

## **A Study on Development of Plantation of Forest and Forest-Based Industry in Bangladesh**

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### **Abstract**

*The development of forest plantation and forest-based industry in Bangladesh has an important role in forest resource management and wood supply. Plantation of forests will have to provide an increasingly larger share of the timber supply in near future. Technology, shortage of supply and marketing problems are emerging in this sector. The development of industrial forest plantation is focused on meeting the needs of timber for houses, furniture. Fast growing plant species may be planted extensively. It is known to almost all educated persons that about 25% (one forth) of land of a country should be under forest. According to government opinion and judgment, the forest area of Bangladesh is 17.50% at present, on the other hand, according to FAO of UNO; the forest area of Bangladesh is only 10% of total area of Bangladesh. Government policy is to promote forest land area up to 20% within 2015 (P-25). But, there is a doubt whether the government will be successful in achieving the target as deprived person and scoundrel are destroying and making empty of the forest land to become rich in short time through illegal manner.*

*The sustainable development of forest depends on proper planning and implementation, and to save from curses of deforestation and forest degradation in Bangladesh. This paper will provide a review of plantation forests in Bangladesh development, processing, progress and deterioration, restructuring and potential markets.*

### **Introduction**

Bangladesh is situated to the North Eastern part of South Asia between 20°34' and 26°38' North latitude and between 88°01' and 92°41' East longitude. It lies in the active delta of three major rivers viz Padma, Meghna, and Jamuna and their numerous tributaries. The country covers an area of 1,47,570 sq.km. and bounded by India from the west, north and east and in most of east. Myanmar lies on the south eastern edge and Bay of Bengal on the south.

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A small region of higher land occurs in Sylhet, Mymensingh, Chittagong, Cox's Bazar and Chittagong Hill Tracts (CHT) regions. The coastal part of Bangladesh includes the famous Sundarban Mangrove Forest. Climate of Bangladesh is sub-tropical and monsoon rainfall varies from 1200-3500mm. Rice is the major cereal crop, while Jute, Sugarcane and Tea are the main cash crops. Bangladesh is noted for its arm of the sea and tidal mouth of a river. Less than 10% of its total water flow originated from its own catchments and rest comes from India, Nepal and Bhutan. It is observed that 20% of the country gets flooded during the monsoon period.

Before partition under British India in 1947, the forest of Bangladesh was under the control of Bengal Forest Department and Assam Forest Department. After partition of British India, East Pakistan Forest Service and East Pakistan Sub-ordinate Forest Service were created. After the independence of Bangladesh in 1971, Bangladesh Senior Forest Service was (Forest Cadre) under Bangladesh civil Service Cadre Rules 1980. The Forest Department has multi-dimensional functions of forest resource conservation and management, protection and management of bio-diversity and watershed along with economic and ecological development of the country. For sustainable management of the country, wealth, efficient and adequate manpower comprising with logistic support may be considered as prerequisites. The government of Bangladesh formulated Forestry Sector Master Plan (FSMP) in 1990 (FSMP 1993-2012). The objectives of the FSMP were to optimizing the contribution of forest resources for environmental stability and socio economic development through people-oriented forestry programs. The new Forest Policy was promulgated in 1994 to implement and materialize FSMP directives and recommendations.

The administrative head of Forest Department is the chief conservator of Forest (CCF). The Forest Department is divided into 4 wings. Each wing is administered by a Deputy Chief Conservator of Forest (DCCF). The wings are: (1) Forest Management Wing, (2) Social Forestry Wing, (3) Planning Wing, (4) Education and Training Wing.

### **Objectives of the Study**

- To discuss the historical background of Forest sector development in Bangladesh.
- To explore the underlying causes of deforestation and forest degradation in Bangladesh.
- To discuss forestry impacts on environment.

- To state activities as per Forest Development Plan and Program.
- To observe Administrative units of the Forest Department under revenue budget.
- To describe Forest Type and overview on protected areas of Bangladesh.
- To recommend suggestion and proposal for future development.

### **Methodology of the Study**

The article is descriptive and empirical. Statistical data has been collected from secondary sources. Qualitative technique key informant and through informal interviews, Focus Group Discussion, community workshop, case studies and analysis from newspaper and media reporting have been used. Literature reviewed as per requirement and availability and personal observation in different areas of the country have also been quoted.

### **Scope of the Study**

The study is divided into few parts as per objectives and design of the research article. Part one includes Abstract, key words, introduction and objectives of the study, Methodology and scope of the study. Part two deals with the conceptualization of deforestation and forest degradation from the perspective of forestry. Part three states the activities as per Forest Development Plan and Program, Administrative unit of Forest Department, Forest type overview on protected areas of Bangladesh and description of forest of different regions of Bangladesh. Part four depicts finding, recommendation, information and suggestions.

### **Discussion and Literature Review**

**Historical background of forest development:** The country had a population of 7 crore in 1970 and now it has a population of 15 to 16 crore which was 14 crore in 2008. According to Ministry of Agriculture total area is 14.86 million hectare out of which forest area is 2.599 million hectare, cultivable land is 8.52 million hectare, current fallow land is 0.469 million hectare. The data on forestland is controversial. One estimate puts the total forestland as 2.47 million hectare, whereas the FAO estimates the total natural forest cover as 769,000 hectare or 5.9 percent and the area is 2.5 percent of the total land area (FAO, 1993). Bangladesh's natural forests are controlled by the Forest Department. Forests are classified in three classes: (a) hill forests, (b) inland deciduous sal forests, and (c) the Sundarban mangrove forests.

FAO made a global assessment of 179 countries in 1990 and found that forest land constituted slightly over 3400 million hectare or 27 percent of the land area. Forest of the developed regions represented 42 percent of the total global forest area compared to 58 percent of the under developed regions (FAO 1995). The per capita forest area fell globally from an average of nearly 1.2 hectare in the 1960 to 0.6 hectare in 1990 and it is projected to be less than 0.2 hectare by 2020 (FAO, 1995). As per information of the Ministry of Forest and Environment, total forest land in the country is 25 lakhs hectare and out of this highest area of land is found in Chittagong. In this region the total forest land is 17 lakhs 65 thousands 517 acres which is about 45% of total forest land of the country. It is a paper's statement but in practice the situation of forest in Chittagong is too bad. It is due to the rate of growth of population and augmentation of their residence and cultivable agricultural land and building construction, unplanned expansion of city and urban areas and extension of mills and industry. It has been observed that more than 3 lakhs acres of forest land of Chittagong forest circle have been destroyed within very shortest time and more than 5 lakhs to 7 lakhs areas of land are going to be destroyed. In the name of Rubber garden, extension of Euclapatas type of tree plantation, the rain forest of Chittagong Hill Tracks are damaged. The cultivation of Tobacco in the hill area is another reason of destruction of forest. It has been found the area of Alikdem, Ruma, Lama, Tahanchi, Naikhanchari up to Satkania. In the research report of Chittagong University Institute of Forestry and Environmental Science of 2011 that only in Bandarban District the area of Tobacco cultivation has been increased from 1941 hectare to 4085 hectares. A huge timber is being used as fuel in the processing of Tobacco. It has been observed that 30% forest land has already been destroyed due to above reason.

Moreover, after 1991 the Government has implemented the coastal area fence/cordon from Mirrarshari to Cox's bazar -Teknaf about 300 km, but unfortunately now there is no existence of 180 km. In the 2<sup>nd</sup> phase of coastal area 8 projects of forest were implemented and 78 thousand of acres are cultivated by forest. Many brick fields are functioning in Chittagong and these fields are using timber as a fuel. Moreover, different varieties of timbers are smuggled through land and sea route from reserved forest of Chittagong. It is said that smugglers are doing this kind of illegal activities by managing forest stuffs. Besides, fishery project in coastal area are destroying the forest land. It is happening in the Chittagong and Cox's bazar district. In addition, housing extension in the forest area is destroying forest land. It is observed that political instability also destroying the forest resources. Some thousand trees were cut by miscreants during political trouble of last year (2013) in Satkania, Lohagara, Sitakunda, Mirrarshari, Raozan, Rangunia and in other upazillas. The reserve forest area of Chittagong Hill Track is being deteriorated. In 1964 the reserve forest was 23.8 million cubic meters and it has

come down to 19.8 cm in 1985. Many forest officers became millionaire by doing illegal activities.

Forest lands of Sylhet are being snatched by miscreants and smugglers. The total area of 50 natural forest zones of Sylhet was 1 lakh, 64 thousand, 7 hundred 47.981 acres. But about 82,666 acres have been taken possession unlawfully and forcibly by unauthorized persons. About 82 thousand 81.981 are under the jurisdiction of forest department. In the year 2007 the caretaker government had taken step to rescue the forest land and at the beginning the government was successful in attaining the goal but after coming elected government the said forest land 281 acres have been occupied by influential persons. In Sylhet, Sunamgonj, Hobigonj and Moulovi-bazar district of Sylhet division there are 50 reserve forest zones under natural forest and animal protection division. As per survey report of 1950 in four districts (Sylhet, Sunamgonj, Hobigonj and Moulovibazar) of Sylhet division 1 lakh 64 thousand 7 hundred 47.19 acres lands were under forest department. In 1965 the Government took the possession of 48,582 acres of forest land for Sylhet Pulp and Paper Mill. This land was under this mill for about 36 years. But, since 2001 this land is lying abandoned and about 23,200 acres are occupied by influential persons. Moreover, 59,566.56 acres of forest department wild animal and natural protection have been occupied by leaders of different political parties and local influential persons.

### **Smuggling of timbers/trees from forest land**

A gang of smugglers are smuggling the valuable timber and trees from the department of protected animal department and forest department. Although, there is prohibition of cutting forest tree and timber still smugglers are cutting the trees illegally.

### **Sundarbans**

The area of Sundarban is decreasing gradually, in the last 150 years the area has been decreased about 50 percent. About 1.7 percent is being lost every year. As a result diversity and variety of tree plants are destroyed. 60 percent area of Sundarban is situated to the South-West region of Bangladesh and 38 percent is within the area of India. The total area of Sundarban is 6 thousand and 17 square km. Its area is 4.2% of total area of Bangladesh. Sundarban is the largest mangrove zone of the world and one of the three largest Mangrove of the world. On 6<sup>th</sup> December, 1997 UNESCO has announced that Sundarban is a world heritage. It is has been reported in the Alokito Bangladesh dated 24<sup>th</sup> May, 2014 that there occurred 16 times accident of fire in Sundarban in last ten years which destroyed many trees and plantation worth of few crore taka.

As per record of Valuka Upazila and local forest department the forest area of Valuka's was about 24,000 acres. After 1980 Government land has been decreased. The influential persons have occupied many government lands alongside Dhaka-Mymensingh road and established Mills and Industries. It is said that about 15,000 acres of land have been occupied by industrialist.

### **Forestry Impacts on Environment**

Forest protects land from natural disasters. Forests affect climate at the global as well as regional and local levels. Forest ecosystems are the sources of wood and timber, of edible products including mushrooms and other fungi, meat, forage for livestock, fruit and honey. Some forest species have medical values. Many environmental and ecological 'services' come from forests such as global climate change, flows of water in rivers or soil erosion are often related to the role of forest ecosystems.

It is believed that the presence of forests attract rain which is instrumental to increasing rainfall. In high temperature and tropical regions such as Southeast Asia, the main sources of water vapour in the surface of the oceans. It is assumed that Southeast Asia, receives much of its rainfall in the form of water that has evaporated from the subtropical Indian ocean.

Rain falling on forested land is intercepted by the foliage of the canopy. Some of the rainwater that penetrates to the land surface flow into rivers, lakes and oceans. Some water becomes part of underground reserve. Forest cover plays a role in regulating hydrology. The international panel on climate change (IPCC) considers that water cycling is one of the most important environmental services provided by forests.

Forests protect the ground from erosion by covering and stabilizing it, this prevents valuable soil being washed away, rendering whole tracts of land unfruitful. Forests that grow in mountain areas play an important role in maintaining the stability of mountain systems and supporting the people who live there. Mountain forests are vital as sources of water for irrigation and power generation.

### **Role of Bangladesh Forest Industry Development Corporation (BFIDC) in the Development of Rubber Plantation**

1. The Government of Pakistan by its Ordinance No. LXVII dated 3<sup>rd</sup> October 1959, established East Pakistan Forest Industries Development Corporation. After independence, the name of the

corporation was changed to Bangladesh Forest Industries Development Corporation (BFIDC), under Presidential Order No.48 of 1972.

2. First attempt to grow Rubber in Bangladesh was made in 1952 when forest department planted some thousands of seed & budded stamps in Chittagong imported from Malaysia & Srilanka.

In 1959 FAO expert investigated the possibilities of producing rubber in large scale & recommended to cultivate Rubber extensively.

In the year 1959 BFIDC (the EPDIC) was established by the government. In the Forest Department handed over Rubber Planting Activities to BFIDC.

**Combined profit of the corporation BIFDC (From 2001-2012) is given below:**

| Financial Year | Industrial Sector |         | Agriculture (Rubber) Sector |         | Grand Total (Year wise) |           |
|----------------|-------------------|---------|-----------------------------|---------|-------------------------|-----------|
|                | Profit            | Loss    | Profit                      | Loss    | Profit                  | Loss      |
| 2001-2002      | -                 | 589.00  | -                           | 1325.00 | -                       | (1914.00) |
| 2002-2003      | -                 | 554.00  | -                           | 377.00  | -                       | (931.00)  |
| 2003-2004      | 90.00             | -       | -                           | 14.00   | 75.00                   | -         |
| 2004-2005      | 528.00            | 1009.00 | 1009.00                     | -       | 1538.00                 | -         |
| 2005-2006      | 627.00            | 2936.00 | 2936.00                     | -       | 3562.00                 | -         |
| 2006-2007      | -                 | 2609.00 | 2609.00                     | -       | 2580.00                 | -         |
| 2007-2008      | 197.00            | 3061.00 | 3061.00                     | -       | 3260.00                 | -         |
| 2008-2009      | 465.00            | 922.00  | 922.00                      | -       | 1387.00                 | -         |
| 2009-2010      | 1366.00           | 4205.00 | 4205.00                     | -       | 5571.00                 | -         |
| 2010-2011      | 635.00            | 8089.00 | 8089.00                     | -       | 8724.00                 | -         |
| 2011-2012      | 717.00            | 5483.00 | 5483.00                     | -       | 6200.00                 | -         |

Source: BFIDC, Dhaka

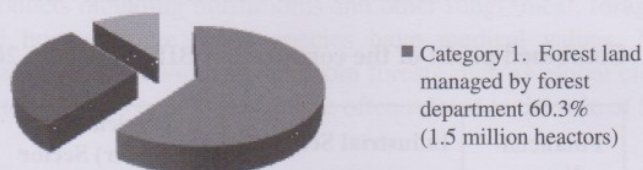
According to a social scientist's estimation, total forest land in Bangladesh is about 2.5 million hectares or 17% of the land surface of the country. The forest land of Bangladesh is broadly categorized as state forest land (2.2 million hectares) and private forest land (0.4 million hectares). Of the state owned forest land 1.3 million hectares of natural forest and plantations are under the jurisdiction of the forest department in Ministry of Forest and Environment (MOFE). We may explain it through the following table:

### Category of Forest Land

| Category of Forest                          | Area (Million hectares) | Percentage |
|---------------------------------------------|-------------------------|------------|
| 1. Forest land managed by Forest Department | 1.52                    | 60.3       |
| 2. Unclassed state forest                   | 0.73                    | 29.0       |
| 3. Village forest                           | 0.27                    | 10.7       |
| <b>Total</b>                                | <b>2.52</b>             | <b>100</b> |

Source: Forest Department and Ahmed Mahbubuddin, August, 2008.

Graph: Category of Forest Land



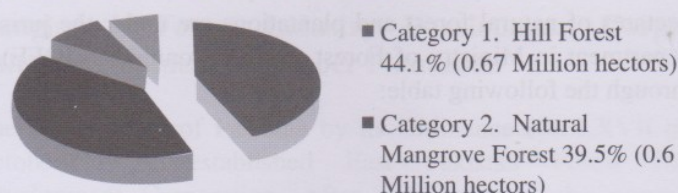
It may be mentioned the plain land “Sal” forest is situated generally in Gazipur, Tangail, Mymensingh, Sherpur, Jamalpur, Netrokona, Naogaon, Rangpur, Dinajpur, and panchagar. The total area of Sal forest is 1,20,000 hectares which is 0.81% of total area of Bangladesh and 7.89% is managed by Forest Department. We can explain it in the following table and graph.

### Forest Department

| Category of Forest         | Area (Million hectares) | Percentage |
|----------------------------|-------------------------|------------|
| 1. Hill Forest             | 0.67                    | 44.1       |
| 2. Natural mangrove forest | 0.60                    | 39.5       |
| 3. Mangrove plantation     | 0.13                    | 8.6        |
| 4. Plain land Sal forest   | 0.12                    | 7.9        |
| <b>Total</b>               | <b>1.52</b>             | <b>100</b> |

Source: Forest Department and Ahmed Mahbubuddin, August 2008.

Forest Area Management by Forest Department



Moreover, there are 4 types of ecological classification:

1. Tropical well-evergreen forest: It is found in hills and moist shady areas in Rangamati, Bandarban, Khagrachari, Chittagong, Cox's Bazar and Sylhet.
2. These forests are found in Cox's Bazar, Chittagong, Khagrachari, Bandarban and Sylhet in less dry and hotter localities.
3. Tropical moist deciduous forest: These are seen in Dhaka, Mymensingh, Tangail, Dinajpur, Rangpur, Naogaon and Comilla.
4. Mangrove forest (River-water side forest): The natural mangrove forest is the Sundarbans in Khulna, Bagerhat and Satkhira districts. In addition to natural mangroves in Sundarbans, there are a number of manmade mangrove forests along the coast of the Bay of Bengal.

### **Forest Act of Bangladesh**

During the Mughal period (1526-1857) forests were leased out by the local authority. The first Indian Forest Act was passed as law in 1865. A comprehensive Indian Forest Act was formulated in 1927. The Forest Act of 1927 as amended with its related rules and regulations is still the basic law governing forest in Bangladesh.

### **The Private Forest Act (PFA 1959)**

This law was promulgated during Pakistani Regime now known as the Bangladesh Private Forest Act (PFA). The Private Forest Act of 1959 allows the government to take over management of improperly managed private forest lands, any private lands that can be afforested and any land lying fallow for more than three years.

### **Present Forest Management**

Present forest management is primarily guided by Forestry Master Plan (FMP) completed in 1993 with assistance from ADB, UNDP and FAO. The objectives of present forest management are as follows:

1. Enhancing environment presentation and conservation.
2. Introducing rational forest land use.
3. Increasing public participation and benefits from the forest.
4. Creating forests on marginal and private lands.
5. Institutional strengthening.
6. Improving management practices.
7. Improving efficient resource utilization.

By achieving the above objectives through better forest management the bad effect of climate change may be mitigated.

### **Training and Education**

There is a wing named Education and Training wing in the Forest Department which is administered by an officer in the rank of Deputy Chief Conservator of Forest (DCCF). There are five institutions:

1. Forest Academy, Chittagong.
2. Forestry Science and Technology Institute (FSTI), Sylhet.
3. Forestry Science and Technology Institute (FSTI), Rajshahi.
4. Forestry Science and Technology Institute (FSTI), Chittagong.
5. Forest Development and Training Centre (FDTC), Kaptai, Chittagong.

### **Types of Forest and Afforestation:**

1. Natural Mangrove Forests: The largest single tract of natural mangrove forest is the Sundarban. It is 40% of total forest land.
2. Mangrove plantation: Mangrove afforestation along the entire southern coastal frontier is an innovation of foresters. During 1960-61 government undertook afforestation program along the offshore land of coastal districts. This initiative got momentum from 1980-81 with the aid of development partners and afforestation programs were extended over offshore islands, embankments and along the open coast. Since 1965-66 up to 2012-2013, 1,96,000 hectare of mangrove plantations have been raised under a number of coastal afforestation projects. The present net area of mangrove plantation is 132,000 hectare after losing some area due to natural calamities.
3. Tropical evergreen and semi-evergreen forests have been expanded in Chittagong and Cox's Bazar. Chittagong Hill tracts and Sylhet, total area is 6,70,000 hectare which is 44% of national forest land.
4. Tropical moist deciduous forests: The central and northern districts covering an area of 1, 20,000 hectare are bestowed with tropical moist deciduous forests.
5. Village Forests: Tree coverage in the village forests are 2,70,000 hectare which act as the source of national demand of forest products.

## **Protected Areas of Bangladesh**

Protected areas include wildlife sanctuary, National park and Game Reserve. Notified protected areas of the country are as follows:

- a. National parks
- b. Wildlife sanctuaries.
- c. Other conservation sites.

Management plans for the Protected Areas (PAs) in Bangladesh have been developed for the first time in 1997 (Rosario, 1997a, 1997b). Five National Parks, seven Wildlife Sanctuaries and one Game Reserve are within public forests in Bangladesh and the Bangladesh wildlife preservation (Amendment) Act of 1974 provides legal protection to these areas.

### **A. National Parks**

| SL.              | National Parks               | Location               | Area (ha.)       | Established |
|------------------|------------------------------|------------------------|------------------|-------------|
| 1                | Bhawal National Park         | Gazipur                | 5022.00          | 11-5-1982   |
| 2                | Madhupur National Park       | Tangail/ Mymensingh    | 8436.00          | 24-2-1982   |
| 3                | Ramsagar National Park       | Dinajpur               | 27.75            | 30-4-2001   |
| 4                | Himchari National Park       | Coxs Bazar             | 1729.00          | 15-2-1980   |
| 5                | Lawachara National Park      | Moulavibaar            | 1250.00          | 7-7-1986    |
| 6                | Kaptai National Park         | Chittagong Hill Tracts | 5464.00          | 9-9-1999    |
| 7                | Nijhum National Park         | Noakhali               | 16352.23         | 8-4-2001    |
| 8                | Medhakachhapia National Park | Coxs bazaar            | 395.92           | 8-8-2008    |
| 9                | National Park                | Habigonj               | 242.91           | 15-10-2005  |
| 10               | Khadimnagar National Park    | Sylhet                 | 678.80           | 13-4-2006   |
| 11               | Baroiyadhala National Park   | Chittagong             | 2933.61          | 6-4-2010    |
| 12               | Kuakata National Park        | Patuakhali             | 1613.00          | 24-10-2010  |
| 13               | Nababgonj national park      | Dinajpur               | 517.61           | 24-10-2010  |
| 14               | Singra National Park         | Dinajpur               | 305.69           | 24-10-2010  |
| 15               | Kadigrah national Park       | Mymensingh             | 344.13           | 24-10-2010  |
| 16               | Altadighi National Park      | Naogaon                | 264.12           | 24-12-2011  |
| 17               | Birgonj national Park        | Dinajpur               | 168.56           | 24-12-2011  |
| <b>Sub-Total</b> |                              |                        | <b>45,745.33</b> |             |

**B. Wildlife Sanctuaries**

| SL                 | Wildlife Sanctuaries                      | Location    | Area (ha.)         | Established |
|--------------------|-------------------------------------------|-------------|--------------------|-------------|
| 1.                 | Rema –kalenga Wildlife Sanctuary          | Hobigonj    | 1795.54            | 7/7/1996    |
| 2.                 | Char Kukri-Mukri Wildlife Sanctuary       | Bhola       | 40.00              | 19/12/1981  |
| 3.                 | Sundarban (East) Wildlife Sanctuary       | Bagerhat    | 31226.94           | 6/4/1996    |
| 4.                 | Sundarban (West) Wildlife Sanctuary       | Satkhira    | 71502.10           | 6/4/1996    |
| 5.                 | Sundarban (South) Wildlife Sanctuary      | Khulna      | 36970.45           | 6/4/1996    |
| 6.                 | Pablakhali Wildlife Sanctuary             | Chittagong  | 42087.00           | 20/9/1983   |
| 7.                 | Chunati Wildlife Sanctuary                | Chittagong  | 7763.97            | 18/3/1986   |
| 8.                 | Fashiakhali Wildlife Sanctuary            | Cox's Bazar | 1302.43            | 11/4/2007   |
| 9.                 | Dudhpukuria-Dhopachari Wildlife Sanctuary | Chittagong  | 4716.57            | 6/4/2010    |
| 10.                | Hajarikhil Wildlife Sanctuary             | Chittagong  | 1177.53            | 6/4/2010    |
| 11.                | Sangu Wildlife Sanctuary                  | Bandarban   | 2331.98            | 6/4/2010    |
| 12.                | Teknaf Wildlife Sanctuary                 | Cox's Bazar | 11615.00           | 24/3/2010   |
| 13.                | Tengragiri Wildlife Sanctuary             | Barguna     | 4058.58            | 24/10/2010  |
| 14.                | Dudhmukhi Wildlife Sanctuary              | Bagerhat    | 170.00             | 29/1/2012   |
| 15.                | Chadpai Wildlife Sanctuary                | Bagerhat    | 560.00             | 29/1/2012   |
| 16.                | Dhangman Wildlife Sanctuary               | Bagerhat    | 340.00             | 29/1/2012   |
| 17.                | Sonarchar Wildlife Sanctuary              | Patuakhali  | 2026.48            | 24/12/2012  |
| <b>Sub-Total</b>   |                                           |             | <b>2,24,833.5</b>  |             |
| <b>Grand-Total</b> |                                           |             | <b>2,70,478.88</b> |             |

**C. Other Conservations Sites**

| Sl. | Name                                    | Location     | Area (ha) | Established |
|-----|-----------------------------------------|--------------|-----------|-------------|
| 1.  | National Botanical Garden               | Dhaka        | 84.21     | 1961        |
| 2.  | Baldha Garden                           | Dhaka        | 1.37      | 1909        |
| 3.  | Madhabkunda Eco-Park                    | Moulavibazar | 265.68    | 2001        |
| 4.  | Sitakunda Botanical Garden and Eco-park | Chittagong   | 808       | 1998        |
| 5.  | Dulahazara Safari Park                  | Cox's Baza   | 600       | 1999        |

Source: Bangladesh Forest Department

**Administrative Units of Forest Department and Manpower**

Bangladesh forest department are functioning as per government policy and instruction. A brief of administrative units of the Forest Department under revenue budget is as follows:

| SL. | Name of units/offices                                                            | No. of units/offices |
|-----|----------------------------------------------------------------------------------|----------------------|
| 1.  | Offices of the Chief Conservator of Forests                                      | 1                    |
| 2.  | Offices of the Deputy Chief Conservator of Forests                               | 4                    |
| 3.  | Offices of the Conservator of Forests/ Circle Office                             | 9                    |
| 4.  | Office of the Divisional Forest Officer/ Forest Division                         | 41                   |
| 5.  | Management Plant Division                                                        | 3                    |
| 6.  | Botanical Garden (Dhaka and Chittagong)                                          | 2                    |
| 7.  | Forestry Development Training Centre, Kaptai                                     | 1                    |
| 8.  | Forest Academy, Chittagong                                                       | 1                    |
| 9.  | Forestry Science & Technology Institute (FSTI) (Sylhet, Rajshahi and Chittagong) | 3                    |
| 10. | RIMS-GIS unit                                                                    | 1                    |
| 11. | Social Forestry Zone                                                             | 41                   |
| 12. | Protected Areas                                                                  | 34                   |
| 13. | Range                                                                            | 255                  |
| 14. | Beat                                                                             | 672                  |
| 15. | Check Station                                                                    | 57                   |
| 16. | Social Forestry Nursery Training Centre                                          | 98                   |
| 17. | Social Forestry Plantation Centre                                                | 341                  |

#### **Manpower Summary**

| SL.                | Name of Position                       | No. of Manpower |
|--------------------|----------------------------------------|-----------------|
| 1                  | Chief Conservator of Forests           | 1               |
| 2                  | Deputy Chief Conservator of Forests    | 4               |
| 3                  | Conservator of Forests                 | 11              |
| 4                  | Assistant Chief Conservator of Forests | 5               |
| 5                  | Deputy Conservator of Forests          | 63              |
| 6                  | Sub-Divisional Forest Officers         | 7               |
| 7                  | Assistant Conservator of Forests       | 130             |
| <b>Total</b>       |                                        | <b>221</b>      |
| 8                  | Other Officers                         | 38              |
| 9                  | Other Officers and Staffs              | 8422            |
| <b>Grand Total</b> |                                        | <b>8681</b>     |

#### **Findings**

Causes of deforestation and forest degradation in Bangladesh are as follows:

### Poor Forest Management

Main cause of making empty of hill forest is due to shifting cultivation and over-exploitation. The principal reason of depletion of mangrove forest are due to the corruption, negligence of some staffs, illegal businessman, local influential leaders, some government officials, policeman, field level local journalist etc. Some poor people are destroying the forest for earning money illegally. Improper and poor management is also responsible for deforestation and degradation. The ethics, morality and patriotism are deteriorating and growing in worse position. It has been observed that number of security staff so small that it is not possible for them to protect the government and natural forest from the smugglers and black marketers. Moreover, corruption is rampant in different forms.

Government programs and development strategy which are also sponsored by donor agencies are sometimes helping in deforestation and degradation i.e. Rubber plantation program. It is a commercial plantation. It is done by clearing natural forest even the stumps are uprooted and are sent to brickfields. Encroachment is another cause of deforestation in Bangladesh. Iftekher and Haque (2003) said that encroachment is an important cause of deforestation and forest degradation in Bangladesh.

The construction of the Farakka barrage over the upstream of the Ganges by India in West Bengal reduced the water flow at the time of dry season which has been changing the ecosystem.

Some people are destroying natural forest like fuel wood, timbers, bamboo etc. They also cultivating varieties of fruits like - banana, pineapple etc.

Heavy rainfall during rainy season is a cause of severe erosion of soil and siltation in the Kaptai Lake. Establishment of brickfields and stone extraction are responsible for the forest degradation in Sal forest areas.

### Causes of Deforestation in Sal, Hill and Mangrove Forest may be shown through following

| Sal Forest                     | Hill Forest                                  | Mangrove Forest                              |
|--------------------------------|----------------------------------------------|----------------------------------------------|
| a) Over population             | a) Development, Intervention                 | a) Forest mismanagement                      |
| b) Forest Management           | b) Unplanned Industrialization               | b) Over population, poverty and unemployment |
| c) Consumerism                 | c) Irrational profit making                  | c) Developmental, Intervention               |
| d) Irrational profit making    | d) Forest mismanagement                      |                                              |
| e) Unplanned Industrialization | e) Over population, poverty and unemployment |                                              |
| f) Militarization              | f) Consumerism                               |                                              |
|                                | g) Militarization                            |                                              |
|                                | h) Inappropriate jhumming                    |                                              |

**Causes of Forest Degradation in Sal, Hill and Mangrove Forest are as follows**

❖ **Physical and environmental causes**

| Sal Forest                                                                                      | Hill Forest                            | Mangrove Forest                                                                                                                                             |
|-------------------------------------------------------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Heavy rainfall and hail storms<br>2. Soil erosion<br>3. Natural calamity<br>4. Wild elephant | 1. Natural calamity<br>2. Soil erosion | 1. Soil erosion<br>2. Accretion<br>3. Increased salinity<br>4. Sedimentation<br>5. Oil spill<br>6. Problems in ecological succession<br>7. Natural calamity |

❖ **Socio-Economic causes**

| Sal Forest                                                       | Hill Forest                               | Mangrove Forest                                                                        |
|------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------|
| 1. Stone extraction<br>2. Brick field<br>3. Profit making motive | 1. Profit making motive<br>2. Brick field | 1. Api-culture<br>2. Golpata<br>3. Shrimp by catching<br>4. Deer and crocodile hunting |

**Recommendations**

From the above discussion it is understood that there are many causes of deforestation and forest degradation. In fact due to increase of population poverty, unemployment, deterioration of morality and ethics, access of modern, industrial civilization, admixture of different culture and high living standard have emerged. We have also observed the adverse impacts of deforestation and forest degradation in the society as well as on environment. We are proposing the following recommendations:

1. The administration and management of Forest Department should be revised, reorganized and modernized. Local educational institution may be attached for discussion and consultation. The number of employees for security purpose should be increased and their moral values should be enhanced.
2. Research and training programs may be increased and awareness may be built up among people about the evil effect of deforestation.
3. Gas and coal must be used in the brick fields instead of forest trees and woods.

4. The forest area may not be used for Army cantonment purpose by destructing the forest resources, construction of roads and highway for military purposes should be avoided.
5. For the establishment of mill, industry and commercial activities, the forest area should not be used.
6. Strict law and measures should be taken for violation of government forest law. Smugglers, black marketers and dishonest persons should be punished.
7. Vacant and unutilized hilly land may be leased for a define period among poor and landless persons with the condition of plantation of forest resources like: varieties of trees or timber, jack tree, mangoes and olive tree, bamboo and rubber plant. In addition, establishment of dairy and poultry firms may be established. Government may give financial and advisory services. Before taking any program in vacant place of hilly area, soil test, climate, weather and environmental analysis must be made carefully.

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