

Welcome to all Participants to
my Presentation

National Biodiversity of Bangladesh

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Points for Discussion

- Definitions
 - Meaning of “Biodiversity”
 - Various types of Biodiversity
- Direct and indirect values of Biodiversity
 - Bangladesh Context
 - Threats to Biodiversity in Bangladesh
- National Biodiversity Strategy and Action Plan
 - CHM

Definitions

- **Abiotic:** Non-living components, such as air, water, soil etc.
- **Biotic:** Living organisms-animal and plants
- **Endemic:** Species confined to a given region and having originated there
- **Extinct:** Not located anywhere for the last 50 years
- **Endangered:** Whose number has reduced to a critical level at an alarming rate and are in danger of extinction
- **Flora:** All the plants species (plants, trees, creepers, shrubs)
- **Fauna:** All the animal species (insects, reptiles, amphibians, birds and mammals)
- **Hot spots:** They are the areas that support rich biodiversity, because of geological formations and endemic flora and fauna and exhibit exceptional scientific interests. Hot spots are severely threatened by human activities (e,g; Amazon forests in Brazil; the Himalayas in Nepal etc.)

Meaning of Biodiversity

- “**Biological diversity**” means the variability among living organisms from all sources including *inter alia*, **terrestrial, marine** and other **aquatic ecosystems** and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (*Article 2, Convention on Biological Diversity, 1992*)

Meaning of Biodiversity

- **Biodiversity** can be defined as diversity of species (plants, animals and microorganisms) occurring as an interacting system in a given habitat. It is the total sum of genes, species and ecosystems.
- Conservation of biodiversity encompasses the whole spectrum of biotic (living organisms-animals and plants) components and their activities.
- Biodiversity could be divided broadly in to three groups:
 - **Ecosystem Diversity**
 - **Species Diversity**
 - **Genetic Diversity**

Ecosystem Diversity

- An **Ecosystem** is a dynamic complex of plant, animal and micro-organism communities and their non-living environment (air, water, soil) interacting as a functional unit, e.g., forest ecosystem; mountain ecosystem; wetland ecosystem; desert ecosystem etc
- A community of organism does not live in a vacuum. It operates in an environment, composed of both biotic (living) and abiotic (nonliving) components.
- The community and the environment with which it interacts is referred to as an “ecological system” or “ecosystem”

Species & Genetic Diversity

- **Forest Ecosystem** has a variety of trees, shrubs, climbers and undergrowth. There are several small animals and plants on the forest floor. Various insects, reptiles, amphibians, birds and mammals of that forest are dependent on each other. Forest systems differ widely depending on climatic, soil and water regimes
- **Mountain Ecosystem** has typical breed of flora and fauna climatically adjusted to the very mountain and they are dependent on each other
- **Species Diversity**: Diversity of different species of plants and animals within a geographical area or an ecosystem
- **Genetic Diversity**: Diversity of different genes, also known as “diversity within species”. Example; *lengra*, *fazlee* mangoes

Values of Biodiversity

- Mankind or any living species cannot survive alone on the earth. They are dependent on other lives surrounding them for food, clothing, shelter, health, medicare and other life support systems.
- The continued existence of all living beings including human is thus dependent on the existence of a rich biodiversity
- As the earth's biological resources are vital to humanity's economic and social developments, there is a growing recognition that biological diversity is a global asset of tremendous value to present and future generations
- At the same time, the threat to species and ecosystems has never been so great as it is today. Species extinction caused by anthropogenic (man-made) activities continues at an alarming rate

Values of Biodiversity

- Biodiversity is measured in terms of number of kinds (species diversity) and their population (species diversity) in a given area.

Values of Biodiversity

Direct Values:

- Sources of food and protein (cereals; fruits; meat; milk; fish etc)
- Sources of medicines (plants and animals are used for life-saving medicines)
- Sources of energy (fuel; bio-fuel; firewood)
- Ethanol, Butanol, Methanol, Biodiesel are various types of Bio-fuel or agro-fuel commonly used for transportation and heating purposes replacing oil
- Bio-fuel is produced from plants and food grains (corn and soybean in US; wheat, rapeseed, sugar beet in Europe; sugarcane in Brazil; palm oil in South-East Asia; coconut oil in Philippines; jatropha, pongemia and sugar beet in India)

Values of Biodiversity

Indirect Values:

- Carbon fixation
- Pollination
- Maintaining water cycles; recharging ground water
- Soil formation and protecting from erosion
- Recreational, aesthetic values

Threats to Biodiversity

- High Population Growth
- Green Revolution
- Industrialization
- Deforestation
- Land Use Changes
- Water Pollution
- Development Projects
- Natural Disasters

Bangladesh Context

- The Bengal plains have over the centuries been gradually built up by the alluvial deposits of three major river systems of the Ganges Brahmaputra and the Meghna-forming the **largest delta** in the world.
- The total length of the 700 rivers and their tributaries is 22,000 km criss-crossing the country like a web
- About **80 percent** of the country's landmass is **floodplain**
- Hills: 12 percent; Uplifted Terrace: 8 percent
- Three rivers carry **2.4 billion tons** of silt annually, which is one-fifth of the global sediment load
- Land and water ratio at high flow is **60:40** and the country's **35 to 55 percent** of surface area remain submerged for 3 to 5 months a year

Bangladesh Context-2

The country may be divided into several ecosystems, whose micro-environment, vegetation and fauna are somewhat different from each other:

Terrestrial ecosystems are:

- Alluvial plains
- Hilly area with evergreen forests in S/E
- Mangrove forests of the Sundarbans, Teknaf and Chakoria
- Deciduous Sal forests in Madhupur
- Upland or Barind Tract
- Undulating terrain in the north
- Coastal Islands and coral Reefs in St Martin's Island
- Char lands on the riverbeds

Bangladesh Context-3

Other aquatic ecosystems are:

- The Bay of Bengal (within Bangladesh)
- Estuarine zones
- Freshwater zones
- *Beels* or swampy lands
- *Haors*
- *Baors* or Oxbow lakes
- Ponds
- Lakes

Bangladesh Context-4

- Geographical position and climate of Bangladesh are very favourable for the growth and development of many plants and animals.
- Bangladesh is endowed with superb biological diversity in terms of **floral and faunal species diversity**.
- The Sundarbans is the world's largest tidal flood mangrove forests:- rich in biodiversity
- There are more than **1000 paddy varieties**, 5000 plant varieties- of which 33 are rare or threatened.
- There are some 350 bird species of which 27 are threatened
- One ml people are full time fishermen and 11 ml are part timer
- Over 60 ml people are dependent on aquatic resources
- 60% of food protein comes from fish
- Agriculture sector provides 63.5% of country's employment

Bangladesh Context-5

- At least 5000 species of flowering plants are found in Bangladesh, many of them are of economic importance.
- Bangladesh has possibly the richest inland fisheries in the world. **It has more fish species than all of Europe combined.**
- A total of about 500 fish varieties, 19 amphibians, 124 reptiles and 125 mammal species have been recorded.
- There are several **coral reefs in the Saint Martin's Island.** Around 149 species of fin fish, 19 species of shrimps and prawns, several crabs, snakes and dolphins are found in the estuarine waters of Bangladesh. The brackish water crocodiles are seen in the Sundarbans estuary

Threats to Biodiversity

- **High population growth:** 160 million crammed in 144,000 sq kms. Poverty escalates taxing on the natural resources
- **Extreme Poverty:** More than half of the country's population is living below the poverty Line
- **Thrust on HYV and High Breed:** Hybrid, HYV of cereal crops, fruits, poultry, animals, fishes and exotic plants adversely affect on indigenous varieties
- **Land Use Changes:** change of agricultural lands and water bodies for urbanization, industrialization, and modernization
- **Loss of Habitat for Wildlife:** Habitat loss due to encroachment by humans
- **Over Harvesting:** over-fishing, logging; and felling of trees
- **Poaching:** Poaching of wild animals and birds

Threats to Biodiversity

- **Natural Disaster:** floods, cyclones, drought, desertification, river erosion, earthquake affect biodiversity. Bad floods of 1987, 1988, 1998, 2004, *Sidr* in 2007 and *Aila* in 2009 were devastating
- **Deforestation:** encroachments due to population pressure, shifting cultivation (*jhum*) adversely impacting biodiversity
- **Water pollution:** industrial waste, agro-chemicals affecting fish stocks
- **Engineering construction:** Flood Control Drainage and Irrigation (FCD/I) and development projects affecting fisheries and aquatic lives

Threats to Biodiversity

- **Shrimp Cultivation:** faulty shrimp fry collection practice deplete fish diversity and cause salinity intrusion
- **Introduction of exotic variety** of seeds, plants, crops, trees, fruits, fishes, poultry to meet increased demand of population
- **Climate Change:** Climate change induced sea level rise would affect the mangrove forests of the Sundarbans and would cause salinity intrusion and increased natural disaster, which would adversely affect biodiversity

National Biodiversity Strategy and Action Plan: Progress of Implementation and Mainstreaming

With the development of the NBSAP (MoEF, 2006), Bangladesh has progressed remarkably towards fulfilling the global commitment of the country to the CBD. The Bangladesh NBSAP has identified 16 strategies, including 128 action programmes those are further categorized as short term (0-3 years), medium term (4-7 years) and long-term (8-10 years) programmes

The following sections of this chapter also highlight some major achievements of implementing the NBSAP since its formulation. This chapter further summarizes the progress of NBSAP implementation during 2010-2015 by comparing with the original NBSAP actions and the progress reported in the Fourth National Report to the CBD (MoEF, 2010).

Implementation of NBSAP (2010-2015)

Since the submission of the Fourth National Report to the CBD in 2010 (MoEF, 2010), progress made during the period of 2010-2015 have been summarized in Table 41. This updated table has resulted from expert input, stakeholder consultations and literature review. For a comparative outlook, the accomplishments reported in the Fourth National Report have also been included alongside the new accomplishments.

Bangladesh Government set 14 Strategies for NBSAP

1. Recognize the value and importance of biodiversity for the Bangladesh people and document properly its components, distribution and value.
2. Conserve ecosystems, species and genetic pool of the country to ensure that the present and future well-being of the country and its people are secure.

3. Restore ecosystems and rehabilitate endangered species.

4. Adopt national measures and standards to deal with invasive alien species and genetically modified organisms.

5. Promote equitable sharing of biodiversity conservation costs and benefits among different sectors of the society.

6. Contribute to raising awareness and building capacity of biodiversity conservation among the different sectors of the society.
7. Promote use of traditional knowledge for conservation, use and protection of the local communities' intellectual property rights.
9. Enhance Protected Area Management, recognizing the benefits of collaboration with local communities in their management (Co management)

10. Ensure wise use of wetland resources.
11. Establish participatory mechanisms to receive and utilize the inputs from private sector, civil society and local communities about the different process leading to biodiversity conservation, use and sharing of benefits.
12. Review and develop biodiversity related legislation(s) and establish a specific branch in the Judiciary to deal with biodiversity and environmental issues.

13. Establish an open and transparent monitoring and reporting system status and trends of implementing the principles of CBD.

14. Develop a financial strategy that is innovative and sustainable.

Accomplishment during the Fifth National Report (2010-2015)

- Bangladesh developed and submitted both 4th and 5th NR to CBD secretariate. Both the reports were developed in consultative process and participatory manner.
- The National Plan for Disaster Management (2010-15), has not included elements of contribution from biodiversity.
- NAP updated under UNCCD has considered conservation of Biodiversity
 - Bangladesh Delta Plan under preparation has also given importance to biodiversity and natural resources conservation.
- IUCN Bangladesh developed a community-based biodiversity monitoring protocol for Tanguar Haor.

- Private sector engagement in development planning as well as implementing pro-poor environmental and fiscal reforms are limited.
- The Vision 2021 formulated by the Government of Bangladesh in 2010 envisaged 'Environmentally Sustainable Development' as a key approach.
- Development of Bangladesh Delta Plan 2100 is under preparation.
- 7th Five Year Plan Integrated Biodiversity issues.

- The 7th Five Year Plan (2015-20) considered implementation of NBSAP targets in a broader way.
 - Co-management Council Fund given by Arranyak Foundation and CREL, as seed money.
 - CBA-ECA: Endowment fund established at upazila level in selected ECAs.
 - Tanguar Haor: Fish catch sharing applied among the fisher community, co-management committee and the administration.
- The World Bank-funded Bangladesh Forest Department's SRCWP project is supporting NGOs to conduct 24 projects. In addition to these, 10 projects are being implemented by government agencies
 - Overall, many projects gave revolving funds to CBOs; and many are functioning till now

Bangladesh is a party to the UNCBD. With its limited capacity and resources Bangladesh is implementing the convention with various programs and projects undertaken by the Ministry of Environment and Forest. Bangladesh emphasizes on establishing a regional CHM which could address the main thematic areas, as follows :

- Marine and coastal ecosystem,
- Agricultural biodiversity and agro-ecological zones,
- Forest ecosystems
- Inland wetland biodiversity
- Hilly Ecosystems
- Taxonomic information related to the species of each ecosystem
- Roster of Experts working with various Ecosystems and conservation/development activities
- Information regarding Indigenous and Traditional Knowledge (ITK) with regard to sustainable use of genetic resources
- Information regarding Invasive Alien Species (IAS)

Bangladesh believes that a great deal of progress in terms of capacity building at the country level could be achieved through establishing individual CHM. Yet, it is of paramount importance to establish a regional CHM in order to create information resources that would enable each country to share the information on Biodiversity and the problems and success stories on the management aspects.

A strong harmonization between the countries, in terms of sharing and exchange of information regarding ecosystem and biodiversity management in the region, would be needed to make the regional CHM meaningful.

Convention's cross-cutting issues like Invasive Alien Species and ecosystem approach should get proper attention in designing a regional CHM.

THANK YOU ALL