

## **CHAPTER 15**

### **ENVIRONMENT AND DEVELOPMENT**

Environment and human life are inextricably linked. In fact, the existence of all living being depends upon environment. The Government is giving special emphasis on environmental issues to achieve a sustainable development. The global environment is facing many threats due to various human activities. Industrialization, exponential population growth and tremendous increase in the number of automobiles and indiscriminate felling of trees, are among the root causes of today's vulnerability of the global environment resulting in global warming. The adverse impacts of global warming are going to spread along the shoreline of countries like Bangladesh affecting their overall socio-economic condition.

The present government has undertaken integrated policy and plan to protect the country from environment pollution, global warming and protect the water resources as per pledges made in the election manifesto.

#### **World Environment Movement**

The Stockholm conference on environment is a milestone in world environment movement. The concept of environment was expanded in the larger areas of social, economic and political sectors through this conference held in 1972. Around 113 countries, 19 international organisations and 400 non-government organisations participated in the conference. Following the decision of the conference, United Nation Environmental Programme (UNEP) and International Union for Conservation of Nature (IUCN) were established. Many countries of the world formed environmental institutions (Environment Agencies / Ministry) and undertook environment management related initiatives.

The International Panel on Climate Change (IPCC), coming into existence in 1988, has since been in relentless in undertaking research on the various phenomena related to changes in the global climatic conditions and arousing public opinion and awareness toward undertaking required steps in confronting the potential challenges. The recent IPCC research publication aiming at building awareness of the World Community of its actions in respect of the rate, at which changes are taking place in the global environment, has been the focus of attention of all concerned. For such an outstanding research, IPCC was honoured by awarding Nobel Prize. The World Community, at present, has been taking united actions towards implementation of the recommendations of the IPCC's above research report.

Several international conventions, viz., the Basel Convention, the Rotterdam Convention and the Stockholm Convention have been adopted to mitigate and control the adverse impacts arising from the use of hazardous and harmful chemicals substances. Various activities are being undertaken towards implementation of the recommendations of these Conventions. Besides, Montreal Protocol has been adopted to protect the ozone layer. Activities are in progress to reduce the use of ozone depleting

substances. The worldwide 3R (reduce, reuse and recycle) movement for waste management has now-a-days gained prominence with patronization and championship of Japan

### **Kyoto Protocol**

The Kyoto Protocol signed to reduce carbon dioxide and greenhouse gas emission that is responsible for increasing global warming, mutation of avalanche and rising sea level came into force from 16 February 2005. As of June 2008, 182 parties have ratified the Kyoto Protocol. Till now, 137 developing countries have ratified the Kyoto protocol, including Brazil, China and India, but have no obligation beyond monitoring and reporting emissions. On December 11, 1997, the negotiations on the Kyoto Protocol under the United Nations Convention on Climate Change Framework were completed. The Kyoto Protocol put 36 industrialised nations under obligation to meet specific legally binding targets for emissions of six-greenhouse gas i.e. carbon dioxide, methane, nitrous oxide, by drofluorocarbons, per fluorocarbons and sulphur hexafluoride emission by 5.2 percent below 1990 levels, between 2008-2012.

Below is a list of the change in greenhouse gas emissions for countries which are parties to the Climate Change Convention as reported by the United Nations:

**Table: 15.1 Change in Greenhouse Gas Emissions of some elected Countries**

Country	Change in greenhouse gas emissions (%) (1990-2004)	EU assigned objective for 2012 (%)	Treaty obligation 2008-2012 (%)
Germany	-17%	-21%	-8%
Canada	+27%	N/A	-6%
Australia	+25%	N/A	+8%*
Spain	+49%	+15%	-8%
United States	+16%	N/A	-7%*
Norway	+10%	N/A	+1%
New Zealand	+21%	N/A	0%
France	-0.8%	0%	-8%
Greece	+27%	+25%	-8%
Ireland	+23%	+13%	-8%
Japan	+6.5%	N/A	-6%
United Kingdom	-14%	-12.5%	-8%
Portugal	+41%	+27%	-8%
EU-15	-0.8%	N/A	-8%
China*	+47%		
India*	+55%		

Source: Internet

China and India are large contributors, but are not required to meet numerical limitations of greenhouse gas. Since Kazakhstan and the US did not ratify the treaty, emissions targets are not a treaty obligation

UNEP used the theme on World Environment Day (5 June 2008): Kick the Habit! Towards a low carbon economy. Bangladesh recognized the UNEP theme. Bangladesh is low carbon dioxide emitting country, for instance, the per capita carbon dioxides emission is estimated at 0.2 ton/year, while the average for developing countries is 1.6 ton/year and in USA the per capita emission is 20 ton/year. The Kyoto Protocol plays an important role for forestation activities that absorb carbon, such as planting trees facilitate low level of emission of greenhouse gas.

**Box 15.1: Developing Country Under Global Warming Risk**

Developing countries will be more affected by Global Warming, Sea level rise; increased food scarcity at Asia and Africa with flora and Fauna destruction will take place earliest the prediction time. As a result shore line countries like Bangladesh and Maldives will be facing the dangerous situation. According to International Panel on Climate Change (IPCC) third study report 11% land area of Bangladesh will waterlogged if sea level rise 45 cm. According to IPCC research 18-59 cm sea level rise within 2100. This report of the United Nation say's that if global temperature increase 1.5 to 2.5 °C or 2.7 to 4.5° F one-third flora and Fauna will be face threat. Without that one billion people of temperate region of Asia will be face vast destruction with in 2050. Rainfall will change. Island country of Asia and pacific will be waterlogged; drought in Africa and sub-Sahara will be increase and a minimum of 207 million people in Latin America, Asia and Africa will not have enough water inside a decade. According to that reports temperature will be increase 1.1 to 6.4 °C with in 2100. The World Water Development Report, published in March 2003, said 7 billion people in 60 countries, including Bangladesh, are likely to face acute shortage of water by the middle of this century (2050).

According to institute of Water Modeling Research report, 84 percent mangrove forest will waterlogged if 32 cm sea level rise. According to Bangladesh Center for Advance Studies research, socio-economic condition food security of Bangladesh will face threat.

**Clean Development Mechanism (CDM) Activities**

The Clean Development Mechanism (CDM) is an important part of Kyoto Protocol. As per CDM, industries in developed countries may earn Certified Emission Reduction (CER) credit by investing in the developing countries (39 country of Annex-B). As a result, both developed and developing countries may be benefited. With a view to developing management of waste of the city of Dhaka under the auspices of CDM, 700 MT of decomposable waste will be collected from kitchen markets of various locations to prepare compost fertilizers. Such a programme will facilitate the Dhaka City Corporation in saving its cost in respect of waste collection and transportation and, simultaneously, ensure availability of environment-friendly organic fertilizers produced from the kitchen market wastes. The project has been approved by the CDM Executive Board of UNFCCC. Production of waste-based compost fertilizers would result in cessation of 900,000 MT GHG emissions which could be transacted as CER under CDM. At present, the infrastructure development is going on towards implementation of the project. Based on the available data, so far 1431 CDM projects have been registered with central CDM board by March 2009. GHG emissions from these projects are equivalent

to 220 million tons carbon dioxide (CO<sub>2</sub>). There are about 4,000 projects yet to be certified. These projects would reduce CO emissions by over 2.5 billion tons until the end of 2012.

### **The Major Environmental Problems of Bangladesh**

Because of its geographical location, Bangladesh suffers from a range of environmental problems, arising from drought, flood and other natural hazards. Frequencies of hazards are on the increase day by day. The quality of soil has deteriorated due to reckless use of agrochemicals, unplanned land use, undesirable encroachment on forest areas for agriculture and settlements and indiscriminate disposal of hazardous industrial wastes. Unplanned land use and intrusion of saline water are causing degradation of soil in the coastal area.

The surface water of the country is polluted through capricious disposal of untreated industrial effluents and municipal waste water, runoff pollution from chemical fertilizers and pesticides and oil and lubes spillage in the coastal area from the operation of sea and river ports and ship wreckage. Now in Bangladesh, presence of high-level arsenic contamination in ground water is a national problem especially at Chadpur, Shatkira, Noakhali, Comilla, Gopalganj and other districts.

Bangladesh has 57 trans-boundary rivers, of which 54 are shared with India and 3 with Myanmar. A significant quantity of water flow is withdrawn and diverted upstream by neighboring countries for irrigation and other purposes and thereby reducing normal flow of water. The Farakka Barrage on the river Ganges is a notable example. Desertification prevails in some northwestern areas of Bangladesh due to withdrawal and diversion of upstream water in the dry season by India. Besides, the proposed inter-basin river link project of India, if implemented, the annual water flow of Bangladesh will drastically decrease which will have profound negative impact on economy, society and environment of Bangladesh.

Air pollution is one of the man-made environmental disasters that is creating environmental hazard all over the world. There are two major sources of air pollution in Bangladesh, namely vehicular emissions and industrial emissions, which are mainly concentrated in the cities. There are also numerous brick-making kilns working in dry season all over Bangladesh, which is another source of air pollution. Almost all of these kilns use coal and wood as their source of energy, resulting in the emissions of sulfur-dioxide and volatile organic compounds. An emerging issue of great concern in the cities and towns is the high concentration of lead in the air from vehicular exhausts. The high level of concentration of lead is very harmful for human health especially for child health.

The depletion of biodiversity is the result of various kinds of human interventions that impinge on it through destruction and degradation of land, forest and aquatic habitats. These activities encompass the sectors of agriculture, forestry, fisheries, urbanization, industry, transport, tourism, energy, chemicals and minerals etc. In the fisheries sector, unplanned shrimp cultivation has negative impact on environment. These activities are responsible for destruction of fisheries diversity.

### **The Government Initiatives to Address Environmental Protection and Development**

Bangladesh has limitations in resources and capacities in terms of technology or money to confront massive environmental disasters. Therefore, the Government of Bangladesh has been working

relentlessly to develop and conserve environment to prevent major environmental disasters. Set out below are the initiatives taken by the government to address environmental problems:

### **Preparation of National Land Policy**

The optimum use of land and water depends on planned use of land, water resources and natural environment which are the important sources of the growth. It is possible to ensure optimum use of scarce land resources by way of integrating the uses of these three natural resources. With this end in view, the Government has approved 'National Land Use Policy, Bangladesh' in June 2001. The Government has adopted various other national policies and measures to prevent land depletion. Notable among them include 'The National Environment Policy', 'National Environment Act and Rules', 'National Forestry Policy' and 'The National Plan for Agricultural Research'.

### **National Water Policy**

Water resources is of immense importance for socio economic development of the nation. Bangladesh is endowed with a good number of water bodies scattered all over the country.

WARPO maintains a National Water Resources Database (NWRD) established at WARPO under NWMP project that preserve and disseminate information/data of country's water sector including information/data of other related sectors. There are analytical tools analysing information. Different organisations, use data of NWRD in their planning and research works. Updating and upgrading of NWRD will be done under Water Management Improvement Project (WMIP) to be implemented by December 2014. A 5- tier web-enabling database has been created for coastal zones. 5 layers of ICRD include Presentation, application server, data server, web server and spatial data engine.

### **Air Pollution Control**

There exists a regulatory framework to combat air pollution in the country. The Department of Environment is implementing a number of projects to control air pollution. A ban was imposed on the plying of two stroke three-wheelers in Dhaka city since 1 January 2003. Instead, environment friendly 4-stock three-wheeler was introduced. Initiatives are being undertaken to promote CNG in petrol driven cars.

Five Continuous Air-quality Monitoring Stations (CAMS) have been set up in the country under Air Quality Management Project (AQMP) being implemented by the Department of Environment with financial assistance of the World Bank. Two of such CAMS are located in the city of Dhaka, while of the rest three, one each in the cities of Chittagong, Rajshahi and Khulna. Besides, a number of mobile Air-Quality Monitoring Stations have also been procured for measuring air pollution at localized areas. To improve the quality of air, the Department of Environment has conducted research under 'Clean Air and Sustainable Environment' project on issues like i) Pedestrian Infrastructure and Traffic Engineering, ii) Brick- kiln Emission Management, iii) Pre-feasibility Study for Bus Traffic Transit and iv) Media Consultancy for Clean Air.

The 7<sup>th</sup> Meeting of the Governing Council of the South Asia Cooperative Environment Programme (SACEP) held in 1998 adopted the 'Malé Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia'. The Department of Environment has been in the process of implementing the Malé Declaration in stages. Under this implementation programme, a Transboundary Air Pollution Monitoring Station has been set up in upazilla Shyamnagar of the district of Satkhira and the monitoring programme is being run on a regular basis.

Setting up of a second, Transboundary Air Pollution Monitoring Station is now underway. The Bangladesh Agricultural University, Mymensingh is implementing a research project on 'Impacts of Ozone (O<sub>3</sub>) on Crops' under this monitoring programme. The above research project has revealed the adverse impacts of O<sub>3</sub> on crops. There is yet another research program in operation which is devoted to 'Assessment of Impacts of Air Pollution on Child Health' and is being run in three schools in the city of Dhaka. Publicity materials have been prepared for print and electronic media towards creating mass-awareness in checking air pollution. For public awareness, a web site is open about air pollution information ([www.doe-bd.org](http://www.doe-bd.org)). 'Schedule-2' of environment conservation role 1997 has been amended to replace the air quality range

### **Control of Pollution from Brick Kilns**

To contain air pollution, environment-friendly 'Block Bricks' are encouraged instead of traditional bricks. Attempts have been made for demonstration and publicity of environment-friendly brick-burning technologies under the project 'Clean Air Sustainable Environment (CASE)' being implemented by the Department of Environment. A Draft Brickfield Policy has been formulated keeping in view the effective implementation of the Brick-burning Act 1989 (Amended in 1992 and 2001) and conservation of the environment simultaneously to meet the demand of bricks in the country. Besides, steps are also underway towards implementing the decision to ban conventional brickfields by 2010.

To implement Brick Burning Control Act 1989, Brick Burning (Control) Rules 2004 have been framed.

### **Conservation of Ecology**

Considering the importance of hills in protecting ecology of the country, the Government issued a notification in March 2002 banning hill razing. Awareness about the importance of hills in protection of ecology is increasing and the illegal attempts of cutting/razing of hills are on the decline.

### **Control of Industrial Pollution**

In compliance with the Environment Conservation Act, 1995 and the Environment Conservation Rule, 1997, the mechanism for issuance of environmental clearance certificate has been introduced for the new industries or projects after assessing project area and pollutants to be emitted or discharged by the industries or projects to be set up. For the highly polluting industries, environmental clearance is given after setting up effluent treatment plant. Steps have been taken to set up effluent treatment plants for the existing industries with the support of chamber and the concerned sector-associations.

Against this background, an International ETP Fair was organized in Dhaka in September, 2007 for raising awareness and encouraging the various industrial entrepreneurs about constructing and establishing ETPs within their respective industrial premises. During FY2002-05 the department of environment had conducted a survey covering 11,149 industrial units. Out of them 524 units had identified as Red Category as per ECR, '97. Among the above-identified 524 red-listed industrial units, 419 were found to have constructed their ETPs at their own initiative while 105 had no ETP at all. Besides, four enforcement teams constituted by the Department of Environment, since November, 2006, have been inspecting various industrial units and taking legal measures against the polluting ones. Till now, the teams have inspected about 945 industrial units.

Currently, a UNEP-assisted project, titled, 'Survey and Mapping of Environmental Pollution from Industries in Greater Dhaka and Preparation of Strategies for its Mitigation' is being implemented. This project has been undertaken with a view to formulating and undertaking an action plan on accurate assessment of the number and pollution loads of the various industrial units operating in the greater Dhaka district and controlling pollution by them. The project has been designed to provide information regarding exact location of various industrial units, their types, dimensions, waste characteristics and whether or not they are being operated conforming the existing Acts, Rules and Regulations. Such type of information is very important to prepare strategy for controlling industrial pollution.

### **Control of Noise Pollution**

As per the provision of the existing Environment Conservation Act 1995 which has set limit on noise pollution, the Government has formulated the Noise Pollution Control Rules 2006. Under these rules, it will be easier for the Government to control noise pollution particularly the use of mike and loud speakers. The Ministry of Environment and Forest has set a target of reducing the noise pollution level of Dhaka City of 45-55 decibel from 90-110 decibel by 2009-10 FY. Recently Dhaka Metropolitan Police (DMP) has prohibited the use of horns on several city streets to check sound pollution.

### **Conservation of Biodiversity**

Bangladesh signed the Biodiversity Convention at Rio in 1992. There is a focus on biodiversity in the forest and environment policy.

Under the Bangladesh Wildlife Preservation Act, 1974 (amendment Act 1994), three categories of protected areas have been identified as national parks and wildlife sanctuaries. With an aim to conserve the biodiversity, conserve and develop natural environment and eco-tourism (environment friendly tourism) and to facilitate research, the Government has declared 19 protected areas in different parts of the country. Moreover, the Government has declared 8 areas viz. Cox'sbazar, Teknaf Sea Beach, St. Martin's Island, Sonadia Island, Sundarban reserve forests, Gulshan- Baridhara Lake, Hakaluki Haor, Tanguar Haor and Marjat Baor as Ecologically Critical Area (ECA) under Environmental Conservation Act, 1995. According to Ramsar Convention, the Government has undertaken major development activities to conserve the biodiversities of wetlands including Tanguar Haor.

The Department of Environment with the assistance of Global Environmental Facilities (GEF) and UNDP is implementing a project titled 'Coastal and Wetland Biodiversity Management to conserve biological diversities in the areas of Teknaf Peninsula, St. Martins Island, Sonadia Island and Hakaluki Haor. Ecological Critical Area (ECA) Coordination Committees have been established at District, Upazila and Union level in order to involve all classes of people in bio-diversity conservation activities. 72 Village Conservation Groups (VCGs) have been formed to bring the general public and poorer people under environmental programmes. Community based nurseries for the protection of bio-diversity and sanctuaries for fish and wild animals have been established in the project areas. Because of the initiatives undertaken by the Ministry of Environment and Forest, bio diversities of these areas have enriched remarkably and migratory birds have started returning at different haors following banning of hunting, wetland plantation and offsetting up bird sanctuaries.

Recently 55 species (which is double than the year 2006) of migratory birds have been seen in the Hakaluki Haor, the largest wetland (covering 40,000 Hectors of land) in the country.

Besides, a part of the Sundarbans (east, west and south sites) and the Tanguar Haor have been designated as Ramsar sites. In addition, considering the importance of protecting bio diversity of the world, UNESCO has declared the Sundarbans, the single largest mangrove forest of Bangladesh, as World Heritage Site on 6 December 1997.

### **Climate Change**

Climate change has occupied the centre stage of all deliberations on environmental issues in today's world. Bangladesh is especially vulnerable to climate change because of geographic exposure, low income, and greater reliance on climate sensitive sectors such as agriculture. Impacts of climate change include excessive flooding, increased salinity and drought, lack of drinking water and water logging due to the rise of sea level.

Bangladesh is one of the signatories of United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol. According to the provision of UNFCCC, Bangladesh has sent the NAPA document to UNFCCC secretariat. Bangladesh presented NAPA in the sidelines of the eleventh conference of parties (CoP-11) held in Montreal, Canada, November-December 2005. The NAPA of Bangladesh earned appreciation from all quarters. By now, Bangladesh has prepared Initial National Communication (INC) with GEF-UNDP financial assistance and submitted to the UNFCCC secretariat in 2002. Formulation of Second National Communication is now in progress. GHG Inventory, initiatives undertaken and to be undertaken will be identified under Second National Communication.

According to Nobel laureate International Panel on Climate Change (IPCC), Bangladesh will be one among the worst victims of climate change. Sea level will be increased due to rise in temperature and the frequency of cyclone-storms will be increased. As a result, food and energy security will be threatened and different types of diseases and natural calamities will endanger lives. The density in population will make the problem more critical. To combat the forthcoming climatic risk, the Ministry of Environment and Forest has formulated Bangladesh Climate Change Strategy and Action Plan-2008.



Besides, in FY 2008-09 the Government has created a fund of Tk.300 crore to combat climate change risk, adaptation and mitigation.

UNFCCC has established the Least Developed Countries (LDC) Fund and Special Climatic Change Fund (SCCF) to address climate change risk management issues for the least developed countries. A coastal afforestation project titled 'Community-Based Adaptation to Climate Change' is being implemented by the Department of Forest with the financial assistance from LDC fund. United Nations Framework Convention (UNFCCC) has also established Adaptation Fund. Bangladesh has been selected as an alternate member of the 16-member Adaptation Fund Board for the least developed countries group. Developing countries, hopefully, will receive the maximum financial assistance from the adaptation fund in addressing climate change issues.

The U.K. Bangladesh Climate Change Conference: Bangladesh Facing the Challenge held in London 10 September 2008 has decided to establish a Multi Donor Trust Fund (MDTF). The Multi-Donor Trust Fund received a commitment of US\$ 97.9 million from the Governments of UK and Denmark. Japan International Cooperation Agency (JICA) proposed to provide Tk. 490 crore as budget support during the next three years, to cope with the environment related disasters. At the same time, Japan has proposed to contribute Tk. 700 crore from their Japan Debt Cancellation Fund (JDCF) facility in managing the risks due to climate change. The Climate Change Fund constituted with the Government's own resources has been, approved by the cabinet in principle. Meetings of conference of parties 15 (COP-15) will held at Copenhagen, Denmark in December 2009 to address impact of climate change risk and mitigation activities. Bangladesh attaches highest priority to the climate change negotiation and is playing a vital role on behalf of LDCs. Hopefully, in Copenhagen conference Bangladesh will hold intensive bilateral talks with the countries and development partners for getting more support to combat climate change.

### **Protection of Ozone Layer**

Bangladesh has achieved remarkable success in protecting ozone layer. By now, Ozone Depleting Substances (ODS) has been phased out from aerosol sector in Bangladesh. As a result, 60 percent use of ODS has been reduced in the country. Besides, in the refrigeration sector, industry-owners and technicians have been provided with necessary equipment and machineries. As many as 2000 technicians have trained on recovery and recycling toward checking unnecessary emission of chloro-floro-carbon (CFCs).

Ozone Depleting Substances (Regulation) Rules, 2004 has been framed under which import and use of ODSs are being controlled through licensing systems. A plan has been undertaken toward 100percent reduction of CFC-use in the form of CFC-11/12 in Refrigeration and Air-conditioning Sector by 01 January, 2010 through the implementation of plan titled “National Phase-out Plan”. Necessary equipment and training have been provided to the sector.

### **Publication of Dhaka City State of Environment report**

The DOE has published the report titled “Dhaka City State of Environment” with the financial assistance from UNEP. Besides, a report on Bangladesh National Programme of Action for protection of the coastal and marine environment from land based activities have been published.

### **Development of the National Bio-safety Framework**

The Department of Environment is implementing development of the national bio-safety framework project with the financial assistance from Global Environment Facility (GEF).

### **Steps Taken for Management of Hospital/Clinical Waste**

For environment-friendly management of Hospitals’ Clinical wastes in Dhaka city, the DoE and Bangladesh Private Clinic and Diagnostic Owner's association are working closely. By now, many hospitals and clinics in Dhaka city have developed management system of waste disposal by receiving consultancy support from the DoE. 133 upazila health complexes have been included for the smooth disposal system of clinical waste. In compliance with the Environment Conservation Act, framing of draft clinical waste management rules and guidelines are at the final stage.

The Government has taken an initiative to produce energy and fertilizer from waste. With the support from JICA, Dhaka City Corporation has undertaken a 20- year master plan for waste management. Technical assistance has been provided to DCC for taking CDM projects. With the financial assistance from UNCRD, the Department of Environment is implementing a project titled “National Strategy on Waste Reduce, Reuse and Recycle”. Preparation of 3R strategy is in progress.

The DoE has set up a pilot composting plant under Kustia Municipality with the assistance from JICA.

### **Natural Disaster Management**

Various government and non-government organisations are working in the field of disaster management and mitigation. The focal point for disaster management is the Disaster Management Bureau under the Ministry of Food and Disaster Management. Bangladesh Meteorological Department (BMD) is responsible for forecasting natural disasters, like cyclones, droughts storms and such other disasters . Bangladesh Space Research and Remote Sensing Organisation (SPARRSO) is responsible for providing satellite images while the Flood Forecasting and Warning Centre (FFWC) of Bangladesh Water Development Board is entrusted with the responsibility of forecasting flood.

A numbers of institutions under different ministries such as the Directorate of Relief and Rehabilitation, Directorate General of Food, Department of Public Health Engineering, Local Government Engineering Department, Water Resources Planning Organisation and Armed Forces Division are involved in disaster management. To increase awareness of disaster risk management, the Government has taken up programmes like media award for reporting on risk management in the newspapers and electronic media and advocacy workshop for micro-credit use in controlling disaster.. Moreover, three national committees have been working to administer disaster management effectively.

Besides the national disaster management committee, the following committees are also functioning:

- (a) Cyclone Preparedness Programme Implementation Board (CPPIB)
- (b) Disaster Management Training and Public Awareness Building Task Force (DMTATF)
- (c) Focal Point Operation Coordination Group of Disaster Management (FPOCG)
- (d) NGO Coordination Committee on Disaster Management (NGOCC)

Other than the district disaster management committee, Upazila disaster management committee, union and pourashava disaster management committee and city corporation disaster management committee have been constituted at sub national levels to coordinate, review and implement the disaster management activities within their area of jurisdictions.

### **NGO Activities for Conservation of Environment**

In alliance with the Government, a good number of NGOs have been working to address environmental problems and to improve environmental system of the country since 1980s. The NGOs play an important role in motivating people at the grass root level to protect environment and to take coordinated efforts in solving environmental problems. There are NGOs which are playing commendable role in projecting environment. Included among them are: International Union for the Conservation of Nature (IUCN), Centre for Sustainable Development (CSD), Bangladesh Centre for Advanced Studies (BCAS), Environmental Conservation Management Centre, Waste Concern, Bangladesh Paribesh Andolon (BAPA) and Bangladesh Environmental Lawyers' Association (BELA).etc.

### **The Department of Forest**

The Forest Department plays an important role in the development of physical, socio-economic development, maintenance of environmental balance and sustainable land based production system. The forest management system of Bangladesh is an age-old system. At the beginning, the main task of the forest department was to protect the forest and to ensure sustained yield management. The present Government has taken up a plan to bring 20 percent of our land under afforestation programmes by 2015 to attain self-sufficiency in forest resources and maintain ecological balance. Co-management has been implemented in 6 out of 19 protected areas to promote conservation of bio-diversity and the protection of wild life. To promote conservation of biodiversity established with the "medakachapia" variety of plants, Madhupur National Garden, a wild life sanctuary in the char Kukri-Mukri areas, a marine eco-park in the Ichakhali areas of Mirersharai upazila (Chittagong district) will be developed to expand eco- tourism. A development programme has been taken up for maintaining ecological balance and biodiversity in the Sundarbans area at a cost of Tk. 650 crore.

### **The Development activities of the Forest Department in FY 2008-2009 include:**

- 1) Distribution of benefits among the participants involved in the social forestry programme.
- 2) Formation of 'Tree Farming Fund' for sustainable replanting programme

Forest Department has been implementing a number of development projects for conservation of bio-diversity such as (a) Establishment of Botanical Garden and Eco-park at Sitakunda (2<sup>nd</sup> Phase), Chittagong. (b) Establishment of Tilagar and Barshijora Eco parks at greater Sylhet district. (c) Further development of Dulahazra Safari park, at Cox'sbazar, (d) Establishment of Dhanshiri Eco park and Ramsagar National park development including recreation centre of Shingra, Ranisagor and Ashura Beel (e) Integrated reed-land social forestry project in Sunamganj district (f) Establishment of Kuakata Eco-park at Kalapara upazila in Patuakhali district (g) Establishment of Modhutilla Eco-park at Sherpur district (h) Social forestry for development and management of forest resources (i) and Agar plantation (1<sup>st</sup> Phase) project.

### **Social Forestry**

Social forestry programme is one of the important programmes of the Forest Department. Since 1981, the Forest Department implemented four social projects with the financial assistance from the Asian Development Bank (ADB). The Forest department has been successfully implementing these social forestry programmes. During the last three years, the DoF has provided training in social forestry to 46021 persons which has allowed the poor village people to benefit from common property.

Through different social forestry projects, 56484 hectares encroached and degraded forest area has already been bought under social forestry. In the coming three years, activities will continue to control soil erosion and forest land erosion as well as to stabilise new char land. Also there will be activities for improvement of soil quality and for this purpose, block plantation in 51,000 hectares of land, strip plantation in 7,855 km, homesteads and institutional plantation and the sale and distribution of 43.80 lakh seedlings among the people. The poor and marginal farmers are participating in the social forestry programs and there is a legally binding definite share of benefit for them. Currently, the Forest Department has been implementing three projects viz (1) Redland Integrated Social Forestry Project; (2) Agar Plantation (1st phase); (3) Biodiversity Conservation and Poverty Alleviation in the Greater Rajshahi and Kustia Districts Projects. In addition, there are two programmes like Afforestation programme in the denuded hill areas of greater Sylhet and Cox'sbazar districts (2nd phase) and Afforestation programme in the Canals band, Embankment and link road of Tista Barrage Irrigation project for poverty reduction.

After joining the plantation programme, the social restrictions on women employment has largely been removed. Social forestry is not only producing wood, fuel-wood, and improving environmental condition, it is also playing a significant role in reducing poverty.

### **Nishorga Support Project (NSP)**

Bangladesh Forest Department has been implementing a project titled "Nishorga Support Project" with the financial assistance from USAID. The objective of this 5- year project (from 2004-05 to 2008-09) at a total cost of Tk. 61.86 crores is to save the remaining natural forests of Bangladesh for our future

generation. The success of this project depends on the involvement of people. the forest department, therefore, plans to develop a co-management model with the involvement of local people for protection of natural forests. In this model, people living in and around natural forests will work together with the department for protection of forests and nature. The Government and local people involved in implementation of the programme will also share income (if any). Currently this co-management model has been working at five protected areas under NSPs namely Lawachara of Moulvibazar, Rema-Kalenga and Satchari of Hobiganj, Chunati of Chittagong and Teknaf of Cox'sbazar on experimental basis. Besides, establishment of co-management model in Madupur National Garden is in progress.

### **Barind Environmental Balance Restoration Through Aforestation Project**

The north-west part of Bangladesh i.e. Barind area is an area where agro-ecological condition, topography and soil characteristics are significantly different from other parts of the country, and where the forest coverage is very low. Consequently, temperature is high, rainfall minimum and surface water is scarce in this part of Bangladesh. Barind Multipurpose Development Authority (BMDA) is implementing comprehensive development programme such as irrigation, surface water development, feeder road construction, drinking water supply to improve the socio-economic condition of the people of this area.

For environmental improvement of the Barind area, the Government is implementing “Barind Environmental Balance Restoration through Afforestation” project at a total cost of Tk. 22.52 crore under the Ministry of Environment and Forest. The project was taken up for implementation in July 2006 and scheduled for completion in June 2010.

### **Bangladesh National Herbarium (BNH)**

Bangladesh National Herbarium is a national research organisation meant for conducting botanical survey. One of the main objectives of National Herbarium is to identify, collect and preserve all plant species including those that are part of national tradition and culture. Some of the important activities of Bangladesh National Herbarium are stated below:

- Botanical Survey: About 1450 plant specimens have been collected through botanical survey from the forest areas in the districts of Maulibazar, Khagrachari, Rangamati, Kurigram, and Dinajpur since July 2008.
- Plant Identification and Publication of the Flora of Bangladesh: Through taxonomic studies about 1000 plant species were identified by the scientific staff of the National Herbarium since July 2008. Besides, as many as 200 plant species on request from various government and non-government organisations have been identified. Under the Taxonomic studies carried out at the National Herbarium, manuscripts of seven Angiospermaic families (fascicle FY 59 and 60) have been compiled for the publication of the series ‘Flora of Bangladesh’.

Apart from this, BNH is actively engaged in the implementation of the programme on the Encyclopedia of Flora and Fauna of Bangladesh sponsored and implemented by MOEF and Bangladesh Asiatic Society.. BNH is also assisting the Ministry of Health and Family Welfare in publishing a manual entitled “Medicinal Plant in Primary Health Care: Introduction, Cultivation -user-3”.

### **Bangladesh Forest Research Institute (BFRI)**

BFRI is the only national forest research organisation in the country. The main objective of BFRI is to augment and preserve forest resources through scientific use and innovate new technologies for environmental development. The objectives also include poverty reduction and employment generation.

The technologies recently developed by BFRI include:

- ▶ Technique for bamboo groove management.
- ▶ Technique for coppice management and its rotation age to increase the productivity of fuel wood species.
- ▶ Appropriate technologies for hill farming in Chittagong Hill Tracts to ensure efficient use of hill land and soil conservation.
- ▶ Clonal propagation technique for hybrid *ecasia* and *syzygium grande*
- ▶ Tissue culture technique for bamboo and hybrid *ecasia*
- ▶ Easy and cost effective propagation technique for bamboo through branch cutting and tissue culture. These techniques are being widely used throughout the country
- ▶ Techniques for pest and disease management of major forest nurseries and plantation to ensure increased production of forest resources.
- ▶ Technique for the determination of growth rate and bio mass production of forest species
- ▶ Technique for manufacturing of particle board at a minimum cost
- ▶ Easy and cost effective planting technique for tree seedling
- ▶ Preservation technique for enhancement of service life of rural housing materials (wood, bamboo cane, sun-grass, straw, etc.) and bamboo materials using at betel leaf farm.

Moreover, BFRI is continuing its technology transfer activities by organising workshop, seminar, field days exchange visits, participation in different tree and technology based fairs.

### **Bangladesh Forest Industries Development Corporation (BFIDC)**

The main objectives of BFIDC include extraction of forest produces (timber) from the forests of the country, establishment of timber based industries, rubber plantation, productions, processing and marketing, best utilization of forest resources and processing of the extracted timber. The activities of BFIDC are divided into two sectors, (a) Industrial sector and (b) Agriculture sector

Under BFIDC, there are three rubber zones and sixteen rubber gardens comprising 32,635 acres of forest land. These are yielding profits.

In FY 2006-07, the profit amounted to Tk. 25.80 crores which rose to Tk. 32.60 crores in FY 2007-08 and Tk. 17.13 crores in FY 2008-09.

Moreover, BFIDC met about 70 percent of total demand of raw rubber of the country and provided employment opportunities for 5015 people. Rubber production cost is also less, and therefore it is remarkably profitable. Quality and standard of rubber wood as tested are very close to those of teak (Segun) wood.

A comprehensive action plan has been taken up to modernise BFIDC. Some important features of the action plan are mentioned below:

- a. Formulation of National Rubber Policy;
- b. Modernisation of factories and smoke-houses, creation of armed guards for rubber sector to protect theft/trafficking, infrastructure development and re-plantation of 5332 acres rubber garden by FY 2008-09.
- c. Manufacturing of modern doors, windows and household wooden items to meet the local demand and to face the market competitiveness by modernizing the existing Industrial Units;
- d. Alleviation of poverty of the rural poor people by expansion of rubber cultivation in private/public sector especially in the hilly areas of Bangladesh and Modhupur tracts.

In FY 2008-09, BFIDC has fixed a rubber production target of 6700 MT.

#### **Annual Development Programme**

The Ministry of Environment and Forest implemented 35 development projects in FY 2008-09 with RADP allocation of Tk. 68.66 crores. Out of this allocation, the expenditure incurred up to June 2009 was Tk. 60.34 crore and overall progress is 88 percent. During FY 2007-08, MoEF implemented 35 development projects with RADP allocation of Tk. 97.18 crore. Besides these, 11 development programmes financed from non-development budget during the fiscal year were under implementation at a revised cost of Tk.5.15 crore. A total of Tk. 4.23 crore was spent registering an overall progress of 82 percent. -Apart from these projects or programmes which are directly related to the development of environment and eco-system, some other line Ministries particularly, Ministry of Water Resources, Ministry of Agriculture, Ministry of Food and Disaster Management and Ministry of Fisheries and Livestock. are also involved in executing environmental development projects. Ministry of Agriculture has been motivating the farmers to accept a new technique of how to use super/mega granules (guti urea) instead of urea, which will have a positive impact on protection of pollution and misuse of urea fertilizer. Moreover, activities like development of forest management, conservation of wild life, protected area management, development of national parks and development of safari parks aimed at putting in a sustainable eco-system of the country are making immense contribution towards protection of environment.