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Issues and Challenges of the Forest Villagers and Joint Forest Management: A case study of Alipurduar District, West Bengal

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Abstract

The present study tried to analyze the impact of forest on the forest villagers, and also the forest-related issues important to these villagers. It is based on the data and information collected from the field survey of sample households. It is found that the forest plays an important role in the social and cultural life of the villagers who primarily depend upon forests for a variety of goods and needs such as edible fruits, fodder, flowers, tubers, roots and leaves for food, medicines, and firewood. The study also highlighted the activities of the JFMC programmes such as horticulture, NTFPs processing, the nursery of seedlings and medical plants, forest cleanings, sal and teak plantations, and seed handling. All these are related to their socio-economic condition and also to their participation in sustainable forest management. Unfortunately, adequate JFMC members are not always appointed in the working circles. The leadership of EDC, FPC, and other communities is also lacking. Besides, the JFM members are getting less interested as there is no regular source of income and employment opportunity. Although the JFM project opened up many avenues for forest development, quite a number of difficulties and issues have been identified, that need to be seriously addressed by the Government and the NGOs.

Introduction

Generally, forest villages are found both in the interior and fringe areas with dense and fairly dense forest cover. The forest is not only a source of income to the villagers but it also provides employment to the local inhabitants which make forest an important contributor to the rural economy in the area. The villagers collect a variety of NTFPs (edible fruits, flowers, tubers, roots, and leaves), medicinal plants, firewood for both cooking and selling in the market, wood for traditional agricultural implements, house construction, and fencing, fodder (grass and leave) for livestock and space for livestock grazing for livelihood. Therefore, with such different uses and extensive dependence pattern, over-exploitation and unsustainable harvest practice degrade the forest cover rapidly over the years. To mitigate these problems, a decentralized and participatory forest management program called joint forest management (JFM) is being promoted in India since 1990 by Govt. of India. The JFM provisions, under the JFM guidelines of 1990, are expected to promote local peoples' involvement, collective decision-making, empowerment of the village community, sharing of authority, and focus on nontimber forest products (NTFP) and sustained a harvest of usufructs horticulture. In short, JFM is an approach to achieve sustainability by involving the villagers, fringe village communities and NGOs for the protection of the forest.

The Study Area

Alipurduar district, a new one in North Bengal is the study area (created on 25th June 2014). Lying between 26°23'11"and 26°52'30"N latitudes and 89°02'30"and 89°53'07" E longitudes, it covers an area of 2526.30 sq.km. It is an important forest covered district of the Duars region of West Bengal, famous for 'Tea, Timber, and Tourism', evergreen forests, hills, tea gardens, scenic beauty. It is drained by a number of rivers like the Torsa, Kaljani, Raidak, Sonkosh, Mujnai, Pana, Jainti, Dima, Gaburbasra and Dyna which are also subjected to occasional

flooding. The area is bounded by Bhutan in the north, Kochbehar district in the south, Assam in the east and Jalpaiguri district in the west. Topographically, the entire area is crisscrossed with rivers and ridges. The northern part of the district is adjacent to the Bhutan hill and is of higher altitude. Comparatively, cultivated lands are more in the southern part of the district. The area is inhabited by a number of tribes like the Totos, Dukpa, Mech, Rava, Santal, etc (Grunning, 1911).

The area experiences tropical monsoon climate with heavy rainfall during June September. The annual average varies from 2800 to 3000 mm while the average temperature ranges from to 10.8^{0}C in January to 30.9^{0}C in May. The soil texture ranges from sandy to sandy loam having low water holding capacity. The main kharif crops are *Amon* and *Aus.* Besides, some vegetables, viz. tomato, brinjal, cabbage, cauliflower, chili, etc are also grown as cash crops. Sal is the dominant tree species in the forests, others being teak, sissoo, and simul; all are fairly numerous (Grunning, 1911). The forest may be divided into the following types: deciduous (sal, sissoo, schimawallichii), mixed deciduous (main sal), evergreen (luqinia, glaeocarpus, Echinocereus, michelia, and canes), and Savannah (Saccharum, Erianthus, Imperata cylindrical)(Karmakar, 2011). In fact, it is a storehouse of bio-diversity for which tourists often visit North Bengal. Two pockets of wilderness have been reserved carefully in this district where wild animals can wander without disturbance. These are i) Jaldapara Wildlife Sanctuary (216.51 sq. km), and ii) Buxa Wildlife Sanctuary & Tiger Reserve (761.09 sq. km) (State Forest Report, 2011). The region was inhabited by about a population of 1,337,575 (Census, 2001) that has increased to 1,491,250 (Census 2011). The density of population increased from 471 persons/sq.km (2001) to 525 persons/sq.km (2011). The major ethnic groups are Rajbanshi, Rava, Toto, Mech, Santal, Garo, Oraon, Nepalese, etc (Kar, 2003). There are 39 forest villages of 2,926 households with the population of more than 20,000 in Alipurduar district (Das, 2000) and more than 90% of the forest villages belong to the tribals who are socially and economically backward. The Alipurduar district consists of Alipurduar Municipality and six Community Development (CD) Blocks, viz., Madarihat-Birpara, Alipurduar-I, Alipurduar-II, Falakata, Kalchini, and Kumargram. Alipurduar Sadar is consists of Alipurduar municipality and is the districts headquarter.

Objectives

The major objectives of this study are:

1) To study the profile of forest-villagers in Alipurduar district
2) To understand dependency and participation of forest-villagers in Joint Forest Management (JFM).
3) To know the expectations of forest-villagers from forest and development through Joint Forest Management.

Methodology

The study is based on both primary and secondary data. The primary information such as forest villagers' demography, consumption of forest-related resources such as timber, fuel, fodder, fruits, and participation in Joint Forest Management, plantation activities, training program attend, etc have been collected from forest-dependent respondents in the district with the help of a questionnaire. The study has been conducted in 17forest villages of the district where altitude, population size, a distance of the village from transport line, village site (such as inside the forest, hill slope, hilltop), etc have been considered for the random selection of sample villages. The questionnaire survey was done from 1st June 2015 and continued until 15th October 2015. The secondary data on a collection of NTFPs uses of medicinal plants and other data have been collected from Divisional Forest Office (DFO) of Buxa Tiger Reserve (East and West), Dalgaon, Hamiltongaunj, and other range office and beat office of this division. Besides data also gathered through semi-structured interview of Rangers of Dalgaon, Madarihat, Hamiltongaunj range and forest guards of this division.

Demographic Profile of the Villages

There was a total of 878 households in the 17 sampled study villages with a total population of 4,071 of which 51.6% were male and 48.4% female (2015). Among the households, 88.4% were cultivators, and of these, about 76.08% have their own land.

Age Group

It is found that the highest percentage of the population belongs to the 0 14 age group (24.83 %) and the lowest 60 + age group (11.38%). Besides, about 24.71% of the population belongs to the 15 29 age group, 22.16% in the 30 44 age group, 16.92% in the 45 59 age group. The villagers depend on primary activities and are less educated. Childbirth rate has been higher as they would increase their labour power potential in the future.

Age-Sex Composition

The age and sex composition pattern of study villages' population reveals that 24.83% villagers belong to the age group of up to14 years of which 12.48% is male and 12.36% is female, 24.71 % are in the age group of 15-29 years of which 12.97% is male and 11.74% is female, 22.16% are in the age group of 30 to 44 years where 11.37% is male and 10.78% is female, and 16.93%are in the group of 45 to 59 years of which 8.94% is male and 7.98% is female (fig. 2). In the age group of 60 and above there are only 11.38% where 5.87% is male and 5.50% is female of sampled villages. The sex ratio of the sample villages' population is 936 females /'000 males.

Ethnic Variation

About 3,009 (73.91%) of the population belongs to the ST community, followed by General (16.38%), and OBC (8.51%). Only 1.20% belongs to the SC community. Therefore, the majority of the villagers are ST, who are economically and socially backward.

Dominant Tribal Communities

The major ST communities are Rava (42.87%), Tamang (Nepali) (18.62%), Dukpa / Bhutia (17.98%) and Mech (7.74%), Santal, and Oraon. The villagers live together in complete communal harmony and interdependency. Relationship of villagers within their own community and with other community is good. They follow social marriage, although love marriage is not uncommon lately. They generally arrange their marriage within the same community. Durga Puja, Shyama puja, Saraswati Puja, etc are the major festivals of the Hindus

and X'mas is the main festival among the Christians. The Rava, Mech, Oraon, and Madeshia are mainly found in the southern part of the study area where elevation is comparatively low, while Dukpas/ Bhutias live in the northern part of Buxa hill and Nepalese are scattered all over (Das, 2000). There is a good number of Bengali-speaking community in the proximity of the forest villages.

Dependency on Forest

Non-Timber Forest Products (NTFPs)

The Non-Timber Forest Product (NTFPs) has been defined as "all biological materials, other than timber, which are collected from the forest for human purpose". It includes fruits, flowers, tubers, roots and leaves for food and medicines; firewood (which is not timber), fodder (grass and leave), resins, gums, herbal plants, roots, honey. According to Shvidenko et al. (2005), "All the biological material (other than industrial round-wood and derived sawn timber, wood chips, wood-based panels and pulp) that may be extracted from natural ecosystems, managed plantations, etc and be utilized within the household, be marketed, or have social, cultural or religious significance. Thus, non-timber forest products include plants used for food, fodder, fuel, medicine; fiber, biochemical, etc have an important role in forest livelihoods in the south-western part of the State.''

There are many important NTFPs items which are being collected by villagers. These are Cane fruits, Purundi fruits, Pan Leaves, Naglata, Lycopodium stick, Totola pods and Seeds, Golden and sponge Mushrooms, Odal fruit, Fern bud, Mahogony floral axis, Lali fruit, Simul floss and Floral axis, Broomstick, Thatch, etc. All forest villagers e.g Adma, Poro, Raimatang, Santrabari, Gangutia, Sankosh, etc collect NTFPs for household needs and excess for selling purpose. Besides there are many medicinal plants in this forest region and some of these are collected by the villagers who are used to remove fever, bone fracture join etc.Based on the domestic and commercial importance, availability of the NTFPs in a year, NTFPs market value, amount of collection, the most important and valuable NTFPs of that area are given in Table - 3.

All the residents of these study villages collect firewood, fodder, and fruits from the surrounding forests. More than half of the villagers are completely dependent on forest, while others do some agricultural and horticulture work on their agreement land or work as agricultural and tea garden wage labourers. However, at least one person from each household goes into the forest every day to collect leaves and firewood for fuel, fodder for livestock. Villagers also collect fruits, roots, bark, leaves, and flowers for own and commercial purpose. They collect dry leaves of sal, teak, simul, gamaree, and other trees from the surrounding forest. Each household collects about 360 to 400 sacks of leaf in a year. They also collect green leaves as fodder for livestock rearing. Dry leaves are mostly used for kitchen fuel purpose and very little another purpose such as to make roof shading and fencing. Each household earns between Rs. 1000/- to 1300/- per month by selling firewood, Rs. 240/- to 300/- by shrub, Rs. 200/- to 250/- by climber, Rs. 160/- to 190/- by grass, Rs. 150/- to 190/- by bamboo, Rs. 900/- to 1200/- by cane (Table - 3). Villagers also collect different kinds of fruit which is used for household and commercial purpose, and they earn a few supporting amounts of money for their family by selling haritaki (Rs. 25/- to 35/-), jam (Rs. 35/- to 40/-), and Purundi (Rs. 8/- to 10/-). The collection of NTFPs from BTR of Alipurduar district is given in Table - 4 where nature of plants, the quantity of collection and their market values, species of trees, etc are shown.

Medicinal Plants

About a total of 121 species of plants were found to be used as a medicinal purpose by forest villagers of this study area (Das, 2000). The knowledge of medicinal plants have been transmitted traditionally from generation to generation and some of them are considered as first aid medicine of treatment. Different parts of a plant are used for the preparation of medicine. Leaves (42.14%) are of common use, followed by roots (17.35%), whole plant (14.04%), seed (14.04%), rhizome, fruit, latex, flower, and only in rare occasions a combination of fleshy scale, flower bud, root bark, and stem.

Fodder

The livestock rearing is an important source of economy of the forest villagers for milk, meat, and hard cash. The domesticated animals are cow, calf, sheep, pig, and goats. They also provide organic manure for agricultural fields. They need fodder from the forests. The quantity of fodder depends on the number, size, and variety of livestock, nature of feeding as well as the availability. The livestock is both stalled fed (buffaloes) and open grazed (goats, cows, and sheep). The villagers collect dry and green fodder from various sources and parts (Table 6). It is found that the lowest per day quantity of dry fodder fed to animals was 1.24 kg ± 0.85 kg which is also found in Chunabati village where the size of the landholding is small. On the other hand, it was 4.54 kg ± 0.35 kg in Gadhadhar village which is highest due to its low altitude location and medium size of land holding capacity among villagers.

The entire quantity of dry fodder fed is obtained from owned land and the farmer feed byproducts of crops produced in own agricultural lands as dry fodder for their animals. The lowest average quantity of green leaves fodder and green grass fodder obtained from the field was 0.92 kg ± 0.21kg and 1.24 kg ± 0.89 kg per day which is found in Raimatang and Suni village respectively. On the other hand, the highest average quantity of green fodder of leaves and grass was 2.55 kg ± 0.35 kg and 2.37 kg ± 0.65 kg per day in Garo Basti and Lehra village respectively. The lowest average quantity of green fodder leaves obtained from the forest was 2.35 kg± 0.65 kg per day in case of leaves and 3.45 kg± 0.82 kg per day in case of grass which is found in Poro and Garo Basti village respectively. The highest average quantity of green fodder of leaves and grass obtained from the field was 5.47 kg ± 0.31kg and 5.49 kg ± 0.39 kg per day which is found in Adma H.A and Lehra village respectively.

The fodder collection in winter season for feeding of animals is presented in Table-7, It is found that villagers collecting and feeding dry fodder quantity is comparatively more than the summer season. The average lowest quantity of dry fodder fed of grass was 1.78 kg ± 0.91 kg and highest quantity was 4.98 kg ± 0.62 kg which is found in Chunabati and Poro respectively. The per day minimum and maximum quantity of green fodder of leaves from the field area was 0.76 kg ± 0.12 kg and 2.47 kg ± 0.17 kg of Raimatang and Garo Basti respectively. In the case of

green grass fodder, it was 1.14 kg ± 0.55 kg in Suni and 2.27 kg ± 0.45 kg in Lehra village. However it is also identified that per day lowest and highest quantity of green fodder consumption of leaves from forest was 2.24 kg ± 0.23 kg and 5.37 kg ± 0.21 kg of Gadhadhar and Adma village respectively whereas in case of green grass fodder it was 2.95 kg ± 0.72 kg in Garo Basti and 4.89 kg ± 0.49 kg in Lehra village. Thus, the number of green leaves and grass obtained from the forest was significantly higher than that of leaves and grass collected and fed from the field and other sources. However, owned land or field was the only source of dry-fodder on sampled villages under study. It is also identified that per day fodder collection of leaves and grass is more in summer season comparatively than winter season collection.

Fuelwood

The villagers collect firewood which is the prime NTFPs from the surrounding reserve forest as well as from protected forest. It is generally used for cooking, preparation of food for livestock and to keep the houses warm during winter in the high-altitude villages. The consumption of firewood varies from one season to another. Table - 8 gives an idea of fuelwood consumption of an average of villages of household per day and per month during summer and winter season separately.

Villagers use more fuelwood during winter than in summer. The average per day consumption of firewood of each household was 3.99 ± 0.67 kg in winter and 3.29 ± 0.68 kg in summer. In winter the per day minimum and maximum quantity of firewood consumption were 3.23 ± 0.98 kg and 4.96 ± 0.59 kg found in Lehra and Sankosh respectively where in summer it was 2.78 ± 0.81kg and 4.03 ± 0.72 kg in Lapraguri and Adma. The consumption of firewood per household per month recorded a maximum of 148.89 ± 17.74 kg in Sankosh village and minimum 83.43 ± 24.31 kg in Lapraguri village in winter which was 120.91 ± 21.63kg in Adma and 83.43 ± 24.31kg in Lapraguri. In high altitude area of the Buxa hill where per household per day average was recorded from 3.52kg ± 0.61 kg to 4.86kg ± 0.54 kg in winter and 2.88 kg ± 0.78 kg to 4.03kg ± 0.72 in summer.

The quantity of firewood requirement is too high in the forest villages due to lack of alternative source of energy supply such as kerosene, LPG, electricity, and other sources. Villagers collect firewood for their livelihood as the only alternative source of energy. Twigs, branches, dead dry wood, fallen wood, and logwood of Sal, Teak, Simul, and Jarul are normally used as fuel. As a matter of rights and concessions, the forest villagers are allowed to collect the dry leaves, dry fallen wood and small twigs and branches for fuel from the nearby forest. Since Sal and Teak are common and widely grown trees, almost all respondents preferred that leaves, branches, and log of these trees as a good fuel.

Timber

The timber is one of the most important forests produce used by the forest villagers for various purposes. Timber and branches are a prime component in house construction such as platform or floor, wall, pillar and stair of houses. It is also used for entresol, wood bridge, tower and fence making. In general, most of the houses in this area are two-story houses. The long trees have been used as a pillar of the house. The ground floor is allotted for cattle and storage of water tank, fuelwood as well as garage. In some case, cattle shed is also constructed by a wood near the house separately. The first floor is used for the living purpose such as for the kitchen, dining room, open space and bedroom as it is comparatively safe from the attack of the wild animals. The doors and windows, the walls and upper floors are invariably made of wooden planks whereas bricks, stones are used for ground floors and tins, playthings, banana, and others tree leaves are used for roof purpose according to their financial capacity. A limited number of households use grass, banana and other leaves for thatching but tin and wood are common for roofing purpose in all most all the cases. Also, a limited number of concrete houses are constructed only for Lehra and Suni village through Gitanjali project. The required wood is either acquired from the adjacent forest as free since forest agreement holder or labour or as a claim basis on traditional rights of forest inhabitants or by paying the concessional price or auction price or collected unauthorized way. The used woods are different types but sal and teak are very common for house construction.

Construction Material

As many as 87.70% of the households used wood for different purpose of house construction. The percentage of households using wood varies from 17.86% to 100%, wherein Gangutia, Bhutri forest basti, Bhutiabasti, and Lapraguri village households covered 100% of using wood. Due to benefits of Gitanjali project, almost all households of Lehra and Suni villages are provided a pucca house with tin so that only 31.82 % and 17.86 % of households have used wood. In high altitude villages such as Gangutia, Adma, Raimatang, Chunabati, Bhutiabasti, and Santrabari used comparatively more wood than in the plains. Thus, altitude is a factor which influences the proportion of households using wood for house construction. The size of the family or settlement, however, has not affected the use of wood. Actually, the households at higher elevations are forced to use the forest wood because of non-availability of alternatives for house building material such as soils, bricks, irons, and cement at that height for that villagers depends on the plain market with any cost although transport is a big obstacle.

The nature of the terrain, types of trees and availability of wood are major factors for house construction. About 62.98% of the households used timbers of sal and teak, 14.12% teak, sissu and sidha, 9.22% sissu, and odal, 8.31% khair, jarul and neem, 5.35%) sidha, semal, simul and neem for house construction and other purpose. The sal and teak are popular in areas with higher altitudes, e.g., Adma, Chunabati, Sankosh, Santrabari, Raimatang, Gangutia, and Bhutri forest basti. Sissu, khair, sidha, and neem are commonly used in lower altitude areas. The sal and teak are popular tree species of timber for all the respondents as its longevity very good compared to others.

Other Uses

There are so many other unavoidable demands which have been fulfilled through a collection of wood, branches from the forest. The needs of benches for house and shop, agricultural implements such as the wood plough and harrows for cultivation, rod poles for fence and vegetable creepers and bulk firewood for the occasions such as birth party, wedding

ceremony and cremation, etc are also fulfilled from the neighboring forest. The amount of wood needed for social ceremonies depend on size and number of invitees of occasion therefore, respondents could not able to reply to the actual firewood required for that. However, it has been observed that an average of 5 to 7 quintal of extra firewood is required for each of these occasions. The villagers' relatives either contribute or pay for the wood individually or go together to the forest to collect the wood unauthorized way. Sometimes, the concerned family collects the required wood on concessional rate by applying to the local forest authority as an agreement holder. The requirement of forest wood for agricultural appliance and rods, fence for cropland and creepers as well as to make gola to store paddy or other produce. About 4 to 6 small trees are required for each household every year for this. Sometimes branches of trees are also used to make protective poles and hedges around the agricultural field. Again this wood is collected after granting permission or through negotiations with the forest department, but mostly, villagers choose to go to the forest and collect it themselves without informing the authority.

Forests as a Source of Employment

In the study area, forest villagers never think their livelihood existence and economy without forest support. It is, however, considered that the forest provides more or less some significant opportunities to the forest dwellers for their livelihood. The forests, no doubt, generate a good amount of income but most of it accrues to the Government through tree felling by the local forest department. Even most of the permanent employees, forest contractors come from outside who were employed for tree felling, lumbering, and other forest-related matter and as a consequence, villagers do not get financial benefits only casual employees of forest felling or lumbering, Forest Protection Committees (FPCs) and Eco-Development Committees (EDCs) members engaged in Joint Forest Management project were getting little financial support. During the field survey, it was identified that 449 households of members out of 878 households were employed in forestry activities through FPCs and EDCs committee member, Self Help Group members, or employed as casual labour for official activities such as seed collectors, nursery supervisor, day and night guard or basket makers. Among them, none of a single member got a full-time job as a regular service basis in their local office of the forest department.

Joint Forest Management Activities

In Lera and Suni village there is a negative sense of deprivation among villagers in the form of non-payment and inactivity by the Forest Protection Committee (FPC) despite their participation in forest protection activity. So villagers do not spontaneously participate for forest protection and preservation as a result forest gets degraded with the multiple impacts of poverty and illegal filling. According to villagers, the forest is degraded due to illegal felling which is the main cause behind degradation. In Chunabati, Adma and Bhurti village are located in a hilly, remote and dense forest region, people are extremely poor and suffer from severe unemployment and pursuit of agriculture is very difficult due to rocky-waste, stony undulating surface, lack of perennial water source. They have very few alternative employment opportunities such as shifting cultivation, contour farming, and marginal labour work in nearby Bhutan. Duration of employment is a very short period and on average, it is 5-8 days a month. Having no alternatives, people don't have interest in the FPCs activities for sustaining their livelihood as Forest Department (FD) provide them only a few days work during the whole year. On the other hand, tribal dominating inhabitants in Poro (N), Nimati-Dabri, Lapraguri, Balapara and Sankosh village have a great dependence on NTFPs. Again alternative job opportunity through JFM is extremely little among these areas. So they feel the urge to preserve the forest land for sustainability. Apart from this, local knowledge motivates villagers to cut small trees scientifically so that the stem gets enough opportunity for re-growth and subsequently to provide NTFPs. However, participation in FPCs activity has not been attained here at the expected level.

The FPCs in Santrabari, Garo Basti, Gadhadharand Balaparavillage is quite well coordinated with the forest department. Because forest felling here occurs at regular interval and the FPC members are assured of the stipulated percentage of forest revenue. There is an intense level of forest dependence observed here, which is mostly reflected in the form of a collection of NTFPs from sal, teak, sisoo, gamari plants for extracting abundant dry follow wood bench while the fruit is used for self consume. The attachment of the villagers with the forest and their intense dependence on forest resources has motivated them to take an active drive in forest conservation activities. But due to lack of sufficient income and the uncertain job of JFMP, their motivation for active participation in forest protection has been failed.

In Raimatang, Bhutiabasti, Gudamdabri and Gangutia people are facing severe unemployment. Since JFM does not provide a job for the whole of the year, many of them migrate to nearby states such as Assam and Bihar, even in Bhutan for several times a year for a job as labour. Villagers also have no opportunity to access loans from other sources like NGOs, Clubs, Societies and even from friends, relatives, Mahajan, and shops because of the remote location. Besides these, most of the villages face the frequent trampling of crops by elephants. For this, they usually get only a small part of their demand as compensation from the forest department. This sometimes leads to loss of mutual trust between FPC members and FD which is also responsible for lower participation rate. So there is a need for providing awareness and training to the forest villagers and fringe people about aims, objectives, and activities of JFM.

Participation and Expectation in Forest Management

Table 10 shows that out of 878 forest households, about 46.70% opined that the forests are managed by the forest department while only 16.06% are of the view that the forest is managed by the Joint Forest Management Committee (FPCs/EDCs) where 14.12% are engaged in participation meeting related to forest management and only 10.60% are directly involved in plantation activities. Besides, 8.31% participated in the training programmes on forest management scheme. Thus, about 16.06 % of the households are found engaged and playing an active role in JFM as FPCs and EDC member. This poor participation is due to the fact that 83.94% of the households believe that there is no guarantee of income as a Joint Forest Management

beneficiary as well as income is insufficient as compared to the time spent in the forests; about 18.79% stated that the forest department does not allow them to be a member of JFM; about 59.57% of the respondents opined unwillingness due to irregular and insecure earning and only 5.58% are unwilling without any specific reason. The JFM must provide various benefits to its members like an equal distribution of income (too less than a requirement) and allow the forest department to take them in decision making. Hence, villager's participation and performance are not satisfactory. They have also opined that it is highly impossible for them to meet their basic needs out of the income from the forest produce collection. In connection of the benefits as members of JFM, about half of the beneficiaries are of the view that there is no guarantee of benefit and only 9.80% are getting benefits from NTFPs collection and 5.58% and 0.68% beneficiaries are benefitted from participation in committees' process (FPCs/EDCs) and contribution in forest product collection. However, respondents noticed that they needed adequate training about the collection of NWFPs, conservation, and protection of the forest, micro planning, loan facility, etc. Some of them are also of the opinion that the training is necessary to have sufficient knowledge about sustainable forest development.

Conclusions

The forest-villagers are highly attracted and satisfied towards the forest environment to live and very much interested in forest activities related to forest protection as well as for their survival. The forest-dependent communities are mainly Rava, Santal, and Dukpa/ Bhutia. The forests are a major source of income of the forest-villagers in all sense. The residents are economically backward living below the poverty line. The forest contributes everything they need to sustain their life. The villagers collecting wood and nonwood forest products to increase their family income through the unsustainable way. Some of them are members of the Joint Forest Management Committee and play an active role in JFM Programmes. Although the Forest Department gets adequate financial assistance from the Govt., the members of Joint Forest Management Committees (JFM) do enjoy a very little benefit. Villagers mostly lack ideas about of sustainable method of collection of NTFPs, conservation, and protection of the forest, awareness of micro-planning, etc. in fact, the JFM committees are on paper only, there is a need for activity and target oriented actions of JFM programme to achieve its goal within a certain period.

References

1. Das, S.C., 2000: *Management-cum-working-plan of Buxa Tiger Reserve*, ForestDepartment, Govt. of West Bengal, Vol. 1, pp. 90, 110, 253, 261.
2. Govt. of West Bengal, 2009: *Ninth Working plan of Jalpaiguri Forest Division,* Directorate of Forest, Volume I, 2008-09, pp. 10, 123.
3. Govt. of West Bengal, 2011: *State Forest Report, 2010-2011*, Directorate of Forests, pp. 14-15.
4. Govt. of West Bengal, 2011: *Statistical Handbook of Jalpaiguri District*, Bureau of Applied Economics and Statistics, Govt. of West Bengal, Kolkata, 2010-11, pp. 1-2.
5. Grunning, J. F., 1911: *Eastern Bengal and Assam District Gazetteers, Jalpaiguri*, First reprinted by N.L. Publishers, Siliguri, 2008, pp. 11-14, 44-50 and 86-90.
6. Kar, A., (Ed.) 2003: *Kirat Bhumi, Jalpaiguri Zila Sankalan* (second part), p. 435.
7. Karmakar, M., 2011: *Growth of eco-tourism North Bengal & Sikkim*, First Edn, N.L. Publishers, Shivmandir, Siliguri,pp. 27- 40
8. Ministry of Home Affairs, GOI, 2001: *Census of India 2001*, Registrar General & Census Commissioner, Office of the Registrar General India, New Delhi.
9. Shvidenko, A., Barber, C. V. & Persson, R., 2005: *Forest and Woodland Systems (Current State and Trends Assessment)* [online]. Millennium Ecosystem Assessment, World Resources Institute: Washington, USA. Available at: http://www.maweb.org/documents /document. 290. Aspx.pdf (Accessed 20th May2016), p. 605

Table -1: Demographic Characteristics of the Sampled Forest Villages

Sl. No.	Village	Total Household	Total Popul-ation	Male	Female	Cultiv-ators	Cultiva-Ted Land owner
1	Lehra	22	93	49	44	21	21
2	Suni	28	127	69	58	28	25
3	Garo Basti	72	329	170	159	70	63
4	Gadhadhar	63	348	179	169	63	60
5	Poro (N)	61	301	155	146	61	57
6	Nimati & Dabri	68	368	191	177	68	63
7	Gangutia H.A	55	210	112	98	32	24
8	Adma H.A	55	184	95	89	31	20
9	Raimatang H.A	55	271	139	132	43	32
10	Bhutri forest basti H.A	45	221	113	108	40	36
11	Gudamdabri	63	251	129	122	63	61
12	Chunabati H.A	54	211	109	102	34	24
13	Bhutiabasti	30	133	68	65	30	21
14	Sankosh	60	331	169	162	60	54
15	Lapraguri	47	231	118	113	47	41
16	Santrabari H.A	65	310	159	151	53	37
17	Balapara	35	152	78	74	32	29
Total		878	4071	2102 (51.63%)	1969 (48.37%)	776 (88.38%)	668 (76.08%)

H.A= High Altitude location,(Estimated by the researcher based on field survey

Table – 2: Ethnic Variation of Sampled Forest Villages.

Sl. No.	Village	Ethnic Variation				
		SC	ST	OBC	GEN	Total
1	Lehra	-	93	-	-	93
2	Suni	-	127	-	-	127
3	Garo Basti	05	304	12	08	329
4	Gadhadhar	-	331	06	11	348
5	Poro (N)	-	301	-	-	301
6	Nimati and Dabri	21	306	24	17	368
7	Gangutia H.A	-	13	48	149	210
8	Adma H.A	-	184	-	-	184
9	Raimatang H.A	05	176	24	66	271
10	Bhutri forest basti H.A	-	09	63	149	221
11	Gudamdabri	18	116	69	48	251
12	Chunabati H.A	-	211	-	-	211
13	Bhutiabasti	-	84	17	32	133
14	Sankosh	-	195	49	87	331
15	Lapraguri	-	231	-	-	231
16	Santrabari H.A	-	184	34	92	310
17	Balapara	-	144	-	08	152
Total		49 (1.20%)	3009 (73.91%)	346 (8.51%)	667 (16.38 %)	4071 (100%)

H.A= High Altitude location *(Estimated by the researcher based on field survey)*

Table – 3: Some Important NTFPs (collected by surveyed households)

Name/ Nature of Plants	Name of NTFPs	Season	Domestic Use	Commercial Use	Quantity of NTFPs collected in a year /Household	Monetary Value	Utility Class
Tree	Leaf	Winter	Yes	No	360 to 400 sack	-	1
Fire wood	Benches	All season	Yes	Yes	1800 kg to 2000 kg	Rs.10/kg	1
Shrub	Benches	Winter	Yes	Yes	360 kg to 400kg	Rs.8/kg	1
Climber	Stem	Winter	Yes	Yes	300 kg to 350kg	Rs.8/kg	2
Grass/fodder	Stem	All season	Yes	Yes	400kg to 450 kg	Rs. 5/kg	1
Haritaki	Fruit	Summer	Yes	Yes	16 kg to 20kg	Rs.20/kg	2
Jam	Fruit	Summer	Yes	Yes	18kg to 20kg	Rs.25/kg	2
Bamboo	Stem	All season	Yes	Yes	20 to 25 piece	Rs. 90/Bamboo	1
Cane	Stem	All	Yes	Yes	250 kg to 300kg	Rs. 45/kg	1
	fruit	season			15 kg to 18 kg	Rs.10/kg	2
Orchards	Stem & flower	Winter	Yes	Yes	20kg to 25 kg	Rs.12/kg	2
Golden and Sponge Mushroom	Stem & flower	Winter	Yes	Yes	25kg to 30kg	Rs. 25/kg	2
Medicinal Plants	Leaf & Stem	All season	Yes	No	5kg to 7kg	-	2
Purundi	Fruits	Summer	Yes		12kg to 15kg	Rs. 8/kg	2

Utility Class: 1-most important for Household and Commercial Use; 2-less important for Household and Commercial Use. (Estimated by the researcher based on field survey)

Table -4: Collection of NTFPs from BTR, 1998-99

Nature of plants	No. of species used	Quantity Collected (Metric ton)	Value of collection at the primary collector's level (lakh Rs)	Value at exporter level (lakh Rs)	%	Remarks (Species)
Tree	20	231.20	11.36	51.19	48	Jarul, Lotka, Pata, Chilauni, Chikrasi, Narkeli, Sal, Tinfali, Ritha, Simul, Bohera, Odal, Phata lali, Gota lali, Dalchini, Kowla, Lampata, Amloki Etc.
Shrub	5	25.25	2.33	15.33	15	Jangli sojna, Ulta, Kamal, Hartaki, Hydrocial etc.
Climber	9	30.60	4.90	11.87	11	Satmula, Manjito, Bantarul, Gila, Sikakai, Dhundhal, Jangli San, Bet.
Grass	3	310.00	2.40	3. 70	4	Kucho, Kans, Thatch etc.
Others	6	27.00	5.10	23.90	22	Includes Orchards, bamboo, mushrooms, and edible herbs.
Total	43	624.05	26.09	105.99	100	

(Management-cum-working-plan of BTR, 2000)

Table -5: Medicinal Plants used by the Forest Villagers.

Sl. No.	Species	Local name	Parts Used	Medicinal Uses for
1	Andrographis paniculata	kalmegh; Chirata	Stem and leaf	Stomach, Fever, Liver, Skin, and Ulcer
2	Hygrophila schulli	Kulekhara	Stem and leaf	Anemia
3	Bombax ceiba	Simul; Panchu phang; Simal	Resin, gum, and flowers	Diarrhea and disorders women
4	Calotropis procera	Akanda; Akwan pata; Bhosanpata	Leaf	wounds
5	Cuscuta reflexa Roxb	Swarnalata; Alokzori	Whole plant	Jaundice.
6	Cissus quadrangularis L	Harjora	Stem	Broken bone
8	Curcuma longa L.	Halud	Bulb	Skin diseases and inflammation
9	Dioscorea bulbifera	Ban-alu; Kukrala; Gachh-alu; Githa	Tuber	Asthma and snake bite.
10	Dracaena angustifolia	Nagmoni	Leave	Insect bite
11	Datura stramonium	Dhatura	Seed	Dog bite.
12	Eclipta prostrate	Kesuti; Kalakheshri	Leaf	skin disease
13	Jatropha gossypifolia L.	Lal bharanda	Root	Tuberculosis.
14	Scoparia dulcis Roxb.	Mithapata; Chinipata	Leaf	Boils, tumors
15	Terminalia chebula	Haritaki	Fruit	stomach disorder
16	Vitex negundo L.	Nishinda	Leaf	hair
17	Zingiber officinale Rosc	Aada; Haigeng	Rhizome paste	bone fracture

(Source: Management-cum-working-plan of BTR, 2000)

Table – 6: Fodder Collections during Summer for Livestock (kg/day).

Sl. No.	Forest Village	Dry Fodder		Green Fodder			
		From Field	From Forest	From Field		From Forest	
		Grass	Leaves and Grass	Leaves	Grass	Leaves	Grass
1	Lehra	3.55 ± 0.31	-	1.57 ± 0.75	2.37 ± 0.65	3.53 ± 0.89	5.49 ± 0.39
2	Suni	2.23 ± 0.25	-	1.84 ± 0.47	1.24 ± 0.89	3.45 ± 0.93	4.38 ± 0.37
3	Garo Basti	3.42 ± 0.45	-	2.55 ± 0.35	1.57 ± 0.67	3.12 ± 0.25	3.45 ± 0.82
4	Gadhadhar	4.54 ± 0.35	-	1.65 ± 0.87	2.27 ± 0.53	2.54 ± 0.38	3.56 ± 0.75
5	Poro (N)	4.35 ± 0.32	-	-	-	2.35 ± 0.65	4.49 ± 0.85
6	Nimati and Dabri	3.58 ± 0.15	-	1.57 ± 0.54	1.34 ± 0.56	3.52 ± 0.69	4.56 ± 0.25
7	Gangutia H.A	2.56 ± 0.25	-	-	-	4.45 ± 0.32	4.78 ±0.65
8	Adma H.A	2.67 ± 0.46	-	-	-	5.47±0.31	4.89 ± 0.88
9	Raimatang H.A	2.23 ± 0.55	-	0.92 ± 0.21	1.26 ± 0.88	3.45 ± 0.66	5.34 ± 0.67
10	Bhutri forest basti H.A	1.56 ± 0.75	-	-	-	4.23 ± 0.69	3.59 ± 0.15
11	Gudamdabri	3.78 ± 0.38	-	-	-	4.56 ± 0.73	4.57 ± 0.25
12	Chunabati H.A	1.24 ± 0.85	-	-	-	5.34 ± 0.33	4.66 ± 0.77
13	Bhutiabasti	1.45 ± 0.37	-	-	-	4.12 ± 0.61	4.67 ± 0.81
14	Sankosh	3.35 ± 0.39	-	1.79 ± 0.27	1.62 ± 0.55	3.56 ± 0.71	4.43 ± 0.43
15	Lapraguri	2.45 ±0.28	-	1.25 ± 0.39	1.34 ± 0.95	4.33 ± 0.64	3.65 ± 0.29
16	Santrabari H.A	2.67 ± 0.73	-	-	-	3.17±0.95	4.78 ± 0.38
17	Balapara	3.59 ±0.21	-	1.45 ± 0.31	1.29 ± 0.47	3.59 ± 0.37	5.23 ± 0.31
Average		2.89 ± 0.41		0.86 ± 0.24	0.84 ± 0.36	3.81 ± 0.59	4.50 ± 0.53

N.B: (mean and '±' SD), H.A= High Altitude location (Estimated by the researcher based on field survey)

Table -7: Fodder Collections during Winter for Livestock (kg/day).

Sl. No.	Forest Village	Dry Fodder		Green Fodder			
		From field	From Forest	From field		From Forest	
		Grass	Leaves and Grass	Leaves	Grass	Leaves	Grass
1	Lehra	3.98 ± 0.39	-	1.37 ± 0.35	2.27 ± 0.45	3.13 ± 0.39	4.89 ± 0.49
2	Suni	2.93 ± 0.65	-	1.51 ± 0.27	1.14 ± 0.55	3.15 ± 0.43	4.18 ± 0.32
3	Garo Basti	3.88 ± 0.95	-	2.47 ± 0.17	1.47 ± 0.47	3.10 ± 0.15	2.95 ± 0.72
4	Gadhadhar	4.94 ± 0.85	-	1.73 ± 0.52	2.21 ± 0.33	2.24 ± 0.23	3.26 ± 0.65
5	Poro (N)	4.98 ± 0.62	-	-	-	2.25 ± 0.45	4.29 ± 0.15
6	Nimati and Dabri	3.89 ± 0.65	-	1.47 ± 0.36	1.31 ± 0.54	3.32 ± 0.39	4.26 ± 0.21
7	Gangutia H.A	2.86 ± 0.35	-	-	-	4.35 ± 0.22	4.29 ±0.35
8	Adma H.A	2.87 ± 0.56	-	-	-	5.37± 0.21	4.19 ± 0.78
9	Raimatang H.A	2.73 ± 0.82	-	0.76 ± 0.12	1.23 ± 0.37	3.25 ± 0.16	4.74 ± 0.47
10	Bhutri forest basti H.A	1.88 ± 0.87	-	-	-	4.21 ± 0.39	3.19 ± 0.25
11	Gudamdabri	3.93 ± 0.89	-	-	-	4.46 ± 0.63	3.97 ± 0.75
12	Chunabati H.A	1.78 ± 0.91	-	-	-	4.74 ± 0.53	3.86 ± 0.87
13	Bhutiabasti	1.79 ± 0.57	-	-	-	3.82 ± 0.51	4.17 ± 0.21
14	Sankosh	3.69 ± 0.73	-	1.69 ± 0.17	1.52 ± 0.51	3.56 ± 0.71	4.13 ± 0.33
15	Lapraguri	2.96 ±0.78	-	1.21 ± 0.31	1.32 ± 0.75	3.93 ± 0.74	3.11 ± 0.19
16	Santrabari H.A	2.81 ± 0.82	-	-	-	2.97±0.87	4.41 ± 0.48
17	Balapara	3.90 ±0.45	-	1.41 ± 0.21	1.19 ± 0.27	3.21 ± 0.33	4.73 ± 0.42
	Average	3.28 ± 0.69		1.51 ± 0.28	1.52 ± 0.47	3.59 ± 0.43	4.04 ± 0.45

N.B: (mean and '±' SD), H.A= High Altitude location (Estimated by the researcher based on field survey)

Table -8: Seasonwise Consumption of Firewood.

Sl. No.	Forest Village	Winter		Summer	
		kg/day	kg/month	kg/day	kg/month
1	Lehra	3.23 ± 0.98	96.91± 29.42	2.81 ± 0.54	84.32 ± 16.21
2	Suni	3.72 ± 0.74	111.69 ± 22.44	3.21 ± 0.43	96.30 ± 12.90
3	Garo Basti	3.61 ± 0.75	108.31 ± 22.51	3.01 ± 0.59	90.32 ± 17.72
4	Gadhadhar	3.76 ± 0.69	112.83 ± 20.73	2.96 ± 0.89	88.87 ± 26.74
5	Poro	3.66 ± 0.84	109.23 ± 25.22	3.12 ± 0.72	93.65 ± 21.61
6	Nimati and Dabri	4.10 ± 0.40	123.12 ± 12.36	3.41 ± 0.47	102.32 ± 14.11
7	Gangutia H.A	4.76 ± 0.77	142.36 ± 23.76	3.98 ± 0.71	119.43 ± 21.33
8	Adma H.A	4.86 ± 0.54	145.68 ± 16.21	4.03 ± 0.72	120.91 ± 21.63
9	Raimatang H.A	4.36 ± 0.64	130.81 ± 19.28	3.76 ± 0.47	112.81 ± 14.11
10	Bhutri forest basti H.A	4.56 ± 0.51	136.87 ± 15.34	3.86 ± 0.79	115.85 ± 23.76
11	Gudamdabri	3.26 ± 0.67	97.83 ± 20.14	2.87 ± 0.76	86.11 ± 22.83
12	Chunabati H.A	4.79 ± 0.73	143.72 ± 21.91	3.46 ± 0.38	103.84 ± 11.45
13	Bhutiabasti	3.47 ± 0.75	104.11 ± 22.61	3.04 ± 0.67	91.21 ± 20.11
14	Sankosh	4.96 ± 0.59	148.89 ± 17.74	3.76 ± 0.89	112.82 ± 26.76
15	Lapraguri	3.36 ± 0.68	100.82 ± 20.41	2.78 ± 0.81	83.43 ± 24.31
16	Santrabari H.A	3.52 ± 0.61	105.65 ± 18.32	2.88 ± 0.78	86.48 ± 23.47
17	Balapara	3.89 ± 0.58	116.73 ± 17.45	2.94 ± 0.88	88.23 ± 26.41
	Average	3.99 ± 0.67	119.74 ± 20.34	3.29 ± 0.68	98.64 ± 20.32

N.B: (mean and '±' SD), H.A= High Altitude (Estimated by the researcher based on field survey)

Table – 9: Total JFMC Member of the Sampled Households

Forest Division	Forest village	Total household member	Category of household			
			SC	ST	OBC	Gen
Jalpaiguri Forest Division	Lehra village	04	-	04	-	-
	Suni village	05	-	05	-	-
Buxa Tiger Reserve, West Division	Garo Basti	14	-	09	-	05
	Gadhadhar	12	-	12	-	-
	Poro (N)	10	-	10	-	-
	Nimati and Dabri	13	-	13	-	-
	Gangutia	08	-	02	-	06
	Adma	10	-	10	-	-
	Raimatang	08	-	08	-	-
	Bhutri forest basti	04	-	04	-	-
	Gudamdabri	07	-	07	-	-
Buxa Tiger Reserve, East Division	Chunabati	07	-	07	-	-
	Bhutiabasti	06	-	03	-	03
	Sankosh	08	-	03	-	05
	Lapraguri	06	-	06	-	-
	Santrabari	12	-	-	-	12
	Balapara	07	-	07	-	-
Total		141	00	110	00	31

(Management-cum-working-plan of BTR, 2000)

Table -10: Participation Status of Forest Villagers' in Forest Management

Sl. No. of particulars	Forest village					
	Lehra 1	Suni 2	Garo-Basti 3	Gadha-dhar 4	Poro (N) 5	Nimati - Dabri 6
1. Forest management						
By Forest dept. Itself	11	14	26	24	28	32
By forest protection Committees (FPC/EDC)	04	05	14	12	10	13
Participation in meeting	03	04	12	11	09	07
Plantation activities	02	02	09	09	07	04
Awareness of micro planning	-	-	-	-	-	-
Training programme attended	02	03	06	05	04	05
None of these	00	00	05	02	03	07
Total	22	28	72	63	61	68
2. Membership of the committee						
Yes	04	05	14	12	10	13
No	18	23	58	51	51	55
Total	22	28	72	63	61	68
3. Role as a member						
Active member	02	03	06	06	04	07
Nominal member	02	02	08	06	06	06
Total	04	05	14	12	10	13
4. Reasons for non–membership						
Unwillingness	00	01	05	03	05	07
Forest dept. did not allow	07	07	15	07	11	09
Irregular earning	11	15	38	41	35	39
Total	18	23	58	51	51	55
5. Benefits as a members						
Contribution in forest product collection	00	00	00	00	00	00
Participation in committees' process (FPC/EDC)	01	01	05	05	03	04
NTFPs collection	03	04	09	07	06	9
No benefits	00	00	00	00	00	00
Total	04	05	14	12	10	13

Sl. No. of Particulars	Forest village					
	Gangutia 7	Adma 8	Raima-tang 9	Bhutri basti 10	Gudam-dabri 11	Chuna-bati 12
1. Forest management						
By Forest Dept. Itself	24	28	26	21	32	28
By forest protection Committees (FPC/EDC)	08	10	08	04	07	07
Participation in meeting	09	06	07	11	06	07
Plantation activities	06	04	09	06	06	05
Awareness of micro planning	-	-	-	-	-	-
Training programme attended	05	04	03	03	09	04
None of these	03	03	02	00	03	03
Total	55	55	55	45	63	54
2. Membership of the committee						
Yes	08	10	08	04	07	07
No	47	45	47	41	56	47
Total	55	55	55	45	63	54
3. Role as a member						
Active member	05	04	03	02	05	02
Nominal member	03	06	05	02	02	05
Total	08	10	08	04	07	07
4. Reasons for non–membership						
Unwillingness	04	02	03	03	06	00
Forest dept. did not allow	12	07	11	08	12	13
Irregular earning	31	36	33	30	38	34
Total	47	45	47	41	56	47
5. Benefits as a members						
Contribution in forest product collection	01	02	00	01	00	01
Participation in committees' process (FPC/EDC)	04	03	04	00	02	04
NTFPs collection	03	05	04	03	05	02
No benefits	00	00	00	00	00	00
Total	08	10	08	04	07	07

Sl. no of Particulars	Forest village					
	Bhutiab-asti 13	Sanko-sh 14	Lapra-guri 15	Santra-bari 16	Bala-para 17	Total (%)
1. Forest management						
By forest dept. Itself	14	31	23	32	16	410 (46.70)
By forest protection committees (FPC/EDC)	06	08	06	12	07	141 (16.06)
Participation in meeting	03	09	10	06	04	124(14.12)
Plantation activities	02	06	05	08	03	93(10.60)
Awareness of micro planning	-	-	-	-	-	
Training programme attended	03	04	03	07	03	73(8.31)
None of these	02	02	00	00	02	37(4.21)
Total	30	60	47	65	35	878(100)
2. Membership of the committee						
Yes	06	08	06	12	07	141 (16.06)
No	24	52	41	53	28	737(83.94)
Total	30	60	47	65	35	878(100)
3. Role as a member						
Active member	04	05	04	07	03	72(8.20)
Nominal member	02	03	02	05	04	69 (7.86)
Total	06	08	06	12	07	141 (16.06)
4. Reasons for non–membership						
Unwillingness	00	04	03	03	00	49(5.58)
Forest dept. did not allow	05	13	09	12	07	165 (18.79)
Irregular earning	19	35	29	38	21	523 (59.57)
Total	24	52	41	53	28	737 (83.94)
5. Benefits as members						
Contribution in forest product collection	00	00	00	01	00	06 (0.68)
Participation in committees' process (FPC/EDC)	03	02	01	05	02	49 (5.58)
NTFPs collection	03	06	05	07	05	86(9.80)
No benefits	00	00	00	00	00	00
Total	06	08	06	12	07	141(16.06)

(Estimated by the researcher based on field survey)

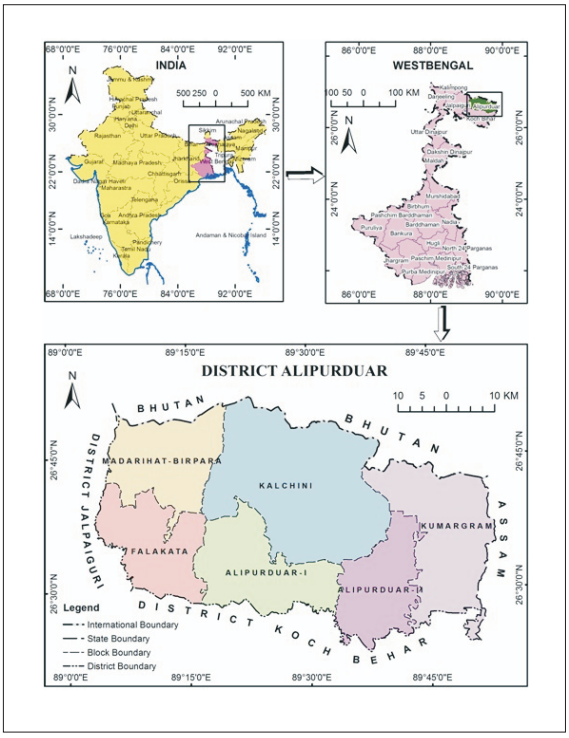

Fig.1: Location Map of the Study Area

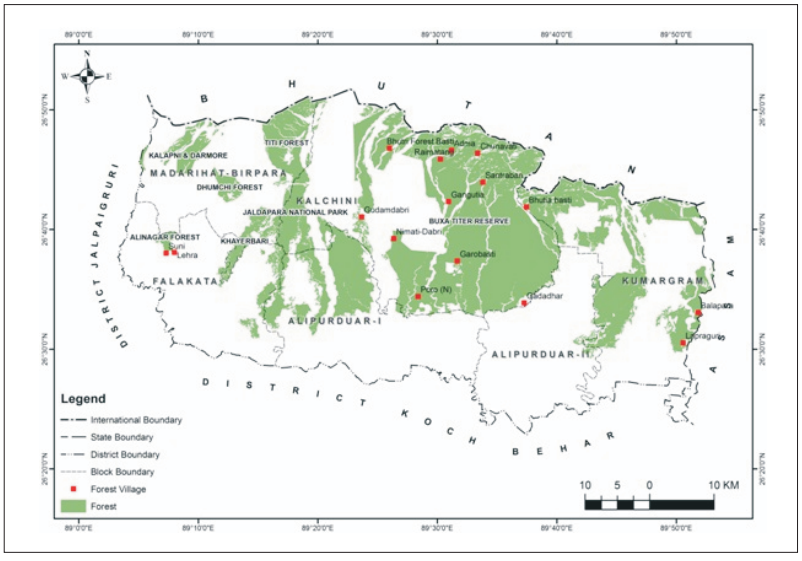

Fig. 2: Location of the Sample Forest Villages

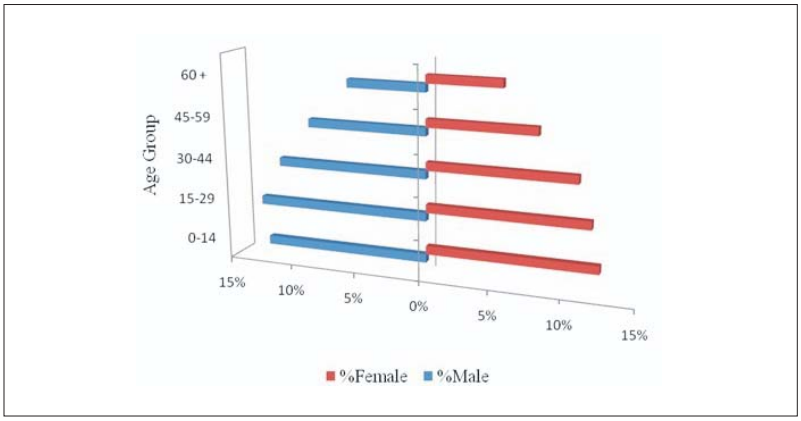

Fig. 3: Age - Sex Composition of Population.

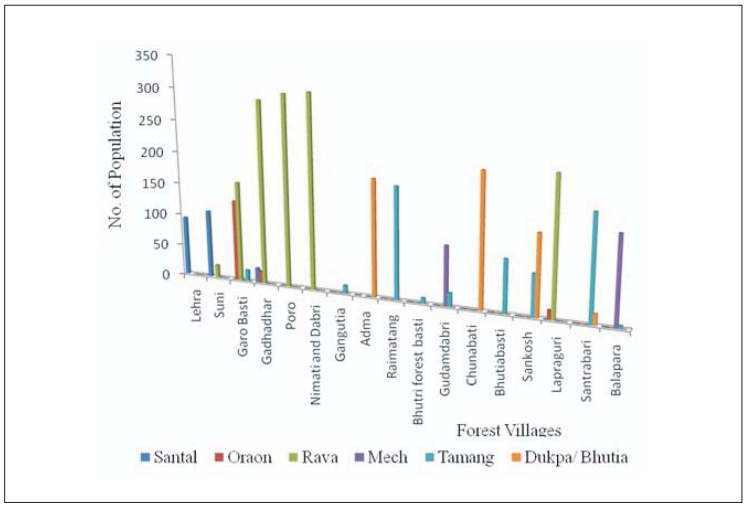

Fig. 4: Population Distribution among the Dominant Tribal Groups (village wise).

Fig. 5: Timber used as Housing Material (Gangutia Forest Village)

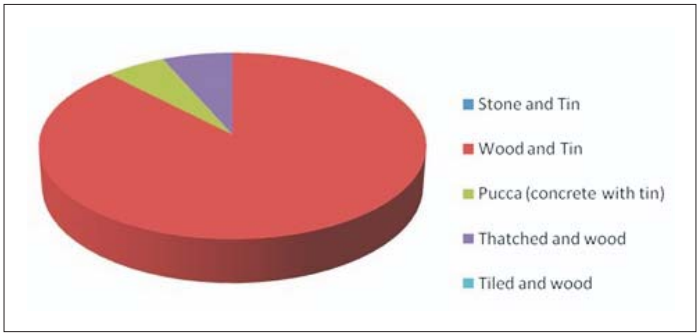

Fig. 6: Materials used for Housing in the Study Area

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