

Availability and Seasonality of NTFPs and Its Implications on Rural Livelihood: A Case Study of Sonamukhi C.D. Block, Bankura District, West Bengal

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ABSTRACT

A livelihood comprises the assets, the activities and mode of access to all these things for living of individual or household. All set as well as elementary forms of livelihood determine the standard of living. Keeping space and time, the pattern of livelihood is changed due to the influence of rules and regulation of institutions and social relations. Therefore, the concept of rural livelihood is not only theme of socio-economic rather inter-disciplinary thought. The whole matter needs to be seen not only from the perspective of the present socio-economic situation of a particular area, but a clear mapping of the future tends of the patterning of forest based rural livelihood, needs to be stressed at. In 2001 the World Bank estimates that one fourth of the world's poor depend directly or indirectly on forest for their livelihood. Non-Timber Forest Products (NTFPs) play an important role in the rural economy in terms of providing employment, income potential and life support sustenance. In Sonamukhi C.D. Block, most of the forest based households are directly or indirectly depending on the collection of NTFPs. Not only that NTFPs are the main source of rural economy of the poor people and the additional income source of the rich farmers of forest based households of the concerned area. This research article is an empirical investigation to chalk out the major NTFPs in terms of availability and seasonality and also highlighted on implications of NTFPs on rural livelihood of the study area.

Key words: Rural livelihood, NTFPs, Rural economy, Availability and Seasonality.

1.0 INTRODUCTION

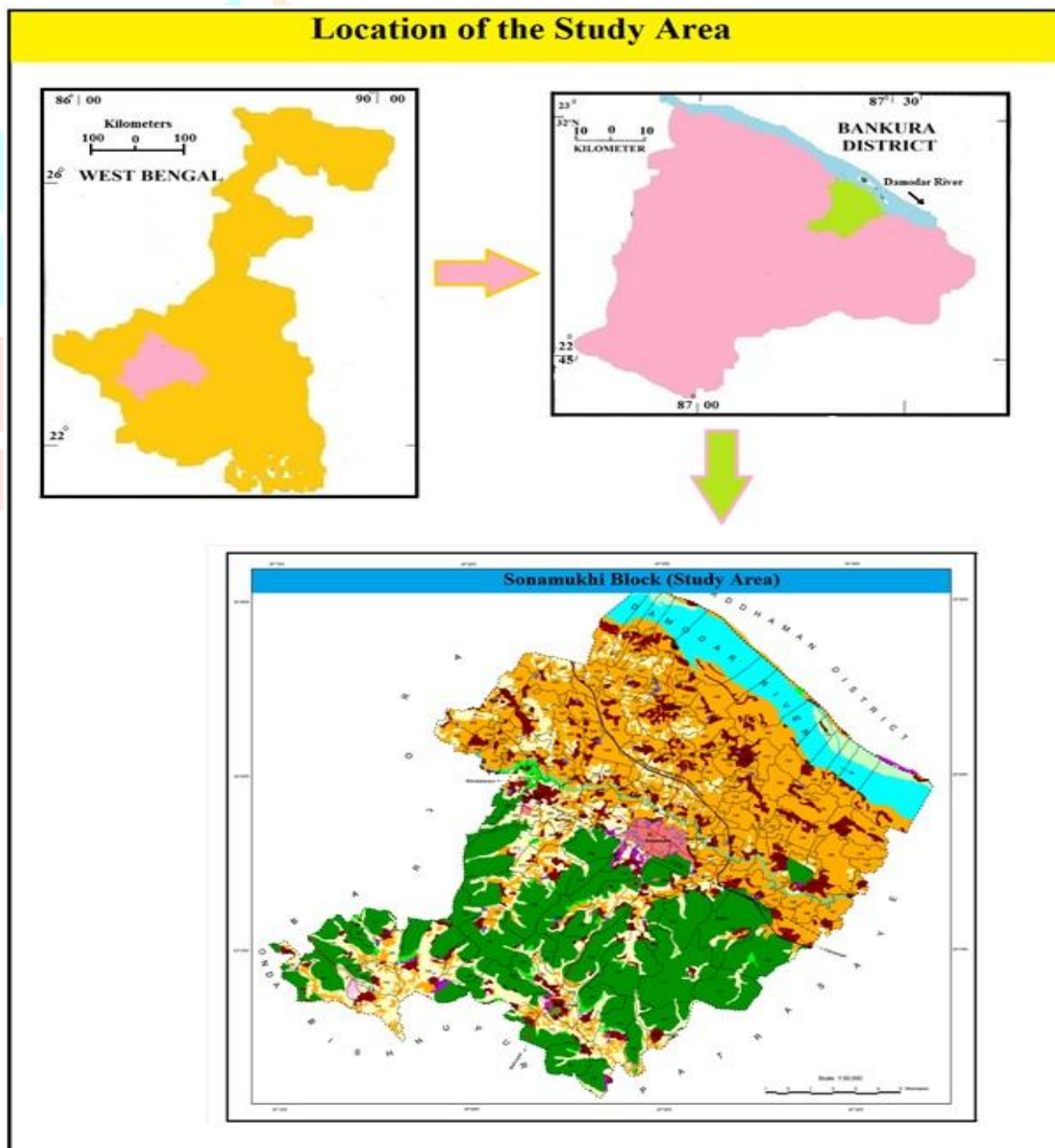
A Livelihood can be defined as the activities, the assets and the access that jointly determine the living gained by an individual or household (Ellis 1998). Chambers and Conway (1992) have stated livelihood comprises the capabilities, assets and activities required for a means of living. Soles bury (2003) have also stated Sustainable Livelihoods Framework (SLF) as a systems and it is a term that covers research concerning poverty reduction, sustainability and livelihood strategies. Chambers and Conway (1991), Scoones (1998) and Soles bury (2003) have identified five capital groups like human (skills, knowledge, health and ability to work), social (social resources, including informal networks, membership of formalized groups and relationships of trust that facilitate cooperation and

economic opportunities), natural (natural resources such as land, soil, water, forests and fisheries), physical (basic infrastructure, such as roads, water & sanitation, schools, ICT; and producer goods, including tools, livestock and equipment), financial (financial resources including savings, credit, and income from employment, trade and remittances), and political for the study of sustainable livelihood. A livelihood is sustainable which can cope with and recover from stress and shocks, maintain and enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in short and long term.” (Chambers and Conway, 1992). Rural livelihood strategies are often heavily reliant on the natural resource base. Today, livelihoods approaches are most useful as an analytical or heuristic tool (Clark and Carney, 2008). Livelihood strategies are the combination of activities that people choose to undertake in order to achieve their livelihood goals. They include productive activities, investment strategies and reproductive choices. The vulnerability context within which people pursue their livelihoods includes trends (for example, economic or resource trends), shocks (for example, conflict, economic shocks, natural shocks, etc.), seasonal fluctuations in prices, production, health, employment opportunities. (Alinovi et al., 2010)

For the study of Non Timber Forest Products (NTFPs), De Beer and McDermott (1989) have stated that the NTFPs are all biological materials rather than timber, which are extracted from the forests for human use. Food and Agricultural Organization (F.A.O., 1995) has identified that NTFPs can improve rural livelihood and contribute to household food security and nutrition, and help to generate additional employment and income at the same time it enhance economic growth and sustainable forest management (Farinola et al, 2014). Ghosal has (2011) considered the collection of *sal seed, kendu leaves, mahua flower, mahua fruit and kendu leaves* as the source of auxiliary income and enhanced forest based livelihood outcomes. Livelihood outcomes are the goals to which people aspire, the results of pursuing their livelihood strategies, such as increased income, reduced vulnerability, increased well-being, improved food security, and more sustainable use of natural resources (Alinovi et al., 2010). In the study area the rural households are directly or indirectly engaged in the collection of NTFPs for wood, fodder and food for their domestic needs as well as improving household economy. The availability of the NTFPs is typically guided by the seasonality and the involvement of the people for collection.

2.0 STUDY AREA

Sonamukhi block is situated in the eastern part of Bankura district and bounded by the latitudes of 23°10' N to 23° 25' N and longitude of 87°15' E to 87° 30' E encompassing 368.3 sq. km area with 158697 population and the population density is 430 persons /sq. km. (Census of India, 2011). The block is a Community Development (C.D.) unit in Bishnupur sub division in Bankura District of West Bengal (Map 2). The block is bounded Barjora in the north, Bishnupur in the south, Onda in the west and Patrasayar in the east. The Damodar River is flowing towards north eastern part of the block. The study area is situated under forest and riverine environment in Bankura district. In the study area the most important soils are alluvial, mixed lateritic and red soil. Here tropical dry deciduous forest is dominated by *Sal*, *Palash*, *Mahua* (*Madhuca indica*), *Piyal* (*Buchanania latifolia*), *Simul* (*Bombexmalabaricam*), *Nim* (*Azadirachta indica*), *Kurchi* (*Holorrhenna antidysenterica*), *Eucalyptus* (*Eucalyptus Globulus*) and *Akashmoni* (*Acacia Auriculiformis*) etc.



Map 2: Location of the study area

3.0 OBJECTIVES OF THE STUDY

This research article is the outcome of a field based empirical survey which has examined the dependence of forest based rural livelihood and economy on the collection of NTFPs. At the same time it is try to find out the availability and seasonality of these forest products.

4.0 DATA BASE AND METHOD

The research methods may be understood as all those methods/techniques that are used for conduction of research (Kothari, 2008). The consisting research work is developed with help of both primary as well as the secondary source of data. The primary information is collected by door to door survey and the secondary information is collected from the census reports, different books, journals and statistical hand books. The study area (Sonamukhi) has been considered as a unit of study and set-up the aim of research work. It has been mentioned in the objectives that the importance of NTFPs on forest based rural livelihood and economy. The survey was done out of 125 no. of households. The observation and the perception study are very much essential for the systematic arrangement of the theoretical framework by the help of model, chart and to some extent statistical methods and techniques. Both quantitative and qualitative data have been taken into the consideration for the study of NTFPs and its' significant on rural livelihood. The proposed research follows two types of research methods like qualitative and quantitative method for the systematic and analytical study.

5.0 RESULT AND DISCUSSION

5.1 Forest based Rural Livelihood:

As five Gram Panchayats (G.P) of the concerned block are developed in the forest ecosystem so, the forest based people are continuously interacting not only with the fresh environment but also interacting with the wild animals like elephant, fox, snake, hog etc.

People, who have large agricultural land, are partly depending on the forest. The agricultural labors and the people who have least agricultural land are mostly depending on the different kinds of forest resources. The rich farmers are very much busy in the seasons of agricultural practices and they have no time to collect forest resources. During the off seasons of agricultural activities, people are coming in the forest for collections of fuel woods. Woods are only source of fuel for the inhabitants of the forest based villages (Map 3). The land-less labour is fully depending on forest resources in the study area. They are collecting different type forest resources from dense *sal* forest and travelling a long distance from the villages. The most important forest resources are fuel wood, mahua flower, mahua fruit, kendu leaf, dry and green *sal* leaf, *jhanti*, mushroom, *sal* latex, *kendu* fruit, *piyal* fruit, date palm leaf, date palm and *kusum*, *ban kul* etc.

Three input assets play a significant role for the progress of forest based livelihood strategy. The natural assets like forest land (plain and slope land), water, climate, forest soil (red lateritic), availability of forest resource, natural flora, fauna, where the remarkable human assets are population size, physically strong people and strong mental attachment with the fresh natural environment. The significant cultural assets which inspire the whole livelihood system are most essential for enhancement of the livelihood outcomes. The notable cultural assets are strong environmental ethics, indigenous technology, and the strong values or norms of the inhabitants. The improvement food security, more income, and sustainable use of forest resources all these are the outcomes of the forest- based rural livelihood in the concerned study area. (Figure2). As the rural livelihood depends on natural resource base so it has some vulnerability context due to dynamicity, seasonality, availability of the natural resources. As a consequence, rural livelihood system sometimes trend into positive as well as negative direction (Figure 1).

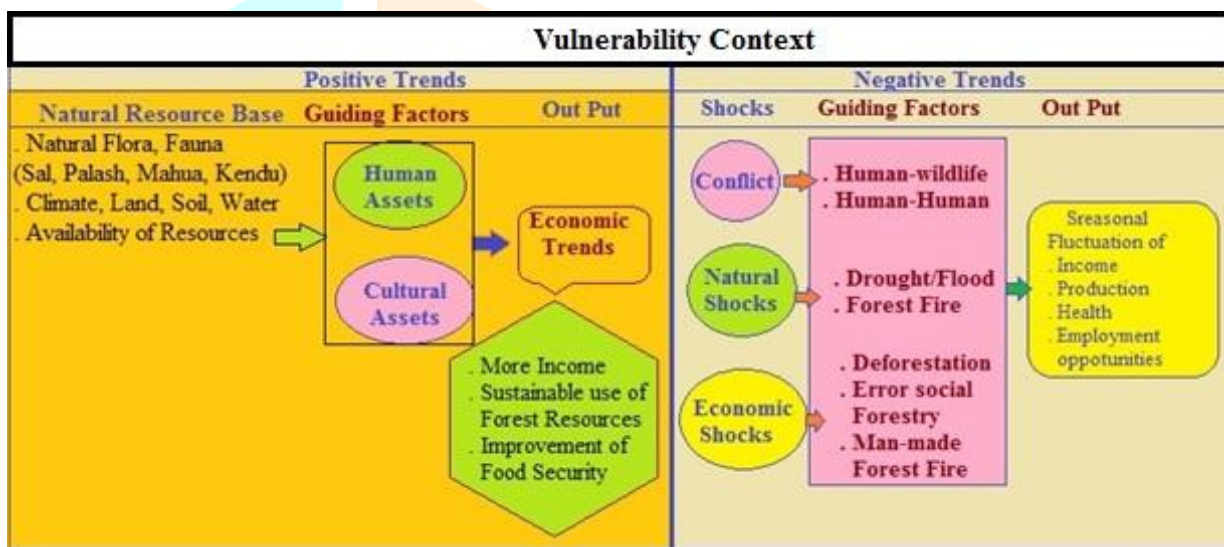
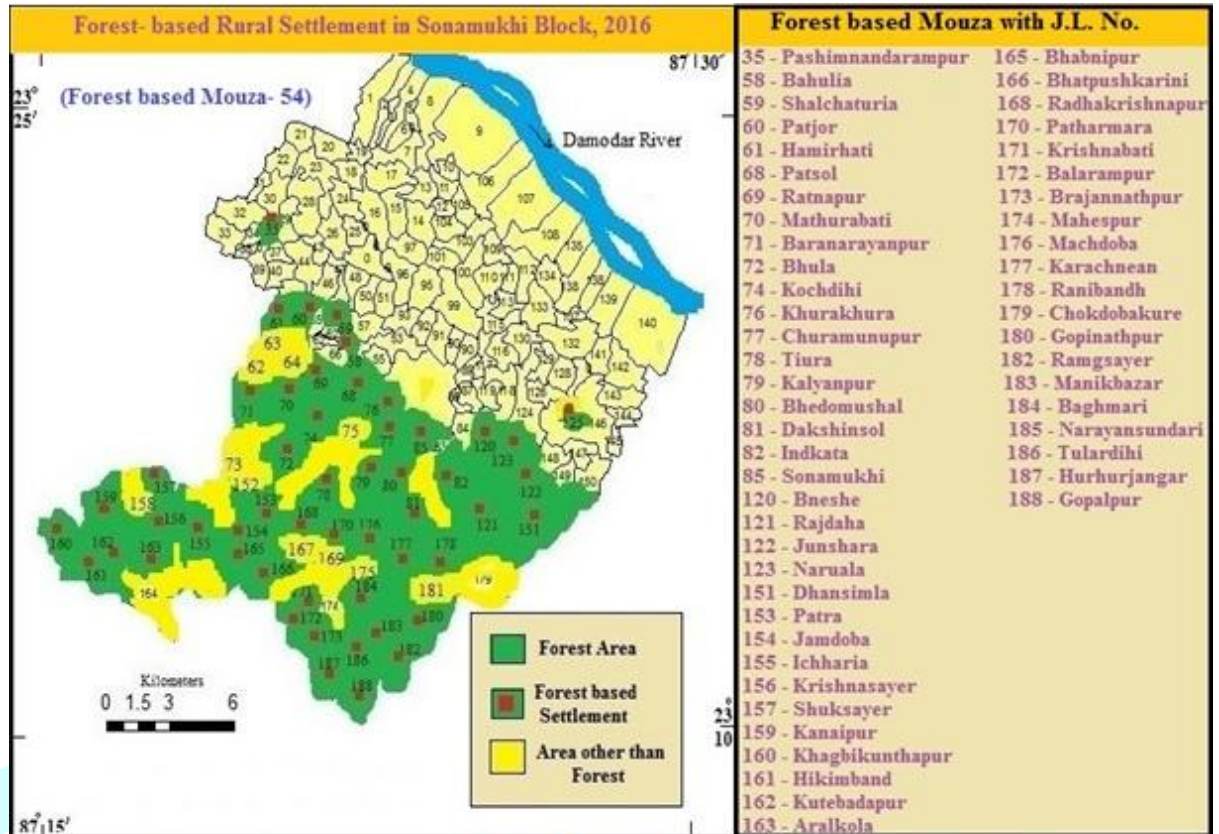


Figure 1: Vulnerability context of the forest based livelihood in Sonamukhi block

Map 3: Forest based Rural Settlement in Sonamukhi Block, 2016



Source: Prepared by authors, 2016 based on Land and Land Reform Dept.

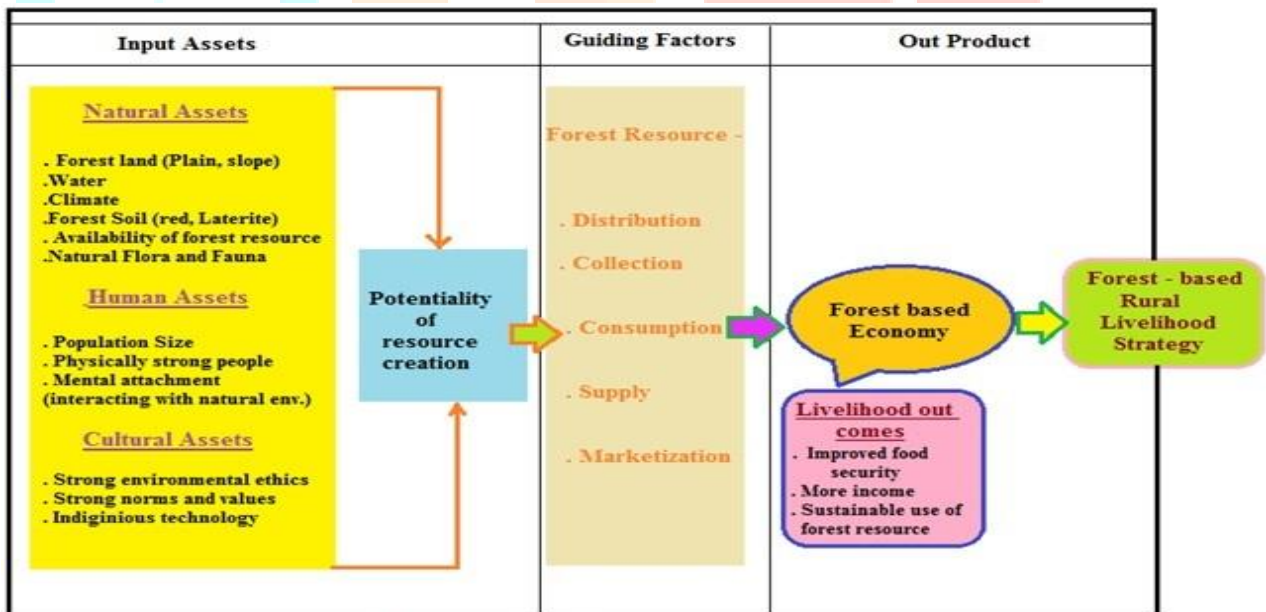


Figure 2: Forest- based rural livelihood strategies in Sonamukhi block

Source: Modified form of DFID’s livelihood model

5.2 Availability of Forest Resource and Their Monetary Value

In the study area NTFPs are not available throughout the year. The distribution, availability and the monetary value of the products are guiding by seasonality. The green Sal leaves, fuel woods and *mahua* flower are highly important (Rank 3) resources for the people who have less agricultural land. The *sal* resin, dry *sal* leaves, *sal* seed, mushroom, *kendu* leaves and *jhanti* are moderately important (Rank 2) as well as *mahua* fruit, *kendu* fruit, *piyal* fruit and *ban kul* are less important for

the forest based people of the Sonamukhi block. The *sal* resin and mushroom is valuable forest product. Although *sal* resin and fire woods are available throughout the year but mushroom are available one fourth month of a year. The green *sal* leaves are available eight months of a year (Table 1). The seasonal crop calendar shows the month wise availability of the different forest resources in the concern block (Figure 6).

Table 1: Value (Rs.) of available forest resource in Sonamukhi Block, 2016-17

| Sl no. | Name of the Products | Availability (Months) | Commercial Importance | Monetary Value in Rs. | Multiple use of the Product | Use as | Rank |
|--|----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|------------------------------|------|
| 1 | Green Sal Leaves | 10 | √ | Rs.20/100 Plates | √ | Fodder, Making of Sal plates | 3 |
| 2 | Dry Sal Leaves | 4 | √ | Rs. 10/ Basta | √ | Fuel, | 2 |
| 3 | Sal resin | 9 | √ | Rs.200/kg | √ | Gum, perfume, Burnish | 2 |
| 4 | Sal Seed | 3 | √ | Rs. 10/ Tin | * | Oil, medical values | 2 |
| 5 | Fire Woods | 12 | √ | Rs.60/ bundle | * | Fuel, making Fencing | 3 |
| 6 | Mushroom | 3 | √ | Rs.350-400/K.g | √ | Food, medical values | 2 |
| 7 | Mahua Flower | 3 | √ | Rs.30-35/K.g | √ | Food, Fodder, making Liquor | 3 |
| 8 | Mahua Fruit | 3 | √ | Rs.35-40/K.g | * | Food, | 1 |
| 9 | Kendu Leaf | 5 | √ | Rs.20/bundle | √ | Fuel, making Bidi | 2 |
| 10 | Kendu Fruit | 4 | √ | Rs.10-20/K.g | * | Food | 1 |
| 11 | Piyal Fruit | 3 | √ | Rs.100-150/K.g | * | Food | 1 |
| 12 | Ban Kul | 3 | √ | Rs15/K.g | * | Food | 1 |
| 13 | Jhanti | 4 | √ | Rs.40-50/bundle | √ | Fuel, making Fencing | 2 |
| Rank-1 Less importance, Rank-2 Moderately importance, Rank-3 Highly importance Source: Based on questionnaire survey of forest villagers of Sonamukhi Block, 2016 | | | | | | | |

5.3 Distance Traveled by the People for collection of the NTFPs

The collection of NTFPs and distance covered by rural people is a major issue in present context, because the various products of the forest are found in various geographical associations within forest ecosystem. It is commonly observed that the people have travelled in and around 1 to 3.5 km for the collection of various NTFPs from their centre of the village. They travel larger distance for the collection of *jhanti* and mushroom. The people used the forest fruits directly as food and in sometimes the fruits are drying to make condiment. The green *sal* leaves which are very much essential forest product are collected in and around 1 k.m. (Figure 3). Green *sal* leaves are used for making *sal* leaves plates. All the forest products are not only use as domestic purposes but also the products are sometimes marketed in the rural market like Dhansimla, Kashipur, and Sonamukhi or sometimes transferred into Bankura, Bishnupur and even Burdwan town (Table 2).

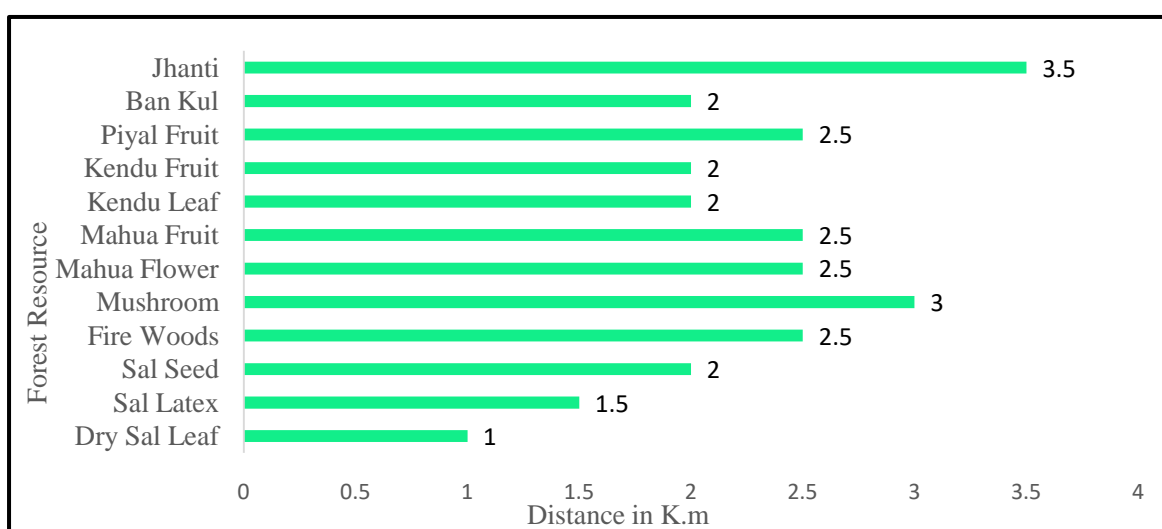
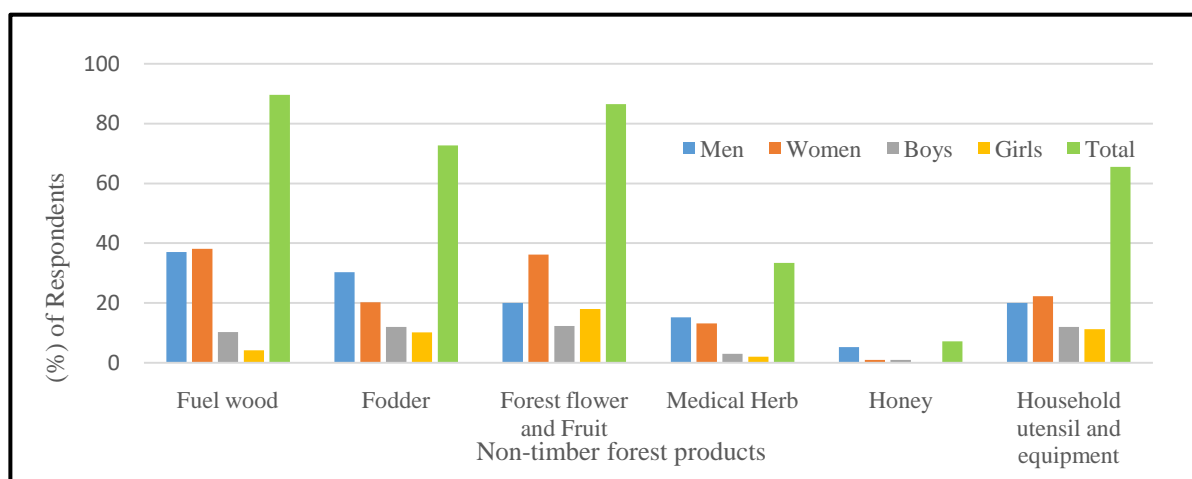


Figure 3: Distance traveled by the people for collection of forest resource, 2016-17

5.4 Relationship between Income level and Forest Dependency

Forest dependency of the local people is greatly influenced by the income level of household of the study area. In one hand there are 54.50 % and 33.33 % individuals are directly depend on forest whose income level under 5 to 10 thousand and 10 to 20 thousand respectively. The people have collected different types of forest products in different seasons and it uses for household requirement, domestic animals and also earned something. Whole family members are engaged for



collection of such products except aged and below 10 years children. On the other hand there are 7.94 % 3.70 % and 0.53 % individuals are directly depend on agriculture, small business, service and indirectly depend on forest whose income level under 20 to 30 thousand, 30 to 40 and 40 to 50 thousand respectively. The people who are belongs the higher income groups have liked to consume the forest products but they are not directly involved for the collection of NTFPs. Therefore the correlation between income level and the forest dependency (%) of people of the study area indicate to strong negative relation ($r = - 0.922$) .

Figure 4: Gender wise collection of Non-timber Forest Product, 2016-17

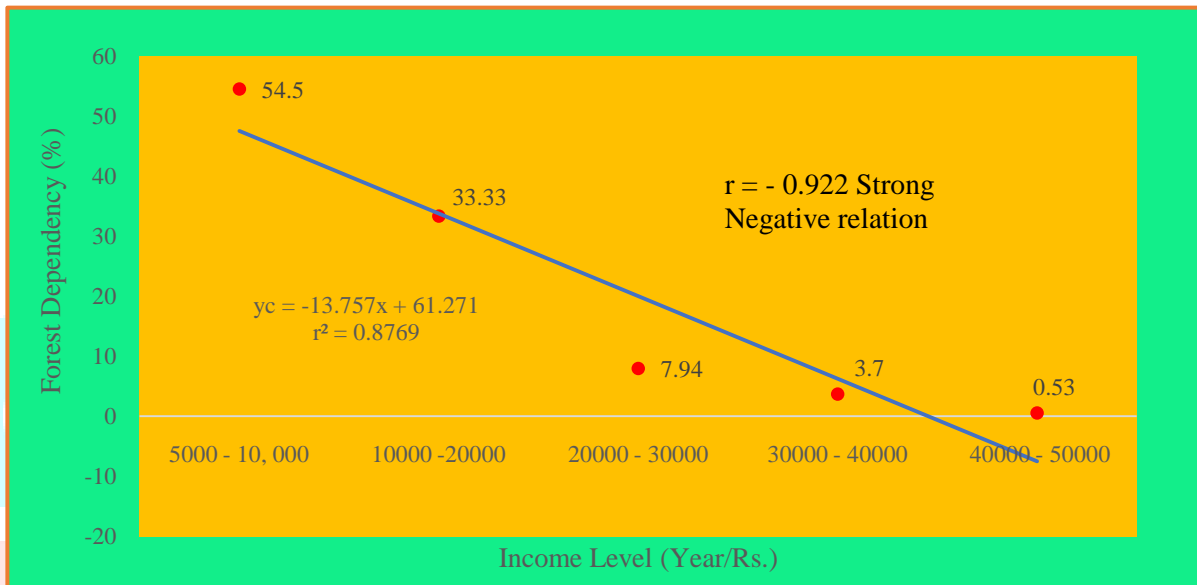


Figure 5: Relationship between Income level and Forest Dependency

| Livelihood (collection of) | Janu | Feb | Mar | Apr. | May | June | July | Aug. | Sept. | Octo. | Nove. | Dece. |
|----------------------------|------|-----|-----|------|-----|------|------|------|-------|-------|-------|-------|
| Mahua flower | | | | | | | | | | | | |
| Mahua fruit | | | | | | | | | | | | |
| Sal latex | | | | | | | | | | | | |
| Kendu leaves | | | | | | | | | | | | |
| Kendu fruit | | | | | | | | | | | | |
| Ban kul | | | | | | | | | | | | |
| Mushroom | | | | | | | | | | | | |
| Kutchha Sal leaves | | | | | | | | | | | | |
| Dry sal leaves | | | | | | | | | | | | |
| Fuel woods | | | | | | | | | | | | |
| Piyal fruits | | | | | | | | | | | | |
| Date palm leaves | | | | | | | | | | | | |
| Kusum fruits | | | | | | | | | | | | |

Figure 6: Seasonal Calendar for collection of Forest Resource

Table 2: Distance traveled for the collection of forest resources and the market place

| Sl no. | Name of the Forest Resource | Distance covered for Collection (Km.) | Out product for Marketization | Distance covered for Marketization (Km.) |
|--------|-----------------------------|---------------------------------------|---|---|
| 1 | Green Sal Leaves | 0.5-1.0 | Making Sal plates, | Sonamukhi(6.5 k.m), Bankura (42 k.m) Bishnupur (30k.m) |
| 2 | Dry Sal Leaves | 0.5-1.0 | Directly | Village market |
| 3 | Sal Resin | 1.0-1.5 | Directly, sometimes Drying | 6.5 k.m (Sonamukhi market), Village market |
| 4 | Sal Seed | 0.5-2.0 | Directly | Sonamukhi(6.5 k.m), Bankura (42 k.m) Bishnupur (30k.m) |
| 5 | Fire Woods | 1.5-2.5 | Making bundles | Village market, Sonamukhi market |
| 6 | Mushroom | 0.5-3.0 | Directly | 6.5 k.m (Sonamukhi market) |
| 7 | Mahua Flower | 0.5-2.5 | Directly, sometimes Drying | 6.5 k.m (Sonamukhi market), Village market, Bishnupur (30k.m) |
| 8 | Mahua Fruit | 0.5-2.5 | Directly | 6.5 k.m (Sonamukhi market) |
| 9 | Kendu Leaf | 0.5-2.0 | Drying the leaves | Village market, Sonamukhi market |
| 10 | Kendu Fruit | 0.5-2.0 | Directly | Village market |
| 11 | Piyal Fruit | 1.0-2.5 | Directly | Village market, Sonamukhi market |
| 12 | Ban Kul | 1.0-2.0 | Directly, sometimes Drying, Making of condiment | 6.5 k.m (Sonamukhi market) |
| 13 | Jhanti | 2.0-3.5 | Making bundles | Village market, Sonamukhi market |

Source: Field Survey with forest villagers of Sonamukhi Block, 2016 -17

Table 3: Major Types of Forest Based Activities and Annul Income

| Sl.no. | Activities (Making of) | No. of active household | Percentage | Income/household/month |
|--------|-------------------------------|-------------------------|------------|-------------------------------|
| 1. | Sal plate | 27 | 21.60 | Rs. 200-400 |
| 2. | <i>Biri</i> binding | 10 | 8.00 | Rs. 200-400 |
| 3. | Rural furniture | 10 | 8.00 | Rs. 300-500 |
| 4. | liquor | 09 | 7.20 | Rs. 500-800 (season wise) |
| 5. | Condiment | 4 | 3.20 | Rs. 200-300 (season wise) |
| 6. | Agricultural utensils | 17 | 13.60 | Rs. 500-1000 (season wise) |
| 7. | Sweeps | 13 | 10.40 | Rs. 100-200 |
| 8. | Cooking utensils | 10 | 8.00 | Rs. 100-200 |
| 9. | <i>Nolen gur</i> | 09 | 7.20 | Rs. >5000 (only three months) |
| 10. | Collection of forest resource | 16 | 12.80 | Rs. 200-400 |
| | | Sample households | | |

| | | | | |
|----------------------------|--|---------|--|--|
| | | N = 125 | | |
| Source: Field survey, 2016 | | | | |

| Name of the G.P | Name of the NTFPs and Households Dependency (%) | | | | | | | | | | | | | | | Households Dependency (%) |
|-----------------|---|------|--------|------|--------|------|------|------|------|------|------|------|------|------|------|---------------------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| Dhansimla | High | High | Medium | High | Medium | High | High | High | High | High | High | High | High | High | High | High- 68 %Medium- 23% Low- 9% |
| Manikbazar | High | High | High | High | High | High | High | High | High | High | High | High | High | High | High | High- 67 %Medium- 25% Low- 8% |
| Panchal | High | High | High | High | High | High | High | High | High | High | High | High | High | High | High | High- 61 %Medium- 30% Low- 9% |
| Kochdihi | High | High | Medium | High | High | High | High | High | High | High | High | High | High | High | High | High- 69 %Medium- 20% Low- 11% |
| Hamirhati | High | High | High | High | High | High | High | High | High | High | High | High | High | High | High | High- 45% %Medium- 35% Low- 20% |

| Colour | Rank | Name of the NTFPs |
|--------|--------|---|
| High | High | 1= Mahua Flower, 2= Mahua fruit, 3= Sal latex, 4= Kendu leaves, 5= Kendu fruit, 6= Ban kul, 7= Mushroom, 8= Kutchha sal leaves, 9= Dry sal leaves, 10= Jhanti, 11= Piyal fruit, 12= Date palm leaves, 13= Kusum fruit, 14= Khorimati, 15= others, NA= Not Available |
| Medium | Medium | |
| Low | Low | |
| | | Total no. of Households (N)= 125 |

Figure 7: Household dependency (%) on NTFPs in Sonamukhi block

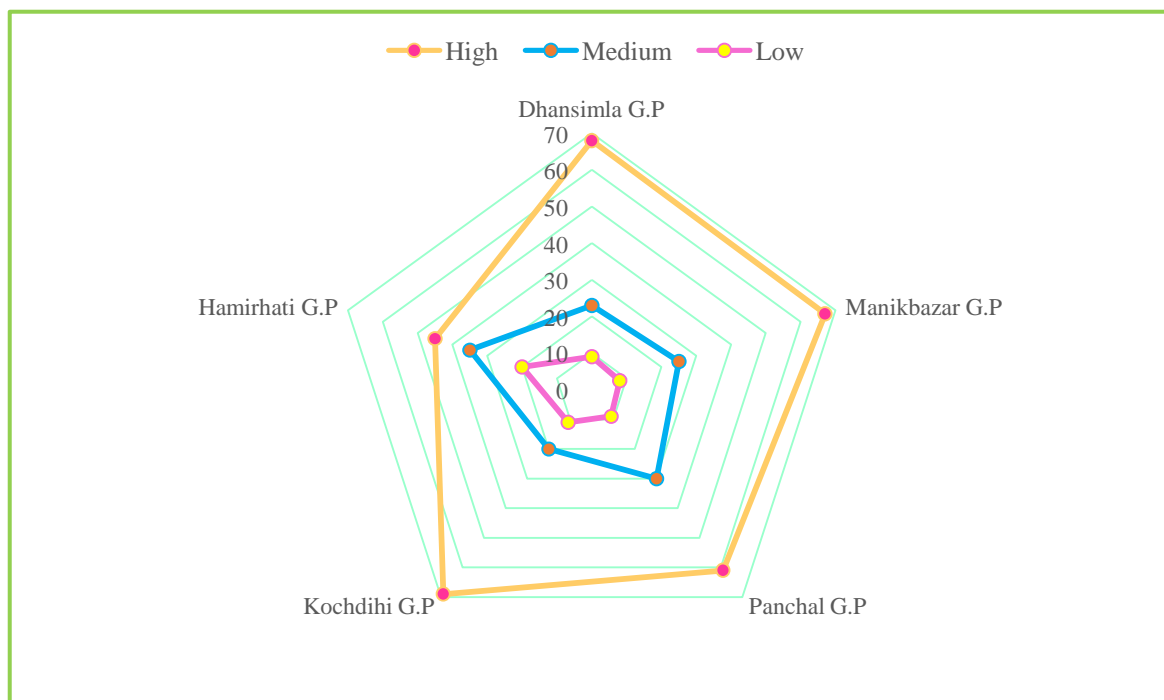


Figure 8: G.P wise household dependency (%) on NTFPs in Sonamukhi block (2016 - 17)

Table 4: Family wise income level and forest dependency

| Income Level (Year/Rs.) | No. of Families | Forest Dependency (population) | Forest Dependency (%) | Source of Income | Types of Forest Resource Collection |
|-------------------------|-----------------|--------------------------------|-----------------------|--|--|
| Less than 10,000 | 57 | 103 | 54.5 | NTFPs collection, Labour | Green and dry sal leaves, sal resin, sal seed, fire woods, mushroom, mahua flower, mahua fruit, kendu leaves, kendu fruit, date palm leaves, date palm fruit, ban kul, piyal, jhanti |
| 10000 - 20000 | 38 | 63 | 33.33 | Agriculture, NTFPs collection, Labour | Green and dry sal leaves, fire woods, mushroom, mahua flower, date palm leaves, piyal, jhanti |
| 20000 - 30000 | 15 | 15 | 7.984 | Agriculture, Small Business, NTFPs collection | Jhanti, dry sal leave, mushroom |
| 30000 - 40000 | 8 | 7 | 3.7 | Agriculture, Business | Fuel woods |
| More than 40000 | 7 | 1 | 0.53 | Agriculture, Service, Business, NTFPs collection | Fuel woods |
| | $\Sigma = 125$ | $\Sigma = 189$ | | | |

6.0 Conclusion

The whole matter is clearly seen that NTFPs play an important role in the household economy. The local people who are marginal farmers, they are also depending on NTFPs during the lean season of agricultural activity. Here, the local tribes with low caste Hindus are the highly benefited class from the forest without any hampering of the balance forest ecosystem. But, now some patches of deforestation tract is observed within forest due to cutting of valuable timber plants in illegal way. Therefore, the association, distribution and natural as well as environmental adaptation of NTFPs are gradually uprooted within the buffer zone of the forest.

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