INTRODUCTION

PRELUDE

The sub-Himalayan districts of Darjeeling and Jalpaiguri are associated with three 'T' s namely Tea, Tourism and Timber. As development progressed, priority was given to Tea. Beside Tea, Tourism and Timber also developed with the exploitation of forest. The most remarkable feature of forest of this region is the wonderful variety of species that it contains. Few places in India command range of variation of forest types as found in such a small area of Darjeeling and Jalpaiguri district. It is perhaps, in fitness of thing that forest conservancy was initiated in these districts first among other districts of West Bengal, more than hundred years ago.

Forest conservancy was started in the study area in 1878. We have celebrated hundred years of forestry in this region. But it may be interesting to know the development of forests, the factors that impeded the programmes and prospects of future development of the vast resource of the region. An attempt has been made by the investigator to present the various problems which are related with the forest resource utilization and to explore the remedial and preventive measures that we may have at hand for such valuable natural resource.

THE PROBLEM

The Darjeeling and Jalpaiguri district is a region of wide variety of forest resource. Of late, this respository of natural wealth has been subjected to virtual plunder. During the last 150 years about 70% of the total forest area had been cleared by so called developmental processes. In consequence, the local ecosystem are fast loosing their resilience and regenerative capacity. Since the nineteenth century, the fact which become evident that forests can not necessarily re-generate naturally. The forest is not capable of regenerating itself if greater number of trees are cut for use. Moreover, selective cutting of economically important species may cause significant degradation of the forest lands of the study area.

Extensive heedless deforestation invites catastrophic soil erosion and innumerable land-

slides in the hilly parts and devastating floods in the foot hills and plains during the monsoon months. During the last 100 years, over 1000 slides were registered covering an area of over 1000 hectares. More than 1000 lives were lost in addition to the loss of property and environment. The situation has deteriorated further in recent years, the last two decades having witnessed the worst landslides on hill slopes and heaviest floods in the plains. The picture is just opposite during the non-monsoon months when paucity of water hinders the local people from reaping out any benefits out of the soils. The depletion of the broad - leafed trees such as the Oak in the Darjeeling Himalaya, which conserve rain water and then release it gradually throughout the year in the form of springs have considerably reduced these natural sources of water which have met the villagers' need for hundred of years. In several villages of the hill, during the dry seasons the women can not sleep restfully due to their anxiety to reach the springs early enough to collect the few drops that trickly in. Man and trees are symbiotically related to each other. So the non - existence of one would certainly vanish the other.

The removal of forest has economic implication also. Existence of agricultural civilization of the sub-Himalayan North Bengal is intimately connected with the forests. Thus, the removal of forest also threatens the existence of agricultural activities. A recent study reveals that in between 1993 to 1999, 850 hectares of good forest land was destroyed either by bank failure or by shifting river courses. Over two million trees were destroyed the market price for which are approximately 15,000 million rupees. In addition to this, dolomite mining activities is also found to be responsible for the destruction of under-growth rich bio - diversity of this area. This also exerts detrimental effects on the wild life of the region.

The forest based industries which play a prominent role in the economic development of the study area are also showing a sign of stagnation. These industries consume enormous quantities of forest produce and also provide employment opportunity to the local people. They are also facing an acute crisis from the deficiencies of raw materials. Moreover, un-scientific and unplanned exploitation of forest resource have led to the establishment of a vicious cycle of degradation, endangering the ecological balance and consequently hinders the economic development of the study area.

Future of forestry activities would be uncertain unless forest management are suitably redefined and made an integral part of the rural development. Attempt need to be made to manage the forest as renewable resource to cater the basic human needs and to ensure employment and income in the rural areas. It will also protect the already endangered environment from further degradation.

THE STUDY AREA

The study area comprises districts of Darjeeling and Jalpaiguri, West Bengal, bounded by the latitudes of 26 ° 16 ′ to 27 ° 13 ′ North and the longitudes of 87 ° 59 ′ to 89° 53 ′ East. The area is located in between three countries namely Bangladesh, Bhutan and Nepal. The area border to the east with Assam. The region covers an area of 9376 sq. km. which is 10.56% of the total geographical area of the state and inhabited by 50,09,104 persons (Census, 2001). Geologically, the study area is composed of several types of rock formation of different characteristics. Topographically, the study area comprises of three distinctive segments - (i) the hilly tract, (ii) the piedmont and (iii) the plain. The area is drained by a number of rivers, important are being the Tista, Mahananda, Jaldhaka, Torsa, Raydak and the Sankosh which are also subjected to occasional flooding (Figure1)

METHODOLOGY

The present study has based on both primary data which have been collected from sample plots and through questionnaire as well as from multifarious secondary sources. The details of methodological frame work are given below :-

a. Reconnaissance Survey

The basic areal data has been obtained from Survey of India Topographical sheets (1 : 50,000 & 1 : 63,360). Maps published by the Geological Survey of India, Forest Survey of India, Forest Department and D.L. & L.R.O have also been utilised for collecting other information of the area. These have been used for preparing a programme of survey, layout of cross sections and test pits.

b. Collection of basic data

Basic data on (a) geology, (b) topography, (c) climate, (d) vegetation, (e) landuse pattern, and (f) demographic pattern have been collected from secondary sources like

(i) topographical sheets and records of the Geological Survey of India, records of the Forest Survey of India and Directorate of Forests, (ii) Meteorological data i.e. rainfall, temperature, humidity from the Regional Meteorological Office and from various Tea gardens (iii) Census reports, District Statistical reports, (iv) Working plans and annual reports of Forest Directorate (v) Reports and publications of past work.

c. Methodology for collection of forest based information

The methodology for collection of forest based information is given below:-

- Collection of secondary data from several sources in the study area like District Forest Department, Institutional Libraries, Revenue and other authorities.

- Data for the study have also been collected from Kolkata to assess the market potential of timber mainly from the area.

- Collection of data from the sources like forest based industries, forest contractors, local market and the West Bengal Forest Develompent Corporation.

- Five types of questionnaires have been canvassed among the respondent includes Wood based industry, Market Centre, Wood depot, Forest area under social forestry and JFM; and Agro-forestry farms.

- Meetings and discussion with the concerned forest official and other authorities in the districts.

- Meeting with inhabitants of the forest area, forest dwellers, local villagers in the vicinity of forests including those involved with JFM activities and those without JFM activities. This has done to incorporate their views and suggestions in formulation of the strategy for protection of forests within the broad principles of Joint Forest Management and the people's participation.

d. Sample Design

Random sample has taken to give sufficiently reliable picture of the resource under consideration during the present study. The details of the random sample survey conducted by the investigator during 1999-2001 is given below :

- 3 FPCs and their JFM areas in each of the concerned districts;
- 5 villages under each FPC;
- 5 beneficiaries in each villages under FPC;
- 3 market centre in each of the selected districts to cover at least 5 respondents in each centre;
- 15 wood based industry units, which use raw material of such referred species;
- 3 wood depots which are owned by the West Bengal Forest Development Corporation and 3 private wood depots;
- 2 agro-forestry farm (seleceted during the field investigation based on ground realities);
- 10 saw mills, which are owned by the private management in each of the sample district and 3 Government undertaking saw mills at Madarihat (Jalpaiguri District), Siliguri (Darjeeling District) and Bhuttabari (Darjeeling District);
- 25 furniture/ toys /other wood products units (in each district) selected .

The various aspects of social forestry in the study area have been followed with the selection of random samples for collecting of growth statistics, survival percentage of different species in different areas. Data have also been obtained from the record of Zilla Parisad,

Panchayat Samities, N.G,Os and other private organisation in respect of seedling distributed and planted by them.

The data and information thus collected are processed and analysed to understand the problems and prospects of forest resource in Darjeeling and Jalpaiguri district. A few case studies have also been conducted to provide sustainable strategies for the future utilisation of forest resource. Time series analysis is used in the computation of estimated annual potential of forest in respect to production of timber, non-timber and employment generation. The analytical results are also been represented through tables, charts and diagrams.