land) wetlands in the north-eastern parts of Bangladesh are probably a vast basin of water during the monsoon and a well networked system of smaller wetlands including beels and khals in the summer.

Terrestrial ecosystems

Only 20% of the country's land area may be considered as terrestrial although large parts of the alluvial and coastal plains have been reclaimed for agriculture and human habitation over highlands. The hill ecosystem covers around 12% of the country's land area. Hills in Bangladesh are largely confined to the north, northeast and south-eastern limits of the

Man-made ecosystems

These are extensively modified aquatic and terrestrial ecosystems. These are the home to a large number of domesticated plants and animals including plant cultivars, crops (cereals, ecosystems and homestead ecosystems two major types of man-made ecosystems. Homestead ecosystems act as the last refuge of wild flora and fauna of open woodland ecosystem that stands about1.93% of country's forest area. Multi-layered vertical stratification, species diversity, and diversity of economic plants rather than number of individuals per species are characteristic features

Forest

Forests of Bangladesh are distributed through mangrove habitats, fresh water swamp forests to hill and plain lands (Figure 44). Phyto-geographically the forests of Bangladesh fall under Forest Department (FD) the total forest area of the country is 2.6 million ha, which is 17.7% of the country's area. Ecologically the forests of Bangladesh are classified into four major forest types: forests. In National Land Zoning Reports of many upazilas, 'Farm Land Forest' has been treated as a separate category.

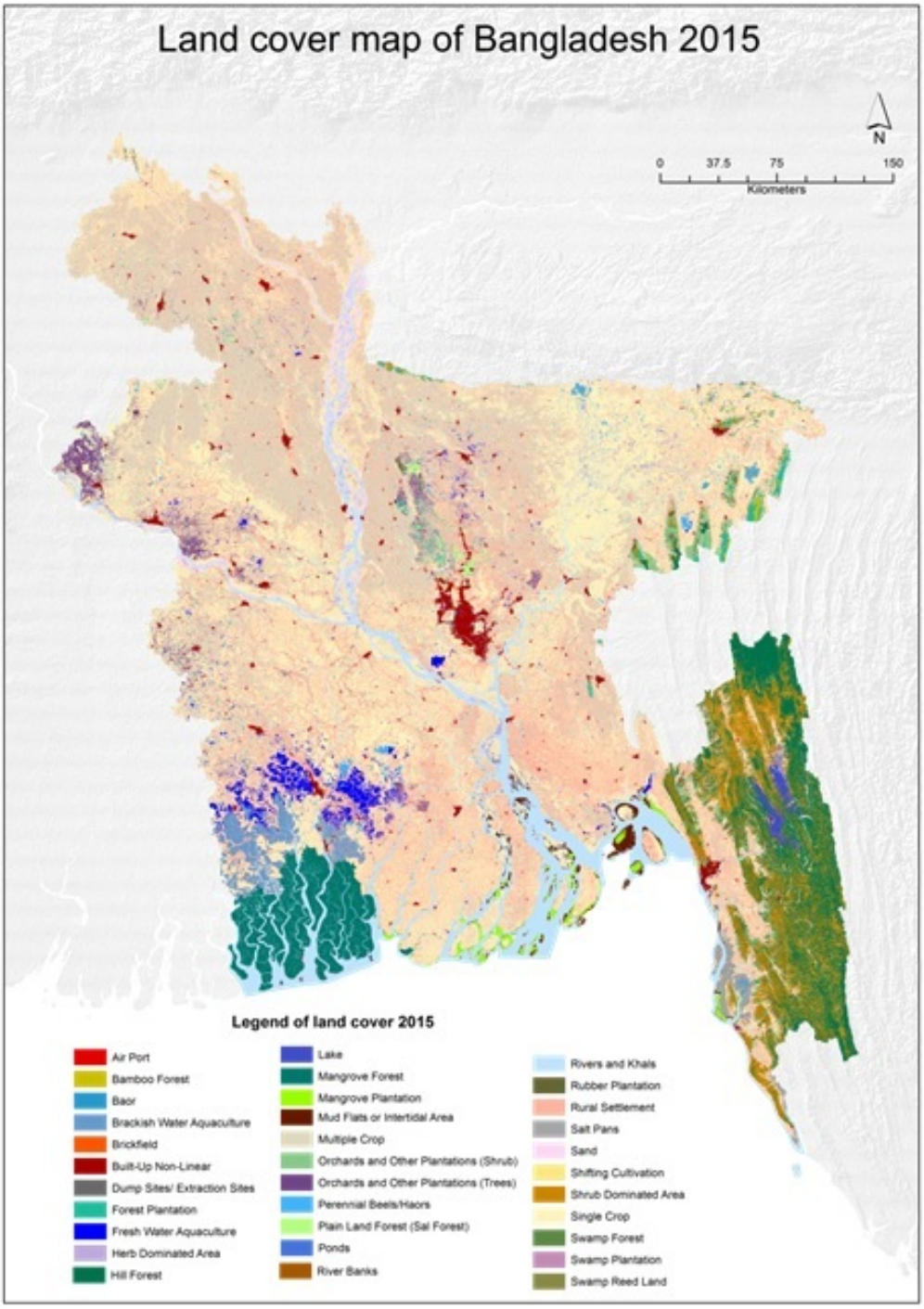


Figure 44: Forest Cover of Bangladesh (FD 2017)

Owing to such factors as over exploitation, conversion of forestland into agriculture, fire and grazing, forest resources in Bangladesh have been continuously depleting in terms of both area hectares of primary forest that between 1990 and 2015. A joint study by Bangladesh Forest Department and Maryland University of USA, using GIS data revealed that hillforests (including tree plantations, village woodlots and agro-forestry) increased their canopy by 219 300 ha. FAO assessment 2015 also shows that Bangladesh forests stocked litter and forest soil.

Estimated number of plant records from recent enumerations indicate tentative number of species as: angiosperms around 3704; algae about 2345, fungi about 320, lichens 67, bryophytes enumerated for pteridophytes, gymnosperms and angiosperms stands about 606. At least 44 species of flowering plants that have been recorded as endemic to Bangladesh.

Animal species recorded are 138 mammals, 690 birds, 171 reptiles, 64 amphibians, 253 freshwater fishes, 141 crustaceans ns175 protozoa, 29 porifers, 102 cinidaria, 10 ctenophors, 76 ecinodermatas and 5000+ arthropods. IUCN Bangladesh evaluation (covering 1,619 species) in 2015 updated the Species Red List for animals.

Little information is available on invasive alien animal species in Bangladesh. The introduction of alien species of fauna, particularly fish, started in the early 1950s. So far least 32 fish species two species, *Oreochromis mosambicus* and *O. niloticus* are of greatest concern because these species have invaded all available habitats, including estuaries.

Genetic Diversity

The diverse agro-ecosystems of Bangladesh are rich in genetic resources of plants and animals. There are 6,000 varieties of rice known to have existed in the country. Pulses, oilseeds, vegetables, fruits, spices, tuber crops, flower and ornamentals, medicinal and aromatic plants. Currently maintains 11,012 accessions of 138 different agri-horticultural crops (BJRI) collect and conserve the genetic resources of jute (Corchorus species), kenaf (*Hibiscus cannabinus*) and mesta (*H. sabdariffa*) germplasm including their wild relatives for utilization Germplasm Center, over about last three decades it has conserved about 11,528 germplasm. Other than major fruits like, mango, litchi, guava, citrus, jack fruits it has about 3,514 germplasm collecting and maintaining germplasm of medicinal plants since 1990 decade. Till date it has centralized germplasm of 126 species ranging from herb to trees. Bangladesh Resource Center preserving crop germplasm in farmers' field. Till date it has preserves 820 local germplasm comprising of 653 rice germplasm, 18 local beans, 10 chilies, nine bananas, 14 brinjal.

Domesticated animal biodiversity in Bangladesh is largely limited to livestock. To a very small extent, dogs, cats and ornamental fish contribute to the diversity. Other than these, there are domesticated

The biodiversity of Bangladesh has intrinsic aesthetic, cultural, biological and economic values. Its components in different ways are linked with the lives and livelihoods of the people. A recent study by Department of Environment under Strengthening, Monitoring and Enforcement in the Meghna River for Dhaka's Sustainable Water Supply shows Bhairab Bridge and Meghna Bridge is US$ 182.935791 million.

About 50 percent of the population still derives its livelihood from primary production in agriculture. Employment in agriculture (% of total employment) in Bangladesh was reported at -agriculture, accessed on 17 September 2018). Forests and related services are important and contributing 1.7 percent of GDP and their value growing annually by about 5 percent. Watershed management and protection from soil erosion are especially important in hilly areas.

The fisheries sector contributes 3.61 percent to our national GDP and around one-fourth (24.41 percent) to the agricultural GDP. More than 11 percent of total population of Bangladesh Contribution of livestock in GDP during 2016- 17 was reported to be 1.60 percent.

Main pressures on and drivers of change to biodiversity (direct and indirect)

There are many threats that drive biodiversity loss, among which some are direct and dynamic while the others are indirect. Direct threats include changesin land use, habitat destruction, introduction of invasive alien species, pollution, etc. On the other hand, examples of indirect threats are the economic system and policies of the State; poor institutional capacities; governance issues; unsustainable exploitation of resources, unplanned tourism and weak management systems; lack of alternate livelihoods in sensitive habitats; inadequate inter-sector coordination; gaps in spatial information; lack of public awareness.

Other threats are emanated from the effects of natural calamities. In addition, Rohingya influx has emerged as threat to forest biodiversity and environment. Elephant - human conflict is considered an important issue from conservation perspective. Habitat loss is considered the single largest threat to biodiversity.

Implementation of the NBSAP

Bangladesh prepared NBSAP in 2004 in line with 2010 Biodiversity Targets. The progress of first generation NBSAP was reviewed in 2010 with the submission of Fourth National Report, as well as, Fifth National Report in 2015. The revised NBSAP has been developed in line with Biodiversity Strategic Planning 2011-2020 (Aichi Biodiversity Targets). Towards contributing to the global targets (Aichi Biodiversity Targets) and implementation of NBSAP, 20national targets with 50 activities under five strategies have been set for the period from 2015-2016 to 2020-2021. Major implementation measures taken can be broadly grouped into policy and legislation; programmes and initiatives taken by local communities. Many of the activities have been included in the annual action plans of concerned ministries, respective departments and different development partners, NGOs and community based organizations.

Overall actions taken to contribute to the implementation of the Strategic Plan for Biodiversity 2011-2020

Major in-situ conservation activities in Bangladesh are implemented through Protected Areas (PA) networks. Total areas under PAs are 636,390 ha. There are three Marine Protected

Areas in the country. Bangladesh has declared tw oVulture Safe Zones as special landscape, i.e., 1) the areas of Sylhet, parts of Dhaka and Chattogram consisting of 19,633 km^2 (1,966,318 ha) as Vulture Safe Zone 1 and 2) the areas of Khulna, Barisal and parts of Dhaka with an area of 27,717.26 km^2 (2,771,726 ha) as Vulture Safe Zone 2.

Department of Environment (DoE) declares Ecologically Critical Areas (ECAs) and manages for its restoration. There are13 ECAs in the country. St. Martin's Island ECA will be further expanded. Sundarban Reserved Forest and Tanguar Haor are RAMSAR sites in the country.

Recently the country has adopted a good number of initiatives for biodiversity conservation through co-management of PAs and community based adaptation in the ECAs through conservation and social protection. These measures address the issue on sustainable management, habitat restoration, biodiversity conservation governance, institutional capacities, environmentally sustainable and resilient to climate change livelihood of forest and aquatic ecosystem dependent people, knowledge management, gender link with biodiversity management and awareness. Scientific monitoring, project evaluations and stakeholders' observations indicate that depleted natural resources are being restored in co-managed PAs and community-based management of wetlands. Establishment fish sanctuaries and banning of fish in sprawling season helped in enhancing fish diversity.

In addition, ex-situ conservation are maintained by the National Botanic Garden, Mirpur, Dhaka; the Botanical Garden of Bangladesh Agricultural University; Chittagong University Botanical Garden; Forest Research Institute Arboretum; Plantations in the Chittagong University Campus are good ex-situ conservation sites. Plant nurseries play an important role in enhancing plant resources in a country. At the same time nurseries also help in ex-situ conservation and conserving genetic resources. More than 10, 000 nurseries including of public and private organizations exist in the country. The National Zoo and Safari Parks are playing some roles in mainlining animal diversity to some extent.

Five sites in the coastal areas of the country with an area of about 350 km long covering 22 upazilas of five districts have been declared as hilsa fishsanctuaries. To ensure uninterrupted spawning hilsa catch, transportation, marketing, selling and storage has been banned throughout the country duringthe highest breeding time (September-October). Re-excavation of small water bodies, maintenance of irrigation canals, and management of fish pass,development of beels for creating fish sanctuaries, excavation of feeder canals, and fresh water swamp species (hijol-koroch) plantations in haor areas,thus improving the wetland habitats. Different public and private universities are pursing biodiversity research on different issues.

Communication, education and public awareness (CEPA) activities are undertaken by various government and non-governmental organisations (NGOs).

Support mechanisms for national implementation (legislation, funding, capacity-building, coordination, mainstreaming, etc.)

Bangladesh has approached biodiversity mainstreaming both through development of specific plans, programmes and institutions that address developmental aspects of biodiversity, and also from a development perspective, integrating into development sector policies. The National Planning Commission is integrating biodiversity conservation into the

Annual Development Programme. Various national policies, legislations and strategies have included biodiversity and natural resources management issues. Conservation of environment and biodiversity has been inserted in the National Constitution as basic principle of state governance.

The National Agriculture Policy 2018, the National Fisheries Policy 1998, and The National Environment Policy 2018 have emphasized on sustainable production and natural resource management. The National Land Use Policy 2001 also highlighted the need, the importance and modalities of National Land Zoning for integrated planning and sustainable management of land resources of the country. The draft National Forest Policy 1994, is currently under updating process to address the commitments of CBD and other international legal instruments.

Legal instruments concerned with biodiversity conservation have been adopted and enacted are, The Bangladesh Biological Diversity Act, 2017; The Bangladesh Biosafety Rules, 2012; The Wildlife (Conservation and Security) Act, 2012; Environment Conservation Rules, 1997; The Protected Area Management Rules, 2017. Co-management of PAs has got legal affiliations through Protected Area Rules 2017.

Instrument of ratification for Nagoya Protocol ensuring ABS is in process. In addition, creation aseparate sector (Sector 8) in the Seventh Five Year Plan (2016-2021) on Environment and Climate Change is an initiative towards mainstreamingbiodiversity at policy level.

No stand-alone financial institutions or funding mechanism is in place to address biodiversity related development activities. Conservation activities arecarried out sporadically by the country's Annual Development Plan (ADP), Non-development expenditures, Non-ADP program and development partner drivenactivities. About the financing, Ministry of Environment, Forest and Climate Change has prepared the Country Investment Plan (CIP) forEnvironment, Forestry and Climate Change (2016 - 20210 in 2017 which includes four pillars. The Pillar 1 is on Sustainable Development and Managementof Natural Resources.

Mechanisms for monitoring and reviewing implementation

Regarding the mechanisms for coordination, Ministry of Environment, Forest and Climate Change (MoEFCC) coordinate the implementation of theNBSAP with other Ministries/Divisions, as well as, government agencies, academic institutions, non-governmental organizations and communities takingpart in the activities. National Biodiversity Committee under the MoEFCC acts as the apex body for coordination with relevant ministries/agencies towardsimplementation of NBSAP. Reporting on the progress of the implementation of the NBSAP is done, periodically, by the Department ofEnvironment.Bangladesh Biodiversity Clearing House Mechanism (CHM) is a web-based platform to provide and receive updated information like the status ofbiodiversity and conservation initiatives.

Additional Information

Other relevant website address or attached documents

Red List of Bangladesh Volume 1- Summary 2015.pdf
CHM Page of Bangladesh
Coastal afforestation in Bangladesh to combat climate change.pdf
Coral Resources in the Saint Martin Island.pdf
Environmental Profile of St Martins Island.pdf
DOE Annual report 2017-2018.pdf
Fisheries resources of Bangladesh.pdf
NBSAP 2016-21.pdf
SDG Action Plan of MoEFCC.pdf
Status of Alien Invasive Species in Bangladesh.pdf
Project Appraisal Document on a Proposed Credit for a Sustainable Forests and Livelihoods (SUFAL) Project.pdf
Forest Cover of Bangladesh

The Clearing-House Mechanism of the Convention on Biological Diversity