

Technology Need Assessment for Biodiversity Conservation in Bangladesh

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Why Need Co-operation?

- Technology is playing a powerful role towards addressing various management problems of biodiversity and thus it is very important for the implementation of NBSAP.
- Effective diffusion and transfer of technology will be dependent on cooperation among the developed and developing nations and other agencies.
- Bangladesh as a developing nation is suffering a lot in terms of vulnerability to climate change and other man-made disasters. Biodiversity is the innocent victim of the onslaught of climate change and other disasters.
- Towards ensuring better adaptation or risk management of climate change or other vulnerability, services offered by the ecosystems of the country must be protected.
- To this end, technological applications and innovations will be the cornerstone to achieve the successes of implementation of NBSAP and Aichi Target.

Technology Needs Assessment for Various Sectors to Manage the Biodiversity

- ❖ Environment
- ❖ Forestry
- ❖ Agriculture
- ❖ Fisheries and Livestock
- ❖ Tourism
- ❖ Information and Communication Technology (ICT)

Environment Sector

Basic Technologies

- Industrial effluents treatment plants/bio-treatments of waste water
- Biological means to treat water (i.e. snails); using eggshells to remove toxic water pollutants (e.g. Chromium)
- Artificial wetlands/reed lands based waste water treatment
- Application of GIS and RS (remotely sensed images derived from satellites, radar, lidar and drones) to map the wetlands cover, 3D map and cost-effective survey for all the wetlands of Bangladesh.
- Predictive mathematical models to project the future of river/canal water flow, pollution and navigation etc.

Associated Issues

- Promotion of the industries or factories that maintain the highest Level of sustainable practice or to introduce BEP for sustainable industries.
- Restoration of rivers, such as the Buriganga, the Sitalakhya and the Karnaphuli.

Forestry Sector

Basic Technologies

- Application of GIS and RS (remotely sensed images derived from satellites, radar, lidar and drones) to map the forests cover, total biomass, 3D map and cost-effective survey.
- Ecosystems modeling towards restoration; carbon sequestration; resilience etc.
- Use of SCP (Spatial Conservation Planning) framework and software in Protected Area planning depending on the allocated resources
- Continuous update the fragmentation of forest and possible corridors with the help of GIS.
- Camera-trapping technology to record the biodiversity of the forest and radio-collaring and bird-ringing to track the migration or movement or to stop poaching and hunting of wild vertebrates.
- Modern quarantine tools, vigilance and monitoring tools and techniques for pet animals, ornamental plants, seeds, exotic plants, fish and genomes
- Develop a database for Bangladesh National Herbarium on stored herbarium specimens collected from all over the country

Associated Issues

- Infrastructural development to redefine the National Botanical Garden as a centre attraction for not only capturing botanical knowledge but also for other target groups (e.g. introducing jungle or trail biking, spot for birdwatchers, etc.)

Agriculture Sector

Basic Technologies

- Organic agro-technologies, e.g. Integrated Pest Management, bio-fertilizers
- Crop rotation! Inter-cropping! Agro-forestry/ Homestead forestry
- Enhanced apiculture
- Research facility or centre on drought- resistant, salinity-resistant and disease- resistant seeds
- Less natural resource-dependent agro-tech, e.g. alternative wet-dry irrigation method
- Surveying and inventorying, and exploration and collection of germplasm
- In vitro and cryopreservation, DNA bank, seed bank, field gene bank
- Characterization and evaluation of germplasm and identification of important trait
- Molecular characterization of germplasm

Associated Issues

- Preservation of seeds of different local and native fruits, medicinal plants and other trees.
- Capacity building to record and sustain the indigenous practices in agriculture
- Recognizing the traditional ecological knowledge that have been practiced for millennia.
- Building germplasm centre with necessary resources/equipments and human resources

Fisheries and Livestock Sector

Basic Technologies

- Models to identify what would be the sustainable exploitation of fish & fisheries resources
- Use Turtle Excluder Device (TED) in fishing
- Attaching tracking device to deep sea fishing boats or trawlers
- Improved fish and fisheries farming technologies in freshwater, estuary and marine water resource etc
- Testing kit/device to measure water quality
- Models and software to predict the fisheries stock for future
- Testing tools for farmers to examine & identify the infectious disease in the fisheries & livestock sector.

Associated Issues

- Improvement of the existing fish landing centers and increase the facility with the estimation of the fish and fisheries harvest from inland and coastal-marine area
- Authoritative body to keep track of the introduction of new breed or cross in fisheries and livestock sector
- Identification of more women- friendly fisheries culture.
- Capacity enhancement for exportable goods from fisheries sector
- Capacity building for identifying the non-native or alien species.

Information and Communication Technology (ICT) Sector

Basic Technologies

- Ensure use of Satellite for mapping purposes
- National database or web-portal on the status, value of existing biodiversity in Bangladesh in an interactive and engaging way, separate platforms for different stakeholder groups.
- Online database of different satellite images, focusing forest cover, extent of water bodies and land cover, etc.
- Map of Bangladesh with an extension from Google promoting citizen science or para-biologists/para-ecologists to incorporate any new recorded or identified species only with geographical coordinates.
- Inventorying biodiversity with bioinformatics
- Create an open access system to storage large data of different climatic parameters, weather, etc.

Associated Issues

- Citizen science: creating an option/platform for school, college and university students to volunteer, learn and disseminate knowledge through surveying and collecting data on biodiversity of Bangladesh.

Thank You All