**Final Report**

# Environmental Data Needs Assessment and IRIS Delivery Potential Evaluation

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**Executive Summary**

Economic development in sustainable manner is committed in macro policies and sectoral strategies in Bangladesh. These policy documents provide directions and options for developing necessary institutional makeup, operational procedure to perform activities relating to sustainable development in different sectors. Accordingly Bangladesh made a good progress in attaining MDG targets and now focusing on achieving SDG targets. SDG targets are different from MDGs in terms of thematic areas, coverage and comprehensiveness. One of the most important challenge relating to SDG attainments is to generate required data so that progress made in achieving SDG targets could properly be monitored, shared and reported. In doing that UNSD (United Nations Statistical division) provided instrument such as ESSAT to address the data generation, sharing and reporting challenges. In this connection, this assessment was carried out and provides an insight about environmental data generation architecture including management and reporting systems of Bangladesh. The data were mainly collected through review of legal and policy documents, publications, databases, interviews with key users, administration of survey questionnaire and a national stakeholder consultation meeting. The findings show that Bangladesh Bureau of Statistics (BBS) is the prime and mandated agency to generate data on various themes/sectors. However, many other agencies working in areas like water resources, meteorology, soil and agriculture generate various types of spatial and non-spatial data. Thus environmental indicators are generated by various agencies as per their requirements adopting different methods; this methodological variations create obstacles (e.g. incompatibility) to assimilate data when there is a necessity. In addition data are generated at different scales with limited disaggregation provisions (e.g. geographical disaggregation, gender, income-based disaggregation etc.).

In this backdrop, BBS developed BESF 2016-2030 following the guidelines provided by UN-FDES and UN-SEEA so that data gathered by different sources could be used in order to develop data for reporting and monitoring the progress of attaining SDGs (by paying especial focus on 7 green targets). The results of this assessment suggests that lack of institutional commitments in data generation and sharing, required funding, high rate of staff turnover among the institutions, skills and knowledge gaps in data generation methods and techniques are still remain as major barriers in aligning existing data generation provisions with SDG indicators. However, the major finding and recommendations of the assessment is given in the following sections.

*Major findings of the study*

- Environmental degradation is high in Bangladesh as reported in the Fifth National Report submitted to UN-CBD although the Constitution of Bangladesh (Article 18A) and long and mid-term policy strategies call for environmental conservation vis-à-vis sustainable development.

- It is indicated that people who depend on natural resources (e.g. agricultural production processes) for their food and livelihoods security are mostly poor. Environmental degradation further worsen the situation.
- Reporting on the state of environment is neglected and received less priority as the latest environment report was published by BBS in 2009.
- About 200 laws are available in Bangladesh which have environmental relevance. The laws are divided in two broad categories, (i) firstly the laws having non-sectoral approach (e.g. ECA 1995, ECR 1997) and (ii) secondly sectoral laws that express environmental concerns and advocate for environmental conservation while achieving sectoral targets. It is observed that most of the policies were developed before 2000 in the contexts and necessity of that time and hence the institutional architecture, human resources, mandates to achieve were remained to be old fashioned.
- BBS planned for implementing BESF (2016-2030) by developing 15 national reports following the guideline provided by ESSAT, UN-FDES and SEEA.

### *Recommendations for Strengthening Environmental Data Management Sharing and reporting*

- Institutional commitments (may be improving the existing APA) are necessary to aligning data generation activities (e.g. develop/improve the data collection instruments such as questionnaire) and sharing mechanisms (e.g. assigning officials for data management, disseminating data via web portals data).
- Inter-agency coordination must be more efficient (a focal person could be assigned).
- Data sharing must be free of costs (since data were generated using public resources) so that sharing is free of hindrance. NSDS (National Strategy for Development of Statistics 2013, Statistical Act 2013, NSDI (National Spatial Data Infrastructure) should be properly harmonized with UN-FDES, UN-SEEA. In addition data generation should also be aligned with DRSF (disaster statistics proposed by UNESCAP), PEI (poverty environment integration) protocols so that overlaps in data generation could be avoided.
- Data quality concerns should be addressed by identifying the sources of error (e.g. shortcomings of data collection methodologies, use of technologies to reduce human error).
- Data collection strategies/methodologies should be developed as per the requirement of scale.
- Updating of existing data are essential since old data/information is misleading the progress and planning provisions.
- New data acquisition methods, such as satellite remote sensing, should be incorporated in the data generation process. In addition, data (as long as

possible) generated for different variables should be geo-referenced and presented in a geocoded mapping framework.

- Data generation provisions are necessary to develop for a number of thematic areas relating to 7 (green) SDG targets. But firstly, water sector data generation, reporting and sharing provisions could be made.

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# Part A
# Priority Needs for Environmental Information and Statistics

## 1.1 Introduction

The Department of Environment (DoE), Bangladesh with funding from UN Environment, prepared a summary report on the current baseline situation for environmental data management in Bangladesh. This report presents the results of the study on data demand at international and national level, recent data availability, indicators needed for policy implementation evaluation and their availability and existing challenges. The primary aims of this report are to do the following tasks.

- Highlight the environmental challenges
- Review of legal acts focusing on data
- Identify data needs and key users
- Review environmental statistics and reporting systems
- Assess the environmental data availability status
- Assess the capacity for data collection and processing
- Identify the existing challenges and suggest recommendations
- Inform stakeholders and decision makers about data needs and actions need to be taken in this regard

The information presented in this report was mainly collected through review of legal and policy documents, publications, databases, interviews with key users, administration of survey questionnaire and a national stakeholder consultation meeting. The report was prepared by Sheikh Tawhidul Islam in accordance with the ESSAT Reporting guidelines named Zero report draft on data assessment prepared by the joint working group of the UNEP, DEP and under supervision of regional expert Robert Steele, with support from UNEP Statistical Division and the Department of Environment, Bangladesh. Data, information, inputs and comments were provided by the relevant stakeholders and further inputs received from the participants of the national consultation meeting held at 24th of April 2018. Additional inputs and validation of data and information were provided by relevant officials.

**1.2 National Environmental Contexts**

Sustenance and security of majority of people, their living arrangements and conditions in Bangladesh have been heavily dependent on the availability, access and quality aspects of natural resources. These natural resources like (i) land with favourable properties such as soil fertility, moisture holding capacity, well drainage systems, (ii) biological diversity and resources that provide wide array of choices to cultivate by the farmers, (iii) water resources that ensures irrigation facilities, supply of important nutrient elements for plants and animals, and (iv) climatic conditions like optimum temperature, occurrence of adequate rainfall, wind direction and flow pattern, necessary sunshine, all in a combined fashion create an enabling environment suitable for natural resources based primary productions systems in this country. The food and livelihoods security for millions of people directly and indirectly depend on these primary production systems/processes. Any impacts on these natural resources and physical systems/processes that may be caused by unsustainable development activities, environmental pollution and degradation, disasters including climate change result in destabilizing the (agricultural) production systems leading to food insecurity, poverty and other social tensions.

This profound dependency on natural resources of people suggest that sustainable development is the most pragmatic approach to follow in Bangladesh since it will help to uphold environmental integrity and at the same time allow economic development to continue. The macro policy instruments of Bangladesh like the Perspective Plan (widely echoed as Vision 2021 comprised of two successive Five Year Plans, i.e. the 6th and the 7th), 7th Five Year Plan (2016-2021) have mentioned about sustainable development and green development plans as most appropriate path while implementing development programs. But for many reasons environmental degradation could not be halted, rapid and slow-onset disasters in the contexts of climate change continue posing threats to physical systems and processes. It is important to note here that due to inadequate data/information these degradation or alteration are not understood properly, the drivers of change remain unidentified and therefore taking appropriate action plans to arrest the degradation remain challenging. Sustainable Development Goals (SDG), in this backdrop, create multiple opportunities for UN member countries including Bangladesh to achieve better wellbeing provisions for the people, better protect the environmental resources and also to achieve various sectoral targets.

**1.3 Priority Environmental Issues and Reports**

A number of reports were developed by relevant Bangladesh agencies since 2001 that contain different environmental data. In addition Bangladesh Bureau of Statistics (BBS) plans to develop 15 new sets of reports (following the UN-FDES guidelines) where a number of reports will focus on environment, disaster and climate change impacts. This section provides a

glimpse on what have been done in Bangladesh and what are proposed in generating environmental statistics. This understanding based on the review may help to connect the upcoming works related to generating data on SDG targets (especially the 7 green SGD targets; target 6, 7, 11, 12, 13, 14 and 15) with the works those have already been done.

The first report on the state of environment in Bangladesh was developed and published by UNEP (in collaboration with DoE, BCAS, SACEP and NORAD) in 2001 based on the data/information that were available upto 1995 for the purpose of developing Global State of The Environmental Report 2002. The report pulled data from different sources and presented the facts in narrative form about land degradation, water pollution and scarcity, air pollution, biodiversity, and natural disasters using the analytical framework known as PSIR (pressure-state-impact-response). The report also indicated that the environment, social and development problems are multifaceted and it requires more complete (not partial), precise and analytical and properly linked/relational data so that human actions and resultant development impacts could be properly understood. It also recommended to create and foster long term mechanisms to monitor and assess the effects of environmental policies on environmental quality and quality of life of the human being. The report could be treated/used as a baseline state of environment in Bangladesh.

The country environmental analysis for Bangladesh was published by Asian Development Bank (ADB) in 2004. The report focused on the environmental concerns especially the pollution in the water and air, discussed about the release of solid, hazardous/toxic chemicals, hospital wastes, arsenic contamination in the ground water, land degradation and soil quality (e.g. salinity intrusion, fertility decline, nutrient imbalance, loss of organic matter), loss of top soil issues etc. The report mentioned about the legal, institutional and policy frameworks relating to environment of Bangladesh. It indicated that about 200 environmental laws are available in Bangladesh which could be broadly divided into two groups. These are firstly the laws having non-sectoral approach (e.g. ECA 1995, ECR 1997) and secondly sectoral laws that express environmental concerns and advocate for environmental conservation while achieving sectoral targets (e.g. Land use law, agriculture and irrigation related laws, laws related to water resources, forestry, fisheries energy, health, food etc.).

Compendium of environmental statistics of Bangladesh was published by Bangladesh Bureau of Statistics (BBS) in 2009 under the institutional capacity development project of BBS. The report contained data on biodiversity, climatic variables, land and water resources, human settlement, information on wastes and pollution (e.g. air, soil, sound, water and radio-active pollution), impacts of disaster and climate change. In recent times, BBS published disaster related statistics in 2015 to capture impacts of natural disasters including disasters induced from climate change on human lives and livelihoods. The study was focused on twelve major disaster types occurring in different parts of Bangladesh. The survey results show that about 56.52% of the households experienced major disasters once in their life, while 26.57% and

16.91% reported their experiences twice and thrice respectively. Floods appeared to be the most disturbing and damaging disasters compared to all other disasters as 24.44% respondents reported that they were affected by floods, followed by 15.10% affected by cyclones and 10.59% mentioned about thunderstorm impacts.

Bangladesh Bureau of Statistics (BBS) published BESF (Bangladesh Environmental Statistics Framework 2016-2030) following the principles and guidelines provided by UN-FDES and SEEA. As mentioned in the framework report, the objectives of BESF are (i) identifying main quantifiable aspects of the environment, (ii) identifying components, sub-components and topics that are relevant and statistically feasible according to defined national needs and priorities, (iii) facilitating the development of a national programme of environmental statistics, (iv) contributing to the assessment of data requirements, sources, availability and gaps, (v) guiding the development of databases that can be used for multiple purposes and (vi) assisting the co-ordination and organization of environmental statistics given the inter-institutional nature of the domain. It is indicated in the BESF that BBS will work in partnership with DoE, BFD, MoEF, DDM, MoDMR, BMD for developing 15 set of reports (Table 1) by the year 2030. The first report will be the Compendium of Bangladesh Environmental Statistics that was planned to be published in 2017 and updating the report in every three years interval (i.e. 2020, 2023, 2026 and 2029/2030). The costs for undertaking the mammoth task was estimated to be 33630 million Bangladesh Taka (about US$ 420 million). It is imperative to mention that GED (General economics Division) of Planning Commission also conducted a report on SDG data gap analysis and assessed the availability of indicators with 62 government agencies/Ministries in terms of data readily available, partially available and not available. Development of BESF (2016-2030) consulted all related documents including this GED report in outlining the proposed title of (15 set of) reports.

Table 1: National reports (published and proposed under BESF 2016-2030) on environment related statistics of Bangladesh since 2001.

| No. | Title of report | Year of publication | External support |
|---|---|---|---|
| 1. | State of Environment (SoE) Report | 2001 | UNEP in collaboration with DoE, BCAS, SACEP and NORAD |
| 2. | The Country Environmental Analysis: Bangladesh | 2004 | Asian Development Bank |
| 3. | Compendium of Environment Statistics of Bangladesh | 2009 | Capacity Building of Bangladesh Bureau of Statistics Project |
| 4. | Disaster-related Statistics 2015 (Climate Change and Natural Disaster Perspectives) | 2015 | Impact of Climate Change on Human Life (ICCHL) Programme |
| 5. | Bangladesh Environmental Statistics Framework (BESF) | 2017 | UNEP and UNDP |
| ***Reports to be developed proposed in the BESF (2016-2030)*** | | | |
| 1. | Compendium of Environmental Statistics | | |
| 2. | Compilation of Resource Accounts following SEEA (on land/soil, water, forests, natural gas, energy, fish ) | | |

| 3. | Climate Change and Natural Disaster-related Statistics |
|----|--------------------------------------------------------|
| 4. | Compilation of Social Accounting Matrix |
| 5. | Poverty Environment Accounts(PEA) in light with SEEA |
| 6. | Experimental Ecosystem accounts (EEA) in light with SEEACF |
| 7. | Household Survey of Health and Sanitation in Disaster Prone Areas of Bangladesh |
| 8. | Urban/Rural Waste Generation Recycling and Management survey |
| 9. | Environmental Protection and resource Management Expenditure Accounts |
| 10. | Disaster Risk Reduction Expenditure Accounts |
| 11. | Climate Change and Natural Disaster Impacts Vulnerability Index |
| 12. | Pre-crisis Data Gathering Tools as Baseline Information |
| 13. | Climate and Natural Disaster Induces Survey |
| 14. | Urban/Rural Water generation Use and Management survey |
| 15. | Developing a Web Based Data Sharing Reporting and Ensuring Access to Stakeholders |

## 1.4 Ecosystem Services and Wellbeing of People in Bangladesh

### 1.4.1 Natural Resources and Primary Productions

A steady economic growth (>6% GDP growth for last ten years) associated with infrastructure development, change in the land use pattern, enhanced cropping intensity using chemical inputs, meeting high energy demand in the changed conditions all contributed in exerting pressure on the environment of Bangladesh. The statistics suggest that forest cover in Bangladesh stands at 17.5% that includes 10.54% government managed forest resources and the remaining 6.9% are managed by other government agencies. But major portion of the forest covers are highly degraded, for instance out of 10.54% government forest lands, 7.6% has no tree cover at all and the remaining 2.89% forests have < 5% tree cover (Fifth National Report 2015, submitted to Convention on Biological Diversity, CBD). These forests are the storehouse for a number of floral (3733 number of species) and faunal diversity (e.g. 650 species of birds, 128 mammals, 154 reptiles). Bangladesh has huge wetland resources (wetlands constitute >50% of the land area) with 700 rivers and tributaries, 6300 permanent and shallow lakes in floodplain areas and about 47 deeply flooded depressions, millions of small fish ponds and tanks and 118813 square kilometres maritime areas. The rivers and wetlands are the habitats of about 267 freshwater fish species. The agricultural crops also show large diversity as BRRI (Bangladesh Rice Research Institute 2015) reports that 8044 genetic varieties of rice are available in Bangladesh. These forests, wetlands, land based ecosystems support people of Bangladesh to get benefits through production of crops, fisheries, raise livestock resources which finally help to supply food and secure livelihoods of people. Even the people living in urban areas receive supports from the products supplied from different ecosystems distributed in rural settings.

Table 2: Threats to biodiversity in Bangladesh (Source: 5<sup>th</sup> National Report to CBD).

| Nature of threat/underlying causes | Examples of specific threats/underlying causes |
|---|---|
| **_Threats_** | |
| Loss of habitat | Deforestation (for agricultural expansion, creation of settlements)<br>Urbanization<br>Draining/filling water bodies<br>Destruction of fish breeding areas<br>Hill slope cultivation and associated silting of water bodies<br>Clear felling for plantation<br>Jhum cultivation<br>Forest fire<br>Alien and invasive species<br>Upstream withdrawal of water /salinization in downstream |
| Over harvesting of resources | Unregulated/unscientific logging<br>Indiscriminate collection of medicinal plants<br>Hunting/trafficking in wildlife<br>Destructive fishing gear/trap |
| Increasing productivity | Indiscriminate breeding of livestock<br>Indiscriminate introduction of HYV<br>Introduction of hybrid fishes |
| Natural calamities | Floods<br>Droughts<br>Earthquakes<br>Others |
| **_Underlying causes of threats_** | |
| Pollution | Disposal of untreated industrial wastes/oil spillage from ships<br>Indiscriminate use of pesticides/fertilizers |
| Awareness | Major focus of policy makers is on development<br>Priority for poor stakeholders is financial improvement |
| Land tenure and user rights issues | Conflicting and incomplete legislative measures<br>Conflicting sectoral policies<br>Legal instruments and policies do not conform with conservation science<br>Traditional land management systems are lost |
| Institutional capacity constraints | Conflicting institutional mandates and responsibilities<br>Many protected areas essentially "paper parks"<br>Expertise in many government agencies focused on production rather than conservation |
| Human population growth | Increasing demand for space/resources<br>Change in agricultural practices and local culture<br>Land use change/conflict<br>Poverty |

## 1.4.2 The Nexus among People Poverty and Primary Production Processes

Bangladesh Bureau of Statistics (Labour force Survey 2011) suggests that 56.7 million people currently constitute the labour force of the country, where 39.5 million (70%) are male and 17.2 million (30%) are female. About 25.7 million (47%) are directly engaged in agriculture and fisheries sector of which almost 62.7% are functionally poor landless (when bottom two

land ownership categories are combined); about 27.7% got land resources between 0.5 to 2.49 acres and only 9.6% fall in the rich category in terms of holding of land resources. This suggests that the people who are engaged in primary production systems by taking the advantage of different hydro-meteorological and other physical processes are generally poor. In these sectors some people organize the economic activities and appear as owners or employers, some are engaged as self-employed persons and a major part engage as day labourers (agricultural and non-agricultural), petty traders, crop processors, transportation workers. It is important to note that about 95.40% (there are 5.53 million day labourers in Bangladesh when all sectors are combined, about 25 million people are dependent on them) of day labourers of the country come from agriculture sector (Labour Force survey 2011). It suggests that occurrence of any impacts whether it is strong episodes of disasters such as floods or cyclones or slow onset climate change calamities like salinity intrusion put these marginal people (who are labelled as hard core poor, currently comprising 7% of whole population) in serious poverty ridden conditions. It happens because they have no land or possess minimum land resources in one hand and on the other hand land utilization processes remain under multiple and cyclic forms of disaster threats.

Table 3: Status of Employment (in 000) in Bangladesh, BBS (2011).

| Occupation Category | Status in Employment (in 000) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Regular paid employee | Employer | Self employed (agri) | Self employed (non-agri) | Unpaid family worker | Regular paid worker | Day laborer (agri) | Day laborer (non-agri) | Servant |
| All professional categories combined | 54084 | 7876 | 119 | 12308 | 9714 | 11787 | 1486 | 5792 | 4838 | 455 |
| Agriculture, forest and fishing (% against all categories combined) | 25679 (47.47 %) | 748 (9.5%) | 23 (19.32%) | 7982 (64.85%) | 1518 (15.62%) | 9559 (81.09%) | 116 (7.8%) | 5526 (95.40%) | 383 (7.91%) | 31 (6.81%) |

It is important to note here that people take different professions simultaneously as means of spreading the risk factors in rural Bangladesh. It is commonly observed that family inheritance of professions dictates people to place more importance on one type of profession over the other. It is generally observed that people allocate 60-70% of their time in one profession and the rest on minor others. The secondary or minor professional engagements play important supportive roles when the primary profession is in jeopardy due to unavoidable circumstances like natural disasters or climate change impacts on which they have least control. Thus those who are farmers are at the same time are the fishers and in the similar way those who are fishers are also the farmers. Therefore, based on primary occupation, people could be divided into different professional groups but making sharp division would be problematic in Bangladesh rural contexts.

**1.5 Constitutional Environmental Rights**

Protection and improvement of environment and biodiversity issues are reflected in the Constitution (Article 18A of the Constitution[1]), long term plans (e.g. Perspective Plan 2011-2021, Five Year Plans) and sector plans of Bangladesh. The legal and policy frameworks, in general, are aligned with sustainable development principles declared/defined in the Rio Declaration and Agenda 21 and other related multilateral agreements signed by Bangladesh. The Constitution states that "The State shall endeavour to protect and improve the environment and to preserve and safeguard the natural resources, bio-diversity, wetlands, forests and wild life for the present and future citizens". The Constitutional obligations are reflected in the Environment Conservation Act (1995) and The Environment Conservation Rules (1997). This obligation/approach entrenches the rights of the public to a healthy and protected environment into a solid legal foundation. The interpretation of constitutional rights was broadened in Bangladesh with the decision provided by the Supreme Court of Bangladesh against a writ petition filed by Dr Mohiuddin Farooque (writ petition number 891) in 1994 where the court ordered the government to take measures to stop/reduce pollution (water, air, soil) induced from industrial units.

**1.8 Major Environment Related Laws and Policies**

Due to the multitude of environmental pressures and challenges that Bangladesh faces a number of legislative enactments have been made that articulate specific intentions to address environmental concerns in the country. This more specific emphasis is fortified by sectoral legislation and policies within other areas of the Bangladesh Government institutional framework, which also have the effect of addressing particular areas of resource management, sustainable development or cover more general environmental protection issues.[2]

A total of 23 laws contain provisions regarding the conservation of the environment and control of environmental pollution. These are supported by a further 185 laws which have some bearing on environmental and resource preservation. These laws provide for measures relevant to environmental offences, and by prescribing or prohibiting certain activities, they establish the duties and responsibilities of the controlling authority and the public in general.

The National Environment Management Action Plan (NEMAP) 1992 of Ministry of Environment and Forest (MoEF) proposes actions to achieve the objective stated in the National Environmental Policy 1992. These actions cover many diverse areas related to the

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[1] Article 18A was inserted by the Constitution (Fifteenth Amendment) Act 2011 (Act XIV of 2011, section 12).

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environment with emphasis on public participation in the process of formulating the action plan.

The Environmental Conservation Act of 1995 empowered the MoEF to formulate rules and guidelines for the management of environment. It also designates DoE (Department of Environment) responsible for enforcing the 1997 EIA procedures to control air pollution, water pollution, noise pollution. The EIA process is categorised into four classes, those are green, amber A, amber B and red.[3]

Table 4: Some of the key environmental laws and legislations in Bangladesh.

| Laws and Regulations | Relevance to Environment |
|---|---|
| Environmental Conservation Act (1995) | Empowers the MOEF to formulate rules and guidelines for the management of the environment. Designates DOE as responsible for enforcing the 1997 EIA procedures. |
| Environmental Conservation Rules (1995) | Air pollution, water pollution, noise |
| EIA Guidelines of Industries (1997) | Categorizes into four classes: green, amber A, amber B, and red, according to degree of impact |
| Environmental Pollution Control Ordinance (1997) | National water quality standards according to WHO guidelines, air quality standards, noise, solid waste management |
| Chittagong Hill Tract Regulation Action (1990) | Land use |
| Agriculture Pest Ordinance (1962) | Toxic and hazardous substance |
| Private Forest Ordinance (1950) | Forest Conservation |
| Forest Act (1927) | Forest Conservation, biodiversity conservation, soil conservation |
| Wildlife Preservation Act (1973) | Wildlife conservation, wetland management, biodiversity conservation |
| Wildlife (Conservation and Security) Act 2012 | |
| | |
| Marine Fisheries Ordinance (1983) | Coastal resources management, biodiversity conservation, marine pollution |
| Territorial Water and Marine Zone Act (1974) | Coastal resources management, marine pollution |
| Water Supply and Sewerage Authority Ordinance 1963) | Water resources management |
| Sustainable & Renewable Energy Development Authority (SREDA) Act (draft), 2012. Land Zoning Act (Draft), 2012 National Water Act (draft), 2012 Brick Production Act (draft), 2012 Haor Master Plan, 2012-2032 Bangladesh Wildlife Conservation and Security Act , 2012 Disaster Management Act, 2012 Forest (Amendment) Act, 2012 | |

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[3] Handbook on National Environmental Legislation and Institutions in Bangladesh

It is important to note that the legal frameworks that are concerned about environment in Bangladesh are crowded with big number of documents (as indicated before, over 200 Acts currently play roles). However, Bangladesh Environment Policy 1992, The Forest Policy 1994, The Water Policy 1999, National Land Use Policy 2001, National Fisheries Policy 1998, National Environmental Management Action Plan (NEMAP) 1995 are the major policies that play roles in providing necessary guidelines in formulating Acts, Laws, strategies, plans and to issue relevant ordinances. The policies also provide directives in making institutional architecture and to formulate institutional mandates which in turn influence to define the approach for achieving the policy objectives. The important issues to mention here is most of the policies were developed before the year 2000 in the contexts and necessity of that time and hence the institutional architecture, human resources, mandates to achieve were remained to be old fashioned. In contrast, the policies those were formulated or amended after 2000 taken/incorporated the environmental and biodiversity conservation issues. It suggests that the legal documents that were passed earlier were less aligned with the national and international goals and targets relating to environment conservation including SDG green targets. This overcrowding and old makeup of the legal documents leave impacts on the ways environmental concerns are to be handled by agencies.

## 1.9 Environmental Governance, Decision-making & Management

Almost all sectors within Bangladesh have environmental concerns of some description, especially those relating to action in natural resources management such as land and water. Institutional arrangements both within public and private sectors are a pre-requisite in policy making and resources mobilization, and are vital to considerations at the level of implementation.

The National Environmental Council was established in Bangladesh, chaired by the Prime Minister. It functions through an Executive Ministerial Committee headed by the Ministry of Environment Forest and Climate Change (MoEFCC) and a Divisional Environment Committee headed by the Divisional Commissioner. The MoEFCC is primarily responsible for environmental protection, also responsible for the formulation and monitoring of environmental policy and legislation. This ministry acts as the controlling authority of all executing agencies like Department of Environment (DoE), Forest Department (FD), Bangladesh Forest Research Institute (BFRI), Bangladesh Forest Industries Development Corporation (BFIDC) and Institute of Forestry and Environmental Sciences (IFESCU). Furthermore, it coordinates other inter-ministerial (e.g. water, industrial, transport, mining, etc.) environmental issues. The Forest Department (FD) works as an executing agency for the protection, control, conservation, expansion and maintenance the national forest resources.

In addition, a number of Ministries/entities have environmental mandates. These include Ministry of Planning, Ministry of Local Government Rural Development and Cooperatives (MoLGRD & C), Ministry of Water Resource, Ministry of Agriculture, Ministry of Health and Family Welfare, Department of Public Health Engineering, Water Supply and Sewerage Authority, Ministry of Energy and Mineral Resources.[4] Table 5 provides a comprehensive list of Government, Academic and Non-governmental organisations that have environmental management mandates and missions.

Table 5. Institutions, Academic Institutions and Non-governmental Organisations with Environmental Mandates and Missions

| Government agencies | Academia from different Universities | Non-governmental agencies |
|---|---|---|
| ▪ Ministry of Agriculture<br>▪ Ministry of Land Resources<br>▪ Ministry of Water Resources<br>▪ Ministry of Fisheries and Livestock<br>▪ Ministry of Local Government and Rural Development<br>▪ Ministry of Science and Technology and Information Communication<br>▪ Forest Department<br>▪ Department of Environment<br>▪ Department of Fisheries<br>▪ Directorate of Livestock<br>▪ Water Development Board<br>▪ Bangladesh Agriculture Research Council<br>▪ Bangladesh Soil research Institute<br>▪ Bangladesh Fisheries Research Institute<br>▪ Bangladesh Forest Research Institute<br>▪ Bangladesh Rice Research Institute<br>▪ Local Government Engineering Department<br>▪ Bangladesh Jute Research Institute<br>▪ Bangladesh Sugarcane Research Institute<br>▪ Water Resource Planning Organization<br>▪ Department of Agricultural Extension<br>▪ Integrated Coastal Zone Management Policy- Program Development Office<br>▪ Department of Agricultural Extension | • Department of Zoology Dhaka University<br>• Department of Botany Dhaka University<br>• Department of Plant Genetics Agricultural University Mymensingh<br>• Department of Fisheries and Animal Husbandry, Agricultural University Mymensingh<br>• Department of Environmental Science, Khulna University<br>• Department of Botany Rajshahi University<br>• Institute of Environment Sciences, Rajshahi University<br>• Department of Sociology Rajshahi University<br>• Department of Geography and Environmental Studies Rajshahi University<br>• Department of Zoology, Rajshahi University<br>• Department of Botany Chittagong University<br>• Department of Zoology Chittagong University<br>• Department of Forestry Chittagong University<br>• Department of Marine Biology, Chittagong University<br>• Department of Environmental Science, Shahjalal University of Science and Technology | ▪ Centre for Sustainable Development (CFSD)<br>▪ Bangladesh Environmetal Lawyer's Association (BELA)<br>▪ Bangladesh Rural Advancement Committee (BRAC)<br>▪ Bangladesh Institution for Development Studies (BIDS)<br>▪ Centre for Natural Resource Studies (CNRS)<br>▪ Nature Conservation and Management (NACOM)<br>▪ Bangladesh Centre for Advance Studies (BCAS)<br>▪ Centre for Environmental Geographic Information System (CEGIS)<br>▪ Bangladesh Unnayan Parishad (BUP)<br>▪ Forum of Environmental Journalists (FEJB)<br>▪ Bangladesh POUSH<br>▪ Wildlife Society of Bangladesh<br>▪ Coastal Area Resource Development and Management Association (CARDMA)<br>▪ Wildlife Society of Bangladesh<br>▪ DEBTEC<br>▪ CARITAS |

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|---|---|---|
| ▪ Barind Multi-purpose Development Authority | • Department of Anthropology Shahjalal University of Science and Technology<br>• Department of Forestry Shahjalal University of Science and Technology<br>• Department of Environmental Science, Jahangirnagar University<br>• Department of Botany Jahangirnagar University<br>• Department of Zoology Jahangirnagar University | ▪ BARCIK<br>▪ SEHD<br>▪ UBINIG<br>▪ Treenamul-Rajshahi |

## 2. Environmental Statistical Data and Information Landscape

### 2.3    Environmental Data Suppliers and Users

The Bangladesh Bureau of Statistics (BBS) is the only National Statistical Organization (NSO, mandated by Statistics Act 2013) responsible for collecting, compiling and disseminating statistical data of all the sectors to meet and provide the data-needs of the users for the national planning and formulating policies by the government. The key stakeholders (both suppliers and users of data) for environment statistics include both government and non-government organizations/institutions. The governmental institutions include BBS, the Ministry of Environment and Forests and Climate Change, relevant line ministries, departments, organizations, authorities.

Table 6. Key agencies that generate environmental data.

| Thematic areas | Key agencies who generate data | Major products |
|---|---|---|
| Environment | | |
| *Land* | Bangladesh Bureau of Statistics (BBS), Ministry of Land (MoL), Survey of Bangladesh (SoB), Department of Land Records and Survey (DLRS), Local Government Engineering Department (LGED), Bangladesh Agricultural Research Organization (BARC), Soil Resources Development Institute (SRDI) | Land area, Land types and quality, Land use/classification/ pattern, Land degradation |
| *Water* | Bangladesh Bureau of Statistics (BBS), Water Resources Planning Organization (WARPO), Ministry of Water Resources (MoWR), Ministry of Fisheries (MoF), River Research Institute (RRI) | Waterbody maps, water quality, water inundation/flood maps, hydraulic modelling |
| *Air quality including atmospheric attributes* | Department of Environment (DoE), Bangladesh Meteorological Department (BMD) | Air quality, variables related to air such as air pressure, flow direction, humidity, temperature etc. |

| Biodiversity (flora and fauna) | Bangladesh Forest Department (BFD), National Herbarium, Bangladesh Forestry Research Institute (BFRI), Department of Environment (DoE) | Species types and distributions, habitats and protected areas |
|---|---|---|
| Disaster impacts | Department of Disaster Management (DDM), Bangladesh Bureau of Statistics (BBS) | Impacts of hydro-meteorological, geological disasters |
| Climate change | Department of Disaster Management (DDM), Bangladesh Bureau of Statistics (BBS), Bangladesh Bureau of Education Information and Statistics (BANBEIS), Bangladesh Agricultural Research Organization (BARC) | Impacts of waterlogging and sea level rise, long term change in the climatic variables |
| Development indicators | Bangladesh Bureau of Statistics (BBS) General Economics Division (GED) at Planning Commission, Bangladesh Bureau of Education Information and Statistics (BANBEIS) | Economic development and employment, agriculture and food security, education, health |

## 2.4    International Environmental Reporting Obligations (MEAs)

Bangladesh is a signatory to a number of Multilateral Environmental Agreements (MEAs) including the Rio Conventions (RCs), i.e. United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD) and United Nations Convention to Combat Desertification (UNCCD). However, the country's capacities at individual, institutional and systemic levels to implement these Conventions are limited[5]. Bangladesh has ratified and/or evaluated 35 international Conventions, Treaties and Protocols (ICTPs). The key international MEAs that Bangladesh has obligations to report are listed below.

- *International Plant Protection Convention, Rome, 1951*
- *International Convention for the Prevention of Pollution of the Sea by Oil, London, 1954 (as amended on 11 April 1962 and 21 October 1969)*
- *Plant Protection Agreement for the South East Asia and Pacific Region (as amended). Rome 1956*
- *Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Moscow, 1963*
- *Treaty on Principles Governing the Activities of States in the Exploration and use of Outer Space including the Moon and Other Celestial Bodies, London, Moscow, Washington, 1967*
- *International Convention Relating to intervention on the High Seas in Cases of Oil Pollution Causalities, Brussels, 1969*
- *Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar, 1971 (Popularly known as Ramsar Convention)*
- *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons, and on their Destruction, London, Moscow, Washington, 1972*

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[5] Bangladesh Environmental Statistics Framework (BESF) 2016-2030, Environment, Climate Change and Disaster Statistics (ECDS) Cell, Bangladesh Bureau of Statistics, Statistics and Informatics Division, Ministry of Planning, May 2017.

- *Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 1972*
- *Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 1973 (Popularly known as CITES)*
- *United Nations Convention on the Law of the Sea, Montego Bay, 1982*
- *Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985 ⬜ Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal 1987*
- *London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990 (Copenhagen Amendment)*
- *Convention on Early Notification of a Nuclear Accident, Vienna, 1986.*
- *Agreement on the Network of Aquaculture Centres in Asia and the Pacific, Bangkok, 1988*
- *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989*
- *International Convention on Oil Pollution Preparedness, Response and Cooperation, London, 1990*
- *United Nations Framework Convention on Climate Change, New York, 1992*
- *Convention on Biological Diversity, Rio De Janeiro, 1992*
- *International Convention to Combat Desertification, Paris, 1994*
- *Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques, Geneva, 1976*
- *Agreement related to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, New York, 1994*
- *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and management of Straddling Fish Stocks and Highly Migratory Fish Stocks, New York, 1995*
- *Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Paris, 1993*
- *United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Paris, 1994*
- *Convention on Nuclear Safety, Vienna, 1994*

## 2.3 National Level Environmental Reporting Obligations

The country's environmental data reporting obligations are reflected in developing and submitting the National Reports (Table 7) to international agencies where Bangladesh made commitments through signing the MEAs. These national state of the environment reporting – SoER play important roles in monitoring the state of the environment and also to measure the progress made in areas like national sustainable development plan, social, environment and economic development plan; green economy development policy and plan, etc.

Table 7: National Reports that are submitted to international entities as part of MEAs.

| Thematic area | Title of the report | Submitting agency | Agency where the report was submitted and year |
|---|---|---|---|
| Biodiversity | Fifth National Report of Bangladesh to the Convention on Biological Diversity | Department of Environment (DoE), Ministry of Environment and Forests (MoEF) | Convention on Biological diversity, 2015. |
| Biodiversity (Aichi Targets) | Developed National Biodiversity Strategy and Action Plan (NBSAP). This report was incorporated in CBD national report. | Department of Environment (DoE), Ministry of Environment and Forests (MoEF) | Convention on Biological diversity, 2015. |
| Disaster Management | Disaster Risk Management Report | Department of Disaster Management (DDM) | UNISDR, 2017 |
| Desertification | Sixth National Report on CCD (Convention to Combat Desertification). National Action Plan (NAP 2015-2024) in this connection has also been prepared. | Department of Environment (DoE), Ministry of Environment and Forests (MoEF) | UNCCD, 2014 |
| Climate Change | Third National Communication Report | | UNFCCC, to be submitted soon |
| Development (MDG target achievements) | MDG Progress Report 2015 | General economics Division (GED), Planning Commission, Ministry of Planning. | United Nations, 2015. |
| Development and sustainable environmental governance | Bangladesh Capacity Development Action Plan for Sustainable Environmental Governance | Ministry of Environment and Forests | United Nations Development Program, 2007 |
| Agriculture and Rural Statistics | Report on in-depth Capacity Assessment of Bangladesh to Produce Agricultural and Rural Statistics | Bangladesh Bureau of Statistics, Ministry of Planning. | Food and Agriculture Organization of the UN, 2014 |
| International Trade in Endangered Species of Wild Fauna and Flora | Bangladesh ratified CITES in 1981 and entered into force in 1982. However no national reports have been submitted so far. | Department of Environment (DoE), Ministry of Environment and Forests. | CITES of wild fauna and flora, UNEP |
| Sustainable Development | Rio+20: National Report on Sustainable Development | Ministry of Environment and Forests. | Rio+20, UN Conference on Sustainable Development, 2012. |

# Part B
# Data Statistics and Indicator Availability

**3. Description of Environmental Indicator Availability**

**3.1 Existing data on environmental elements/variables**

It is indicated earlier sections that BBS has been playing significant roles in supplying information to know about the status of environment and to monitor the changes/successes happening in different sectors. A number of reports are produced by this agency but in most of the cases the reports present national scenario with division and district level disaggregation of data generated from sample observations. For example, Multiple Indicator Cluster Survey 2012-13, Report on Sample Vital Registration System 2013, Labour Force Survey Report 2010, Household Income and Expenditure Survey 2010 are some reports that present sample based national level data on environment, development, disaster and climate change impact indicators. On the other hand, the Population and Housing Census 2011 supply useful information on demographic and social characteristics of
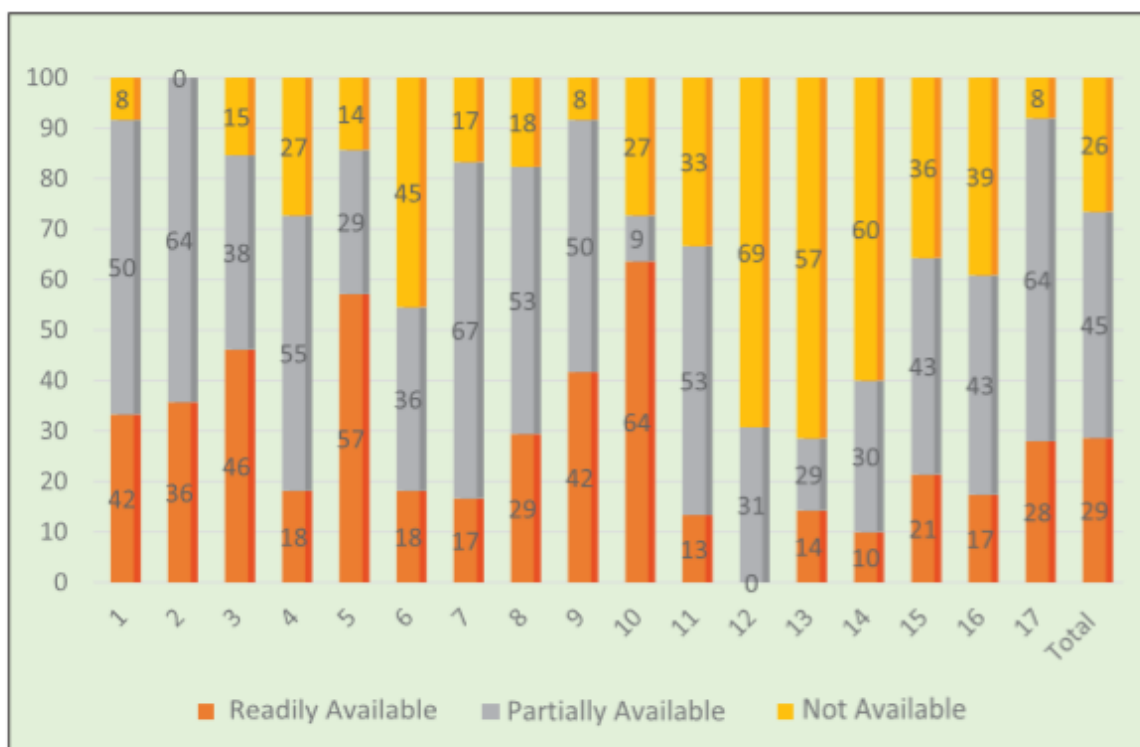


Figure 1: State of data availability on SDG indicators (by percentage) in Bangladesh. (Source: General Economics Division, Planning Commission).

Bangladesh including issues related to economy and other service sectors. Bangladesh Bureau of Statistics also produce statistics on different crops such as different varieties of paddy, jute, potato on regular basis. Generation of environmental statistics is one of the areas where BBS give less efforts as the last report on environmental indicators titled "Environmental compendium of Bangladesh" was published about a decade ago (in 2009). In recent times BBS produced a report on disaster and climate change impacts named ICCHL (Impacts on Climate Change on Human Lives, 2015). This report was also based on sample observations and degree of disaggregation was limited.

## 4. Description of Environmental Data Availability and Methodology

### 4.1 Methodological Approaches/Tools Used by Data Generation Agencies
### 4.1.1 Criteria and Standards for Dataset Management

The generation of data and information in Bangladesh is guided by Statistics Act passed in the National Parliament in 2013. Immediate before that a cell in BBS named 'Statistics Division' was created in 2010 and this sub-unit was renamed as Statistics and Informatics Division (SID) in 2012. The policy formulation and institutional reform was further strengthened by developing National Strategy for Development of Statistics (NSDS) in 2013 under which a set of short, medium and long term plans were developed and set criteria and standards for data management and reporting. This (NSDS) strategy document is currently playing vital roles in devising necessary strategies for generating detailed, realistic, participatory, dynamic statistical information for different sectors including environment.

### 4.1.2 Existing Environmental Datasets

Defining variables, developing data generation methodology/procedures and related protocols, spatial assessment (e.g. GIS based information systems) including geo-coding of data, web enabled data development potentials are few activity mandates that Bangladesh Bureau of Statistics performs in generating and supplying information. The agency regularly conducts surveys in developing different indexes such as Consumer Price Index (CPI), Wage Rate Index (WRI), Building Material Price Index (BMPI), Quantum Index of Industrial Production (QIIP), House Rent Index (HRI) and regularly publishes National Accounts Statistics, Statistical Yearbook, Statistical Pocket Book, Monthly Statistical Bulletin, Foreign Trade Statistics etc. However, BBS is reluctant in producing environmental statistics regularly; as indicated before that the last report on environment, called Environmental Compendium was produced in 2009 and the second one is planned to be published in mid-2018 (2017 report) under the scope to Bangladesh Environmental Statistics Framework 2016-2030 (BESF). This second Environmental Compendium is going to be published following the methodologies and instructions provided in the UN-FDES (2013) and UN-SEEA.

BBS contributes in developing Household Income and Expenditure Survey (HIES), poverty database and map, national household database and most importantly conducts national census surveys for population, agriculture and economic sectors. The last population census survey was conducted in Bangladesh in 2011, agriculture census in 2008 (the fourth census report on agriculture; the first one was conducted in 1983/84) and economic survey in 2013. A number of reports are being produced with the data generated through these census survey activities; national reports, district reports and community series data/reports are the major publications in this regard. In addition, BBS conducts Sample Vital Registration System Survey on yearly basis to provide yearly projected population count, birth and death rates, information about average life expectancy, marriage, immigration-emigration, people with disabilities etc.

In parallel to BBS, BANBEIS (Bangladesh Bureau of Education Information and Statistics) has been generating statistics for education sector in areas of school infrastructure, students and teachers, educational attainments etc. In recent times the agency undertook CCESD[6] study and a census survey to gather disaster and climate change impact information from different educational institutions of the country and gathered data on vulnerability and disaster impact-conditions of educational institutions located in different disaster hot-spots of Bangladesh. These geographical areas (in 12 disaster hot spots), where the CCESD study was conducted, have many disasters in common and at the same time many disasters that are only featured in that location happened for their relative location, physical and hazard environment/conditions they belong to.  The CCESD study produced disaster-education information in an integrated manner covering hazards like cyclone, floods, river and sea erosion, flash floods, heavy rainfalls associated with floods and landslides, Tsunami, high temperature with burning terrain, waterlogging, unusual/abnormal high tides, salinity intrusion, drought conditions, cold bites, earthquake, fire hazards etc. This UNESCO supported CCESD pilot study contributes in developing a national baseline scenario regarding disaster and climate change impacts on education sector for the first time in Bangladesh.


### 4.1.3 Utilization of Earth Observation and Geospatial Information System Data

The United Nations Statistical Commission (UNSC) and United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) have recognised the need for managing and effectively integrating geospatial and statistical information nationally and globally. It is imperative to mention here that application of satellite remote sensing, photogrammetry for analysing aerial photographs have been in use in Bangladesh since 1980 with the development of SPARRSO (Space Research and Remote Sensing Organization) and thereafter emergence and contributions of EGIS (Environment and GIS) in the water sector in

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[6] Climate Change Education for Sustainable Development.

1990 (Haque 200). In addition, Survey of Bangladesh (SoB), Soil Resources Development Institute (SRDI), Bangladesh Agricultural Development Council (BARC) are some agencies who have the capacities to use geospatial methods, data and tools in Bangladesh. SPARRO have been using data from meteorological satellites like NOAA AVHRR to forecast rainfall, tornado and do cyclone predictions and the results are supplied to Bangladesh Meteorological Department, Bangladesh Bureau of Statistics (BBS) for their reporting and dissemination purposes. Survey of Bangladesh (SoB) produces administrative and topographic maps at 1:50000 scale and aerial photographs covering the entire country are archived for years like 1974-75 (1:30000 scale), 1983/84 (1:50000 scale) and 1999-2000 (at 1:25000 scale). But use of these data needs permissions of Bangladesh Ministry of Defence. The agency named EGIS, later renamed as CEGIS, has necessary expertise to use radar data for flood monitoring; the agency also contributes in areas of floodplain research, river morphology dynamics, landuse zoning, and environment impact assessments etc. In addition, natural resources mapping, monitoring, crop estimation, post-disaster impact assessments are some avenues where these agencies play important roles in generating primary data. Bangladesh has got necessary the capacity at this moment to generate and handle space and GIS based data that may combine disaster data along with disaggregated socio-economic data for evidence based policy making.  Table 8, Table 9 show the usage type of applied GIS data by SoB (Survey of Bangladesh).

Table 8. Availability of Geospatial data that is collected by SoB

| | Scale of the maps: 5,000 and 25,000 (Being implemented) | |
|---|---|---|
| | Category | Summary Layers |
| 1 | Administrative Boundary | International, Division, District, Upazila along with Pillars and topographical sheet boundaries |
| 2 | Building and Structure | Building, Building Rooftops, Clustered Buildings, Buildup Area, Monuments etc. |
| 3 | Facilities | Religious, Education, Health, Governmental facilities etc. |
| 4 | Geodetic Control Points | Nationwide Vertical and Horizontal control points |
| 5 | Hydrography | River, Wetland, Island/Char-land etc. |
| 6 | Industry | Major Industrial locations along with type |
| 7 | Relief | Contour, Spot heights etc. |
| 8 | Transportation | Road, Railroad, Bridges, Ports etc. |
| 9 | Vegetation | Forest, Cultivation and non-cultivation area etc. |

Table 9. Usage of Geospatial data that is collected by SoB.

| Field of Applications | Use Activities |
|---|---|
| Agriculture | Monitoring, evaluation and management etc. |
| Environment | Monitoring, modelling and management for land degradation; weather and climate modelling, prediction and forecasting; river and coastal erosion modelling; flood management etc. |
| Health | Aerial distribution of different diseases in relation to environmental factors; visualizing changes in the occurrence of a disease over time etc. |
| Intelligence | Monitoring, tracking, evaluation and management etc. |
| Forestry | Management, planning; map prepare for site specific matching etc. |
| Regional / Local Planning | Development of plans, maintenance, management; infrastructure development programme, land registration etc. |
| Research & education | Different solutions from personal to national level etc. |
| Resource | Management, planning, monitoring, recording etc. |
| Social studies | Demographic trends and developments analysis etc. |
| Transport network | Planning and management etc. |
| Military Use | IPB, DMP and other battle planning, terrain analysis, resources planning, deployment, management, monitoring, recording etc. |
| Other uses | Thematic mapping, topographical mapping, site and location information, services, consultancy etc. |

Table 8 and Table 9 show that there is a large amount of geospatial data available in Bangladesh through various public and private sector organizations which were produced to facilitate their mandated responsibilities to perform. Almost every year the demand for maps and geospatial data is growing in Bangladesh due to the increasing number of prominent governmental organizations within Bangladesh using GIS facilities in their respective fields of application, though most of these users are developing GIS databases in isolation. This is creating redundancy, inconsistency and duplication of data along with very high initial overhead costs.[7] According to the Statistics Act 2013, BBS is mandated to establish an Integrated Geographical Information System. BBS is now working closely with Survey of Bangladesh (SoB) and other GIS based organizations towards establishing an integrated geographical information system. Furthermore, within the National Strategy for Development of Statistics (NSDS), a scopes have been identified for modernizing GIS and developing a web enabled GIS mapping system with other statistical attributes.[8]

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[7] Bangladesh Country Report Integrating Statistical and Geospatial Information System.
[8] Bangladesh Country Report Integrating Statistical and Geospatial Information System.

**4.2 Quality Assurance and Validation Methods**

Data quality concerns arise out from a number of ways in Bangladesh. These quality issues may be elaborated firstly as flaws and shortcomings of data collection methodologies, secondly introduction of human errors during data collection processes and finally lack of regular update of the data that may cause losing relevance of use of data. Data on demographic (through census surveys), agricultural crops, socio-economic indicators and sector specific variables (e.g. health and sanitation, industrial growth, poverty incidence etc.) are being gathered by Bangladesh Bureau of Statistics since the independence of Bangladesh. In conducting census surveys (e.g. population, agriculture) BBS uses door-to-door data collection methods, while other surveys like Household Income and Expenditure Survey (HIES[9]) the agency is based on representative sample surveys for data collection through a number of Primary Sample Units (PSU). This indicates that census survey results may supply information upto the lowest tier of the country but HIES may only applicable upto district level (not very effective to use lower than district level) reporting. BBS provide training at two levels (develop master trainers who train enumerators and data entry operators) in order to reduce errors and to ensure quality in producing data.

Agencies such as Survey of Bangladesh (SoB), Soil Resources Development Institute (SRDI), Department of Land Records and Survey (DLRS ) also produced data on land ownership and land quality aspects. But due to lack of data update some of the data becomes irrerevent and thus provide confusing state of the phenomenon. For instance, data generated on different characteristics of soil generated in 1960s are still in use in making the Agro-ecological database (AEZ database) of Bangladesh and these datasets are still in use for agricultural crop production planning and harvest estimation. Karim and Iqbal (2001[10]) showed that soil properties in different AEZs of Bangladesh have significantly changed (Figure 2) and commented that without update of the soil data and associated AEZ database the use of this data for agricultural planning might have little use/impact. Later, during 1990s, the use of geospatial data and techniques and relevant data by a number of Bangladesh agencies added new dimension in the integration of non-spatial data with non-spatial variables and to perform different kinds of spatial analysis and mapping activities. Data produced on environmental indicators (e.g. waterbodies, forests etc.) by the then ESPAN (currently known as CEGIS), AEZ database including maps developed by BARC (Bangladesh Agricultural research Council), pilot projects implemented by DLRS (Department of Land Records and Survey), infrastructure and service facilities data produced by LGED (Local Government and Engineering Department) are some example of production of geospatial data in Bangladesh.

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[9] HIES 2016 was conducted comprising of 2304 Primary Sample Units (PSUs) covering 46080 households while HIES 2010 took only 12240 households.

[10] Karim, Z. and Iqbal, A. (2001). Impact of land degradation in Bangladesh: Changing scenario in agricultural land use. BRAC, Dhaka.

But these datasets (both spatial and non-spatial) produced few decades back and become less relevant now a days because the landscape of Bangladesh (e.g. geomorphological settings and waterbodies/rivers) are highly dynamic and land configurations change quickly which cannot be captured in databases without regular updating provisions.
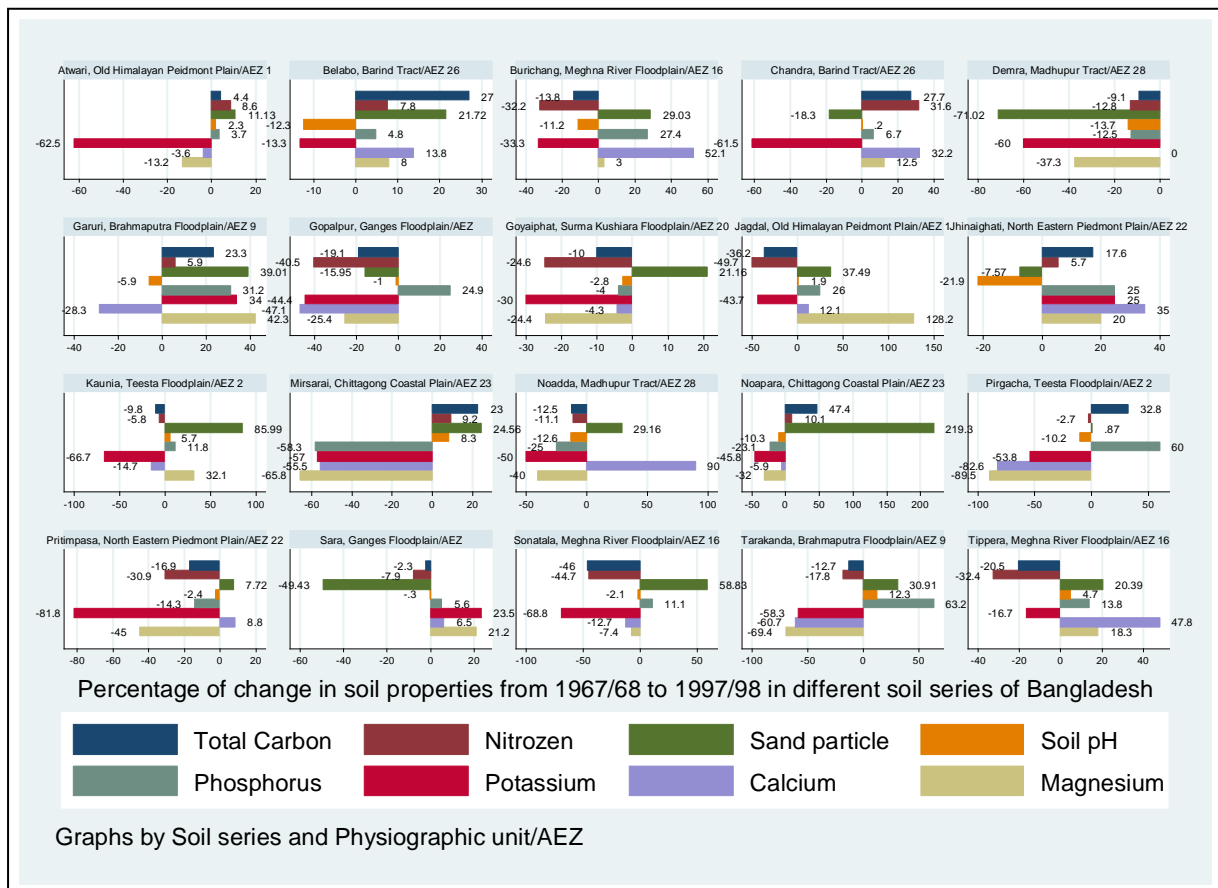


Figure 2: Change in the soil properties in different Agro Ecological Zones of Bangladesh. Figure generated using data from Karim (2001).

## 4.3 Availability of Environmental Dataset by Others (i.e. data users)

In general the agencies who produce environmental data (i.e. act as producer) also use the same data (i.e. act as user) for public reporting, planning and management of natural resources and in some cases for providing early disaster warning to people. For instance, Bangladesh Meteorological Department (BMD) produces data on different meteorological indicators based on daily records, satellite information and old records for trend analysis and at the same time use their own information for long term forecasts and trend analysis. Satellite data such as NOAA-AVHRR and other satellite supply data to BMD by which this agency predicts rainfall occurrence, provide cyclone warnings etc. Bangladesh Forest Department also performs both as data producer and user roles. But agencies like Flood

Forecasting Warning Centre (FFWC) does not produce primary data but use hydro-meteorological, land morphological data generated by Bangladesh Water Development Board (BWDB), BMD (Bangladesh Meteorological Department), also satellite altimeter data to forecast flood warning signals for various stakeholders like communities, navigating vessels and disaster impact professionals/volunteers. Other agencies such as DDM (Department of Disaster Management), Bangladesh Red Crescent Society, development partner agencies such as UNDP, UNEP, FAO use environmental data generated by different government agencies and help various agencies by developing partnership programmes so that they can provide more effective services to the communities. Programmes like Comprehensive Disaster Management Programme (CDMP[11], Phase I and II) running from 2003 to 2015, NARRI[12] (National Alliance for Risk reduction and Response Initiatives) running since 2010 are few major initiatives implemented in Bangladesh that were supported by a consortium of donors. These programmes uses various kinds of environmental data and provide backstopping support to frontline government agencies for their capacity development and enable them to provide community support effectively. Department of Disaster Management (DDM) with the support of development partners developed a disaster risk assessment mechanisms called CRA (Community Risk Assessment) that performs nine steps exercise using different kinds of environmental data and finally prepares RRAP (Risk Reduction Action Plan) at grassroots levels. In addition, this (DDM) agency produce post disaster impact assessment data using a field level data collection tool called "D Form" which contains 27 types of loss and damage information categories (Table 10) to be filled in by government representatives at upazila level and district commissioners at district level and send to Emergency Operation Center (EOC) within three weeks of disaster occurrence. The EOC then compile all the data gathered from the field and develop national loss and damage database and forward to NDRCC (National Disaster Response coordination Center based at the Ministry of Disaster Management and Relief MoDMR) for wider dissemination.

Table 10: Loss and damage information categories contained in the D Form.

| Information category | Description | Information category | Description |
|---|---|---|---|
| 1 | Name of Upazilla and district affected disasters | 15 | Damage of mobile phone towers |
| 2 | Number of wards/unions affected | 16 | Damage of structures of religious institutions |
| 3 | Affected area in square kilometers | 17 | Information on the damage of road networks of different categories |
| 4 | Affected people (man, women, children) | 18 | Number of bridge and culvert damage |

[11]http://www.bd.undp.org/content/bangladesh/en/home/operations/projects/All_Closed_Projects/Closed_Projects_Crisis_Prevention_and_Recovery/comprehensive-disaster-management-programme/CDMPHome.html

[12] http://narri-bd.org/

| | | | |
|---|---|---|---|
| 5 | Physically challenged persons (man, women, children) | 19 | Damage of embankments in kilometres |
| 6 | Affected households (partial, total) | 20 | Affected forest areas in hectares |
| 7 | Number of affected house (concrete, semi-concrete, thatch made) | 21 | Number of affected educational institutions |
| 8 | Affected disaster shelters (partial, total) | 22 | Affected industries (agriculture and non-agriculture) |
| 9 | Value of livestock lost (goats, lamb) | 23 | Number of affected tubewells |
| 10 | Value of livestock lost (cow, buffalo) | 24 | Affected toilets/latrines |
| 11 | Value of birds/poultry lost (chicken, duck) | 25 | Affected water reservoirs in numbers |
| 12 | Affected crops and seedbeds in hectares | 26 | Affected health centers (hospitals, clinic, community health centers) |
| 13 | Damage of other farms (e.g. shrimp hatchery etc.) | 27 | Loss of fishing boats and gears (boats, trawlers, fishing nets) |
| 14 | Damage of power lines (partial, total) | | |

## 4.4 Challenges and Constraints for Environmental Data Management

The challenges and constraints that exists within the various ministries and agencies for collecting and managing environmental statistics generally entail a shortage of knowledgeable and competently trained human resources coupled with a lack of technical capacity and severe limitation on financial resources. More specifically, the key challenges for having an effective environmental data management and reporting system among the various stakeholders includes the following[13].

- Lack of Inter-Ministerial/ Agencies agreement and coordination on how to work together and collect, manage and share data. Ministries, Institutions and Organizations have various types of environmental data, but due to lack of coordination and formal agreements, it is not possible to access or use this data strategically;
- Lack of a standard or common format and sharing/ dissemination platform for administrative environmental data;
- No data quality assurance mechanism agreed on by the different to ensure quality of data by respective ministries, institutions, and organizations who supply or use the data;
- Lack of permanent and sufficient budget has become one of the vital issues for data collection, compiling, processing & disseminating environmental data; and
- Absence of designated ministry, institute or organization focal points that has the official responsibility for management environmental statistical data and other information.

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[13] Bangladesh Environmental Statistics Framework (BESF) 2016-2030, May 2017.

**5. Technical Data Analysis Processing and Reporting Capacity**
**5.1 Capacity Strengths Weakness Gaps and Needs**

According to the National Strategy for Development of Statistics (NSDS) 2013, the BBS is responsible for developing a team with membership from the identified data providing agencies and initiating capacity building for data collection, verification, sharing and reporting. These members of the team will need conceptual and technical training so that they can efficiently contribute in gathering and reporting data. In addition professionals working at BBS also needs to improve their capacity to produce data/statistics and make them available to the public and policy makers in timely manner. BBS has recently started a project with the assistance of World Bank[14] to improve the capacity to generate vital statistics for different thematic sectors (e.g. national accounts, price statistics, labor and industry statistics, social statistics, agriculture statistics etc.) including proposed 15 reports mentioned in the BESF 2016-2030. The project will also improve the coordination and management of statistics, developing human resources and ICT infrastructure, improve the coverage and quality of core statistics and promoting and strengthening access to the use of official statistics. This capacity improvement initiative will support to implement Statistics Act 2013 in more effective manner.

**5.2 Budget Situation for Environmental Data Management**

Arranging budget for development and environment data generation, processing, reporting and dissemination has been a challenge for different data generating agencies including BBS in Bangladesh. This obstacle causes to limit the geographical coverage of data generation processes and also affect generation of reports quickly/timely (sometimes 5 to 7 years in case of census survey reports) manner and in many cases huge amount of collected data are never be reported and disseminated among the public. In addition, the data generation processes are taking place in non-coordinated manner among the data generation agencies; for example BBS, BMD, BANBEIS are gathering data on a number of overlapping (causing misuse of financial resources) areas but inherent integration among the indicators/variables on which data are being generated are generally missing. One of the most important challenge that happened due to budget constraints is the produced statistics are not georeferenced (i.e. data do not come with geographical coordinate values using GPS instrument) and thus spatial referencing, analysis and reporting cannot be done. Recently BBS has taken initiative to address this gap and developed geocode map for Bangladesh which could be used for georeferenced data generation in future. It is also important to note that without having geo-referencing of gathered data integrated data generation activities (as proposed in the BESF

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[14] http://www.worldbank.org/en/news/loans-credits/2018/03/22/bangladesh-the-national-strategy-for-development-of-statistics-implementation-support-project

2016-2030) such as SEEA (where environment and economic data will be integrated), DRSF (disaster statistics, proposed by UNESCAP), PEI (integration between poverty and environment) will be technically difficult to undertake since enumeration units in these cases might be different from administrative boundary-centred enumeration units. However, Bangladesh has currently got the capacity to fund projects from own revenue sources but it needs to produce good quality project proposals (using Development Project Proposal, DPP) and channelled through Ministry of Planning and Ministry of Finance. Due attention is needed in developing capacities of BBS professionals on this DDP formulation, execution and monitoring/evaluation processes so that funding challenges could be overcome.

## 6. Implementation of the System of Environmental Economic Accounts

SEEA is an internationally recognized and standardized approach for integrating environment indicators and metrics into a system of information fully consistent with the System of National Accounts (SNA) that is used to measure the economy. Up till present time, SEEA has not been utilized as an integrating framework for the national statistical accounts of Bangladesh, or as a framework for how data is collected, organized and reported to inform policy decision-making. However, according to the recent National Strategy for the Development of Statistics (NSDS 2017), the Bangladesh Bureau of Statistics (BBS) will compile and develop resource accounts (Land & Soil, Water, Agriculture, Forest, Experimental Ecosystem, Energy, Natural Gas, Fish, Materials Flow Accounts etc.) as per United Nations guidelines of the System of Environmental-Economic Accounting (SEEA).[15]

### 6.1 Environment Economy Nexus and Reflections in Data Generation Processes

Environment economy nexus in the context of Bangladesh society are discussed section 1.4 of this report. It showed how environmental functions such as hydro-meteorological processes, fluvial systems, land morphology, biodiversity create provisions for agricultural productions and hence support many associated activities of people living in resource-rich areas for their food and livelihoods security and overall wellbeing. Reports like Agriculture Census Survey (2008), Economic Census Report (2013), Productivity Survey of Major Crops, Compendium of Environmental Statistics of Bangladesh (2009), Household Income and Expenditure Survey (2010), Labor Force Survey (2010), poverty maps (2010), disaster prone area atlas are few statistical reports and maps published by Bangladesh Bureau of Statistics which provide accounts on natural resources based productions and shows areas that are poor (due low wage rate and lack of employment opportunities) and disaster vulnerable. The reports also indicate that most poverty prone areas located in north-western, south-western and south-eastern corners of the country that are situated in most disaster vulnerable areas

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[15] Bangladesh Environmental Statistics Framework (BESF) 2016-2030, May 2017.

that, in turn, also well correspond with areas showing less productive for agricultural crops in related statistical accounts. But developing integrated variables, as suggested in the SEEA framework, which will capture environment-economy data simultaneously is not happening in the statistical data generation processes in Bangladesh yet. The proposed BESF (2016-2030) would help to fill in the gap in this regard as at least three report titles are recommended such as compilation of resource accounts, poverty-environment accounts (PEA) in line with SEEA and experimental ecosystem accounts (EEA) that will capture data showing environment economy nexus in Bangladesh contexts.

## 6.2 Codes of National budget and Accounts and Reflections of Environmental Data in the System

Ministry of Finance (MoF) of Bangladesh manages government's financial transactions using a tool called BACS (Budget and Accounting Classification System). BACS[16] is a system of (economic) codes used to plan, record, report, analyse and compare the government financial operations. The current economic codes comprise of 35 digits based on nine[17] segments and managed by computer software called iBAS++. The iBAS++ system read expenditure accounts of Ministry of Environment Forests as 145 (its subordinate office DoE as 14505), similarly Ministry of Water Resources as 147, Ministry of Disaster Management and relief as 149. In the similar fashion location where expenditures are held through which operation or program implementation could easily be tracked in the new BACS system. In recent times CPEIR[18] (2012) carried out by General Economics Division (GED) of Planning Commission, the CFF[19] (2014 and reviewed in 2017) by Ministry of Finance make necessary rationale for making the BACS and iBAS++ system disaster and climate expenditure sensitive so that risk reduction efforts could be tracked in more specific terms. In current efforts the Finance Division of Ministry of Finance is incorporating 44 program activities mentioned in the BCCSAP[20] (Bangladesh Climate Change Strategy and Action Plan) spread over 6 thematic areas into the BACS and iBAS++ system.

Using a climate sensitive expenditure tracking methodology proposed in the CPEIR (Climate Public Expenditure and Institutional Review) report it was estimated (using the IBAS++

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[16]http://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/8b31f768_35db_46b0_bf7d_cb6c4754a011/New%20Budget%20and%20Accounting%20Classification%20System%20%281%29.pdf

[17] The segments for distributing the codes are organization, operation, fund, economic, mode of payment, location, authorization, classification of functions of government (COFOG), budget sector.

[18]https://www.unpei.org/sites/default/files/e_library_documents/Bangladesh_Climate_Public_Expenditure_and_Institutional_Review_2012_0.pdf

[19] https://info.undp.org/docs/pdc/Documents/BGD/1695%20ClimateChange_FullLayout%20290914.pdf

[20] https://www.iucn.org/downloads/bangladesh_climate_change_strategy_and_action_plan_2009.pdf

system) that government spends around 6% to 7% of its annual combined development and non-development budget on climate sensitive activities which is equivalent to about US$ 1 billion at current exchange rates. This report was presented by the Finance Minister of Bangladesh before the Member of Parliaments as supplement to national budget address 2017-18 given by the Minister in the Parliament. This national report has significant value to demonstrating seriousness and actions taken against the commitments made in different national strategic documents and MEAs.  It is imperative to mention that no strategy is taken yet how the data generated from this government's Public Finance Management (PFM) facilities (i.e. BACS, iBAS++) could contribute in formulating statistical reports including reports planned through BESF 2016-2030.

## 6.3 Valuation of environmental services

Valuation of environmental resources and services are new concept for Bangladesh and hence less practiced phenomenon. The value of forest resources located in the south-western mangrove forest areas and in the south-eastern hill areas, the wetlands and rivers, the land resources are not properly recognized and therefore ignored for sustainable planning and judicious management processes. Different reports rather (e.g. different studies conducted by USAID, World Fish, ADB, World Bank) conducted economic valuation of some provisioning services received from timber, fuelwood, fish stock etc. But comprehensive economic valuation where all other types of ecosystem service categories such as supporting, regulatory, cultural services are yet to be performed in Bangladesh. Even BESF (2016-2030) did not consider any title in this regard although it demands significant necessity for sustainable development planning.

However, studies suggest (base) average monthly income of people living in mangrove adjoining areas in the south-western parts of Bangladesh who primarily depend on mangrove resources[21] is 3000 BDT (USD 37.5 at 80 BDT per USD exchange rate) but these income drops in the Bangla month of *Srabon, Vadra, Ashwin and Kartik* (July, August, September, October) when ecosystem services (provisioning services) from mangrove reserve forest becomes low for different fluvial and biological functions of the forest ecosystem (Table 11). During this lean period people suffer from food shortage conditions suggesting that income of people drops when the ecosystem is less productive which also corresponds with food insecurity conditions. IPAC (2010[22]) in a value chain study on mangrove forest resources showed that harvesters enjoy only 5% of the total value generated from a resource category where upper tier professionals (local traders, wholesale big merchants) receive the most of the income

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[21] About 63% depend on fish-shrimp harvesting, 30% mud-crab, 5% on collection of reeds and 2% honey. Source: SUNDARI Baseline Survey Report, conducted by Concern Worldwide (2012).

[22] Integrated Protected Area Co-Management (2010): A Study of the Principal Marketed Value Chains Derived from the Sundarbans Reserved Forest. Study supported by USAID.

generated from the value chain process. However, these interconnected indicators, i.e. *ecosystem services-income and livelihoods-food security and wellbeing* are not currently taken into consideration in data generation and reporting provisions in Bangladesh.

Table 11: Food security conditions of mangrove forest dependent people based on survey conducted. Source: Sundari Baseline Survey 2012.

| Months | No shortage | Moderate shortage | Bad shortage |
|---|---|---|---|
| Boisakh (April-May) | 29.1 | 50.7 | 20.2 |
| Jaistha (May-June) | 25.6 | 55.8 | 18.6 |
| Ashar (June-July) | 17.8 | 59.3 | 22.9 |
| *Srabon (July-August)* | *16.4* | *53.9* | *29.6* |
| *Vadra (August-September)* | *13.2* | *48.2* | *38.5* |
| *Ashwin (September-October)* | *10* | *32.1* | *58* |
| *Kartik (October-November)* | *10.8* | *31.3* | *58* |
| Agrahayan (November-December) | 26.1 | 45.3 | 28.6 |
| Pous (December-January) | 35 | 44.2 | 20.8 |
| Magh (January-February) | 39.1 | 44.7 | 16.2 |
| Falgun (Februaru-March) | 38 | 47.7 | 14.3 |
| Chaitra (March-April) | 31 | 51.5 | 17.5 |

# Part C
# Institutional Infrastructure

## 7. National Policy-Institutional architecture

### 7.1 National Policies and MEAs

It is mentioned earlier that environmental concerns are reflected in the Constitution (Article 18A) of Bangladesh, long term plans (e.g. Perspective Plan 2011-2021, Five Year Plans) and sector plans of the country. The longstanding legal and policy frameworks are revised and amended, in some cases, in order to align those with sustainable development principles declared/defined in the Rio Declaration and Agenda 21 and other related multilateral agreements signed by the government of Bangladesh.

Table 12: Major environmental and economic development plans and policies of Bangladesh.

| Environment related plans, policies | Plans and policies related to economic development |
|---|---|
| National Environment Management Action Plan (NEMAP), 1995 | Seed policy, 1993 |
| Action Plan (NEMAP), 1995 | The National Energy Policy 1995 Policy |
| National Land Use Policy, 2002 | New Agricultural Extension Policy (NAEP), 1996 |
| National Biodiversity Strategy & Action Plan (NBSAP), 2004 | Seed Rules, 1997 |
| Social Forestry Rule, 2004 (amended in 2010 & 2011) | National Fishery Policy, 1998 |
| Coastal Zone Policy 2005 | National Water Policy, 1999 |
| Integrated Coastal Zone Management Plan, 2005 | National Agriculture Policy (NAP), 1999 |
| National Adaptation Plan of Ac | Department of Agricultural Extens |
| tion (NAPA), 2005 (updated 2009) | ion (DAE)-Strategic Plan, 99-02 |
| National Capacity Self Assessment (NCSA) Report, 2006 | Agricultural Extension Manual, 1999 |
| Deer Rearing Rule, 2008 | National Land Use Policy 2001 |
| Biomedical Waste Management Rules, 2008 | National Land Use Policy 2001 |
| Bangladesh Climate Change Strategy & Action Plan (BCCSAP), 2009 | National Jute Policy, 2002 |
| Bangladesh Climate Change Trust Fund Act, 2010 | Dhaka Building Construction Rules, 2004 |
| Revised National Conservation Act, 2010 | Coastal Zone Policy (CZP) 2005 |
| Environment Courts (in all district) Act, 2010 | Agriculture Sector Review- II, 2005 |
| Draft National Solid Waste Management Rules, 2010 | Actionable Policy Briefs on Agriculture, 2005 |
| National 3-R Strategy, 2010 ( 3R : Reduce, Reuse and Recycle) | National Energy Policy (draft), 2006 |
| National Plan for Disa | National Coal Poli |
| ster Management 2010-2015 | cy (draft), 2007 |
| Ship Breaking and Hazardous Waste Management Rules, 2010 | National Livestock Development Policy, 2007 |
| Balu Mohal and Soil Management Rules 2011 | National Food Policy Plan of Action , 2008-2015 |
| Bangladesh Climate Change Resilience Fund, 2011 | National Water Management Plan (2004, revised) |
| Forest Transit Rule, 2011 | Building Construction Rules, 2008 |
| Draft National River Conservation Act, 2011 | Renewable Energy Policy, 2008 |
| Bangladesh Wildlife Conservation and Security Act , 2012 | National Sustainable Development Strategy, 2009 |
| Draft Tree Conservation Act, 2012 | Jalmohal Management Policy, 2009 |
| Disaster Management Act, 2012 | Amendments to Jalmohal Policy, 2009 |
| | Land Acquisition Law for Padma Bridge, 2009 |
| | Energy Conservation Act, 2010 |
| | The Gas Act, 2010 |
| | Bangladesh Economic Zones Act, 2010 |
| | Revised Renewable Energy Policy 2011 |

| Forest (Amendment) Act, 2012<br>Bangladesh REDD+ Readiness Roadmap , 2012 | Dhaka Elevated Expressway Project (Land Acquisition) Law, 2011<br>Industrial Policy, 2011<br>Draft Bangladesh Economic Zones Regulations, 2011<br>Sustainable & Renewable Energy Development Authority (SREDA)<br>Act (draft), 2012.<br>Land Zoning Act (Draft), 2012<br>National Water Act (draft), 2012<br>Brick Production Act (draft), 2012<br>Haor Master Plan, 2012-2032 |
|---|---|

It is important to note, also mentioned earlier, that the legal frameworks that are concerned about environment in Bangladesh are crowded with big number of documents (over 200 Acts currently play roles). For example water sector and related issues are regulated by about 29 legal documents. Bangladesh Environment Policy 1992, The Forest Policy 1994, The Water Policy 1999, National Land Use Policy 2001, National Fisheries Policy 1998, National Environmental Management Action Plan (NEMAP) 1995, Wildlife (Conservation and Security) Act 2012 are the major policies that play roles in providing necessary guidelines in formulating Acts, Laws, strategies, plans and to issue relevant ordinances to protect natural resources and at the same time attain sectoral objectives/targets. For example, Department of Environment (DoE) can take initiatives to declare certain parts of an ecosystem as 'community conservation area', 'national parks', 'buffer zone', 'co-management areas' by using the provisions given in the Wildlife (Conservations and Security) Act 2012.  Thus the (amended) policies provide directives in designating an ecosystem with specific identity where certain rules have to be followed, shape out institutional architecture and to formulate institutional mandates. The important issues to mention here is most of the policies were developed before 2000 in the contexts and necessity of that time and hence the institutional architecture, human resources, mandates to achieve were remained to be old fashioned. In contrast, the policies those were formulated or amended after 2000 taken/incorporated the environmental and biodiversity conservation issues.  It suggests that the legal documents that were passed earlier were less aligned with the national and international goals and targets.  This overcrowding and old makeup of the legal documents leave gaps on the ways environmental concerns are to be handled by the concerned agencies.


**7.2 Policy-Institutional and Cooperation Mechanisms**

It is indicated earlier that pursuing development in sustainable manner is manifested in macro and sector policies of Bangladesh. These policy documents provide directions and strategies for developing necessary institutional makeup, operational procedure to perform activities relating to sustainable development in different sectors. The sectors are generally interconnected in such a fashion that one influences the other. For instance, data generated

by BBS helps other agencies to plan and forecast the challenges so that strategies could be taken to achieve the targets including developing monitoring, evaluation and reporting instruments/plans for respective sectors. In the similar fashion, agricultural production (thus ensuring food security) guided by the Ministry of Agriculture, technically supported by the BARC (Bangladesh Agricultural Research Council) institutional systems strongly contribute in reducing community vulnerability and disaster risks which is also a mandate of the Department of Disaster Management (DDM). Thus the cooperation and partnerships are the indispensable phenomenon practised among the institutions under the auspices of both macro and micro policies. Table 13 presents a number of agencies working in different sectors to achieve sector specific targets but finally help to culminate in achieving sustainable development goals and targets. Most important challenge in this regard is various actors have their own development mandates to achieve rather than having focus on biodiversity conservation or ensuring sustainable use of environmental resources. For example, the Ministry of Agriculture set priority at food grain production by introducing high-yielding varieties, use of huge chemical inputs (thus environmental conservation receives less priority). The Department of Fisheries also wants to see fish production in terms of as many tons as possible with limited focus on fish biodiversity conservation. In contrast the National Shrimp Policy 2014 is, however, an encouraging example of integrating biodiversity conservation along with economic development. Ministry of Water Resources aims at extending geographical coverage of flood control drainage and irrigation schemes that caused serious hindrance to free flow of water and also on floodplain biodiversity.

Table 13: Institutions/agencies perform to achieve sustainable development targets.

| Thematic sectors (e.g. environment, natural resources, development) | Name of the agencies |
|---|---|
| Data generation | Bangladesh Bureau of Statistics (BBS), Ministry of Planning<br>Bangladesh Bureau of Education Information and Statistics (BANBEIS) |
| Planning and oversight agencies | Planning Commission, Ministry of Planning<br>Department of Environment (DoE), Ministry of Environment and Forests |
| Agriculture research, planning | Bangladesh Agricultural Research Council (BARC) and their allied 13 agencies<br>Ministry of Agriculture |
| Disaster impact management | Department of Disaster Management (DDM), Ministry of Disaster Management and Relief (MoDMR) |
| ICT (Information Communication and Technology) and development | ICT Division, Ministry of Posts, Telecommunications and Information Technology<br>A2I project, Prime Minister's Office |
| Providing services in local government level | Local Government Engineering Department (LGED), Ministry of Local Government Rural Development and Cooperatives<br>Department of Public Health and Engineering (DPHE) |
| Water, forests and biodiversity | Bangladesh Water Development Board (BWDB), Ministry of Water Resources<br>Bangladesh Forest Department (BFD) and DoE, Ministry of Environment and Forests (MoEF) |

## 7.3 Institutional Coordination of Information Management Systems and Processing Capacity

The institutions and agencies working in different sectors in Bangladesh generally maintain their own information generation capacities which are required/used in producing progress reports (specially the annual reports). These reports play roles as data dissemination mechanism and reports are made available through the web portals (sometimes as print copies) for public consumptions. These reports also act as data sources for Bangladesh Bureau of Statistics (BBS) to produce sector statistics. In recent times, the Government of Bangladesh has taken initiatives to develop common web portal to be used by all government agencies to report their activities and information relating to service delivery systems (through A2I project aimed at creating digital Bangladesh). These identical/alike web based platform made people familiar about the relevant facts of government institutions and about their mandated functions. The facts and processed data/information about the agencies are put generally in eight categories, i.e. introduction, citizen charter, policy and strategies, publications, reports, forms, notices, communication and all the institutions in the country follow these categories in disseminating information, policies and activity results. In recent times different ministries sign APA (Annual Performance Agreement) with Secretary, Ministry of Cabinet Affairs where they set strategies to achieve targets.

However, the institutions generally lack the capacity to produce critical and analytical reports by processing data. Sometimes data processing results are not trust worthy because of the precision of the analysis and influence of the professionals on data processing activities to meet/show the standards (Source: Development of Deep Aquifer Database and Preliminary Deep Aquifer Map; DPHE, 2006). It is important to mention here that separate and independent government agencies are developed under different agencies for generating knowledge products by capturing and analysing data. For example, the Bangladesh Institute of Development Studies (BIDS) was created for giving results based suggestions to the government in development sector, CEGIS for environmental management, IWM for water sector modelling, NORI (National Oceanographic Research Institute) for oceanographic research and training. These agencies generally use state of the art tools, methods and techniques for producing knowledge products in respective sectors. In addition, the donor agencies and different international development partners have been assisting government partners in commissioning data generation, processing and reporting processes. It is pertinent in this regard that most of the national communication reports (e.g. communication reports to UNFCCC, UNCBD, UNCAD, UNISDR etc.) are generally prepared with the support of international partner agencies. In doing that these partner agencies generally provide both technical and financial assistance to respective sector agencies. Third party agencies are sometimes engaged to generate data, process information and produce knowledge products.

# Part D
# Recommendations
# Gap Analysis and Options

## 8. Analyses

### 8.1 The Analysis for Annex 1 (A): SDG Environmental Indicators of Bangladesh

The assessment provides insights about environmental data generation architecture including management and reporting systems of Bangladesh. It shows that Bangladesh Bureau of Statistics (BBS) is the prime and mandated agency to generate data on various themes/sectors. However, many other agencies working in areas like water resources, meteorology, soil and agriculture generate various types of spatial and non-spatial data. Thus environmental data are generated by various agencies as per their requirements adopting different methodologies that creates obstacles to assimilate data when there is a necessity. In addition data are generated at different scales with limited disaggregation provisions. In this backdrop, BBS developed BESF 2016-2030 following the guidelines provided by UN-FDES and UN-SEEA so that data gathered by different sources could be used in order to develop data for reporting and monitoring the progress of attaining SDGs (by paying especial focus on 7 green SDG targets). However, lack of institutional commitments in data generation and sharing, required funding, high rate of staff turnover among the institutions, skills and knowledge gaps in data generation methods and techniques are still remain as major barriers in aligning existing data generation provisions with SDG indicators.

### 8.2 The Analyses for Annex 2 (A): Environmental Statistics Self-Assessment Tool (ESSAT)

ESSAT is an instrument proposed by United Nations Statistical Division (UNSD) to gather environmental statistics in an orderly fashion in terms of specific components, topics and basic set of statistics. This tool provide a provision to generate 492 basic set of statistics among which 107 statistics are labelled as core set of statistics, distributed in six thematic components such as (i) environmental conditions and quality, (ii) environmental resources and their use, (iii) residuals, (iv) extreme events and disasters, (v) human settlements and environmental health and (vi) environmental protection, management and engagement. The indicators are again categorised as tier I, II and III based on the degree of detail of the statistics to be generated. The core set of statistics fall in tier I which are generally assimilated and reported to reflect the national level conditions on certain variables. As indicated earlier that this inventory report is primarily focused on 7 SDGs with specific environmental focus like water and sanitation (Goal 6), energy (Goal 7), human settlements (Goal 11), sustainable consumption and production (Goal 12), climate change (Goal 13), oceans and terrestrial ecosystems (Goals 14 and 15) aiming to assess the current national situation in regards to environmental data needs and related to IRIS (Indicator Reporting and Information System)

delivery potential. The results of the assessment suggest that ESSAT components and 7 SDG (green targets) in the contexts of Bangladesh data generation architecture (policies, institutions and related decision making landscape) are harmonious at least for tier I environmental statistics. But proper understanding of data needs by the professionals including policy makers, technical skills and institutional commitments will be necessary for generating, reporting environmental data/information. More attention will be needed for generating tier II and III set of environmental statistics.

## 9. Gaps and Recommendations

### 9.1 Major findings of the study

- Environmental degradation is high in Bangladesh as reported in the Fifth National Report submitted to UN-CBD although the Constitution of Bangladesh (Article 18A) and long and mid-term policy strategies call for environmental conservation vis-à-vis sustainable development.
- It is indicated that people who depend on natural resources (e.g. agricultural production processes) for their food and livelihoods security are mostly poor. Environmental degradation further worsen the situation.
- Reporting on the state of environment is neglected and received less priority as the latest environment report was published by BBS in 2009.
- About 200 laws are available in Bangladesh which have environmental relevance. The laws are divided in two broad categories, (i) firstly the laws having non-sectoral approach (e.g. ECA 1995, ECR 1997) and (ii) secondly sectoral laws that express environmental concerns and advocate for environmental conservation while achieving sectoral targets. It is observed that most of the policies were developed before 2000 in the contexts and necessity of that time and hence the institutional architecture, human resources, mandates to achieve were remained to be old fashioned.
- BBS planned for implementing BESF (2016-2030) by developing 15 national reports following the guideline provided by ESSAT, UN-FDES and SEEA.

### 9.2 Recommendations for Strengthening Environmental Data Management Sharing and reporting

A number of recommendations are made to strengthen environmental data generation capacity of the agencies/professionals and to develop better management, sharing and reporting systems in Bangladesh. The recommendations are given in the following sections.

- Institutional commitments (may be ensured by improving the existing Annual Performance Agreement, APA) are necessary to align data generation activities (e.g. develop/improve the data collection instruments such as questionnaire) and

improving data sharing mechanisms (e.g. assigning officials for data management, disseminating data via web portals data).

- Inter-agency coordination must be efficient, effective (a focal person could be assigned).
- Data sharing must be free of costs (since data were generated using public resources) so that sharing is free of hindrance. NSDS (National Strategy for Development of Statistics 2013, Statistical Act 2013, NSDI (National Spatial Data Infrastructure) should be properly harmonized with UN-FDES, UN-SEEA. In addition data generation should also be aligned with DRSF (disaster statistics proposed by UNESCAP), PEI (poverty environment integration) protocols so that overlaps in data generation could be avoided.

- Data quality concerns should be addressed by identifying the sources of error (e.g. shortcomings of data collection methodologies, use of technologies to reduce human error etc.). Metadata (i.e. data about data) should be maintained for all kinds of data generated.

- Data collection strategies/methodologies should be developed as per the requirement of scale so that necessary elements could be taken into consideration (at-scale) for data generation.
- Updating existing data are essential since old data/information could mislead the progress monitoring and planning provisions.
- New data acquisition methods, such as satellite remote sensing, should be incorporated in the data generation process. In addition, data (as long as possible) generated for different variables should be geo-referenced and presented/archieved in geocoded mapping framework so that environmental variables could be distributed spatially and spatial analysis could be performed.
- Data generation provisions are necessary to develop for a number of thematic areas relating to 7 (green) SDG targets. But firstly, water sector (e.g. especially water quality) data generation, reporting and sharing provisions could be made which will pave the way for generating data on other variables.

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# ANNEX 1: Priority Environmental Data and Indicator Inventory

**SDG Indicator 6:** Clean water and sanitation Ensure availability and sustainable management of water and sanitation for all.

*Source: modified after BESF (2016-2031).*

| SDG targets and indicators | Major agencies involved in data generation and use | Alignment with 7th Five Year Plan | Alignment with Country Investment Plan, CIP-EFCC (Environment, Forestry and Climate Change); |
|---|---|---|---|
| Target 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all<br><br>6.1.1 Proportion of population using safely managed drinking water services | **Data production**<br>Bangladesh Bureau of Statistics<br><br>**User agency**<br>Local Government Division; Min. of Primary and Mass Education | • Ensuring safe water facilities for all through the development of different water supply options<br>• the development of different water supply options in affected areas<br>• Ensuring safe water facilities in the hydro-geologically difficult and problematic areas<br>• Establishment of WSS HRD centre in DPHE to ensure adequate supply of trained and skilled manpower<br>• Establishment of the NAWASIC (National Water Supply & Sanitation Information Centre) in DPHE<br>• Establishment of water quality examination, monitoring and surveillance systems<br>• Update and strengthen "Organizational Setup" of DPHE to orient it to support the LGIs.<br>• Continue with hydrological and hydro-geological investigation for ground and surface water<br>• DPHE has to carry out and look after information management and R&D activities of the WSS sector to support policy making and strategic planning<br>• Gradual shift of DPHE from its exclusive role of "Service provider" to the role of "Service provider and Facilitator".<br>• Modern water management technology to be promoted to enhance irrigation efficacy and water productivity through optimal use of available water resources | |
| 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to | **Data production agencies**<br>Bangladesh Bureau of Statistics<br><br>**User agencies** | • Ensuring sanitation facilities for all through the development of different sanitation options<br>• Sustaining & replication of Total Sanitation Campaign with a variety of water supply initiatives. | • |

| | | | |
|---|---|---|---|
| the needs of women and girls and those in vulnerable situations<br><br>6.2.1 Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | Min. of Education, Min. of Primary and Mass Education, Min. of Women and Children Affairs, Min. of Environment and Forests | • Ensuring sanitation facilities in the hydro-geologically difficult and problematic areas<br>• Ensuring safe sanitation facilities for all through<br>• the development and up-gradation of different sanitation options<br>• Increase access to sanitation facilities to all rural people. | |
| 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally<br><br>6.3.1 Proportion of wastewater safely treated<br><br>6.3.2 Proportion of bodies of water with good ambient water quality | **Data producing agencies**<br>Department of Environment; Department of Public Health and Engineering; Local Government Division; Different City Corporations<br><br>**User agencies**<br>Local Government Division; Min. of Environment and Forests | • Urban areas need integrated water treatment and efficient water supply facilities.<br>• Shifting the dependence on water supply from groundwater to surface water with<br>• improvement in surface water quality<br>• Construction, operation and maintenance of water treatment plants, water abstraction facilities and water distribution system for providing drinking water to public, industries and commercial organizations, | • |
| 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity<br><br>6.4.1 Change in water-use efficiency over time<br><br>6.4.2 Level of water stress: freshwater withdrawal as a proportion of available | **Data producing agencies**<br>Bangladesh Water Development Board, Water Resources Planning Organization, Department of Environment, Local Government Division, Department of Public Health and Engineering<br><br>**User agencies**<br>Ministry of Agriculture, Local Government Division, Min. of Water Resources | • Monitor, control and prevent environmental pollution and degradation related to water<br>• Undertake environmental assessment<br>• Implementation of emission, effluent and waste management strategy<br>• Expansion of small scale irrigation technology and surface water for irrigation<br>• Implement Water Act 2013<br>• Implement programmes of BDP 2100<br>• Design and implement different Water Management Programme<br>• programme for dry season irrigation coverage<br>• efficient use of irrigation water<br>• increase surface water use for irrigation<br>• limit ground water use for irrigation | • |

| | | | |
|---|---|---|---|
| freshwater-resources | | | |
| 6.5 By 2030, implement integrated water resources management at all levels, including through trans boundary cooperation as appropriate<br><br>6.5.1 Degree of integrated water resources management implementation (0-100)<br><br>6.5.2 Proportion of trans boundary basin area with an operational arrangement for water cooperation | **Data producing agencies**<br>Min. of Foreign Affairs, Bangladesh Water Development Board, Water Resources Planning Organization, Department of Environment, Joint River Commission, Local Government Engineering Department<br><br><br>**User agencies**<br>General Economics Division, Planning Commission; Local Government Division, Min. of Water Resources | • Strategies required for improvement of water resource management for supporting agriculture growth.<br>• Enhanced water management to emphasize the sustained and balanced use of water resources<br>• for irrigation, drinking water and water<br>• transport<br>• A comprehensive long term water resource management plan is in place under the umbrella of the Bangladesh Delta Plan.<br>• Introduced Participatory Water Management approach<br>• Basin-wide Water Resources Development Initiative<br>• The Ganges Barrage Project with ancillary infrastructure<br>• River dredging to be carried out | • |
| 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes<br><br>6.6.1 Change in the extent of water-related ecosystems over time | **Data producing agencies**<br>Bangladesh Water Development Board, Water Resources Planning Organization, Bangladesh Forest Department, Department of Environment<br><br><br>**User agencies**<br>Min. of Environment and Forests, Min.of Water Resources, Department of Environment | • The DoE has to apply its legal authority to recognize and manage any ecosystem as an Ecologically Critical Area (ECA).<br>• Maintain the inland river systems and ecosystems for fishery, sediment transport, and inland shipping,<br>• protecting dry season water flows, restoration of habitat and fish species;<br>• Integrated Coastal Fisheries Resource Management;<br>• Maintenance of ecosystem health and management of pollution;<br>• Coping with climate changes has yielded positive results<br>• Conserve and protect forest ecosystems for biodiversity and overall environmental stability,<br>• Efforts will be made to reduce the coverage of eucalyptus trees which are not deemed suitable for Bangladesh.<br>• Programmes will be taken to protect the threatened and endangered species of flora and fauna and the fragile ecosystems. | • |

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| | | • Half/reduce rate of salinity intrusion and mitigate impacts of salinity on human health and agro-ecosystem production.<br>• Proper ecosystem management is required to ensure the sustainability of natural resources without hampering the livelihood of people dependent on the goods and services.<br>• Conduct assessment of ecosystem degradation in terms of heavy metal contamination and nutrient loss.<br>• Identification of wetland ecosystems significant for biodiversity to be declared and managed as ECAs.<br>• Assessment of ecosystem degradation and<br>• mitigate impacts of drought in dry land Barind ecosystem<br>• Valuation of goods and services provided by ecosystem and biodiversity will be accomplished towards integration of the values into the national accounting system.<br>• Polluting the ecosystems from all sources will, wherever possible, be stopped or minimized<br>• An appropriate IT/ITeS business ecosystem has to be established<br>• An innovation ecosystem comprising of required infrastructure, well trained human resources and supportive policy regime need to be established<br>• Use of Science and Technology as a means of sustainable use of Environment, Ecosystem and Resources contribute to world pool knowledge in Science and Technology Support product innovation & creation ecosystem. | |
| 6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, | **Data producing agencies**<br>Economics Relations Department, Ministry of Foreign Affairs, Bangladesh Water Development Board, Water Resources Planning Organization | • Generation of adequate resource allocation through ensuring GoB fund, resource<br>• mobilization from other sources<br>• Explore the strategies to encourage the Public-Private partnership in the development of infrastructure for adequate WSS service and its subsequent O&M | • |

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| wastewater treatment, recycling and reuse technologies | **User agencies** Local Government Division, Min. of Foreign Affairs, Min. of Water Resources, Economic Relations Department | | |
| 6.b Support and strengthen the participation of local communities in improving water and sanitation management<br><br>6.b. I Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management | **Data producing agencies** Local Government Engineering Department, Local Government Division, Bangladesh Water Development Board, Department of Public Health and Engineering<br><br>**User agencies** Local Government Division, Agriculture Water Resources and Rural Institution Division-Planning Commission, Local Government Division, Min.of Water Resources | • Local Government will be charged to expand the role of citizen committees and strengthening participation of citizens from different groups<br>• Creation of water reservoir/ rain water harvesting in rain fed/coastal/hilly areas to be encouraged,<br>• Ensured implementation of provisions of community participation under the Social Forestry Rules, Water Management Policy, Forestry Sector Policy, WATSAN Policy and so on.<br>• Community participation in relevant associations and groups would be ensured and monitored | • |

# Indicator 7: Energy

| SDG targets and indicators | Major agencies involved in data generation and use | Alignment of 7th Five Year Plan | Alignment with Country Investment Plan, CIP-EFCC (Environment, Forestry and Climate Change); |
|---|---|---|---|
| Target 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services | **Data production**<br><br>PoD | • Government's target to ensure electricity reaches every household by FY2021.<br>• Power generation capacity targets of 23,000 MW by FY2020 (end of Seventh Plan); 24,000 | |

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| 7.1.1 Proportion of population with access to electricity<br><br>7.1.2 Proportion of population with primary reliance on clean fuels and technoloy | Power Development Board (PDB)<br><br>Rural Electrification Board (REB)<br><br>**User agency**<br><br>PoD<br>EMRD<br>MoST<br>MoFA | MW by 2021; and 40,000 MW by 2030.<br>• Expansion/up-gradation of 1,50,000 (km) electric distribution line<br>• Construction/Up-gradation of 480 sub-station<br>• New 70,00,000 consumer connection<br>• 30,000 Village electrification<br>• 40 Switching station construction<br>• 40 (Set) River crossing tower construction<br>• Rehabilitation and Intensification of 25,000 (Km) Distribution System<br>• Establish Gas Allocation Policy (incl. LPG and Biogas Alternative policy)<br>• Develop Energy Subsidy Policy<br>• Promote Use of LPG in Domestic and Transport Sector<br>• Import LNG Strategy<br>• Dissemination of Improved Cooking stove (ICS).<br>• Institutional Reforms in Energy: Improvements are needed in the technical and negotiation capacity of the Ministry and associated energy agencies. | |
| 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix<br><br>7.2.1 Renewable energy share in the total final energy consumption | **Data production**<br><br>SREDA, PD<br><br>**User agency**<br><br>PoD<br>ERD<br>MoFA<br>EMRD | • 500MW Solar Programme (340MW commercial purpose and 160MW social sector)<br>• Commercial Projects: (a) Solar Park (grid connected); (b) Solar Irrigation; (c) Solar Mini- grid/micro-grid; and (d) Solar rooftop.<br>• Social projects: (a) Rural health centres; (b) Remote educational institutes; (c) Union e-Centres; (d) Remote Religious Establishment; (e) Off-grid Railway Stations; and (f) Government & Semi-Government Offices in the off-grid areas.<br>• 15 MW Wind Power Plant<br>• IPPs (100 MW & 60 MW) (after Wind Resource Assessment)<br>• Installation of 15,000 Solar Irrigation Pump<br>• Total 800MW of power generate through renewable energy by FY2017 with a target of 10% of the total electricity to be met from renewable resources by FY2020 | • |
| 7.3 By 2030, double the global rate of improvement in energy efficiency | **Data production**<br><br>SREDA, PD, BERC, EM, HCU, EMR, RD, ERD, BBS | • Energy Efficiency and Conservation Programme<br>• Financial Incentive Mechanism for Improved Cooking Stove | • |

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| 7.3.1 Energy intensity measured in terms of primary energy and GDP | **User agency**<br><br>PoD<br>EMRD<br>ERD<br>MoFA<br>BERC | | |
| 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology<br><br>7.a.1 Mobilized amount of United States dollars per year starting in 2020 accountable towards the $100 billion commitment | **Data production**<br><br>ERD, MoE, DOE, BB<br><br>**User agency**<br><br>ERD<br>EMRD<br>MoEF<br>MoFA<br>PoD<br>MoST | • | • |
| 7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support | **Data production**<br><br>PoD, SREDA, Petro Bangla, GSB, BBS, BERC, PD, BIDA, PMO<br><br>**User agency**<br><br>PoD<br>EMRD<br>ERD<br>IED<br>MoFA<br>PID<br>MoST | • | • |

# Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

| SDG targets and indicators | Major agencies involved in data generation and use | Alignment of 7th Five Year Plan | Alignment with Country Investment Plan, CIP-EFCC (Environment, Forestry and Climate Change); |
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| 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums<br><br>11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing | **Data production**<br><br>BBS<br>LGED<br><br>**User agency**<br>MoHPW<br>LGD<br>SID<br>LPAD | • Improvement of Slums: All relocation/resettlement of dwellers of untenable slums/informal settlements should be implemented in accordance with the Resettlement guidelines as prepared.<br><br>• Improve inclusive housing and other civic services for urban inhabitants including for people living in informal settlements and slums<br>• Providing housing for all including shelter less and implanting the goals and objectives of the Housing Policy through construction of 7000 residential flats, and 5000 plots during the 7th Plan<br>• For Sustainable water supply strategy, WASA should increase water production ratio where 70% will come from surface water and 30% from ground water.<br>• Improving sanitation services ensuring sanitation facilities for city dwellers by increasing the existing coverage from 40% to 60% during the 7th plan period.<br>• Increasing the existing coverage of drainage system from 60% to 80%.<br>• Basic leases should be used along with group tenure arrangements, whereby block is registered under a lease agreement to the group or a local authority.<br>• Providing collective tenure security for communities can eliminate the need for-individual titling and will ameliorate land speculation and price increases;<br>• Private land-owners should be encouraged to set up lease contracts with occupiers which protect the interest of all parties;<br>• Activities involving urban infrastructure contribute to the sustainability of the manufacturing and services sector growths through the urbanization strategy. | |
| 11.2 By 2030, provide access to safe, affordable, accessible | **Data production**<br><br>BRTA | • Implementation of the MRT Line-6 project from Uttara to Motijheel under the supervision | • |

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| and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons<br><br>11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities | BRTC<br>BIWTC<br>BBS<br><br>**User agency**<br>RTHD<br>MoR<br>LGD<br>MoHA<br>MoWCA | of Dhaka Transport Coordination Authority (DTCA).<br>• Construction of the 46.73 km. long Dhaka elevated express way from Hazrat Shah Jalal International Airport to Kutubkhali of Dhaka-Chittagong highway.<br>• 42 km long Dhaka-Ashulia elevated express way from Hazrat Shah Jalal (Ra) International Airport to Chandra Dhaka East-West expressway<br>• Bus rapid transit (BRT) for mass transit<br>• Implementation of revised STP for Dhaka,- two BRT and 5 MRT lines Feasibility study for-construction of Sub-way (underground railway) in Dhaka city<br>• Construction of a multi-lane tunnel underneath the river Karnaphuli in Chittagong<br>• Construction of circular rail road track around Dhaka city. | |
| 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries<br><br>11.3.1 Ratio of land consumption rate to population growth rate | **Data production**<br>MoL, PWD, LGED, BBS (RAJUK, CDA, KDA etc.)<br><br>**User agency**<br>MoHPW<br>LGD<br>MoL | • Ensuring better utilization of land resources and mitigating increased demand for housing and urban services;<br>• Protecting, preserving and improving the urban environment, particularly those of the water-bodies;<br>• Devolving authority at the local urban level and strengthening local governments through transfer of appropriate powers, governance improvement programme, capacity development activities<br>• Improve resource mobilization, provide better service delivery and regulatory functions | • |
| 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage<br><br>11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of | **Data production**<br><br>MOE, DDM, Department of Archaeology (DOA), BFD, BBS<br><br>**User agency**<br><br>MoCA<br>MoE<br>MoPME<br>MoRA<br>MoYS<br>MoFA | • Enriching the intellectual status of the nation through preservation, research and development of culture, history, heritage, arts and literature<br>• Preserve and promote language, arts and culture of ethnic communities through cultural centres in tribal areas.<br>• Restore and preserve many of the intangible cultural heritages that are on the verge of extinction, digitization efforts should be implemented.<br>• Reiterate the importance of archaeological sites by | • |

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| government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship) | MoCAT | conducting national surveys and programmes for further development.<br>• The Antiquities Act should be amended to strengthen protection of archaeological sites and historical monuments.<br>• Programmes should be undertaken to develop museums and folk art.<br>• Preserve and present national history, culture and heritage;<br>• Protect copy rights of intellectual property. | |
| 11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations<br><br>11.5.1Number of deaths, missing persons and persons affected by disaster per 100,000 people<br><br>11.5.2 Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic services | **Data production**<br>DDM, BBS, DGHS,<br>BFD<br>DDM<br>BBS<br><br>**User agency**<br>MoDMR<br>MoHA<br>MoS<br>MoER<br>MoD<br>MoHEW | • Strengthen national early warning systems regarding cyclones, storm surge and floods to enable more accurate forecasts.<br>• Improvement of quick communication system between the reverie and costal belt of southern zone of the country and capital city especially in the time of natural disaster.<br>• Assessment of disaster situation and recommendation to declare state of disaster-emergency and issuance of evacuation notices and monitor disaster early warning dissemination.<br>• Identification and implementation of preventive, emergency and post-disaster mitigation measures will be made;<br>• Coordination of all activities in relation to disaster management and relief incorporating disaster risk reduction and emergency response management.<br>• Mainstreaming Disaster Risk Reduction across line ministries and agencies at all levels, local governments, NGO, CBOs, civil society and all other stakeholders.<br>• Implementation of the refugee related programmes. | • |
| 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management<br><br>11.6.1 Proportion of urban solid waste | **Data production**<br><br>DOE, LGD (City Corporations), BBS<br>LGED<br><br>**User agency**<br>LGD<br>MoEF<br>PoD | • Ensuring cities are sustainable and more efficient with promotion of environment friendly activities in development of interventions.<br>• Disseminate newly developed technologies and building materials which will be agriculture and environment friendly, disaster resilient and affordable. On a pilot basis, steps | • |

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| regularly collected and with adequate final discharge out of total urban solid waste generated, by cities<br><br>I 1.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM 10) in cities (population weighted) | | should be taken for construction of 75 low cost multi-storeyed residential building at different villages during the 7th Plan period. | |
| 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities<br><br>11.7.1 Average share of the built- up area of cities that is open space for public use for all, by sex, age and persons with disabilities | **Data production**<br><br>LGD (City Corporations), MoHPW (Development Authorities, i.e. RAJUK, CDA, KDA etc.) DOE, BFD, MoL, BBS GED<br><br>**User agency**<br>LGD<br>MoEF; MoHPW; MoL; MoSW; MoWCA | • In urban and peri-urban areas the government should preferably not transfer land in freehold to occupants, rather choose leases as the instrument for granting tenure for publicly- owned land and especially local authority land;<br>• Leases with various conditions of title should be utilized and this may vary according to the capacity of the authority, the urban area and the residents;<br>• Implementation of the revised Master Plan of Urban Local Bodies | • |
| 11.a Support positive economic, social and environmental links between urban, peri- urban and rural areas by strengthening national and regional development planning<br><br>11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city | **Data production**<br>LGD (City Corporations) MoHPW (Development Authorities), GED, BBS, DDM, LGED<br><br>**User agency**<br>MoHPW, LGD, AWRRID, MoEF, MoHA, MoFA | • Ensuring legitimate comprehensive development plans for future development of urban areas of Bangladesh<br>• Ensuring regionally balanced urbanization through polycentric decentralized development and hierarchically structured urban system; | • |
| 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line | **Data production**<br>DDM<br>LGED<br><br>**User agency**<br><br>LGD<br>MoDMR<br>MoEF<br>MoFA | • Undertake responsibility for planning and implementing a wide range of infrastructure provision in urban and peri-urban areas.<br>• Development of Growth Centre centric<br>  Urban        centres in selecte Upazillas of Bangladesh-300 Nos<br>• Implementation of the disaster related programmes/projects undertaken due to adverse impacts of climate change. | • |

| SDG targets and indicators | Major agencies involved in data generation and use | Alignment of 7th Five Year Plan | Alignment with Country Investment Plan, CIP-EFCC (Environment, Forestry and Climate Change); |
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| with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels<br><br>11.b.2 Number of countries with national and local disaster risk reduction strategies | | • Approval, administration and monitoring of safety net programmes.<br><br>• Construction and Maintenance of small bridges/culverts, multi-purpose disaster shelters, cyclone shelters, flood shelters with a view to eliminating/ reducing disaster risks.<br>• Establish, strengthen and improve the national disaster response mechanism. | |
| 11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials<br><br>11.c. Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource- efficient buildings utilizing local materials | **Data production**<br>ERD<br>DoE<br>BFD<br><br>**User agency**<br>ERD<br>MoEF<br>MoFA<br>MoHPW | • Liaison with regional and international organizations and matters related to treaties and agreements with other countries and world bodies relating to subjects allotted to this Ministry. | • |

# Goal 12: Responsible consumption and production

| SDG targets and indicators | Major agencies involved in data generation and use | Alignment of 7th Five Year Plan | Alignment with Country Investment Plan, CIP-EFCC (Environment, Forestry and Climate Change); |
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| Target 12.1 Implement the 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of | **Data production**<br>GED<br>DoE<br><br><br>**User agency**<br>GED<br>MoFA<br>MoEF<br>FD<br>MoA<br>MoF | • | |

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| developing countries<br><br>12.1.1 Number of countries with Sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies | | | |
| 12.2 By 2030, achieve the Sustainable management and efficient use of natural resources<br><br>12.2.1 Material footprint, material footprint per capita, and material footprint per GDP<br><br>12.2.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP | **Data production**<br><br>DoE<br>BFD<br>BBS<br><br>**User agency**<br>MoEF<br>EMRD<br>MoWR | ● | ● |
| 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses<br><br>12.3.1 Global food loss index | **Data production**<br><br>Nil<br><br>**User agency**<br>MoEF<br>MoF<br>MoA<br>LGD | ● | ● |
| 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in | **Data production**<br>LGED<br>DoE<br><br>**User agency**<br>MoEF<br>LGD<br>MoA<br>MoHEW | ● | ● |

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| order to minimize their adverse impacts on human health and the environment

12.4.1 Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement

12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment | | | |
| 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

12.5.1 National recycling rate, tons of material recycled | **Data production**<br>DoE<br>LGED<br><br>**User agency**<br>MoEF<br>LGD<br>SID | • | • |
| 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

12.6.1 Number of companies publishing sustainability reports | | • | • |
| 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable | **Data production**<br>MoEF<br>MoPME<br><br><br>**User agency** | • | • |

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| development and lifestyles in harmony with nature<br><br>12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment | MoE<br>MoPME<br>GED<br>MoEF | | |
| 12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production<br><br>12.a.1 Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies | **Data production**<br>DoE<br>ERD<br><br><br>**User agency**<br>ERD<br>MoFA<br>MoEF | • | • |
| 12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products<br><br>12.b. I Number of sustainable tourism strategies or policies and implemented action plans with agreed monitoring and evaluation tools | **Data production**<br>DoE<br>MoCA<br>BFD<br>MoCAT<br><br><br>**User agency**<br>MoCAT<br>MoCA<br>MoEF<br>MoCHTA | • Promoting and revitalize tourism industries, an integrated land use and transport planning for all the potential water front sites viz. Cox's Bazar, Jaflong, Kuakata etc. should be adopted in an urgent basis. | • |

| 12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities<br><br>12.c. I Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels | **Data production**<br>FD<br>PoD<br>EMRD<br><br><br>**User agency**<br>FD<br>IRD<br>EMRD<br>PoD | •     proper pricing of gas for domestic use in order to minimize the energy subsidy pressure on the budget | • |

# Goal 13: Climate Change

| SDG targets and indicators | Major agencies involved in data generation and use | Alignment of 7<sup>th</sup> Five Year Plan | Alignment with Country Investment Plan, CIP-EFCC (Environment, Forestry and Climate Change); |
|---|---|---|---|
| 13.1 Strengthen resilience and adaptive capacity to climate- | Data production<br>DDM<br><br><br>User agencies | •    Mainstream poverty-environment-climate-<br>•    disaster nexus in the project design phase, budgetary process, project | |

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| related hazards and natural disasters in all countries<br><br>13.1.1 Number of countries with national and local disaster risk reduction strategies<br><br>13.1.2 Number of deaths, missing persons and persons affected by disaster per 100,000 people | MoDMR<br>MoEF<br>MoHA<br>LGD | implementation and monitoring processes.<br>• Policy measures should be taken to attract microfinance in environmentally vulnerable areas such as cyclone prone coastal areas, land locked and other flood prone areas and disaster prone areas.<br>• Formulation, review and execution of legislation, policies, plans, procedures, standing orders and guidelines in relation to overall disaster risk reduction and emergency response management including relief rehabilitation and safety net programmes.<br>• Relief and disaster risk reduction programmes, planning, and monitoring.<br>• Disaster Management Framework and Key<br>• Policies/Programmes<br>• Develop risk assessment and CCA inclusion guideline and promote DRR and CCA inclusion in development planning process.<br>• Promote structural and non-structural investment<br>• Encourage different hazard based contingency planning<br>• Establish the National Emergency Operations<br>• Centre (EOC) and fully operationalise it.<br>• | |
| 13.2 Integrate climate change measures into national policies, strategies and planning<br><br>13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which<br><br>increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production | **Data production**<br>GED<br>DDM<br>DoE<br>BFD<br><br>**User agency**<br>GED<br>MoEF<br>MoDMD<br>MoFA | • Promote a whole-of government approach for-climate change readiness to develop a national institutional framework.<br><br>• Enhance understanding, knowledge, capacity and coordination for better CC management.<br><br>• Adopt planned development approach<br><br>• integrating CCA into development so that co-benefits may be accrued from development spending. | • |

| (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other) | | | |
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| 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early Warning<br><br>13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula<br><br>13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions | **Data production**<br>DOE, DDM, BFD, LGED, MoE, BMD<br><br>**User agency**<br>MoEF<br>MoDMR<br>MoE; MoPME; MoHA; MoInf; MoInd (BIM); MoD; LGD | • Design skill-focused training for resilient agriculture, industry, infrastructure, trade and other fields on principles of practical resilience<br>• Initiate research to understand how resilience principles could be used to improve education at different levels in Bangladesh.<br>• Mainstream poverty-environment-climate-<br>• Ensure effective environmental management activities by allowing inclusive bottom-up participation in adaptation decision making, especially at the community level<br>• Promote participatory, community-based environmental resource management and environmental protection (considering the access for the poor, equity, as well as gender issues) along with community based adaptation. | • |
| 13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the | **Data production**<br>ERD, BB, DOE, BFD<br><br>**User agency**<br>MoEF<br>ERD<br>MoFA<br>BB | • one of the key strategies of the Seventh Five Year Plan will be to ensure effective partnership with development partners to ensure better use and results of foreign assistance. | • |

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| context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible<br><br>I 3.a. I Mobilized amount of United States dollars per year starting in 2020 accountable towards the $100 billion commitment | | | |
| I 3.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least<br><br>developed countries and small island developing States, including focusing on women, youth and local and marginalized communities<br><br>I 3.b.1 Number of least developed countries and small island<br><br>developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities | Data production ERD, GED, DOE, BFD<br><br>User agency MoEF GED ERD | •     Support from development partners may be sought to analyse potential NIEs and to enhance their respective capacities including fiduciary capacities and practices. | • |

# Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

| SDG targets and indicators | Major agencies involved in data generation and use | Alignment of 7th Five Year Plan | Alignment with Country Investment Plan, CIP-EFCC (Environment, Forestry and Climate Change); |
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| Target 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution<br><br>14.1.1 Index of coastal eutrophication and floating plastic debris density | **Data production**<br>BWDB, WARPO, BMD, SPARRSO, Coast Guard, DOF, DLS, DOE, BN, MoD<br><br>**User agency**<br>MoWR<br>MoD (BN); MoEF; MoFA; MoST; MoS; MoD; MoHA; MoFL | • Coastal zone policy and coastal zone strategy to be put to use<br>• Establish proper Waste Reception Facilities at port(s) and contingency plan to fight against oil spillage.<br>• Declaration of Marine Ecological Critical Area | • |
| 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans<br><br>14.2.1 Proportion of national exclusive economic zones managed using ecosystem-based approaches | **Data production**<br>DoE<br>BFD<br><br><br>**User agency**<br>MoWR<br>MoEF<br>MoHA (Coast Guard)<br>MoFA | • Coastal Green Belt will be created<br>• Involve local community with allocating appropriate property rights in the management of the SMF | • |
| 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels<br><br>14.3.1 Average marine acidity (pH) measured at agreed suite of representative sampling stations | **Data production**<br><br>DoE<br><br>**User agency**<br><br>MoEF<br>MoST<br>MoFA<br>EMRD | • | • |
| 14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order | **Data production**<br>DOE, BFD, BN, Coast Guard, DOF, DLS | • Formation of National Marine Fisheries Policy during the 7th FYP<br>• Inventory of Marine Biological Resources and development of | • |

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| to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics<br><br>14.4.1 Proportion of fish stocks within biologically sustainable levels | **User agency**<br>MoFL<br>MoD (BN);<br>MoHA; SID | management plan for resources.<br>• Rapid assessment of fisheries stocks by species in recently resolved South-West waters of EEZ (19,467 sq. km)<br>• Creation of alternative livelihood opportunities for the people, depending on the SMF, to lessen population pressure.<br>• Promote development of technology for production of seed for culturing marine fish and seaweed. Community organizations of shrimp farmers and other primary stakeholders will be supported with technology, input, financing and market linkage by contract growing system run by the processing plants and monitored by the DOF and partner NGOs.<br>• Promote development of technology for production of seed for culturing marine fish, and seaweed. | |
| 14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information<br><br>14.5.1 Coverage of protected areas in relation to marine areas | Data production<br><br>DOF, MoS, DOE, BFD, BN, Coast Guard<br><br><br>User agency<br>MoEF<br>MoFL<br>MoFA<br>MoHA | • 5% of coastal and 1.34% of marine areas are targeted to be protected by 2020. | • |
| 14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation (Taking into account on going World Trade | Data production<br><br>DoF, BN, MoD, Coast Guard<br><br>User agency<br><br>MoFL<br>MoD<br>FD<br>MoFA<br>MoHA | • Programme on protection of IUU (illegal, unreported and unregulated) fishing in Bangladesh waters | • |

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| Organization negotiations, the Doha Development Agenda and the Hong Kong ministerial mandate).<br><br>14.6.1 Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing | | | |
| 14.7 By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism<br><br>14.7.1 Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries | Data production<br>LGED<br>DoF<br>BBS<br><br><br>User agency<br>MoFL<br>LGD<br>MoCAT<br>SID | • extending fishing areas using new technologies and methods even beyond EEZ in the<br>• international waters | • |
| 14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the<br>Intergovernmental Oceanographic Commission Criteria and<br>Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries<br><br>I 4.a. I Proportion of total research budget allocated to research in the field of marine technology | **Data production**<br><br>FD, MoST, BN, Coast Guard, DOE, DOF,<br><br><br>**User agency**<br>MoST<br>MoS<br>MoD; MoE; MoFL; MoFA; MoHA; FD | • Institutional capacity building of the concerned agencies, strengthening of monitoring, Control and Surveillance system in the Bay of Bengal<br>• Promote development of technology for production of seed for culturing marine fish and seaweed.<br>• Identify conservation needs and methods that can be effectively administered and regularly monitored. | • |
| 14.b Provide access for small-scale artisanal fishers to marine resources and markets<br><br>14.b. 1 Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries | **Data production**<br>DoF<br>BN/Coast Guard<br><br><br>**User agency**<br>MoFL<br>MoD<br>MoHA | • | • |
| 14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of | **Data production**<br>MoFA, DOE, BFD, BN, DOF, Coast Guard | • | • |

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| oceans and their resources, as recalled in paragraph 158 of "The future we want"<br><br>14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources | **User agency**<br>MoFA, MoEF; MoHA; MoS; MoFL | | |
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# Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

| SDG targets and indicators | Major agencies involved in data generation and use | Alignment of 7th Five Year Plan | Alignment with Country Investment Plan, CIP-EFCC (Environment, Forestry and Climate Change); |
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| Target 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements<br><br>15.1.1 Forest area as a proportion of total land area<br><br>15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type | **Data production**<br>MoCHTA<br>BFD<br>BWDB<br>WARPO<br>MoS<br><br>**User agency**<br>MoEF<br>MoL<br>MoCHT<br>MoL<br>MoWR<br>MoS | • Increase productive forest coverage to 20% by 2020<br>• 15% of land covered by forestry with 70% tree density<br>• At least 15% of the wetland in peak dry season is protected as aquatic sanctuary.<br>• Restore 20,000 acres of denuded Chokoria —Sundarbans Reserve Forest<br>• Maintaining the coastal polders is a major challenge, while ensuring community level climate sustainability is also important.<br>• Resolving social conflicts and disputes regarding community level water management<br>• Ensure effective environmental management activities by allowing inclusive bottom-up participation in adaptation decision making, especially at the community level<br>• Promote participatory, community-based environmental resource management and environmental protection<br>• | |

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| 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally<br><br>15.2.1 Progress towards sustainable forest management | **Data production**<br>MoL, LGED, BFD, DOE<br><br><br>**User agency**<br>MoEF<br>MoL; LGD; CD; MoInf | • Strengthen forestry extension activities to transfer improved technology and research information to the end-users.<br>• Conserve the Sundarbans Mangrove Forest (SMF) without any further deforestation and forest degradation.<br>• Ensure no forest land shall be converted for non-forest use<br>• Ensure no commercial plantation in protected forest areas where only native species for enrichment and restoration purposes can be undertaken.<br>• Creation of alternative livelihoods to lessen pressure on the SMF<br>• Rivers and canals of the SMF will not be used for-transporting goods and materials and other business purposes.<br>• Enhance social forestry programmes | • |
| 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world<br><br>15.3.1 Proportion of land that is degraded over total land area | **Data production**<br><br>DOE, BFD, BWDB, WARPO, LGED, DDM, MoA, MoL<br><br><br>**User agency**<br>MoEF<br>MoL<br>MoA; MoWR; LGD, MoDMR | • Promote science-led agriculture technology systems and encourage research and adoption of modern agricultural practices for development of drought, submergence and saline prone agriculture considering water and time economy, adaptation to climate change, proper use of genetically modified technology in agriculture, and promote adoption of modern agricultural practices in dry land, wetland, hills and coastal areas including use of environment friendly green technologies (e.g. IPM, INM, AWD, etc.) and climate-smart/resilient technologies;<br>• introduce salinity, submergence and other stress tolerant varieties specially in the Southern regions;<br>• Establish national drought monitoring system<br>• Assessment of ecosystem degradation and mitigate impacts of drought in dry land Barind ecosystem. | • |
| 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for | **Data production**<br>DOE, BFD, MoL, LGED, MoCHTA, MoCAT<br><br><br>**User agency**<br>MoEF | • | • |

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| sustainable development<br><br>15.4.1 Coverage by protected areas of important sites for mountain biodiversity<br><br>15.4.2 Mountain Green Cover Index | MoA; MoCHTA; MoCAT; MoL; LGD | | |
| 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species<br><br>15.5.1 Red List Index | **Data production**<br>DOE, BFD,<br><br><br>**User agency**<br>MoEF<br>MoFL; MoA;<br>MoInf | • Initiative will be undertaken to update NBSAP in line with the Aichi Biodiversity Targets and implement the NBSAP as global commitments.<br>• Ensure integration of biodiversity into National Adaptation Plan (NAP) and nationally appropriate mitigation action (NAMA).<br>• Assess and benefits sharing mechanisms will be established as well as Nagoya Protocol on ABS will be ratified with enactment of Bangladesh Biological Biodiversity Act.<br>• National capacity will be built to address the research and development on genetic resources.<br>• Create awareness and education on biodiversity<br>• Use indigenous and traditional knowledge on Biodiversity<br>• Stop and minimise ecosystem pollution from all sources. | • |
| 15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed<br><br>15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits | **Data production**<br>MoA, DOE, BFD<br><br><br>**User agency**<br>MoEF<br>MoA; MoFL<br>MoST | • | • |
| 15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply | **Data production**<br>BFD<br>DoE<br><br><br>**User agency**<br>MoEF<br>MoFL | • Undertake special protection measures to minimise the existing threats<br>• Review IUCN Red list and other documents on the state of endangered and threatened species | • |

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| of illegal wildlife products<br><br>15.7.1 Proportion of traded wildlife that was poached or illicitly trafficked | MoHA | • Keep the Sundarbans' bio-physical characteristics intact through all sorts of protective measures. | |
| 15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species<br><br>15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species | **Data production**<br>BFD<br>DoE<br><br><br>**User agency**<br>MoEF<br>MoFL<br>MoHA | • Ensure no commercial plantation in protected forest areas where only native species for enrichment and restoration purposes can be undertaken.<br>• Bangladesh Biological Diversity Act will be enacted as well as necessary rules will be framed. | • |
| 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts<br><br>15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020 | **Data production**<br><br>**DoE**<br>**BFD**<br>**LGED**<br><br>**User agency**<br>**MoEF**<br>**GED**<br>**LGD** | • Value goods and services provided by ecosystem and biodiversity to accomplish integration of these values into the national accounting system.<br>• Enhance PES with appropriate strategies and policies for poverty reduction | • |
| 15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems<br><br>15.a.I Official development assistance and public expenditure on conservation and | **Data production**<br>DOE, BFD, ERD, FD<br><br><br><br><br>**User agency**<br>ERD<br>FD<br>MoFA; MoEF | • | • |

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| sustainable use of biodiversity and ecosystems | | | |
| 15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation

15.b.I Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems | **Data production**
DOE, BFD, ERD, FD


**User agency**
ERD
FD
MoFA; MoEF | • | • |
| 15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood Opportunities

I 5.c.1 Proportion of traded wildlife that was poached or illicitly trafficked | **Data production**
LGED
BFD
DoE


**User agency**
MoEF
MoFA
MoHA
LGD
MoD | • Review IUCN Red list
• Apply global commitments as a party to the United National Convention on Biological Diversity.
• Bring new areas under forest coverage through social forestry
• Sustain and replicate community based resource management
• Enhance reforestation and forest protection under carbon credit and REDD | • |