

# CHAPTER - I

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## Introduction

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### 1.1 Problems

The socio-economic life of the forest villagers is nearly intermixed and interrelated with the forests that by now forests and villagers have become unseparated word. The forest being a permanent home for the villagers, they think it as their ancestral home and in that way there is an emotional attachment of forest villagers with forests. The forests form an integral part of the physical, economic, social and spiritual lives of forest villagers. The forest resources add to villagers' livelihood security, especially for forest villagers and those living people on the fringe area. The forest constitutes a natural asset of immense value which contributing directly and indirectly to the well-being of forest villagers as well as for inhabitants of surrounding area. Directly the forest, as a renewable productive resource, provides fuel wood and woods for house construction, a variety of minor forest product such as dry branches, bamboo, cane, katha, khair-gilta, resin, grasses, gums, wax, leaves and medicinal herbs. Indirectly, the forest performs protective functions and accounts for a large number of environmental and ecological advantages like preserving the air quality clean, moderating climates, checking soil erosion and landslides, mitigating floods, working as reserves for wildlife etc. Like millions of people in the world living in forest environment for livelihood, India, too, has a huge population living near to the forest with their livelihood linked to the forests. There are around 1.73 lakh villages residing in and around forests (Ministry of Environment and Forests, 2006). Although there is no official census figures for the forest dependent population in the country, different estimates put the figures from 275 million (Bhattacharya, et al., 2008) to 350-400 million population (Ministry of Environment and Forests, 2009) live in forests. Moreover, a significant percentage of the country's underprivileged villagers happen to be living in its forested area (Mahapatra, 1992). It has been estimated that more than 40 % among the poor of the country are living in forest (Ministry of Environment and Forests, 2006). The forest villagers do not only collect forest resources (minor forest product) for their own consumption but also for commercial purpose, which bring them some income opportunity (Kolay, 2000). The income from sale of the forest resources for households living in and around forest constitutes 40 to 60 % of their total income (Malhotra, et al., 1991). About 80 % of their food comes either directly from the forest or

through shifting cultivation (Philip, et al., 1985). A variety of mushroom, tubers, tender bamboo shoots and green leafy vegetables are collected and eaten or stored for future use. The study of Niyamatullah (1984) identified 83 edible items that are available in the forest of Madhya Pradesh alone. Studies in Orissa, Madhya Pradesh, Himachal Pradesh and Bihar indicate that over 80 % of the forest villagers depend on the forest for 25% to 50 % of their food. Besides these, forest also supplies to the villagers with their requirements for building material, fuel and fodder. In addition, villagers also collect minor forest produce like leaves honey, gum, flowers and sell these to earn an income. Villagers also derive their medicines from the herbs, trees, animals and birds. The study on forest tribal medicine in Kerala identified at least 30 varieties of leaves, 39 species of roots, 12 species of barks, 15 types of fruits, and many kinds of flowers and latex and nine entire plants that are consumed by the forest villagers (Gadgil et al., 1982). The same is noticed in other parts of the country. For instance, more than 900 plants and herbs are used for medical purposes by the forest villagers in West Bengal (Fernandes, et al, 1988). A study on the extent of use of Non-Timber Forest Products (NTFPs) in north east India suggests that the tribal villagers use 343 NTFPs for diverse purposes like edible fruits (75 species), medicinal (163 species) and vegetables (65 species) and others. Besides, the dependency for house construction, firewood and other materials is hundred and more in number; and NTFPs contribute 19% -32 % of total household income for the forest villagers under study in the Buxa Tiger Reserve (Das, 2005). Considering the socio-cultural importance of NTFPs in forest livelihoods, Wickens (1991) believes that NTFPs are:

All the biological components that may be collected from forest ecosystems, managed plantations etc. and be utilized within the household have social, cultural or religious significance, be marketed. Thus, non-timber forest products include plants used for fodder, medicine, food, fibres, fuel, bio-chemical, etc.

So it is clear that forest have been strongly linked with the development of man and his society. From the emergence of the primitive man on this earth in the Eolithic age (a million years ago) to the modern times, man has been heavily dependent on forest.

In Alipurduar district, the study area of the present work, forests are not only a source of income for more than twenty thousand households but it also provides employment opportunities for the forest villagers. This makes forest an important contributor to the forest villagers' economy. The villagers living in forest of this district depend upon forests for variety of goods and services. These includes collection of edible fruits, flowers, tubers, roots and leaves for food

and medicines; firewood for both cooking and selling in the market; wood materials for agricultural implements, house construction and fencing; fodder i.e. grass and leaves for livestock and grazing of livestock in forest; and collection of a large amount of marketable non-timber forest products. These activities of villagers are continuous from their ancestral period till now. But their extensive dependence pattern of villagers on forests, over exploitation of forest resources and unsustainable harvest practice, increasing population and changing standards of living have brought increasing pressure on forests. Therefore whatever resources were considered free gift of nature of unlimited quantity is now presently considered shrinkage and limited resources because of excessive exploitation that is greater than regeneration and growth, a trend which potentially degrades the forests of the district and due to which forest villagers face a serious shortage of livelihood needs or resources such as fruits, flowers, tubers, roots and leaves for food and medicines; fuel wood for both cooking, wood materials for agricultural, house construction and fencing; grass, leaves for livestock and grazing of livestock field; and non-timber forest products. The increasing awareness about the limited supply of forest raw-material, their renewable nature resources being constrained because of more exploitation than regeneration, has brought into focus the need for forest development strategies with reference to environmental degradation.

Earlier, the forest village economy was self-supporting subsistence economy and villagers could satisfy their meagre wants by hunting, food-gathering, minor forest produce and primitive cultivation. But now, due to laws enforced by the Forest Department, the rights of villagers on forests and forest resource are reduced day by day along with their chances of making a livelihood from their natural habitat. Now forest villagers in the plains and low altitude areas depend only on traditional agriculture, mainly food crops with livestock grazing which found in Gadadhar, Garobasti, Balapara, Suni and other villages. But in high altitude areas, villagers practised horticulture farming throughout the year. It has to be mentioned that the Forest Department gave each family 2 to 3 acre of land as agreement holder for cultivation in 1998 but now due to extension and separation of family members less quantity of land comes to them without any agreement. Moreover, forest villagers have little opportunity to work in the tea gardens that are close to the tea gardens. Therefore the villagers are forced to work as wage earners outside the forest to earn their livelihood needs. As a result, few of them have reverted to shifting cultivation while some have left the forest habitat and have shifted to urban areas for searching of jobs and became slum-inhabitants facing all the miseries and trouble of the urban

poor. However most of the landless and jobless young generation are going to nearby states and countries for employment and better opportunities resulting in inter-state and international migration among the villagers. Such inhabitants are from Pana, Bhutri, Gangutia, Garopara, Poro basti (North), Bhutiabasti, Adma, Chunabati, Lepchakhawa and Tashi, where villagers are going to Bhutan, Assam and other states for employment (Das, 2000). The agriculture is the primary source of livelihood for most of the forest villagers in this District. But villagers still practised primitive agriculture using traditional modes of cultivation. Lacking knowledge of modern agricultural practices and the money to buy the necessary equipment, the villagers rarely use modern techniques of cultivation and therefore their agricultural outputs are not at the satisfactory level. On the other hand, they do not get agriculture loan from the government or other non-government organisations as they do not have proper documents of land-ownership and other properties. Lack of irrigation is another common problem and it is severe in high altitude horticulture practice areas that are apparent in Adma, Gangutia, Chunabati, Raimatang and other such villages. Apart from this a vast acreage of land is infertile and waste, rocky, barren and unirrigated and therefore the forest villagers are not interested to cultivate their land attentively.

The average cultivable land-holdings among the forest villagers have decreased because forest villages occupied vested land without any proper document or patta. Most of the inhabitants do not enjoy tenancy or legal rights on the residential land or on the agricultural land, which they or their ancestors cleared once. As a result, they always live with the fear of eradication by the Forest Department. In some cases the Forest Department possessed some of their land for departmental purpose and made them landless or labourers on their own lands. Although the State Government provided a few of them with 'patta' of land in Gudamdabri and Poro (North) forest villages in 2015 but still most of the villagers have not been provided with 'land patta' or other related papers for further benefit. Therefore they are unable to get financial assistance from Government schemes, NGOs or institutional sources as they have no recognized right or proper documents on land and other properties. Being the inhabitants of remote forests area untouched by revenue department, they hardly come under the purview of the development administration of the Block and whatever development schemes have been implemented; the benefits either do not reach the forest villages in remote areas or do not reach in time. For that reason, despite development schemes launched by the state or central governments, the forest villagers face a large number of socio-economic problems such as economic exploitation, social

and cultural exploitation, unemployment, land alienation and lack of education. Since most of the villages are located in the interior of forests, on hilly areas or at high altitudes-e.g. Jayanti (inside the forest), Bhutri forest basti and Raimatang basti (inside the forest and in hilly area), Adma and Chunabati (forest and at high altitude) villagers are exploited by outsiders, money-lenders and vendors who buy at cheap prices of agricultural and other commodities that they produce from the land or collect from the forests. Due to undulating land, dense forest cover, huge number of small and big rivers and springs across un-metalled road, the transport network is poor in situation. Only one or two mini buses/ jeep/ auto ply between nearby markets and the forest villages; in some cases there is no bus, auto or jeep plying directly from market to village, that is noticed in Jayanti, Bhutri forest basti, Raimatangbasti, Adma, Chunabati. As a result villagers are isolated from the mainstream of life; therefore brokers, vendors from Kalchini, Hamitlonganj, Alipurduar and other parts travelling to the forest villages to sell daily products at highest prices and purchase at cheaper rates whatever the villagers produce. These include food grains e.g. corn, spices e.g. ginger, pepper, chilly, and vegetables such as brinjal, squash, cucumber, kochu (an esculent edible root), beans and non-timber forest product such as fuel wood, grass, bamboo, wax, gums, tree leaves, medicinal plants, etc. The only other alternative for the forest villagers is the weekly market. In some places there is no local market. In that way day by day the villagers are economically exploited by outsiders. Besides due to lack of money in their hand, most of the villagers borrow from private money-lenders for cultivation and livestock rearing. The money-lenders charge high rates of interest by which they are indebted. If they cannot repay their debt, they are forced to repay with their cultivable products or forest collections, and as a result they are pulled further below the poverty line. Even in some cases they have to work as bonded labourers outside the village. Tribal women/ girls of forest villages are victims of social and cultural exploitation and gender harassments. Tribal culture is misconceived. Their traditional dress and free behaviour are wrongly understood. Outsiders such as contractors, truck drivers, tourists, social workers, etc. belittle their culture and consider it cheap and vulnerable. Girls are lured or enticed and fall victim to allurements.

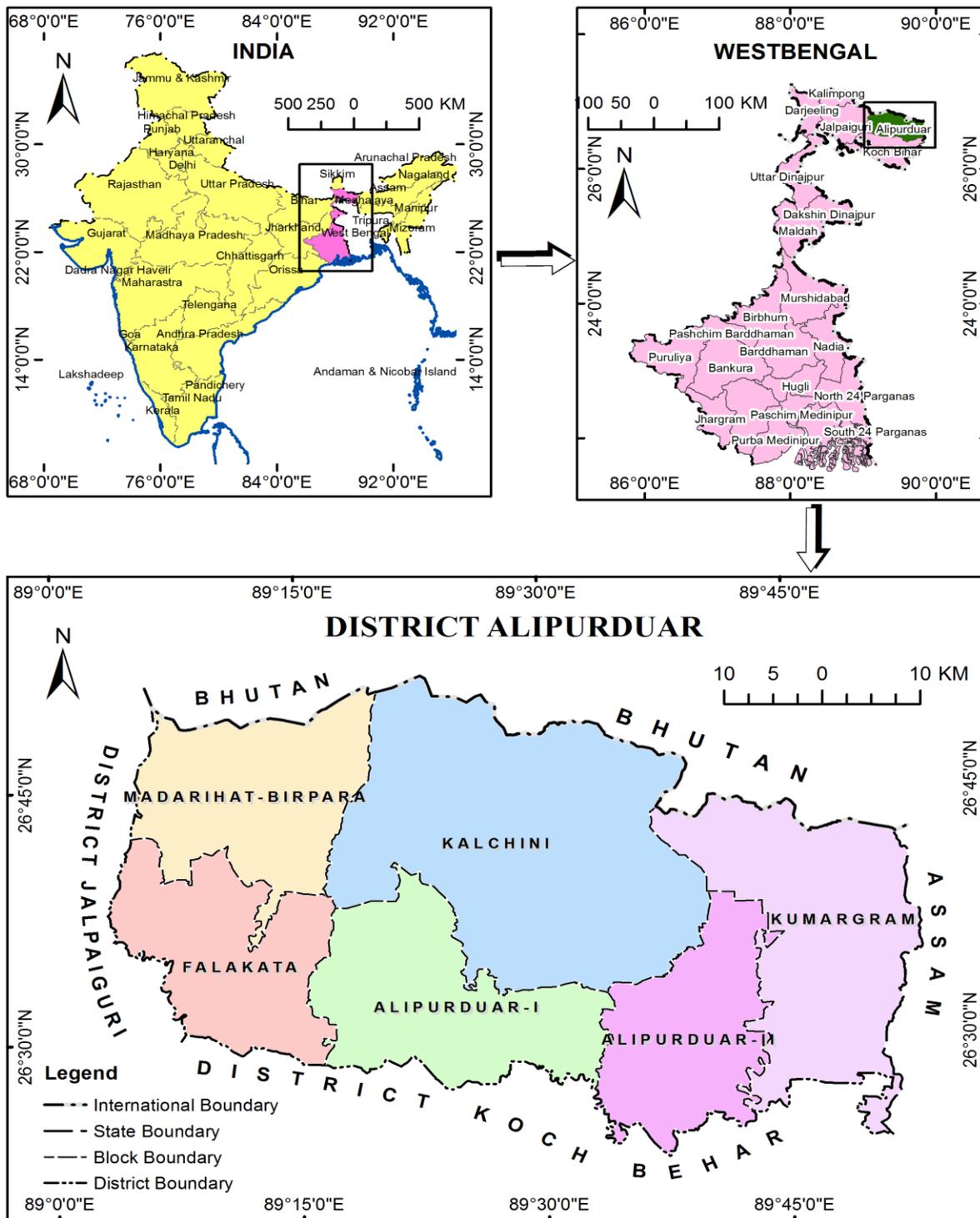
Conflict of villagers over forest rights, forest products (timber and non-timber forest products) and with animals (man-elephant conflict, man-leopard conflict, and man-bison conflict) are common and it occurs at regular intervals. As a result villagers often lose their cultivated food crops and vegetables and in some cases elephants and bison damage their standing crops. Moreover, elephants have been known to injure or even kill villagers as well as

damaging their houses. Besides cattle-predation by leopards is also happens frequently. On the other hand, forest villagers' accelerate increasing demands of land and forests resources has affected this ecosystem to a great extent and made overall environment vulnerable as well as unsustainable. High rate of illiteracy among both male and female inhabitants is a prominent picture among the villagers. Hence illiteracy and ignorance are the main hurdles for village development. The illiterate villagers often look at their children as assets to their family and they are made to support their parents' income by working as labourers collecting forest resources or working in the agriculture sector as labour. Therefore, traditionally they are not being educated or their education is confined to the primary level; even the children themselves are not interested to go to school. More or less each forest village has a free primary school but there is no secondary or higher secondary school for upper primary and high school education in the surrounding areas. Flash floods occur during every monsoon period due to sudden excess rainfall in the Bhutan hills, damaging the forest villagers' houses and properties which are located near river banks. In that period some villages are totally isolated and disconnected due to sudden overflowing of the rivers as there are no bridges across the rivers. For example, Gangutia forest village is disconnecting by Raimatang non-perennial river and Bhutri forest basti by Panna Non-perennial River. Villagers do not get medical facilities because there are no sub-centers or primary health centres within village territory. As a result, the villagers have moved towards Alipurduar, Kochbehar, or even Siliguri for treatment. Mal nutrition among the villagers presents a severe problem and in some places villagers have died due to lack of sufficient food which is an unfortunate incident to modern society. Moreover lack of proper drinking water, only one source of fuel wood (non-timber forest wood), inappropriate livestock grazing and shortage of livestock grazing fields are also prominent challenges among the villagers. All the above problems are simultaneously pulling the forest villagers in this district back and their daily lives are directly and indirectly affected by these social and economic problems. As a result, the forest villagers are still remaining backward in all sense.

## **1.2 Study area**

Alipurduar District is the new district of North Bengal, covering an area of 2526.30 sq. km. (Statistical Hand Book of Jalpaiguri District, 2011). It is situated between 26°23'11" and 26°52'30" north latitudes and 89°02'30" and 89°53'07" east longitudes. The District was established in 25<sup>th</sup> June of 2014. The headquarter of the District is at Alipurduar town, and has its

special importance in respect of tourism, forests, hill, tea gardens, scenic beauty and a wide variety of tribes like the Totos, Dukpa, Mech, Rava, Santal etc. (Grunning, 1911).



**Figure 1.1** Site map of the study area, District Alipurduar.

The area is bounded by Assam in the east and Jalpaiguri district in the west and the Bhutan in the north, Kochbehar district in the south. Topographically, the whole area is crisscrossed with springs, rivers and hills; northern part of the district is adjacent to the Bhutan hill relatively with high altitude. Comparatively low lying plain cultivated lands are extended in the southern part of the district. The area is drained by number of rivers; important are being the Torsa, Kaljani, Raidak, Sonkosh, Mujnai, Gaburbasra, Dima, Pana, Bala and Jainti which are also subjected to occasional flooding (Grunning, 1911). This piece of land has been properly named as the land of 'Tea, Timber and Tourism'. A major extension of area is bordered in the north by the Bhutan country and hence the name 'Duars' which mean 'Door of Bhutan'. Climatically, the area experiences the south-west monsoon and south-east monsoon. So heavy rainfall comes in between June to September and average rainfall varies from 2800 to 3300 mm and the average temperature ranges from 31.9°C to 11.8°C throughout the year (Statistical Hand book of Jalpaiguri District, 2018). The soil status of the district is sandy to sandy loam having low water holding capacity. The main kharif crops are Aus and Amon. Besides, some vegetables, namely brinjal tomato, cauliflower, cabbage, beans, cucumber, pumpkin, chilli etc. have gained as exporting quality. The only important tree of this area is sal. Other valuable trees which are fairly numerous are teak, sissoo, chair, kamjal and simul (Grunning, 1911). The forest may be divided into different types; these are (i) Deciduous forests (sal, sissoo, schimawallichii), (ii) Mixed forests of which sal is found scattered here and there, (iii) Evergreen forests species are numerous including Luqinia, Glaeocarpus, Echinocarpus, Michelia and canes, (iv) Savannah forests (Saccharum, Erianthus, Imperata cylindrical). This forests average height is in between 25 m to 45 m. In fact it is a store house of bio-diversity for which tourists very often visit North Bengal. There are two important pockets of wilderness which have been reserved carefully in Alipurduar District where wild animals can wander without disturbance. These are i) Buxa wildlife sanctuary & tiger reserve: 761.09 sq. km ii) Jaldapara wildlife sanctuary: 216.51 sq. km, (State Forest Report, 2013). Most of the area is connected by roads and are found as metalled and non-metalled, also there are railways of broad gauge, but many areas of this district are still suffering from inadequate transport and communication which influences the marketing system. The region was inhabited by 1337575 persons (Census, 2001) and it is 1491250 persons (Census, 2011). The density of population was 471 persons/ sq. km (Census, 2001) and now it is 525 persons/ sq. km (Census, 2011). Major ethnic groups are Ravas, Mechs, Rajbanshi, Santals, Totos, Garos, Oraons, Nepalees, etc. (Kar, 2003). There are 39 forest villages of 2948

households with the population of more than twenty thousand in Alipurduar District (Das, 2000) and more than 90 % of the forest villages belongs to ST community who are economically, culturally and socially backward (9<sup>th</sup> working plan of Jalpaiguri Forest Division, vol. I, 2008-09). The Alipurduar District consists of Alipurduar Municipality and six Community Development (CD) blocks: Alipurduar-I, Kalchini, Alipurduar-II, Madarihat-Birpara, Falakata and Kumargram. Alipurduar Sadar (town) is the districts headquarter along with Alipurduar municipality and other office. At present there is no subdivision formed in the district. But according to the forest administration area, there are three administrative divisions fall in this district and these are Jalpaiguri forest division, Alipurduar forest division and Kochbehar forest division.

### **1.3 Hypothesis**

In proposed research work the following research hypothesis are considered:

1. Forest villagers' socio-economic activities have always been related with forest.
2. There is a livelihood dependency of forest villagers on forest.
3. Activities of Joint Forest Management (JFM) are related to development of forest and villagers.

### **1.4 Objectives**

In proposed research work the following research objectives are considered:

1. To find out socio-economic status of forest villagers in respect to the forest.
2. To analyze how the forest villagers depend on forest as well as for Non-Timber Forest Product (NTFP).
3. To examine the role of JFM on the protection of forest and villagers development.

### **1.5 Methodology**

To fulfil the above objectives, the methodologies used in the research have been discussed below. Qualitative as well as quantitative methodologies are applied not only to collect data but also for the synthesis of those data. The techniques for the analysis of data, issues and problems faced during fieldwork are also examined here. For this research finding, the collection of qualitative and quantitative data and information, both primary and secondary sources received

equal priority. To discuss primary and secondary data, qualitative as well as quantitative methodologies have been used concurrently.

## **1.5.1 Sources of data and information**

### **1.5.1.1 Secondary sources**

This research started with detailed work at the North Bengal University, Birpara College and Siliguri College Library. This research work provided data and information on socio-economic characteristics of forest village and other related details of forest livelihoods of Alipurduar District. Although, there is not sufficient official record or document of forest villages and their livelihoods in colonial period of Bengal and Alipurduar District, the books, articles and correspondence of different forest officers of the West Bengal and new formed Alipurduar District were consulted for information. To synthesis the socio-economic characteristics such as ethnic composition, economy, anthropogenic activities, and other details of forest village of the study area, the state Government's annual forest reports such as '*Ninth Working plan of Jalpaiguri Forest Division*, Directorate of Forests, Volume-I (2008-09)'; '*State Forest Report, 2005 to 2013*', Directorate of Forests; '*Management-cum-working plan of Buxa Tiger Reserve*,' Forest Department, Govt. of West Bengal, Vol. 1(2000); '*Tiger Conservation Plan, BTR, 2016-17 to 2026-27*'; '*Statistical Handbook of Jalpaiguri District*,' 2011 to 2018; '*Eastern Bengal and Assam District Gazetteers*,' *Jalpaiguri*, 2008, and the West Bengal Tribal Development Cooperative Corporation Ltd. (WBTDC) annual reports (1990-2005) have been examined.

Although, a limited amount of topic related relevant previous research work has been done on forest livelihoods and NTFPs in East Indian states, therefore, during the analysis of livelihood need of forest village, NTFPs, Joint Forest Management (JFM) and other related details of the research area, in addition to the annual reports of different government organizations, previous project reports by organizations such as '*Annual Report of Ministry of Environment and Forest*' (2005 to 09), '*Kirat Bhumi, Jalpaiguri Zila Sankalan*' (2003) and National Afforestation and Eco-Development Board (NAEB) have been consulted. Books and articles on forest villagers' demography, activities of JFM, NTFPs and forest livelihoods in West Bengal and other state of the country such as '*Joint Forest Management in India*' (2008), '*Role of NTFPs among forest villagers in a protected area of West Bengal*' (2005) were followed. Besides online information such as web maps, web journals, web books and newspaper articles have been referred as the source of secondary data and information. For the identification of villages and households

targeted for semi-structured interviews, forest village map and other thematic maps were used. To get a clear view of the socio-physical features of the sampled villages, site map of forest village, land-use and land-cover maps (including forest cover), soil map, drainage and water-body maps were also referred. For this purpose, the State Forest Offices such as Beat and Range (Department of Forest, Government of West Bengal), the Chief Conservator of Forests, North Bengal, Forest Survey of India (FSI), Kolkata, and Divisional Forest Office (Alipurduar, Jalpaiguri, Kochbehar) were contacted. Google image maps, topographical maps and cadastral map of the Survey of India at the scale of 1:50,000 and 1: 3960 were used during fieldwork. The National Atlas and Thematic Mapping Organization (NATMO) published the ‘District Planning Map’ of Jalpaiguri and Kochbehar District using remote sensing technologies. All these maps were used during fieldwork. Jalpaiguri District was divided into two separate Districts (Jalpaiguri and Alipurduar) on 25<sup>th</sup> June 2014. As most of the reserved, protected forest areas and forest villages are in the District of Alipurduar, the fieldwork was arranged in Alipurduar District for research purpose. However, in the ‘Annual Forest Report from 2005 to 2013 of West Bengal both Districts have been considered as one District that is Jalpaiguri and all data and information related to forest have been considered as of Jalpaiguri District only, so for this research, data and information on Alipurduar District as a single was used after sorting carefully (as research work considered after 25<sup>th</sup> June 2015). Census data (which includes socio-economic information on households) and the voter lists were also useful sources for the selection of interviewee/ participants to be interviewed. Census data also provided information about demography, literacy, landholding and occupation and other socio-economic information of the interviewees and villages.

#### **1.5.1.2 Primary sources**

For the collection of primary data and information, predominantly qualitative methods were used. These included interviews such as semi-structured interviews, group discussions and elite interviews. The semi-structured interviews were organised with forest villagers, Ranger Officers, Forest guards, Beat Officers. To get data and information from forest officers, elite interviews were arranged. Questionnaires were used for the household survey among sampled forest villagers to obtain qualitative as well as quantitative data such as demography, economy, adaptation habits, dependency and perception on forests. In addition to these methodologies, discussion with local villagers and direct observation as well as participatory appraisal were

undertaken to get information on the collection, storage, marketing and impacts of NTFPs on forest livelihoods.

### 1.5.2 Methodologies for primary data collection

The semi-structured interviews, elite interviews and group discussions were used in this research for generating more qualitative information whereas questionnaires were used to collect both qualitative as well as quantitative data from forest villagers (Appendix B, C). Finally, both qualitative and quantitative data were compared to obtain accurate picture of the contemporary situation regarding socio-economic, ecological adaptation, dependency on NTFPs, perception and participation in the Joint Forest Management. Using these methodologies, a huge amount of data and information were generated which cover many subjects of forest villagers' livelihoods and their dependence on forest. The survey was designed to explore data or information regarding the demography, social status, economy, dependency on forest. Also it was try to discuss villagers' feelings, their understandings of the surrounding environments and their perception using related questions in the questionnaire.

**Table 1.1** Methodologies used for empirical data collection.

<b>Methodologies used for empirical data collection</b>		
Interviews	Interviewees and places visited for empirical data collection with date	
	Elite interviews	Chief Conservator of Forest (CCF), Wildlife (North Bengal), Government of West Bengal (02-03-2015); Chief Conservator of Forest (CCF), North Bengal, Government of West Bengal (05-03-2015); Divisional Forest Officer, Jalpaiguri Forest Division, Jalpaiguri (08-03-2015); Field Director (FD), Buxa Tiger Reserve (12-03-2015); Deputy Field Director (DFD), Buxa Tiger Reserve, East (17-03-2015); Deputy Field Director (DFD), Buxa Tiger Reserve, West (22-03-2015).
	Semi-structured interviews	Ranger, Dalgaon range, Jalpaiguri Forest Division (29-03-2015); Members of JFM, Lehra village, Dalgaon range, Jalpaiguri Forest Division (02-04-2015); Forest guard, Bandapani beat, Jalpaiguri Forest Division (5-04-2015); Ranger, West Raja Bhatkhawa range, Buxa Tiger Reserve, West (9-04-2015); Ranger, Nimati range, Buxa Tiger Reserve, West (13-04-2015); Ranger, Hamiltonganj range, Buxa Tiger Reserve, West (17-04-2015); Ranger, Buxaduar range, Buxa Tiger Reserve, East (21-04-2015); Ranger, Jainty range, Buxa Tiger Reserve, East (25-04-2015); Ranger, Kumargram range, Buxa Tiger Reserve, East (29-04-2015).
	Group discussions	Ranger and forest staffs of Dalgaon range, Jalpaiguri Forest Division (04-05-2015); Ranger and Forest staffs, Hamiltonganj range office (06-05-2015); Lehra villagers, Dalgaon range, Jalpaiguri Forest Division (08-05-2015) ; Sankosh villagers, Kumargram range, Buxa Tiger Reserve, East (10-05-2015); Lapraguri villagers, Barobhisa beat, Buxa Tiger Reserve, East (11-05-2015); Bhutri forest basti, Hamiltonganj range, Buxa Tiger Reserve, West (13-05-2015); Poro villagers,

		West Damanpur range, Buxa Tiger Reserve, West (14-05-2015); JFM groups of Dalgaon range, Jalpaiguri Forest Division (17-05-2015); JFM groups of Hamiltonganj range, Buxa Tiger Reserve, West (21-05-2015); JFM groups of Nimati range (24-05-2015), Buxa Tiger Reserve, West; JFM groups of Pana range (26-05-2015), Buxa Tiger Reserve, West; JFM groups of Bholka range, Buxa Tiger Reserve, East (30-05-2015).	
<b>Questionnaires survey of sample household with date</b>			
<b>Forest Division</b>	<b>Range office</b>	<b>Beat office</b>	<b>Forest village</b>
Jalpaiguri Forest Division	Dalgaon range	Bandapani	Lehra village (No. of Household -22), 17-06-2015 to 19-06-2015.
			Suni village (No. of Household -28), 09-06-2015 to 16-06-2015.
Buxa Tiger Reserve, West Division	West Rajabhatkhowa	West Rajabhatkhowa	Garo Basti (No. of Household -72), 18-08-2015 to 24-08-2015
	East Damanpur	Gadhadhar	Gadhadhar (No. of Household -63), 01-10-2015 to 06-10-2015.
	West Damanpur	East Poro	Poro (N) (No. of Household -61), 09-10-2015 to 15-10-2015.
	Nimati	West Poro	Nimati and Dabri (No. of Household -68), 25-12-2015 to 31-12-2015.
	Pana	Gangutia	Gangutia (No. of Household -55), 01-01-2016 to 05-01-2016.
		Adma	Adma (No. of Household -55), 31-03-2016 to 04-03-2016.
		Raimatang	Raimatang (No. of Household -55), 07-05-2016 to 12-05-2016.
	Hamiltonganj	Bhutri	Bhutri forest basti (No. of Household -45), 15-08-2016 to 20-08-2016.
Hamiltonganj		Gudamdabri (No. of Household -63), 18-10-2016 to 23-10-2016.	
Buxa Tiger Reserve, East Division	Buxaduar	Chunabati	Chunabati (No. of Household -54), 25-12-2016 to 31-12-2016.
	Jainty (south)	Bhutiabasti	Bhutiabasti (No. of Household -30), 01-01-2017 to 04-01-2017.
	Kumargram	Sankosh	Sankosh (No. of Household -60), 17-04-2017 to 22-04-2017.
	Bholka	Barobhisa	Lapraguri (No. of Household -47), 25-08-2017 to 29-08-2017.
	Buxaduar	Santrabari	Santrabari (No. of Household -65), 01-10-2017 to 06-10-2017.
	Bholka	Balapara	Balapara (No. of Household -35), 25-12-2017 to 31-12-2017.

(Prepared by the researcher based on field survey, 2017)

### **1.5.2.1 Elite interviews**

This type of interview is connected with an 'elite person' in their respective field, who has a good knowledge of the research topic. The elite interviewee (persons of officer rank) is in a position to provide a maximum amount of data and information to the researcher in a very short period of time. For this research elite interviews were organized with the Chief Conservator of Forest (CCF), Wildlife (North Bengal), Government of West Bengal (02-03-2015); Chief Conservator of Forest (CCF), North Bengal, Government of West Bengal (05-03-2015); Divisional Forest Officer, Jalpaiguri Forest Division, Jalpaiguri (08-03-2015); Field Director (FD), Buxa Tiger Reserve (12-03-2015); Deputy Field Director (DFD), Buxa Tiger Reserve, East (17-03-2015); Deputy Field Director (DFD), Buxa Tiger Reserve, West (22-03-2015); A total of six (6) elite interviews were conducted during fieldwork.

### **1.5.2.2 Semi-structured interviews**

Semi-structured interviews were chosen because it does not follow any inflexible or specific order and at the same time, new questions as well as topics related to the research area, could also be added and discussed. For this study, semi-structured interviews were held with forest villagers, Ranger Officers, Forest guards, Beat Officers, other Forest Department staff, villagers/ members of Joint Forest Management Committee who have knowledge about villagers' background, need, activities, cultures, social and economic condition, and involvement in plantation, NTFPs business at the ground level. Nine (9) semi-structured interviews were arranged. In this case, interviewees were able to share own views and knowledge in a flexible and informal environment. All answers were written at the time and simultaneously recorded by mobile recorder.

During field survey, to overcome the language problem between researcher and interviewees (villagers), an interpreter was used at the time of interview from villagers' community who had good knowledge of their native language that is Nepali and Adivasi as well as Bengali, thus the comments from local people were translated to English language at the time of interviews. Interpreters, however, also helped the researcher to be friendly between the researcher and forest villagers as interpreters were mostly selected from the sampled villages and mostly young people from forest communities, who were college students and had very good relationships with other forest villagers and knowledge about the forest community, were selected as interpreters.



**Plate 1.1** Researchers with Ranger, Hamiltonganj Range during Semi-structured interview.

### **1.5.2.3 Group discussions**

Group discussions were applied in this research for several causes such as group discussions were normally organised in a relaxed environment for participant compared to semi-structured or elite interviews; and participants felt and acted more naturally in this case. Through such discussion, several common views and opinions have been exposed on complex questions and subjects. Besides as most of the participants in a group were from the same background, they were free from hesitation and happy to consult the same topic from different points of view. This provided some extra information for the research topic. Finally, for ‘group discussions’ the group worked as a very popular methodology as it generates new and unexpected information on topic. For this research, 12 (twelve) group discussions were arranged. These were two with the Ranger and forest staffs of Dalgaon (Jalpaiguri Forest Division) and Hamiltonganj range office (Buxa Tiger Reserve, West Division). Five group discussions were organized with forest villagers, two in both from Buxa Tiger Reserve, West and East Division and another one taken from Jalpaiguri Forest Division. Another five group discussions were organized with members of Joint Forest Management Committee (JFMC) of which three were taken from Buxa Tiger Reserve, West

Division, one from each of Buxa Tiger Reserve, East Division and Jalpaiguri Forest Division respectively. There were six to ten participants in each group.



**Plate 1.2** Researchers' group discussion with villagers at Lapraguri village.

Each group discussion ran from an hour to two hours. Open questions were discussed during this time. The topics of discussion were revealed to all the group members at the time of discussion. All information of group discussions were noted down and recorded by mobile recorder. Important points had also been taken as special notes during discussions session. The researcher tried to shorten the problems associated with group discussions. Sensitive issues (such as collection of forest product legally or illegally, conflict between foresters and villagers) were normally avoid in discussion. It was very common that some of the participants took a more active role and gave more ideas than others. Therefore, the researcher targeted to give all the participants an equal opportunity to express own ideas by supplied each of all the group participants with a pre-formatted sample of questions; which were consulted during group discussions. This helped participants to take fast preparations and their decisions. However, not all the participants viewed the group discussions with equal importance. To solve this problem, the researcher tried to make all participants understand the importance of this research from the perspective of forest preservation and forest livelihoods. To discuss all the research related

subjects and to arrange local environment, an assistant was also taken from the same community who had good ideas about other language to run the discussion.

#### **1.5.2.4 Questionnaires**

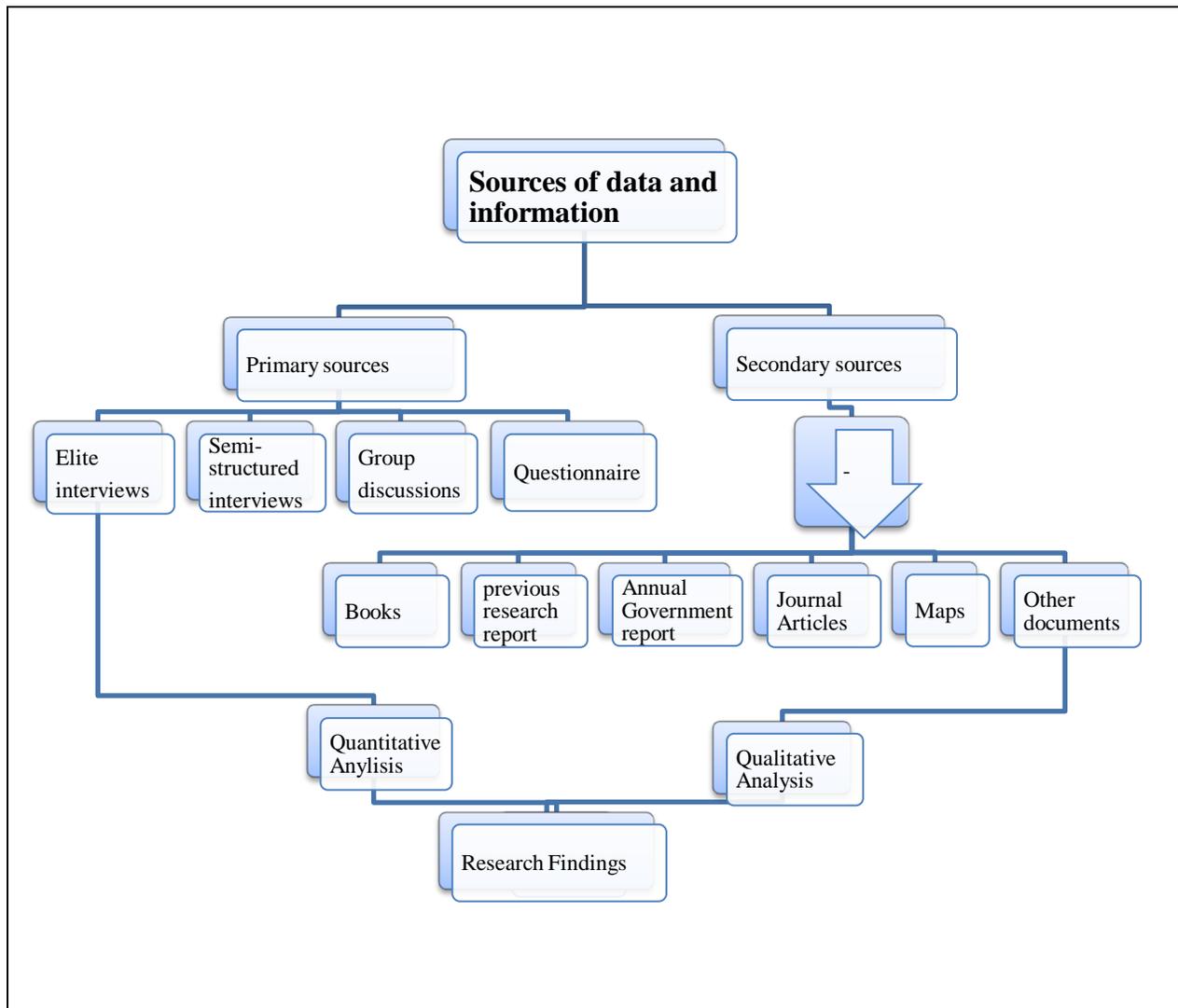
Questionnaire (Appendix B) surveys were conducted among forest villagers mainly for the generation of quantitative data. Through such surveys, large amounts of data were generated in a short period of time for chapter 4, 5, 6, 7 and chapter 8. Some open questions, which generated qualitative data, were included in the questionnaire to share forest villagers' opinions on the research related subject. Questionnaires were used in 17 sample forest villages (44 % of total number, i.e. 39) of three forest divisions. The questionnaire was divided into two parts. The first part deals with the demographic features of sampled forest village (Appendix B). Whereas the second part associates with the household schedule (Appendix C) or socio-economic part including resources for livestock feeding, kind of forest resources uses, house building materials, consumption pattern and dependence on NTFPs, kind of fuel and its use, reasons for forest destruction from villagers point of view, perception on forest, wood collection and consumption by villagers, participation to activities of Joint Forest Management and various other problems of agriculture and stock breeding, suggestions for further improvement forest etc.



**Plate 1.3** Researchers' household survey with Dukpa tribes at Chunabati village.

Questionnaire surveys were arranged throughout the whole day but preferred given to the morning and afternoon, so that all types of household members could take part. During field study on consumption of fodder, timber collection, tree felling and storage related questions were asked to the respondents at the time of survey through questionnaire. The questionnaire survey was started from 17<sup>th</sup> June, 2015 and continued until 31<sup>st</sup> December, 2017. This long fieldwork period was also useful in providing information on the different aspects of villages and villagers socio-economic characteristics. There are some limitations in using this technique. For example, respondents may not give their opinions or thoughts in a flexible way if most of the answers are of the ‘yes’ or ‘no’ type. To avoid this error researcher organized semi-structured interviews and group discussions where villagers were able to share their ideas giving own words.

**Flow Chart 1.1** Source and analysis of data and information.



### **1.5.2.5 Criterion for selection of the sample villages**

The Alipurduar District of West Bengal form the study area which covers 2526.30 sq. km and accommodate a population of 14 lac 91 thousand (Census, 2011), spread over more than 15,000 villages and one municipal town. The majority of the forest villages are small with a population size of less than 300 persons. As the study area has large geographical extent, it is necessary to have representative samples of villages in order to provide wider representation to area as well as villagers. The region has large variations in its altitudinal setting. The villages of Dalgaon forests differ from Buxa and valley slope differs from the other with the corresponding changes in altitude. The changing altitude has influence on vegetation, climate and human settlements. The nature of village eco-system mainly depends upon the altitude on which they are situated. The altitudinal gradient, in fact, is the base on which numerous other environmental gradients are established. Therefore, the most important criterion for selection of sampled villages adopted in the present study is the altitude. The population size of the settlements is another basis of village selection. The altitude helped in the selection of the villages as the villages in their physical setting are located indifferent altitudinal zones. The location aspects like distance of the village from transport lines and the village site such as valley, hill-slope and hill-top, inside of forest is presumed to be taken care of by the random selection of sample villages. It was initially decided to select 17 villages to represent 39 villages, thus, taking one village as representative of more than two villages. However, the 17 villages selected to cover the whole region in a representative manner; hence villages were considered to cover different altitudinal and location sites. The sample villages were selected on the basis of random sampling method where the villages were classified into 3 categories according to population size and the villages with less than 350 populations, the village population between 350-650, and the villages with more than 650 populations. And for such observation random sampling survey were been adopted through questionnaire of 878 household (30 % of total household, i.e. 2948) of forest villagers.

### **1.5.2.6 Analysis of data**

For this research finding, to analyse primary data as well as secondary data and information, qualitative and quantitative methodologies were used simultaneously. For the quantitative analysis of the data on rainfall, temperature were been analyzed by adopting different cartographic techniques to determine climatic condition of the study area. Besides different statistical methods such as central tendency, measures of dispersions, correlation were employed

for comparative analysis of the socio-economic conditions of the forest villagers along with different parameters and for calculation and computation of data, MS word and EXCEL software packages were used. For qualitative data analysis, interpretation and table coding were applied. The interpretation includes the copying of interviews, which were arranged through semi-structured interviews, group discussions and elite interviews. Important comments of interviewee, other researchers have been taken during the time of data analysis. Different opinions of forest villagers were collected in the native languages (mainly Nepali, Hindi, and Bengali) and afterwards their comments and views of mother languages were translated into English. Software such as M.S word, MapInfo and Arc GIS were used during the time of qualitative analysis of data. Preparation of maps were been done with the help of MapInfo, Arc GIS software and GPS tool to show the location of study area and other details of forest villages as well as to show the relationship between different components of physical and cultural aspects. Illustrative photographs, videos as well as field-notes were taken during the time of interview and field survey. All of these visual documents, as well as field-notes, were considered during data analysis to find out the differences between the actual situations and the participants' given information.

During this research work following limitations were identified such as secondary data of all kinds were not available in the respective Government office. Some secondary data were not always reliable as it was irrelevant, outdated and partially manipulated. At the time of primary data collection, problems were faced during the period of field survey for this research area. The problems of sampling villages or households were very common in respect of location, language, economy and politics. Therefore, before starting field survey, the researcher considered some issues carefully such as, the socio-economic status, culture, language and ethnicity. Sampling survey was prepared after visiting the research area i.e. location; however, after starting fieldwork, particularly in dense remote villages, several issues such as poor transportation, sudden attack of wild animals ( elephants, leopard, bison) in some areas, floods and flash floods in springs and rivers, political disturbances were emerged which the researcher did not expect earlier.

## **1.6 Literature review**

This paragraph deals with the review of available literature on important features of Forest Policies of Indian, studies on the nature and extent of the dependence of local communities on

forest resources and the role played by them in conservation of forests, forest livelihood economy, various participatory approaches such as Joint Forest Management including their impact and other issues in forestry systems. The literature were critically reviewed and presented under the following broad aspects.

### **1.6.1 Meaning and definition of forest village**

The genesis of forest villages was a part of forest management in the early part of the last century. The British Government had to fulfil the supply of raw material for widening of railway lines and collection of revenue to support the British Imperial Government. The need for extraction of forest resources required keeping a regular supply of human labour. In the early time of forest resource occlusion and demand was met through the introduction of 'taungya' system as was earlier practiced in Malaysia and Burma. This process consists of the cutting down and the forest growth, firing it when dry and sowing the areas thus arranged with field crops. When crops have been harvested and, as the case may be, after two or three year's use, the open area is deserted, and a new piece of forest cover is clear felled. This goes on till a forest growth adequate to offer a good flame and enough of ashes have grown upon the place first attacked and felled. The rotational system continued from ten to thirty years. In Burma these clearings are called taungya. The inclusion of local tribal people into the scheme of taungya was very effective for Forest Department. The villagers had become habituated to the employment thus offered, which provide a regular earnings, in addition to the crops which they were able to cultivate just as in former times; and it became possible to practice over massive areas, and at the same time to declare better average results. In India, the practice of taungya system was followed mainly in the areas where the local villagers denied sharing labour for Government silvicultural programmes. Primarily, the forest labours were considered as bondsman by the government as they were bound to give free service for forests work for a number of days in a year as specified. Afterwards, the circumstances changed slightly as the migrant labours were offered homesteads and one hector of land in place of services rendered by them to the Forest Department. These hamlets or settlements came to be known as forest villages (Sonowal, 2007). Either existing habitations in the forest were declared as forest villages or people were brought from outside to set up forest villages. The report of the committee on Forestry Programmes for Alleviation of Poverty, GOI (1984), shows that there are five thousand forest villages where two lakhs scheduled tribe (ST) family resideing who are still in the category of inaccessible from the

planning process. Individuals in forest villages were allowed to construct small temporary huts and also cultivate some food crops to supplement their earnings. The land thus utilized legally continues to remain 'reserved' forests and the villages were expected to be replaced when there was no forest work. There are also evidences especially from Madhya Pradesh and Gujarat (Prasad and Jahagirdar, 1993) that some revenue villages were transferred to Forest Department to form forest villages. These types of forest villages are technically or administratively known as 'Revenue Forest Village'. The typical forest villages are on the other hand the ones where the labour camps have been replaced into semi-permanent or permanent settlements.

## **1.6.2. Forest policy of India**

### **1.6.2.1 The first forest act of 1865**

This act was the first attempts in the direction of regulation of collection of forest produces by the forest villagers. The Act empowered the States to declare any land covered with brush or trees cover as State forest and to make rules regarding the management of the same by notification, provided that such notification should not affect or summarize any existing rights of villagers or communities. The government was empowered to prescribe penalty for the violation of provisions or for infringing rules and for the arrest of offenders. In the process, the socially regulated practices of the local people were restrained by law.

### **1.6.2.2 The forest act of 1878**

This Act was more comprehensive than earlier one and divided forest into reserved forests, protected forests and village forests. Villagers or dwellers were to be notified to record their claims over land and forest produce in the proposed reserved and protected forest. Certain activities like trespassing or pasturing of cattle were prohibited and declared certain activities as forest offences and imprisonment and fines were also prescribed. Provisions were made to impose a duty on timber. Some provisions were also made to control private forest. Thus, the 1878 Act continued and extended the Government policy of establishing control over forests.

### **1.6.2.3 The first forest policy 1894**

The Indian Government brought out a wide forest policy in 1894 that clearly spelt out the supremacy of the State's interest over that of villager's interest. By the resolution, forest were divided into 4 divisions: (i) forests, the preservation of which was essential on physical or

climatic grounds; (ii) forests, which give a supply of expensive timbers for business purposes; (iii) minor and non-forests and (iv) pasture or feeding land. The above mentioned classification was applicable only to forest under the management of the State. This policy considered the release of forest land for cultivation, subjected to certain safe guards. Also the policy had left a margin of outlying areas of reserved forest for the supply of the villager's needs.

#### **1.6.2.4 The Indian forest act 1927**

This was an attempt to formalize all the practices of the forest officials and to regulate further villagers rights over forest lands and produce. The forests were divided into protected, reserved and village forest and elaborate provisions were made to extend State control over forest. The Act removes the reference to communities' rights over forest, which was made in the 1878 Act. This Act has put some control on the shifting or Jhum cultivation with certain special provisions. The State Government was finally to fix on the issue of permission or prohibition. If the state government sanctioned the practice wholly or in part, the Forest Settlement Officer (F.S.O) was to arrange for the dividing of land for such practice. This act created a powerful and adequately protected executive consisting of forest officers of Indian Forest Service (IFS), State Forest Service, Rangers, Beat Officers and Forest Guards. These officers enjoyed legal powers. The provisions prepared in respect of the protected forest and the power of arrest any persons without warrant to certain offences or reasonable doubt of movement.

#### **1.6.2.5 The national forest policy 1952**

The relevance of forest to meet the needs of defence, reconstruction schemes such as river valley projects, development of industries and communications was asserted by the first national forest policy of Independent India in 1952 based on national interest. The act followed, by and large, the limes of the British administration where the tribals had virtually no right but enjoyed only certain concessions such as right to take water for agriculture purposes, digging of wells and canals for agricultueal purpose, free grazing in open forests, removal of timber, bamboo, canes for construction of houses and agricultural impliments, collection of grass, dry and dead branch for domestic uses as fuel. The president of India under the article 339 of the constitution of India appointed the Scheduled Area and Scheduled Tribes Commission in 1960 under the chairmanship of U.N. Dhebar. The report of the commission analyses forest policy and vis- a-vis tribals. The commission under scored the impotence of forest in the life of the tribals in

providing them with all kinds of food, fodder, tubers and fish, timber, fuel, wood for construction of houses and other needs even income from the sale of forest produce (minor forest) besides fuel. The commission recommended that the policy of 1952 should be reconsidered and that, subject to safeguards, tribals should be permitted to cultivate forest lands and that their needs should be met from outlying areas in the reserve forest and that their requirements for shifting cultivation and livestock rearing should be accepted.

#### **1.6.2.6 NCA report on forests 1976**

The commission recommended a drastic reduction in the forest villager's rights over forests and forest produce. The commission recommended the strengthening of forestry legislation for effective implementation of forest policy and law for the revision of all Indian forest acts and drastic reduction in people's rights over forests. It was stated, free supply of forest produce to the inhabitants and their rights and advantages have brought destruction to the forests and so it is necessary to sever the process. The local people have not contributed much towards the maintenance or regeneration of the forests. The commission recommended strengthening of the forest legislation by the enactment of a revised all India Forest Act. In 1976 itself a major change taken in that the subject of forest was transferred from the State list to the concurrent list through the 42<sup>nd</sup> amendment of the constitution. This resulted in the decrease of the state's powers and the increase of the centre's power over forest.

#### **1.6.2.7 The forest draft bill 1980**

Based on the recommendations of the NCA a draft forests bill was circulated in 1980. Provisions were prepared in the bill to reduce villagers' rights over forest lands and produce. In states that the principal aim of the forest policy must be ensure environmental stability and the maintenance of ecological balance including atmospheric equilibrium, which are vital to the sustenance of all life forms such as human, animal and plant. Besides safe guarding the customary rights and interests of such people the forestry programmes should pay special attention to the following- To reduce the illegal cutting, contractors should be replaced by the forest as well as tribal cooperative basis, attention should be paid to the protection, regeneration and optimum collection of NTFPs, family oriented schemes for improving the status of tribals, integrated area development programmes to meet the needs of the tribals economy.

### **1.6.2.8 The national forest policy 1988**

The resolution stated the primary objectives of forest policy as follows: the principal aim of forest policy must be to ensure environmental stability and maintenance of ecological balance including atmospheric balance and wherever possible, degraded lands should be made available for tree farming on either lease or the basis of a tree patta scheme. The policy statement asserts that existing forest and forest lands should be fully protected and their productivity should be improved normally. Minor forest produce should be developed and protected, so as to continue to provide sustenance to the tribal population livelihood needs. The national goal should be to have a minimum of 1/3<sup>rd</sup> of the total area in the country under forest or tree cover. A large need-based and time-bound programme of afforestation and tree planting should be undertaken. The important provision taken in this act is the inclusion of farm forestry on private lands of mostly absentee landlords as well as degraded forest land as part of 'Social Forestry' programme. The species most developed in this scheme was eucalyptus and the Forest Department supplied seedlings, technical help and soft loan, all under the so called 'social forestry' which was anything but social as well as environmental purpose. In the last import and captive exotic plantation under joint sector was promoted by this act.

### **1.6.2.9 Scheduled tribes and others traditional forest dwellers (Recognition of forest rights) Act, 2006**

This Act of 2006 was included in the gazette of Government of India on 31<sup>st</sup> December, 2007. It is also known as Tribal Rights Act, 'Forests Rights Act', Tribal Land Act and Tribal Bill. The act was passed 18<sup>th</sup> December, 2006 by the parliament of India and Government of India has notified the Forests Dweller Rules, 2007 on 1<sup>st</sup> January, 2008. The act aims to recognize and protect forest rights and other related subjects to scheduled tribes and other forest villagers residing in forest for long generations. This act provides that no member of forest villagers of ST or other traditional forest villagers shall be evicted or removed from the land under his occupation till the recognition and verification is complete. In doing so, the act also makes the responsibility to protect, conserve and regenerate of wildlife, forests, biodiversity on people who get this right. The act also seeks to endow title on holders of leases and pattas on forest land and endowing title to land and homesteads to residents of forest village and other old habitations on forest land. In addition to this the right to access and collect NTFPs also provides the forest villagers to develop income generating activities such as dry branches, honey collection, tassar

cultivation, tendu leaves collection. Such activities could be developed as common occupation for these people based on the model of cooperatives or JFMC members could be engaged in such operations to aid to build such enterprises.

### **1.6.3. Dependence of forest villagers**

Generally, villagers in plain, plateau, hill and other forests areas depend on forest for their livelihoods such as food, fodder, floss, fuel wood and grazing etc.

#### **1.6.3.1 Grazing and fodder**

Kant and Mehta (1993) stated in Gujarat, forests hold a main position in the village economy through a provision of a diversity of minor forest products and other materials for local use like fodder, fuel wood, wild tubers and materials for agricultural implements and bulbs as vegetables, etc. A study by Misri (1995) disclosed that overgrazing reason the near overall loss of edible species. Subsequently the area got harassed with weeds such as Sambucus, Cincifuga, Stipa, Adonis, Aconitum and Sibbaldia.

#### **1.6.3.2 Fuel wood**

Natarajan (1996) observed that 61.60 % of the total rural energy demand was fulfilled by wood as fuel, 30.35 % and 8.05 % are fulfilled by other bio-fuel and commercial fuel respectively. UNDP (1997) noticed that in India the rural population is highly dependent upon forests. Fuel wood contributes about 84 % of the total household energy consumption in village areas. Bardhan (2002) reported that about 77 % of the households picked up fuel wood from a government of community forest, with the remaining households collecting either from other sources such as roadsides or from own lands. Palanna (2005) depicted that around 50 % of the household members in Hassan and Davanagere District consume 212.5 kg of fire wood per month. However, in Gulbarga District all the household members consume less than 250 kg per month. In Hassan, the main source of fire wood for the household members is from private land and in Davanagere District of Gulbarga it is been collected from the forest.

#### **1.6.3.3 Non-Timber Forest Produces**

Rao, (1988) reported that Non-Timber Forest Products (NTFPs) acted a vital role in the lives of the ST in the state of Andhra Pradesh. The contribution of Non-Timber Forest Products to the

aggregate income of the two tribal region studies was very high which was 73.68 % and 82.28 % respectively. Hotchkiss and Kumar, 1988 observed that women contributed 82 % and children 8 % of time in total for fuel weed collection in Hill villages. They also referred that out of the total household, about 75 % of the households were followed cultivation 58.5 % were engaged in livestock and 24.7 % were labourers. Singh et al., (2010) noticed that the contribution of NTFPs is quite high as it contributes about 79 % (almost Rs 80,000) on an average to the yearly income of the collector's family.

#### **1.6.4 Joint Forest Management (JFM)**

As per the study of Poffenberger (1990), present sharing schedule for major forest products are based on unequal distribution of profits among members of Forest Protection Committees (FPC). Therewith, primary income lost in cash and kind is heaviest among economically disadvantaged groups. The Forest Department has aimed to compensate by offering employment as well as other opportunities while the fresh production system matures. Moreover, the various products from the regenerated forest are utilised and exploited on a seasonal basis or whole of the year particularly by women. Kothari (1995) noticed for giving the controlling power of natural forest resources back to the inhabitants by explaining the instance of Van Panchayat System (VPS) in the Uttar Pradesh hills and uninterrupted JFM schemes in wildlife sanctuary of Nagaland. He further revealed channelizing advantages of biodiversity conservation to the local inhabitants by preparing planning and decision making open, transparent, democratic and enhancing awareness for fruitful conservation of biodiversity in India. Singh and Sethi (2001) described that lack of association with development activities always butting the reach of JFM on its impact. Case studies in India indicates that village resource development function may give an important stimulus, beside monitoring to betterments in the livelihoods of villagers, for sustaining interest in the JFM program, assuring sustainability of such functions. In a study on joint forest management in West Bengal, De (1997) found that the economic desire was the main cause for participation of villagers in JFM programs. Short term profits of the projects attract more participation in joint forest management programmes. The other reasons for involvement in the programmes are prestige motive, affiliation motive, security motive, utilitarian motive and achievement motive in the study. Mukherji and Rangachari (2000) and Vedanand (2000) observes future JFM as a ways to alleviation of poverty in India as a part of integrated land use, in which pasture, agriculture and plantation are all suited in as supplementary activities in an area

unit. Sadashivaiah et al., (2005) indicated that 3/4<sup>th</sup> of the Village Forest Council (VFC) members (73.33 %) showed to low social involvement followed by 20 % with high social involvement and 6.67 % had medium level of social involvement.

### **1.6.5 Household type, size and farming system**

Sadashivaiah et al., (2005) indicated that 64.33 % of the Village Forests Council (VFC) members were associated with nuclear family type whereas the rest from the joint family. In case of Tumkur 70 % of VFC members were from nuclear family and same that of Chitradurga were 58.67 % and the rest were belonged to joint family. Rai and Parthiban (1994) reported that the average size of family among goat and sheep rearers were 6.96 and 6.56 members respectively and difference in family size between the two groups were negligible. Pandey and Pant (1999) indicated that horticulture was comparatively more environment friendly than intensive subsistence agriculture on hill farms of Nepal. Goswami (2002) made optimum farm plans for a new farming system in place of jhum cultivation at existing and high level of resources in terms of simultaneous hiring of capital, borrowing and and labour. He observed the possibility of further enhancing farm income in the present position with an extra capital and labour. Kinhal (2002) indicated that the sharing in the micro plans for farming has mostly favoured the landowners among the villages as compared to the landless who were directly depending on forest resources.

### **1.6.6 Household employment, occupational status and income**

A study by Das Gupta (1988) on the Kondhs tribes described that women spent in an average of 14 working hrs/ day as compared to 9 hrs/ day spent by men. Given this extra work pressure, even women in advanced stages of pregnancy were needed to work in the agricultural fields or walk far distances to collect fuel wood and NTFPs. Singh & Pandey (1992) reported that the total employment of labour including family labour was 398,312 and 201 days in medium small and marginal farms, respectively among the tribal farmer labours of plateau area in Bihar. Pandey and Sathya narayana (1981) described farm income as income including sale value of crops, rent taken from land, livestock products, sales of farm assets, custom service etc. The NCAER (1989) (National Council for Applied Economic Research) depicted that household income as self-employment income from salary income, profession and services, transfer income business, rent and dividend income, agricultural and non-agricultural wage income.

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