CHAPTER 15

ENVIRONMENT AND DEVELOPMENT

[Environmental degradation is a crucial challenge for Bangladesh like other developing countries. As the economic growth and development of the country largely depends on natural resources, it is extremely important to ensure sustainable environmental development. A number of policies and plans have been taken up for implementation to ensure an eco- friendly and pollution-free environment. With a view to mitigating the risks arising from climate change, the actions identified to operationalise the Bangladesh Climate Strategy and Action Plan (BCCSAP), 2009 are underway. For this purpose, the Government allocated Tk.700 crores from its own resources in FY 2009-10 to establish a Climate Change Trust Fund and the same amount of allocation was provided to the fund for the next fiscal years also. In the meantime, relevant policies for utilizing the resources of Climate Change Trust Fund have been formulated. Besides, the Government has also established Bangladesh Climate Change Resilience Fund (BCCRF) with the financial support from the development partners to meet the challenge arising from climate change. Moreover, the Ministry of Environment and Forest have undertaken a number of programmes to build the public awareness about the forthcoming environmental challenges and also the actions required to cope with them. Disaster Management and Relief Division is implementing various programmes to tackle the eventualities of natural disaster. The Ministry of Water Resources is also implementing various development projects and programmes mainly to address the situation that arises due to climate change. In order to ensure a balance in bio-diversity, a National Work Plan has been prepared and various projects are being undertaken within remit of this work plan.]

Bangladesh, because of its geographical location, is one of the rich countries in world in terms of bio-diversity. However, environmental degradation is a crucial challenge for Bangladesh like other developing countries. As the various sectors of the country are largely dependent on natural resources, their contribution to GDP is significantly influenced by sustainable environmental development. Since economic development and environmental sustainability are intricately linked, it is important to integrate environmental related issues with the development agenda.

International Initiatives on Protection of Environment

The concept of environmental protection as well as its development received wider global attention at the Stockholm Conference held in 1972. Following the decision agreed at this conference, several international initiatives were taken up which include establishing environmental institutions, undertaking national environmental work plan/policy across the countries, adoption of the recommendation of Intergovernmental Panel on Climate Change (IPCC) in 1988.Another international initiative related with environmental protection was negotiations on the Kyoto Protocol singed in 1997 under the United Nations Framework

Convention on Climate Change (UNFCCC).The Kyoto Protocol was signed to reduce carbon dioxide and greenhouse gas emission. Up to November 2009, 187 countries (including European Union) of the world have ratified this protocol. The first commitment period of Kyoto Protocol will be over in 2012. It is to be noted that the developed countries which singed the Kyoto Protocol are responsible for global warming by emitting 27 percent greenhouse gas. But Russia, Japan and Canada declared to dissociate themselves from the Kyoto Protocol last year. In this context, global warming by the concerned countries of this protocol declined to 17 percent. Set out below is a list of some selected countries (Table: 15.1) showing the level of their greenhouse gas emissions:

Table: 15.1 Greenhouse Gas Emissions of Some Selected Countries

S.L	Country	Annual CO_2 emissions (in millions of metric tonnes)	% of global total
1.	China	7,711	25.4
2.	United States	5,425	17.8
3.	India	1,602	5.3
4.	Russia	1,572	5.2
5.	Japan	1,098	3.6
6.	Germany	766	2.5
7.	Canada	541	1.8
8.	South Korea	528	1.7
9.	Iran	527	1.7
10.	United Kingdom	520	1.7

Source: EIA (Energy Information Administration), 2009

Furthermore, 194 countries, numerous environmentalist organizations and experts signed an agreement known as the "Copenhagen Accord" at the historic Conference on Climate Change held in 2009 in Copenhagen. In this conference, a recommendation was adopted for formulation of "compulsory legal agreement" with an understanding that the global carbon emission is to be reduced to keep the rate of increase in global temperature below 2 degree celsius. For the purpose, the developed countries committed to jointly mobilise US$ 100 billion a year until 2020 to address the needs of developing and less developed countries.

The Progress Status of Bangladesh in Achieving the Targets of Millennium Development Goals (MDGs)

Ensuring environmental sustainability (Goal-7) is one of the most important goals under MDGs declared by UN. The main issues associated with this goal are integration of the principles of sustainable development into country policies and programmes and reversion of the loss of

environmental resources (Target- 7.A) and also reduction of biodiversity loss (Target-7.B).According to a report titled "Millennium Development Goals: Bangladesh Progress Report 2011" published jointly by UN Development Program and Bangladesh Government, Bangladesh has already made a remarkable progress in achieving the targets under MDG - 7 by ensuring the availability of safe drinking water and improved sanitation facilities. Below is a list of progress areas in terms of achieving the targets under MDG - 7 linked to ensuring environmental sustainability:

Table 15.2: Environment Related Progress in Achieving Millennium Development Goals

No.	Objective Aims and Indicators	Base Year 1990/1991	Current Status	Target Within 2015
Goal 7.B: Reduce Biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss				
7.1	Proportion of land area covered by forest	9.0	19.33 (DoF 2011) (Density>10%)	20.0 (Density>70%)
7.2	CO_2 emission (metric tonnes per capita)	0.14	0.27 (DoE, 2005)	
7.3	Consumption of ozone-depleting Substance (metric tons)	195	128 (DoE, 2009)	0
7.4	Proportion of fish stocks within safe biological limits		54 inland &16 marine	
7.5	Proportion of total water resources used		6.6% (2000)	
7.6	Proportion of terrestrial and marine areas protected	1.64	1.82% terrestrial & 0.47 marine (DoF)	5.0
7.7	Proportions of species threatened with extinction		106 (2001)	
7.8	Proportion of population using an improved drinking water sources	78	86 (MICS 2009)	-
7.9	Proportion of population using an improved sanitation facility	39.0	62.7 (SVRS 2009)	-
7.10	Proportion of urban population living in slums		7.8 (BBS 2001)	-

Source: The Millennium Development Goals Bangladesh Progress Report 2011; GED, Planning Commission and UNDP

Climate Change

The natural disasters like rising global temperature, cyclones in various places frequently, tidal surges, droughts and floods are all indications of major changes in climate. According to the Intergovernmental Panel on Climate Change (IPCC), the main cause of climate change is the rise of global average temperatures. Continual increase of global warming has affected the seasonal pattern and endangered seasonal diversity.

In December, 2010 a Conference of the Parties 16 (CoP-16) was held in Cancun where some important decisions were taken about the actions needed to mitigate the adverse effect of climate change. These are -

- Establish the Adaptation Committee to speed up the adaptation activities;
- Provide assistance and loan to the countries which have less than 10 CDM projects;
- Establish Green Climate Fund;
- Allocate US$30 billion assured by the developed countries that belong to Annex I of COP-16 to the developing countries for their climate adaptation and mitigation programmes;
- Commit the payment of US$100 billion each year by the developed countries till 2020;
- Finalise the Green Climate Fund with a Transitional Committee consisting of 40 members;
- Operate the Green Climate Fund by a board comprising 24 members from the representatives of developed and developing countries;
- Establish a technology mechanism i.e. technology development and exchange system through establishing a technology executive committee and a climate technology centre.

Subsequently, between28 November to 11 December 2011, a Conference of the Parties -17(CoP-17) was held in Durban of South Africa where some significant achievements were made. Some of these are summarised below:

- Starting the activities of Green Climate Fund: In the case of finance related negotiations, a decision has been taken that developed countries shall mobilise US$ 30 billion within 3 years as short term finance during 2010-12 at the rate of US$ 10 billion each year for adaptation and mitigation activities of developing countries. It was also decided that developed and developing countries will mobilise jointly US$ 100 billion each year till2020;
- Establishing the Technology Mechanism, Technology Executive Committee and Climate Technology Centre and Network under the Technology Development and Transfer;
- Finalising the Adaptation Framework and Adaptation Committee as well as providing assistance for Least Developed Countries (LDC) to prepare the National Adaptation Plan (NAP);
- Continuing Kyoto Protocol and asking the developed countries to declare the target of their commitment by 1 may, 2012.

Climate Change and Bangladesh:

The significant adverse impact of climate change is the rise of sea-level which has risen by 10 to 25 centimetres over the past century. In terms of the adverse impact of climate change, Bangladesh is one of the most vulnerable countries in the world. Poor economic condition of the people of Bangladesh and reliance on the natural resources has intensified this vulnerability. Floods, drought, cyclone, salinity and the rise of sea level are impeding the economic growth.

Recently, the following changes discernible in Bangladesh due to climate change:

- Average temperature has registered an increasing trend of about 1°C in May and 0.5°C in November over the last 14 years (1985 to 1998).
- Saline water from the Bay of Bengal is reported to have penetrated an area of 100 km or more along tributary channels during the dry season.
- The annual mean rainfall shows increasing trends in Bangladesh.
- Serious and recurrent floods took place in 2002, 2003, 2004 and 2007.
- Frequency and intensity of cyclones originating from the Bay of Bengal have increased.

Bangladesh Initiatives to Tackle the Eventualities Arising from Climate Change

Bangladesh is an innocent victim of the adverse impact of climate change. However, considering the reality, the Governmenthas taken a number of initiatives to address the climate change related issues which include, among others, the following:

Adaptation and Mitigation

- The government is attaching highest importance to the issue of tackling climate change induced disasters and the country's preparedness to protect lives and livelihoods of the people. A Climate Change Trust Fund was established by enacting a law in FY 2009-10 and a budgetary allocation of Tk. 700 crore was made from the Government's own resources. Over the last three consecutive fiscal years, the Government allocated a total of Tk. 2,100 crore for this fund. The main objective of this fund is to implement the BCCSAP (Bangladesh Climate Change Strategy and Action Plan), 2009. As per Climate Change Trust Act 2010, an amount of Tk. 714 crores has been set aside as fixed deposit and an amount of Tk. 1,386 crore has been earmarked for implementation of different programmes and projects to tackle the adverse effect of climate change. A total of 92 projects at an estimated cost of Tk. 1,089.97crore are now being implemented using the resources from this fund. The concerned ministries including the Ministry of Environment and Forests are implementing these projects. The Ministry of Environment and Forests has established an outfit called

Climate Change Unit to channel this fund. Besides, a Trustee Board has been formed for approving the projects under this fund.

- The Department of Environment has taken up the following 6 projects for implementation under the Trust Fund in FY 2011-12:
    - Waste Reduce, Reuse and Recycle (3R) Initiative in *Gulshan, Baridhara* and *Dhanmondi* areas of Dhaka and *Nasirabad* and *Khulshi* areas of Chittagong cities
    - Prepare baseline, capacity building of entrepreneurs to develop CDM project proposal and evaluation of DNA under Clean Development Mechanism project
    - Programmatic CDM through utilisation of waste in all towns (Municipalities) of Bangladesh
    - Community Based Adaptation in the Ecologically Critical Areas through Biodiversity Conservation and Social Protection
    - Enviornmental management system at the *Parky*Beach area
    - Modernisation and Extension of Chittagong Divisional Laboratory of Department of Environment to strengthen the monitoring and assessment system due to the adverse impact of climate change

- A multi-donor trust fund called "Bangladesh Climate Change Resilience Fund' has been established in 2011 in order to take projects in the adaptation sector. As of now, an amount of US$ 125 million has been released for this fund. Under the BCCRF,a Multipurpose Cyclone Shelter has been established in the coastal area which is governed by the Ministry of Local Government, Rural Development and Co-operatives.
- The government is considering establishment of a separate Department of Climate change.
- Under the Climate Change Trust Fund, the Government has taken up for implementation the following important projects:
    - Innovation and Extension of Rice based Technology to Reduce the Adverse Impact of Climate Change
    - Strengthening Institutional Capacity of Climate Change Unit
    - Farm Productivity and Food security Enhancement of the Vulnerable Farmers in the *Char* Areas of *Jamalpur* and *Sherpur* Districts
    - Water supply and Social Security for the Women and Children of the *Adversely Affected* Areas *Due to* Climate Change
    - Construction of Embankment and Infrastructural Development of Polder No.5 to Tackle the Adverse Impact of Climate Change
    - Project on Restoration of Forest and Conservation of Biodiversity in the Wetland Area to Reduce the Adverse Impact of Climate Change
    - Coastal Afforestation to Combat the Adverse Impact of Climate Change

- A Climate Vulnerable Forum was established in 2009 with 11 member countries that are highly vulnerable. Bangladesh organized a conference under the banner of Climate Vulnerable Forum during 13-14 November 2011 in Dhaka. Bangladesh also took part in the Bhutan Climate Summit for A Living Himalayas, held in Thimphu, Bhutan on 19 November 2011.
- The Department of Forest has already taken a number of initiatives to tackle global warming due to climate change. It has taken up 7 projects under Climate Change Trust Fund which include: (1) Raising of Seedlings for Afforestation to Reduce the Adverse Impact ofClimateChange (2) Climate Change Resilient Afforestation in the Core Zone of Central Circle. (3) Plantation of BWDB's Embankment in the Coastal Belt and Its Adjacent *Char* Areas. (4) Revegetation of *Madhupur* Forest through Rehabilitation of Forest Dependant Local and Ethnic Communities (5) Coastal Afforestation to Combat Adverse Impact of Climate Change (6) Forest Information Generation and Networking System. (7) Reduction of Carbon Emission through Establishment of *Sonaichari* Botanical Garden.

Environmental Protection and Development Programmes

The Ministry of Environment and Forest has implemented a series of programmes to address the concerns surrounding environment protection. The Department of Environment (DoE) as well as the Department of Forest has taken up the following activities as part of their programme for environment conservation.

Activities of Department of Environment (DoE)

The Department of Environment is tasked to implement the Government's environment policies and programmes. The important activities carried out by DoE in FY 2011-12 were as follows:

- Prepared budget under the medium-term budget framework
- Steps taken to carry out campaign and inspection to control environmental pollution all over the country by the Enforcement and Monitoring Unit of Head Office.
- Division/district level offices have been delegated with powers and authorities as laid down in Environment Conservation Act
- Steps taken to digitalize the activities of DoE

Ozone Layer Protection

Bangladesh accessed Montreal Protocol on 2 August 1990 and ratified its London, Copenhagen, Montreal and Beijing amendments in 1994, 2000, 2001 and 2010 respectively. Bangladesh is an Article 5 (1) country according to this protocol. According to the conditions of the protocol,

control on the use of chlorofluorocarbon (CFC) was imposed in1999 and the total phase-out was completed in January 2010. Bangladesh was awarded a certificate of achievement from the Montreal Protocol secretariat in 2010 for its remarkable achievement in phasing-out ODS and also got a recognition by being awarded with an appreciation certificate from UNEP for her vital role in protecting the ozone layer in 2012.

An Ozone Cell was formed in DoE to implement Montreal Protocol related activities in 1996. DoE through its Ozone Cell is executing different projects with the financial assistance of the Multilateral Fund (MLF).Activities carried out by the Department of Environment for the last three years to protect the Ozone Layer are as follows:

1. Collection of data on the use and import of Ozone Depleting Substances (ODSs) by the Ozone Secretariat each year.
2. Observance of International Ozone Day to aware mass people on the harmful effect of the ozone layer depletion each year.
3. Organising training programme on capacity building of ODS users.
4. Phasing out CFCs in the manufacturing of metered dose inhalers (MDIs) in Bangladesh. Transition Strategy project has been implemented and Conversion project is being implemented with the assistance of UNEP and UNDP respectively funded by Multilateral Fund (MLF).
5. Phasing out hydro-chlorofluorocarbon (HCFC). HCFC Phase-out Management Plan (Stage-I) was developed and it was approved by the 65th Executive Committee Meeting of the Multilateral fund.
6. Phasing out HCFC from foam sector, an investment project is being implemented with the assistance of UNDP funded by MLF. The project will help Bangladesh to phase-out 100% HCFC-141b from foam sector application by the end of 2012 and also help meet 2015 target of Bangladesh of the protocol.
7. Full phasing out of Chlorofluorocarbon (CFC) in every sector by 2012.

Partnership Programs to Conserve Environment

The Department of Environment (DoE) is carrying out awareness campaign and partnership programmes to conserve environment- friendly. As part of these programmes, DoE has established partnership with different children organisations, educational institutions and community organisations and supports these organisations in their environment conservation programmes in different ways. Although urbanisation, industrialization and the economic activities have had huge positive impact on the economy of the country, they have also become an inevitable threat to the environment.

DoE has set up six Green Clubs in the schools of Dhaka and Chittagong under the project entitled **Promotion of Environmental Awareness among School Children through Green Clubs** with a view to building an environment sensitive future generation.

A supervisor has been appointed from the science teachers of the schools to administer day to day activities of the green clubs established under this project. Moreover, DoE has published a Green Club Manual for smooth running of the clubs. A programme called **"Meet the People"** organized by DoE is an accountability programme meant to listen to the complaints of mass people and their advice to ensure an environment-friendly country. The programme is a gateway of the common people to DoE to communicate any environment related relevant issues.

River Water Pollution in Bangladesh

Rivers play a vital role in keeping the ecosystem functional and productive. In terms of the Environment Conservation Rules, 1997, water quality of the main rivers in Bangladesh such as the *Padma, Meghna, Jumuna, Korotoa, Dhaleshwari, Surma, Kusiara* are within the acceptable limit all the year round. But the water quality of the rivers flowing around the Dhaka City namely *Buriganga, Balu, Shitalakhya* and *Turag* are not within the limit especially in the dry season when the water flow is very low. In the dry season Dissolved Oxygen (DO) of these rivers comes virtually to a naught for which phytoplankton and zooplankton cannot grow and live. The Government has, therefore, declared the rivers like *Buriganga, Shitalakshya, Turag, Balu* and their foreshores Ecologically Critical Area (ECA) to take necessary actions to improve the ecosystem of these rivers.

DoE has been monitoring the water quality of some of the important rivers since 1973. It monitored water quality at 88 places of 27 rivers in the country in FY 2010-11.The parameters of water quality are: p^H, chloride, turbidity, total dissolved solid (TDS), dissolved oxygen (DO), biochemical oxygen demand (BOD) and chemical oxygen demand (COD). The level of TDS at different locations of the river *Buriganga* is given in Table 15.3 below:

Table-15.3: Level of TDS at different locations of Buriganga River in 2011

Locations of Buriganga River	Concentration of TDS (mg/l) in 2011												Standard limit for drinking water
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Mirpur Bridge	420	596	418	407	387	155	168	170	120	135	150	150	1000 mg/l
Hazaribag	570	1,188	425	418	440	210	390	280	275	215	240	208	
Kamrangir Char	412	592	422	400	420	205	200	165	234	185	160	150	
ChandniGhat	414	590	432	440	410	242	222	170	177	135	164	152	
SadarGhat	410	600	350	294	405	250	234	210	224	160	168	154	
Dholaikhal	406	592		204	330	280	210	306	312		210	200	
B.C.F. Bridge*	520	1,000		542	460	270	318	160	212		170	149	
Pagla	430	620		406	394	275	232	185	192		162	150	

Source: Department of Environment.

Graph-1: Level of Dissolved Oxygen (DO) at *Buriganga* River in 2011.

In 2011, though DO level of *Buriganga* riverincreased slightly in summer, itwas not found in the months of January, February and May. The same condition wasalso found in *Shitalakhsya*and *Turag* rivers. In 2011, Chloride (48 mg/l), TDS (1,188 mg/l), BOD (52 mg/l) and COD (226 mg/l) were found at high levels in *Buriganga* river during the months from January to May. The maximum level of TDS was found near *Hajaribag* in dry season.

Air Pollution

Air is one of the important elements of environment. DoE takes necessary steps to control air pollution based on the result of monitoring all over the country. The department has established air monitoring centres in Dhaka, Chittagong, Khulna, and Rajshahi and receives results of monitoring. It is implementing a number of projects to control air pollution. To upgrade the air standard, a project financed by World Bank titled 'The Clean Air Sustainable Environment (CASE) Project' is being implemented by DoE which has two main components:

- Environment -emissions from brick fields are included in this component. DoE is implementing this component and
- Vehicles - vehicles management and technical aspects are included in this component.

To prevent air pollution, following activities are being carried out:

- Implementation of modern technology in brick manufacturing industry.
- Compulsorily establishing air pollution prevention equipment in the industries.
- Making stringent law to prevent traffic air pollution.
- Ensuring the quality of fuel.
- Enforcement of annual/periodical monitoring on discharge from vehicles.
- Law enforcement for transport and industries.
-

Control of Industrial Pollution

In compliance with the Environment Conservation Act1995 and the Environment Conservation Rules 1997, the system of issuance of environment clearance certificate was introduced. Environment clearance certificate is provided to the industries creating massive pollution after establishing Effluent Treatment Plant (ETP). A project titled "**Survey and Mapping of Environmental Pollution from Industries in Greater Dhaka and Preparation of Strategies for its Mitigation**" is being implemented with a view to formulating and undertaking an action plan on accurate assessment of the number and pollution loads of various industrial units operating in greater Dhaka district and controlling pollution made by them.

Plan to control Industrial pollution

- Tannery industries situated in the residential areas of Dhaka will be relocated at Savar.
- All industrial units in the country will be brought under GIS Mapping system.
- ETP system will be established in all industries creating massive pollution.
- Enforcement program to make all rivers of this country pollution free will be strengthened

Forest Department

Forest Department is managing forests for biodiversity conservation leading to sustainable development. The total forestland of Bangladesh is 1.60 million hectares at present of which 1.40 million hectares are natural forest and the rest 0.20 million hectares are coastal forest which has been created by the forest Department artificially in the coastal region. Moreover, 0.77 million hectares of homestead and fellow lands have been brought under tree cover. Meanwhile, the department has taken initiatives to implement different types of development projects and programmes, provide training and create suitable environment for agricultural production, enrich depleted forest resources, ensure supply of raw materials to wood-based industries, conserve and develop bio-diversity, and expand eco-tourism.

During FY 2011-12, the department implemented 15 development projects (14 investment projects and 1technical assistance project) with an ADP allocation of Tk. 22,178.00 lakh. Out of this allocation, an amount of Tk. 20,752.686 lakh was spent, which was 93.57percentof the allocation. Notable plantation activities for FY2011-12 are- long rotation plantation(650ha.), short rotation plantation(700ha.), strip plantation (3,924km), *char* land plantation(120ha.), bamboo plantation(900ha.), *murta* plantation(100ha.), *Barendro* gallies(50km), institutional plantation(5lakh),sale and distribution of seedlings(6.364lakh), rare species in eco-park and fruit trees plantation for wildlife(10ha), mangrove plantation(3000ha), non-mangrove plantation(105 ha), *golpata* plantation(135 ha) etc.

Regulatory reforms for good governance (FY 2011-2012):

- Forest Act-1927 is under the process of revision.
- Tree Conservation Act -2011 is under the process of final approval.
- Transit Rule for Bangladesh-2011(without Chittagong Hill Tracts) has been approved.
- Passage of the Wildlife (Preservation and Security) Act, 2012.

Some Important Activities of Forest Department (2011-2012):

- A greenbelt is being implemented along 100 km area adjacent to the Cox's bazaar sea beach, embankment of *Sandweep* Island and newly created *Rangabali* upazila in Patuakhali.
- "*Sundarban*s Environmental and Livelihoods Security (SEALAS)" Project is being implemented at acost of Tk. 127.92 crore for maintenance and improvement of ecosystem productivity of *Sundarban*s Reserved Forest (SRF) with financial assistance from European Union.
- "Strengthening Regional Co-operation for Wildlife Protection" project is being implemented at a cost of Tk. 276.198 lakh for control of transboundary illegal wildlife

trade and better protection, conservation and management of bio-diversity in different project areas, with financial assistance from the World Bank.

- Social Forestry Rules 2004 (Amendment-2010) have been revised. Distribution of benefits among the participants who are involved in social forestry programme is continuing.

Social Forestry and Poverty Reduction

Social forestry is playing a vital role in reducing poverty and bringing about socio-economic development of rural areas. The Forest Department implemented a total of four projects during the period from 1981 to 2006. During FY 2011-12, the Department established block/ woodlot plantation over 19,939.66 hectares of land, 4,955.32 km strip plantation and raised 100.894 lakh seedlings under different projects and programmes. Currently, the Department has been implementing the following four projects:

(1) Afforestation in the Denuded Hill Areas of Chittagong North Forest Division (2nd Phase)
(2) Biodiversity Conservation and Poverty Alleviation in the Greater Rajshahi and Kushtia Districts
(3) Bamboo, Cane and *Murta* Plantation (2nd Phase) and
(4) Poverty Alleviation through Social Forestry.

In FY 2010-11, an amount of Tk. 2,456.00 lakh, was distributed among 9,466 beneficiaries as their shares. To date around5 lakh beneficiaries have been involved with the social forestry and as many as 94,965 beneficiaries have become independent after receiving their share.

Bio-diversity Conservation

Department of Environment

Bio-diversity is an important factor for maintaining ecological and environmental balance. In an attempt to conserve the valuable living species, various projects are being taken up under a National Work Plan. A project titled ‘Implementation of National Bio-safety Framework’ has been undertaken to implement ‘National Bio-safety Framework’. Moreover, various programmes are being implemented at Cox’s bazar, St. Martin’s island and *Hakaluki haor* to ensure conservation, management and sustainable use of bio-diversity in coastal and wetland areas.

Steps Taken to Conserve Biodiversity by Forest Department

Recently, *Sonarchar* Wildlife Sanctuary, *Chandpai* Wildlife Sanctuary, *Dudmukhi* Wildlife Sanctuary and *Dhungmary* Wildlife Sanctuary have been declared as protected areas for conservation of forest and protection of natural environment. Meanwhile, a wildlife safari park

named *Bangabandhu* Safari Park at Gazipur near Dhaka and an aviary park called *Sheikh Rassel* Aviary Park at *Rangunia*, Chittagong have been established. Besides these, a number of special projects and programmes are being implemented by the Forest Department for biodiversity conservation which include, Bio-diversity Conservation and Development of Natural Environment in greater Jessore district, Biodiversity Conservation and Poverty Alleviation in greater *Rajshahi* and *Kustia* Districts, Strengthening Co-operation for Wildlife Protection, Bio-diversity Conservation and Development of Ecotourism in Bangladesh, Conservation of Bio-diversity and Creation of Eco-tourism of Natural Forest at *Khurusia* Range under Chittagong South Division, Enrichment of Bio-diversity and Creation for the Opportunity of Entertainment at *LalmaiMouja* in Comilla, Creation of Eco-tourism Facilities at *Tengragiri* Reserve Forest (2009-2012)and Establishment of Pirozpur River-view Eco-park (2009-2012).

Bangladesh National Herbarium

Bangladesh National Herbarium (BNH) is a national organization mandated to conduct taxonomic research on the plant species of the country. The main objectives of the organisation are to collect, identify, and preserve endangered and economically important species of plants through field survey and to develop a database. The Herbarium published a series called “Flora of Bangladesh” which includes information about plant species of the country. The collection of the herbarium is a national property that goes down to the posterity through generations and work as reference materials on the flora of the country.

The Herbarium carried out a range of activities during FY 2011-12 which include among others Botanical Survey, Plant Identification, Plant Specimen Preservation, Developing Database of the Identified Samples, Plant Preservation, Publication of Flora of Bangladesh, Floristic Publication, and Recording of Plant Species available in Bangladesh. In addition, a programme titled "Red Data Book of Vascular Plants of Bangladesh, Vol-2" under the revenue budget during the period from FY 2009-10 to FY 2011-12 at a cost of Tk. 0.51 crore is being implemented by this organisation.

Bangladesh Forest Industries Development Corporation (BFIDC)

Bangladesh Forest Industries Development Corporation is one of the profit making state owned enterprises, which came into being in 1959. The activities of the Corporation are divided into two sectors- Industrial and Agricultural(Rubber).These two sectors earned a consolidated net profit of Tk.162.31 crore over last 3 years. In FY 2011-12, BFIDC earned a net profit of Tk.62.00 crore from both the sectors. BFIDC organised a Rubber Fair at the national level in FY 2011-12. It has also formulated Bangladesh Rubber Policy 2010 and framed a law titled “Bangladesh Rubber Board Act2011”.

Bangladesh Forest Research Institute (BFRI)

Bangladesh Forest Research Institute (BRRI) conducts research on forest development. The core objective of this institution is to ensure proper utilization of forest products and innovation of sustainable technology for the development of environment. The popular technologies innovated by BFRI include the following:

- Easy and cost effective propagation technique for bamboo through branch cutting and tissue culture.
- Preservation technique for enhancement of service life of rural housing materials (wood, bamboo, cane, sun-grass, straw, bamboo materials for betel leaf farm etc.)
- Technique for pest and disease management of forest nurseries and plantation to ensure increased production of forest resources.
- Application of appropriate proportion of fertilizer at seedling stage of different tree species in nursery and field.
- Technique for coppice management and its rotation age to increase the productivity of fuel wood species.
- Nursery and plantation technique of important mangrove species.
- Technique for manufacturing particle board using wastages of wood and bamboo.
- Easy and cost effective planting technique for tree seedlings.

Moreover, one of the technologies called preservative treatments of bamboo materials was disseminated at the field level of different districts. One upazila from each of the three districts, namely, Barisal, kushtia and Gaibandha was selected for dissemination. By using this technology, more than 0.6 different species of bamboo culms were saved per year in the study area. In addition, the average incremental net benefit was estimated at 202 percent in treated bamboo material using betel leaf farm. BFRI is implementing a technical assistance project titled ‘Transfer of Technology in Bamboo shoot Production Processing and Marketing from China to Bangladesh and Srilanka’.

Natural Disaster Management

Bangladesh is a disaster-prone country. Natural disasters like floods, cyclones and other calamities come as shocks to the economy and aggravate vulnerabilities of those who are the most disadvantaged. The Disaster Management and Relief Division of the Government is implementing various programmes to manage and mitigate the effects of natural disasters by ensuring preparedness and putting in place an efficient emergency response system capable of handling large scale disasters. The department is mandated to carry out the following responsibilities, which include among others:

- integrating disaster management, disaster risk reduction and climate change adaptation in the mainstream development plans, programmes, policies and institutions
- employment creation for the poor to reduce their vulnerabilities in the event of any natural disaster
- ensure food availability to the poor during lean season
- providing humanitarian assistance during and after disasters
- risk reduction by repairing and maintenance of rural infrastructure
- capacity enhancement in disaster risk reduction and management
- build disaster risk reduction assisting infrastructure

In FY 2010-11, the Department carried out the following important activities:

- **Institutionalising Disaster Management**
  - Necessary steps were taken to frame Disaster Management Act, Disaster Management Guidelines and update Standing Orders on Disasters
  - Put in place an approved National Disaster Management Plan-2010-15
  - Published Cyclone Shelter Construction, Maintenance and Management Guidelines2011
- Providing assistance in developing SAARC Plan of Action for Disaster Management
- **Disaster Information and Knowledge Management:** With the support from CDMP, key responsible persons for emergency response during disaster were trained in advanced GIS system. A project titled "South Asian Disaster Knowledge Network (SADKN)" has been approved.
- **Strengthening Disaster Risk Reduction and Management Capacity:** Disaster volunteers were recruited to reduce risk of the vulnerable people through disaster induced risk identification and early warning dissemination. To reduce vulnerability during and after disaster, training is being provided to all DM (Disaster Management) related officials. Department of Agriculture Extension(DAE) has piloted drought resilient "NEIRKA" rice cultivation in 8 upazilas of 4 districts. Climate Change issue has been incorporated in an exercise called "Community Risk Analysis and Risk Reduction Action Planning exercise".
- **Building Disaster Resilient Infrastructure**: A total of 74 flood shelters (27 in FY 2008-09 and 47 in FY 2010-11) were constructed at a cost of Tk. 3,104.25 crore in the flood prone area for the flood affected people to provide them shelter during disaster
- **Strengthening Search and Rescue Capacity for Earthquake and Other Disasters:** The Government has taken initiatives for earthquake risk map preparation, contingency plan development, implementation of building code, capacity enhancement of urban volunteers, and raising mass awareness.

- **Developing MicrozonationMap:** Microzonation map is used for earthquake risk- free urbanization, disaster management, identification of new urban areas, land management, building code update etc. Microzonation map will be prepared by 2014.
- **Developing Inundation Map/Risk Map for Storm Surge**
- **Early Warning Signals and Emergency Response Programme:**
  - Cell broadcasting system
  - Interactive voice response
  - SMS
  - Disaster Management Information Centre (DMIC)

Major Projects Implemented under Disaster Management and Relief Division

- **Comprehensive Disaster Management Programme (2nd phase)**

  The 1st phase of this project was implemented during April2004 to December 2009 and the 2nd phase began from 2010 which will continue till 2014.

  Major activities of CDMP II are:

  - Strengthen the disaster risk reduction capacity of 2,000unions.
  - Support to 12 key ministries to incorporate disaster risk reduction policy into their planning and budgeting process.
  - Pilot 7 "disaster-proof" cluster village in 7 divisions.
  - Provide support to 10 million vulnerable people directly and indirectly to reduce the risks they face through various interventions.
  - Assess earthquake risks and prepare ward-based earthquake contingency plans across 8 major cities.
  - Develop national warning system incorporating community risk indicators and preparedness.
  - Support the introduction of a safety-net programme for river bank erosion and climate change victims at least in three districts.
  - Increase the use of cell phone based early warning.

- ***NoboJibon***

  NoboJibon seeks to reduce food insecurity and vulnerability of 1,91,000 households (direct beneficiaries) in nine upazilas of Barisal division over five years. *NoboJibon*will reach approximately 89percent of the total population in the 4,19,247 households of more than 1,300 villages of nine upazilas of Barisal, Patuakhali and Barguna districts. The

programme is being implemented according to the "Host Country Agreement" signed between Save the Children, Bangladesh and Disaster Management and Relief Division of the Government of Bangladesh.

- **Programme for Strengthening Household Access to Resources (PROSHAR)**

  The aim of this programme is to eradicate the food insecurity and reduce the disaster risk by enhaning the capacity of early warning and disaster resilience among the beneficiaries of three upazilas of Khulna Division over five years.
- **Emergency 2007 Cyclone Recovery and Restoration Project (ECRR-D-1)**
- **Cyclone Preparedness Programme**

  It has been working in the field of disaster management in Bangladesh especially in early warning system, search and rescue, evacuation, sheltering, first aid, relief distribution and rehabilitation activities. Under this programme, there are as many as 49,365 Volunteers. Of them 16,455 are female volunteers. The command area of CPP includes 3,291 units, 322 unions37 upazilas of 13 coastal districts.

Ministry of Water Resources

The Ministry of water resource formulates policies, rules and regulations, plans, and strategies, relating to water resources development and management and regulates the functions of all organisations under its control. Bangladesh Water Development Board under this Ministry implements projects for flood protection, drainage and irrigation, river bank erosion, delta development and land reclamation, river dredging etc. and construct barrages, regulators, sluices, irrigation canals, cross-dams, rubber dams, flood protection embankments, coastal embankments, excavates and re-excavates *canal s*under different projects. Over the last decade, a total of 557 major hydraulic structures, 1,125 minor hydraulic structures, 167 bridges and culverts, 3,271.59 km. of drainage channels and 229.63 km. of irrigation canals were constructed.

Implementation of Projects under Ministry of Water Resources

***Buriganga* River Restoration Project:** To improve the water quality of rivers around the Dhaka citya project titled '*Buriganga* River Restoration Project (New *Dhaleswari- Pungli- Bangshi-Turag-Buriganga* River system)' is being implemented at a cost of 94,409.07 lakh. The physical and financial progress of this project by June 30, 2012 are 2.50 percent and 2.23 percent lakh respectively.

***Gorai* River Restoration Project (Phase-2):** The total cost of this project is Tk. 94,214.55 lakh. Meanwhile maintenance work including capital dredging for 30 km. has been completed. Two

high capacity dredgers have been procured using the resources of this project. The physical and financial progress up to June 2012 are 38.32 percent and 26.98 percent respectively.

***Ganga* Barrage Project:** The Government of Bangladesh approved a study project named "Feasibility Study and Detailed Engineering for Ganges Barrage Project" at a cost of Tk. 4563.69 lakh. As per ToR, the study began in May 2009 and the physical and financial progress of the project up to June 2012are72.48 percent and 62.34 percent respectively. The study is now at the final stage.

Reduction of Water Blockage at *Bhabodoha* Area: A total of 12700 hectares of land was bought under irrigation in the last *boro* season under this project. Up to June 2012, water blockage of 16,000 hectares of land has been removed against the target of total 18,100 hectares of land. The physical and financial progress of this project is 90 percent and 62.15 percent respectively.

Capital (Pilot) Dredging of River System in Bangladesh: The capital dredging for 22 km. in the river Jamuna has so far been completed and maintenance dredging is in progress under this project. The physical progress of the project up to June 2012 is 50.47 percent while the financial progress is 10.05 percent.

Water Management Improvement Project (WMIP): The physical and financial progress as on June 30 2012 are33.10 percent and 29.87 percent respectively.

Annual Development Programme

In FY 2011-12, a total of 29 (15 investment and 14 technical) projects were included in the revised Annual Development Programme (RADP) under the Ministry of Environment and Forests with an allocation of Tk. 301.23 crore (GOB 170.94 and PA 130.29) against which Tk. 2,77.44 crore has been spent. The total progress is 92 percent. Besides this, as many as 10 programmes under non-development budget are also being implemented at a cost of Tk.12.78 crore. Up to June2012, the total expenditure stood at Tk.12.56 crore. On the other hand, in FY 2011-12 a total 62 projects of the Ministry of Water Resources was included in ADP of which 12 projects are irrigation projects and one project is technical assistance project. The ADP allocation for these projects stood at Tk.1,535.07 crore. Up to June2012, the total expenditure against these projects was Tk. 1,404.86 crore which is 91.52 percent of allocation.