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Title of the paper: **Sustaining Non-Timber Forest Products (NTFPs) Based Rural Livelihood of Tribal in Jharkhand: Issues and Challenges**

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Sustaining Non-Timber Forest Products (NTFPs) Based Rural Livelihood of Tribal in Jharkhand: Issues and Challenges

Sanjay Kr. Verma i
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Abstract

Jharkhand literally means 'forest region' where forests play a central role in the economic, cultural and socio-political systems and the entire lives and livelihoods of a majority of the people revolve around forests and forestry. Non-timber forest products (NTFPs) play an important role in supporting rural livelihoods and food security in Jharkhand. The NTFPs have variable abundance according to season and the collection of these NTFPs record variations with the seasonal occupation of the local people. The present study tries to explore the spectrum of rural livelihood contributions of Non-Timber Forest Product (NTFP) to the tribals of Bishunpur block in Gumla district of Jharkhand state. However, the main objective is to assess and analyse the contribution of NTFPs to rural livelihood for both subsistence and commercial use and to identify factors influencing household level of engagement in the various cash incomes. For the present study two (2) villages were selected based on their proximity gradient from the forest. A sample of 50 respondents was randomly selected from two (2) villages Banalat and Haraya of Nirasi panchayat in Bishunpur block of Gumla district. A structured interview schedule was administered on the respondents. The study is based on empirical field work using both quantitative and qualitative data, both from primary and secondary sources. The result of the study indicates that major employment (52%) was generated by the crops cultivation followed by NTFPs collection (30%) and other sectors (18%). Comparing income and employment from various sectors indicates that: (i) NTFPs collection is performed by all households irrespective of income contribution but (ii) income contribution from crop cultivation is highest. The study concludes that local people practice diverse livelihood activities mainly crops cultivation (cereals and cash crops) and livestock husbandry, gather forest products and on/off-farm activities for their survival.

For making the rural livelihood of the tribals' through NTFPs sustainable, the role of institutional arrangement is extremely important in natural resource management (NRM) in general and common pool resources (CPR) in particular. The effectiveness of CPRs as collective strategy is directly linked with community's concern, commitment, norms and group action to enforce them. Forest resources with shared access right to the members of a group acquire the status of CPR only with their collective involvement in its management. Thus an efficient distribution of existing benefits through collective institutional mechanism is needed. This can add in realizing sustainable income and employment throughout the year. The paper proposes a collective action institutional model drawing example from some success stories from study area.

Keywords: NTFP, Institution, Collective Action, Rural Livelihood, Tribal, Dry Deciduous forests

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Introduction:

Forests provide significant social and economic benefits at all levels, especially in developing countries. Economics of people living in forest finger have traditionally been dominated by subsistence agriculture. However, non-timber forest products (NTFPs) play vital role among the tribal people and provide a source of income and subsistence living (Peters *et al.,* 1989; Hegde *et al.,* 1996). NTFPs like fuel-wood, medicinal plants, wild edible vegetables, house building materials etc. are integral part of day-to-day livelihood activities especially for tribal people (Sarmah, 2006). Since the early 1990s the role of NTFPs for sustainable forest use and poverty alleviation has received increased attention (Peters *et al.,* 1989). The socio-economic importance and the value of NTFPs in the economics of tropical countries are now well recognized (Gupta and Gularis, 1982; FAO, 1995). In almost all tropical countries, the collection of NTFPs is a major economic activity (Chopra, 1993; Alexander *et al*., 2001; Ambrose, 2003) and about 500 million people living in or near forests being depended upon them for meeting their livelihood needs (Alexander *et al*., 2002).

As the political economy of forest resources changes globally, Non- Timber Forest products (NTFPs) are increasingly argued as having high value in the tropical region (Mahapatra and Tewari 2005; Godoy et al 1993). Since the early 1990s the role of non-timber forest products (NTFPs)[1] for sustainable forest use and poverty alleviation has received increased attention (Peters *et al.,* 1989). It has due to the realization that they contribute substantially to the rural economy. Historically, NTFPs have contributed towards rural livelihoods in both subsistence and commercial uses such as food, medicine, energy and so on.

Non-timber forest products (NTFPs) constitute an important source of livelihood for millions of people across the world. In India alone it is estimated that over 50 million people are dependent on NTFPs for their subsistence and cash livelihoods, which they earn from fuel wood, fodder, poles and a range of Non-Timber Forest Products (NTFP) such as fruits, nuts, vegetables, fish, animals and medicinal plants, resins, essences, and a range of barks and fibers such as bamboo, rattans, and a host of other palms and grasses (Shaanker et al., 2004). Forest-based activities in developing countries, which are mostly in NTFPs area, provide an equivalent of 17 million full-time jobs in the formal sector and another 30 million in the informal sector, as well as 13-35% of all rural non-farm employment (Duong, 2008).

NTFP contributes to about 20% to 40% of the annual income of forest dwellers who are mostly disadvantageous and landless communities with a dominant population of tribal's. It provides them critical subsistence during the lean seasons, particularly for primitive tribal groups such as hunter gatherers, and the landless. Most of the NTFPs are collected and used/sold by women, so it has a strong linkage to women's financial empowerment in the forest-fringe areas. (Report, Planning Commission, 2011)

The term 'forest product' almost immediately brings to mind wood and wood-based products, but there are equally important non-wood products that are collected from the forests. These include all botanicals and other natural products extracted from the forest other than timber, known as Non-Timber Forest Products (NTFPs). NTFPs are components of the forest system that exist in nature and are generally not cultivated. Non-timber forest products (NTFPs) are plants or plant parts that have a perceived economic or consumption value sufficient to encourage their collection and removal from the forest.

[1]Non-timber forest products are defined in this paper as all plant and animal products that come from forested landscapes, including human-modified ones.

The broad term "non-timber forest products" (NTFP) refers to natural resources collected from forests apart from sawn timber. Chamberlain et al. (2000) provides a definition: non-timber forest products are plants, parts of plants, fungi, and other biological materials which are harvested from within and on the edges of natural, manipulated or disturbed forests. NTFP may include fungi, moss, lichen, herbs, vines, shrubs, or trees. Forest is an important renewable, natural resource, which greatly influences the socio- economic development in any rural community (Ghosal 2011).

Forest products play an important role in supporting rural livelihoods and food security in many developing countries (Adhikari, DiFalco, and Lovett 2004). Pimentel et al. (1997) found that the integrity of forests is vital to world food security, mostly because of the dependence of the poor on forest resources.

The past decade has witnessed a *rapid growth of interest in non-timber forest products (NTFPs)* among conservation and development organisations (Arnold and Ruiz Pérez 1998; Wollenberg and Ingles 1998; Neumann and Hirsch 2000; Marshall et al. 2003).

There are a number of reasons for the general spread and upsurge in global interest in NTFPs. It is believed that the promotion of sustainable use of NTFPs could lead to a *win-win situation for poverty reduction and bio-diversity conservation* (FAO 1995; Shiva and Verma 2002; Golam et al. 2008). This is due to the increasing recognition that NTFPs can contribute significantly to the livelihoods of forest dependent communities (Clendon 2001; Belcher et al. 2007; Marshall et al. 2005; Ros-Tonen and Wiersum 2005; FAO 2006;) household food security and nutrition (FAO 1995; Falconer 1997; Clark and Sunderland 2004; Shacleton and Shackleton 2004); generate additional employment and income (Peters 1996; Ros-tonen 1999; Andel 2000; Marshall et al. 2003); and offer opportunities for NTFP based enterprises (Shackleton and Shackleton 2004; Subedi 2006). Moreover, NTFPs are more accessible to the poor (Saxena 2003); contribute to foreign exchange earnings (Andel 2000; Shiva and Verma 2002); and support biodiversity and other conservation objectives (FAO 1995; Arnold and Ruiz Pérez 1998; Marshall et al. 2005; Charlie and Sheona 2004). Furthermore, NTFPs can be harvested with relatively little impact on the forest environment (Myers 1988; Neumann and Hirsch 2000; FAO 2008).

Evidently, it plays a leading role in enhancing the quality of environment by influencing the life supporting system. Forests are also intrinsically linked with our culture and civilization (Jana 2008). They also provides timber as raw materials for various industries like pulp and paper, news print, board, furniture items packing materials, matches, sports goods etc. The important forest products derived from different species are lac, fibers, floss, medicines etc. The tribal people often procure their food (tuber, root, leave, fruit, meat from birds and other animals, and medicines) from the forest in which they live (Peters 1989).

TRIBAL AND FOREST:

Tribal are forest dwellers. Forests are the habitat of the tribal people and are considered to be the very basis for their development. Forest and tribal are culturally and traditionally linked to each other. Tribal have been living in the forest ecology and that has shaped their life and determined the kind of society they presently have. The socio-economic life of the tribal is so intimately interrelated and intermingle with the forest that by now tribal and forest have become inseparable words. The forest being a permanent abode for the tribal, is linked as the ancestral home of the tribal and there exists an emotional attachment between tribal and the forest landscape (Sinha, B.K 1998). The tribal – forest interface, however, is not limited to locating a forest as a tribal habitat

without exploring the core issue which concerns their relationship with the forest for their physical and cultural survival, referred to as “symbiotic” in the New Forest Policy.

The National Forest Policy 1988 of India envisages people's involvement in the development and protection of the forests to meet the growing demands of fodder, firewood and timber. The policy states "creating a massive people's movement with the involvement of women, for achieving these objectives and to minimize pressure on existing forests". The Policy states that forests are not to be commercially exploited for industries, but are to conserve soil and environment, and meet the subsistence requirements of local people. The Policy gives higher priority to environmental stability than to earning revenue. Deriving direct economic benefit from forests has been subordinated to the objective of ensuring environmental stability and maintenance of ecological balance.Based on the above policy, the Joint Forest Management Programme (JFM) has been implemented to strengthen community institutions as well as the institutions of the Forest Department (FD) of the state, for sustainable forest management. Joint Forest Management (JFM) is a concept of developing partnerships between fringe forest user groups and the Forest Department on the basis of mutual trust and jointly defined roles and responsibilities with regard to forest protection and development.

Jharkhand

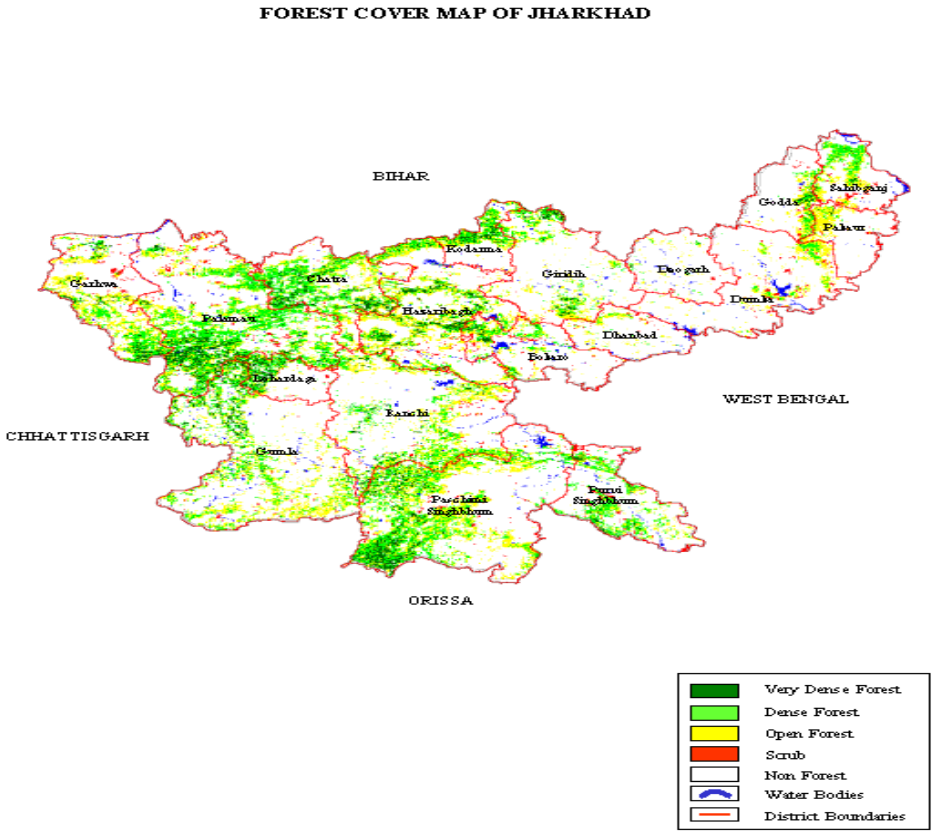
Jharkhand, a forest and mineral rich state, lies between latitude 22°00’ and 24°37’ N and longitude 83°15’ and 87°01’ E. It has an area of 79,714 km^2 which constitutes 2.42% of the geographical area of India. Its geography is marked by the plateau of Chhotanagpur, three major rivers – the Swarnrekha, the Koal and the Damodar. Jharkhand has a tropical climate with annual rainfall of about 900 mm and the temperature varies between 4°C to 47°C.

The Population of Jharkhand according to the 2011 census stands at about 32 million, making it the 13th most populated state in India. The state makes up about 3.5% of the country's population a figure which was about 3% during the last census in 2001. The state is spread over an area of about 79000 sq. km. one of the smaller states in the country in terms of area. The density of population per sq. km. is about 414, which is above the national average by a good 30 points. The Scheduled Tribes constituting 22.50% of the population are mainly distributed in eight districts. The state has a growth rate of about 22% which slightly exceeds the national growth rate of about 17%. The population of the state is raising considerably more due to the lack of education and lack of understanding about family planning. The literacy rate in the state is about 67% a figure that needs instant correction and steps to do so need to be put into effect immediately. The sex ratio in Jharkhand is about 940. The statistics in the Jharkhand Census 2011 reveal facts that can be instrumental in planning for a better development plan for the state.

Forests in Jharkhand offer a rich biodiversity. In Jharkhand, forests form an integral part of the socio-economic set-up and largely contribute towards the economy of the state. Forest in Jharkhand spread over an area of **23,605 sq. km**. which constitute about **29.61%** of the total area of Jharkhand. Moreover, out of the 23,605 square kilometers of forests, 82% of area falls under the protected forests, whereas 17.5% of the land falls under reserve forests.
The forests at Jharkhand are home to the rich biodiversity within the territory of Jharkhand.
It is noteworthy that Jharkhand contains two major types of forests, namely,

- Tropical Zone Dry Forests, and
- Tropical Zone Wet Forests.

The livelihood system is mainly agrarian, complemented by income from wage labor. On average, agriculture is the primary occupation in 60% of all households, and another 40% of households work as paid labor in agriculture, elsewhere and collection of NTFPs. In some villages, as a result of the availability of alternative opportunities (particularly wage labor), many people have shifted away from the use of forests as a primary occupation. All of the communities use the forest, but they do so mainly for subsistence fuelwood and fodder. Fuelwood supplies an average of 86% of energy needs. Fodder from the forest provides about 55% of input requirements for domestic livestock. Gross values are Rs. 2,356/- for fuelwood and Rs. 8,507/- for fodder per household per year. Non timber forest products are used mainly for subsistence purposes, although some villages report periodic sales of a few products in local markets. Commercial sales of forest products are minimal, due in part to poor access to markets as a result of degraded roads, community isolation, low levels of forest production, and poor awareness of markets outside of local trading areas (India State of Forest Report, 2009).



Map 1: Showing Forest Cover of Jharkhand

The recorded forest area of the state is 23,605 km^2 which is 29.61% of the geographical area of the state. Reserved Forest constitutes 18.58%, Protected Forest 81.28% and Unclassed Forest 0.14% of the total forest area as shown in table 1. The Chotanagpur plateau is rich in forest resources.

Table 1: Recorded Forest Area

Reserve Forest (RF)	4,387 sq. km. (18.58%)
Protected Forest (PF)	19,185 sq. km. (81.28%)
Un-classed Forest (UF)	33 sq. km. (0.14%)
Total	**23,605 sq. km. (100%)**
Percentage of State's Geographical Area	**(29.61%)**

The forest cover in the state is based on interpretation of satellite data of Oct. – Dec. 2006, is 23,605 km^2 which is 28.72% of the state's geographic area. In terms of forest canopy density classes, the state has 2,544 km^2 very dense forests, 9,137 km^2 moderately dense forest and 11,035 km^2 open forest. The distribution of forest cover of the state is shown in table 2.

Table 2: State's Forest Cover

Very Dense Forest	2544 sq. km. (11.20%)
Moderately Dense Forest	9137 sq. km. (40.22%)
Open Forest	11035 sq. km. (48.58%)
Total	**22716 sq. km. (100%)**
Percentage of State's Forest Cover	28.50 %

In South Chotanagpur of Jharkhand, the forest is a vital asset in everyday life and is providing food security to the rural population. Recently, the market for commercial NTFPs creating income-generating opportunities for rural people has received increasing research and development attention. However, knowledge about forest, people and market relations are still limited and this is a problem for current development and conservation efforts.

Objectives:

The present study tries to explore the rural livelihood contributions of Non-Timber Forest Product (NTFP) to the tribal of Bishunpur block in Gumla district of Jharkhand state. However, the main objective is to assess and analyse the contribution of NTFPs to rural livelihood for both subsistence and commercial use and to identify factors influencing household in the various cash incomes.

The Study Area:

The Gumla district lies between 22° 35" to 23° 33" north latitude and 84° 40" to 85° 1" east longitude. Gumla is one of the beautiful hilly districts in Jharkhand with many rivers and streams. There are three major rivers, which flow through the Gumla district viz. South Koyel, North Koyel and the Shankh River. There are various streams/ tributaries of the main rivers on which there are some picturesque waterfalls. The forest cover of the district is 1.35 lakh hectares (around round 27 per cent of the total area of the district) out of the total 5.21 lakh hectares of land. (As per record of forest office Gumla)

Bishunpur block is situated at about 70 KM from district headquarter Gumla. It is surrounded by Ghaghra Block at its East, Palamu District at the north-west and Chainpur Block at its south. The main tribal communities in the block are *Oraon, Asur, Brijiya, Korwa and Birhor*. They are socially, economically and politically backward with accompanying impediments of illiteracy, poverty, malnutrition, superstitions, addictions, ignorance and exploitation. They have their own ways of life, traditions, cultural identities and customary modes of living closely intertwined with nature. Unemployment and under-employment features are inherent in the block causing low income and miserable life of the households.

Agriculture is the chief occupation of this block. Farmers depend on Monsoon for irrigation. So only KHARIF crops are cultivated. This Block has many Bauxite Mines. **Panch Pandav Pahar** which has importance of Tourism is situated at 3 KM from block headquarter. **Neterhat** which is known for its sunrise & sunset is just 20 K.M. far from Bishunpur headquarter. Nagpuri is the Local Language here. Also People Speaks Hindi, Oriya, Bihari, Kurukh. Total population of Bishunpur Block is 49,873 living in 9,267 Houses, Spread across total 161 villages and 10 panchayats. Males are 25,093 and Females are 24,780 according to census 2011.

Forests of Bishunpur block in Gumla district of Jharkhand state are the common in all aspects of life, whether it is birth, marriage, livelihood or death among the tribal communities. The forests include a considerable wealth of land, soil, water, fuel, minerals, natural vegetation, wild life including the aquatic fauna *etc*. having multifarious uses constitute an important source of livelihood among tribal people in the block. Forests are the source of revenue, employment, shelter, housing materials, cloth, ornament, fuel, fodder/ grazing, timber, food, vegetables, medicines, fertilizer, fibre, floss, oilseed, cottage industries and handicrafts and other Non-Timber Forest Products (NTFPs) besides playing a vital role in the environmental amelioration in the block.

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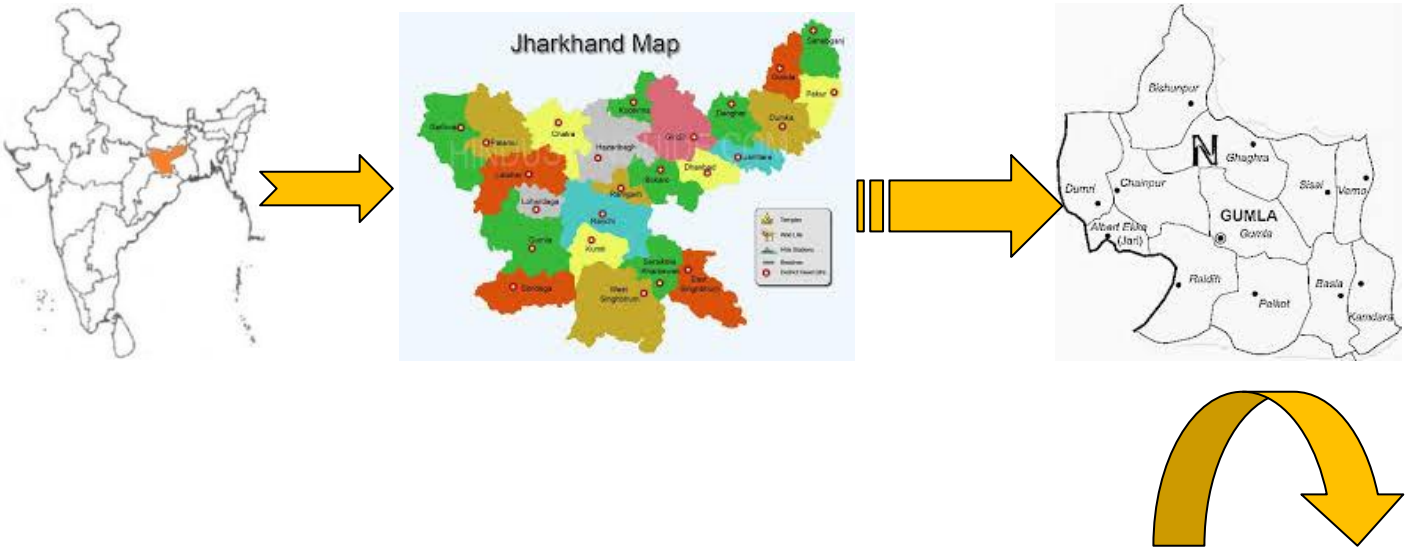
The forest resources are the important contributor to the total livelihoods among the tribal communities in the block. Forest development integrated with agricultural and industrial progress has great potential to enhance livelihood security, poverty reduction and food security for vulnerable section of society including illiterate, unskilled, resource-poor, jobless, landless and labourers people in the area. **Keeping the above facts in view,**

the present study has been undertaken to investigate the livelihood contributions of forest resources to the tribal people of Bishunpur block in Gumla district of Jharkhand.



METHODS OF THE STUDY:

For the present study two (2) villages namely Banalat and Nirasi of Nirasi panchayat were selected based on their proximity gradient from the forest. A sample of 50 respondents was randomly selected from two (2) villages Banalat and Nirasi of Nirasi panchayat in **Bishunpur block** of Gumla district. A structured interview schedule was administered on the respondents. The study is based on empirical field work using both quantitative and qualitative data, both from primary and secondary sources. For primary data collection, methods will include Participatory Rural Appraisal(PRA), Key Informant interviews, Focus Group Discussions(FGD), Participants' Observations, Household Survey (IS), priority NTFPs valuation and NTFPs resource assessment. Secondary data will be collected from relevant sources such as University libraries, Annual reports at the district, online documents, Published Government sources like the Ministry of Forest and Environment, Govt. of India.

Fuelwood consumption was estimated separately in two different seasons *viz.* winter (October to March) and summer (April to September). The analysis of the study was carried out of livelihood substance of tribal communities in participation of NTFPs in economic activities.

RESULT AND DISCUSSIONS:

Description of studied villages

The demographic profile of two villages is shown in Table 3. Both the villages namely Banalat and Nirasi consist of a total household of 499 and having a population of 2526. Village Banalat consist of a total household

of 217 having a population of 1156. Village Nirasi consist of 282 households with the total population of 1370. These villages also do not have any electrification. However, forest department provided solar lamps to these villages but only few lamps are functional at present. There are no means of telecommunication since these villages are remote. The only means of transportation are bicycle. Very few education and health service providing establishments are there in these villages. 87% population belongs to Schedule Tribe. The level of literacy as well as per capita income is much lower in than in other parts of Jharkhand.

Table 3: Demographic profile of studied villages

Demographic Parameters	*Banalat*	*Nirasi*
Total no. of households	217	282
Total village population	1156	1370
Total male population	589	687
Total female population	567	683
Total SC population	72	46
Total ST population	956	1254
Male literate	307	347
Female literate	199	211
Total literate	506	558
Male illiterate	282	340
Female illiterate	368	472
Total illiterate	650	812
Total male work force	305	383
Total female workforce	302	360
Total workforce	607	743
Total male main work population (Agriculture)	43	374
Total female main work population	28	350
Total main work population	71	724
Total casual labour male population	21	371
Total casual labour female population	20	347
Total casual labour population	41	718

Source: Census 2011

Tribal communities in the study area

The Gumla district has a high cultural diversity in terms of composition of tribal. In Bishunpur block of Gumla district the major tribal communities of Nirasi panchayat surveyed are Oraon (65%), Kherwar (12%), Mahli (08%), Bhokta (5%), Lohra (5%), and Asur (5%) as shown in Table 4. These communities are dwelling in the interior parts of the forests, depending on NTFPs for their subsistence. Asur is one of the Particularly Vulnerable Tribal Groups (PVTGs). The Oraon tribe was sampled more since this tribe is dominant in the district and contributes 60 % to 70% of the total tribal population (Census 2011). The tribal communities own pieces of land on which they mainly cultivate paddy, maize, pulse cultivation like urad, rahar in their field. They used to utilize the forest based minor products on their needs. The item like mats, cots wooden stools, basket, cups and plates used by Oraon households are made from forest products. These communities are skilled in fishing and agriculture. Comparing these tribal communities, Oraon have a relatively better socio-economic

status. In this study, communities are not analysed separately since the differences in terms of their livelihood opportunities and outcomes are not that big.

Table 4: Major tribal communities in the study area

Community	No. of Respondents	%
Oraon	32	65
Kherwar	06	12
Mahli	04	08
Bhokta	03	05
Lohra	03	06
Asur	02	04
Total	50	100

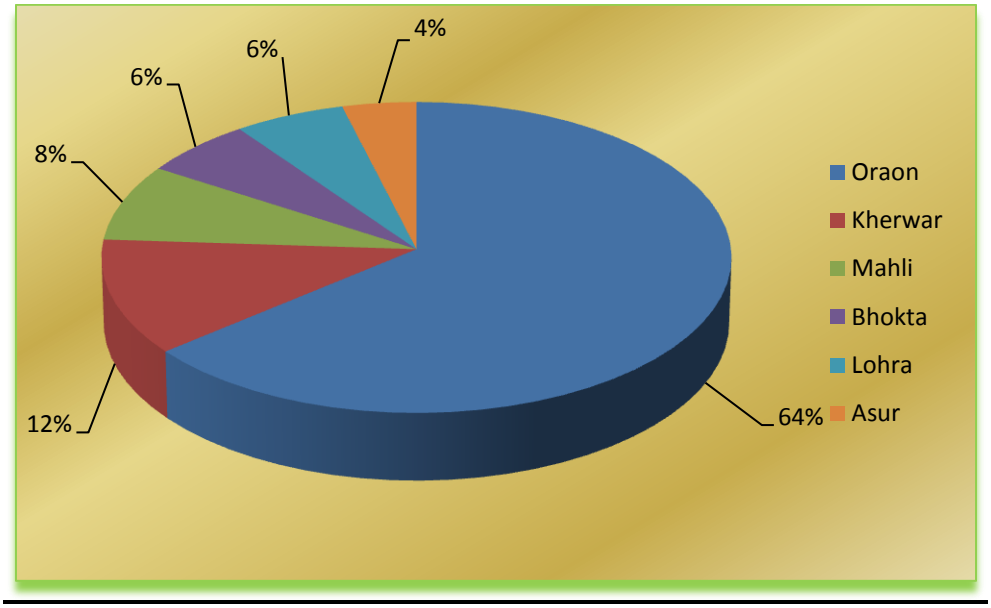


Figure 1: Showing Caste Compositions

Socio-economic analysis of NTFPs collectors.

Descriptive statistics was used to analyse the socio-economic characteristics of individuals involved in NTFPs activities (gathering, processing and marketing) the analysis consists of sex, age, level of education, household size, income level, etc. The results indicate that the female users that represent 71%. This shows the dominance of women in NTFPs activities as shown in Table 5. The individuals whose age falls below 30 years constitute the major 54% and the age group between 31-50 is 32%. The age group > 50yrs with 14% follows this. On the whole, 86% fall into the economically active age group of 20 – 50 years showing that majority of NTFPs users are in the physical active age. The result of the marital status shows that majority 73% of NTFPs users were married while 27% of them were unmarried.

The users with no formal education constitute 32% while those with primary education represent 62%. This sums up NTFPs users below secondary school level education to be 94%. Those with secondary and tertiary education level occupy a small 06%. Since education affects productivity of NTFPs users, this scenario of low literacy greatly impaired the adaptability of the inputs used and had a negative impact on the productivity of NTFPs users. Most of the NTFPs users had a average family size of 5.5.

Table 5: Socioeconomic profile of the NTFP collectors

S/No.	Variable	Category	Frequency	%
1.	Age	≤ 30 31-50 > 50	100 60 25	54 32 14
2.	Sex	Male Female	53 132	29 71
3.	Marital Status	Unmarried Married	50 135	27 73
4.	Educational Status	No formal education Primary Secondary/Tertiary	60 115 10	32 62 06
5.	Size of the family	Size of the family (average) a. Adult males b. Adult females c. Children	5.5 1.20 1.00 3.30	.. ..
6.	Monthly Income **(Family-wise)**	< 5,000 5,000-9,999 10,000-14,999 15,000-19,999 >20,000	10 25 06 04 Nil	.. ..
7.	Religion	Hindu Christian Muslim Sarna **Others**	185	100
8.	Proximity	Within Forest 1-5 6-10 11-15	185	**100**
9.	Source of NTFPs	Free Areas (FA) Forest Reserves (FR) Both (FA & FR)	167 18 ..	90 10 **..**
10.	NTFP experience	< 10 10-20 21-30 31-40 >40	95 30 35 25	51 16 19 14
11.	Seasonality	Rainy Summer Winter	185 Nil 100	100 .. 54
12.	Monthly Expenditure **(Family-wise)**	<1000 1000-4,999 5,000-14,999 >15,000	35 06 04 Nil	.. ..

From, Table 5, it has been observed that 100% of the users involved in NTFPs activities as their products are within the village. This helps to reduce transportation cost and conserve their energy thereby increasing their efficiency and productivity. Also from Table 5, it is observed that majority of the people involved in NTFPs activities gather them from free areas 90% while 10% gather it from forest reserves.

Forest as Source of Food and Livelihoods

The poor household pursued diverse sources of livelihood NTFPs collection being the lifeline of the study village with separate domain of livelihood related activities for women and men. Those puffed done by women included making of *sal* leaf plates, growing homestead vegetables, making rice, backyard poultry, selling eggs, bamboo crafts, weaving mats etc. Traditionally forests used to be a major source of livelihood but it is no longer so. In this category the most common livelihood was trading in timber, which is no more possible, at least legally. Now, the most common activity is collection and sale of non-timber forest products such as collection of fuel wood, honey, mahwa, amla, satawar root, dori, musroom, kusum, *sal* leaves, leafy vegetable and bamboo. In the study villages they collected dead leaves to make mats, which they sold in the market. The poor households earned by selling honey, mahwa, fuel wood, *sal* leaves, bamboo etc. In addition, roots and edible leaves were collected from the forest, which were sold and consumed by the poor households (as shown in Table 6). Many village participants felt that there was need of training to process and items from forest product, such as bamboo and dead leaves. Since the forest area was being depleting and reducing in size, they suggested planting of more trees in the forest.

Table 6: Distribution of households on the basis of types of NTFPs collected (%)

Types of NTFPs collected	Household Dependence (in %)			
	Banalat		Nirasi	
	Village			
	Sell	Self Consumption	Sell	Self Consumption
Honey	88	12	85	15
Sal leaves	90	10	90	10
Mahwa	60	40	56	44
Firewood (Fual)	-	100	-	100
Fodder	-	100	-	100
Amla	90	10	85	15
Karanj oil	80	20	78	22
Tamarind	85	15	82	18
Satwar zaar	70	30	66	34
Bamboo	65	35	65	35
Musroom	15	85	20	80
Rugra	40	60	35	65
Fish	55	45	45	55
Crab	10	90	08	92

Source: Field Work

Respondents' involvement in different occupations:

The tribals meet food and income needs from collection of NTFPs, wage earning, agriculture, livestock rearing and services and allied activities. Table 7 indicates that, all tribal households are traditionally involved in NTFPs collection. During the seasonal collection, local tribals including males, females and children collected the non-timber forest products (NTFPs) for livelihood substance. Since the collection season is spread over the whole year for different items; the Non-Timber Forest Products (NTFPs) collection activities provide employment to the local tribes almost throughout the year. In addition, tribals also depend on wage earning (36 %) followed by agriculture (92%), livestock rearing (64 %) and services and allied activities (8 %). In conclusion, NTFPs is the important activity in terms of labour contribution.

Table 7: Percentage of NTFPs collectors in different occupations

Activities/ Number of Respondents	NTFPs Collection	Agriculture	Livestock rearing	Wage Earning	Services and Allied Activities
14 (28%)	√	√	X	√	X
22 (44%)	√	√	√	X	X
4 (8%)	√	X	X	√	√
10 (20%)	√	√	√	X	X
50 (100%)	100%	92%	64%	36%	8%

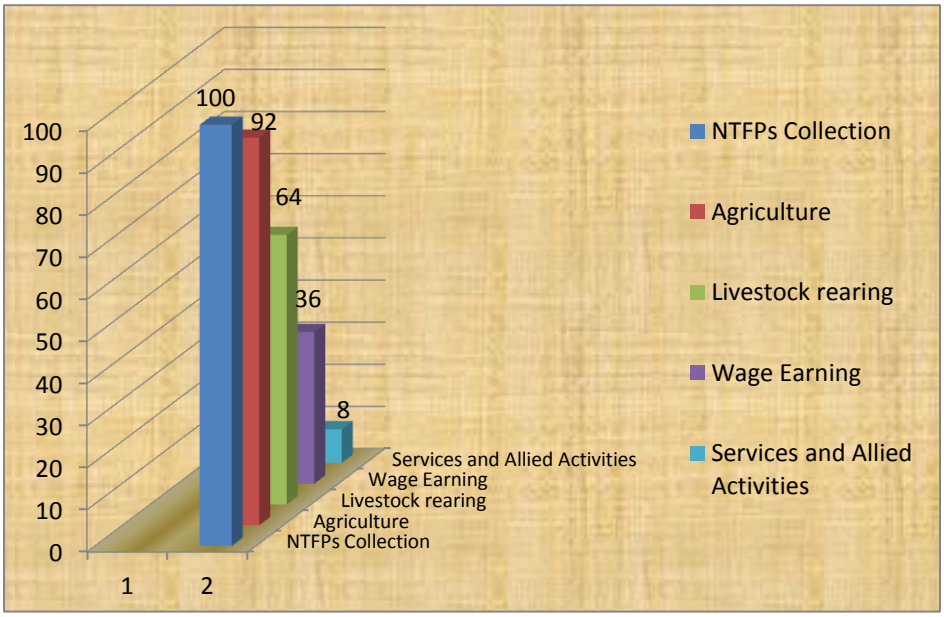


Figure2: Showing occupational distributions of respondents

Income derived from Agriculture:

Agriculture as income generating activity provides relatively more income (averaging Rs.7956.88), than NTFPs collection, wage labour, livestock rearing, and services & allied activities. The majority of the cultivators grow paddy, maize, and vegetables on pieces of land. Paddy is for home consumption and selling while maize and vegetables are for sales.

Table 8: Income from Agriculture

Particulars	Study Villages		Total
	Banalat	Nirasi	
No. of Households	25 (50%)	25 (50%)	50 (100%)
Income from Agriculture	194655.00 (48.93%)	203189.25 (51.07%)	397844.25 (100%)
Average income per HH	**7786.20**	**8127.57**	**15913.77**

The income derived from agriculture in study villages are Rs. 194655 and Rs. 203189.25 from Balalat and Nirasi villages respectively. And if we calculate average income per household of villagers it is Rs. 7786.20 and Rs. 8127.57 respectively. Agriculture is the prior business in study area because of major source of income to their sustainable socio-economic development (as shown in Table 8).

Income derived from NTFPs:

It can be seen from figure 2 that occupational contribution from NTFPs is an important source of livelihood for households in the study area. And villagers are engaged in collection of NTFPs throughout the year. Moreover, it becomes the primary activity during lean season of the year. Thus households depend on NTFP not only for their livelihood but also to earn cash income. NTFP collection and marketing is a traditional and cultural activity in many regions of the world. People who live in relatively remote areas traditionally rely on local forest products because they are more easily available and affordable than products manufactured in cities.

Table9: Income from NTFPs

Particulars	Study Villages		Total
	Banalat	Nirasi	
No. of Households	25 (50%)	25 (50%)	50 (100%)
Income from NTFPs	159561.75 (50.95%)	153563.50 (49.04%)	313125.25 (100%)
Average income per HH	**6382.47**	**6143.54**	**12526.01**

From table 9 it is evident that Non-timber forest produce is the next major alternative source of income after agriculture in study area because of availability of large scale forest area. The income generated from non timber forest produce was Rs. 159561.75 and Rs. 153563 which contribute with Rs. 6382.47 and Rs. 6143.54 average income per households from Banalat and Nirasi villages under study. There is no doubt that NTFP's play a critical role in providing subsistence and cash income to a large proportion of the world's population.

Studies from all tropical regions indicate that it is often the poorest households in rural communities that are most directly dependent on NTFP's (Beer, 1989). But in present study the local people were found less aware about the market value of many produce and therefore not able to generate significant income from NTFP's though they offer huge opportunities. Therefore, NTFP's is the next major alternative business to improve tribal's economy in study area.

Income composition of NTFP collectors

NTFPs contribute to livelihoods for the large proportion of poor living in forests of most tropical countries (Arnold and Perez 2001). The NTFPs incomes vary across tribal households. They collect several NTFPs, however only few of these contribute significantly to the total household income. In the study area, Mahuwa, Sal leaves and Tamarind accounts for more than 70 % of annual NTFPs income (figure 3). It was found that, Mahwa (36 %) contributed the most to the NTFPs cash income followed by Kendu leaves (12 %), Amla (12 %), Rugra (3 %), and Satwaar Zaar (1 %) respectively.

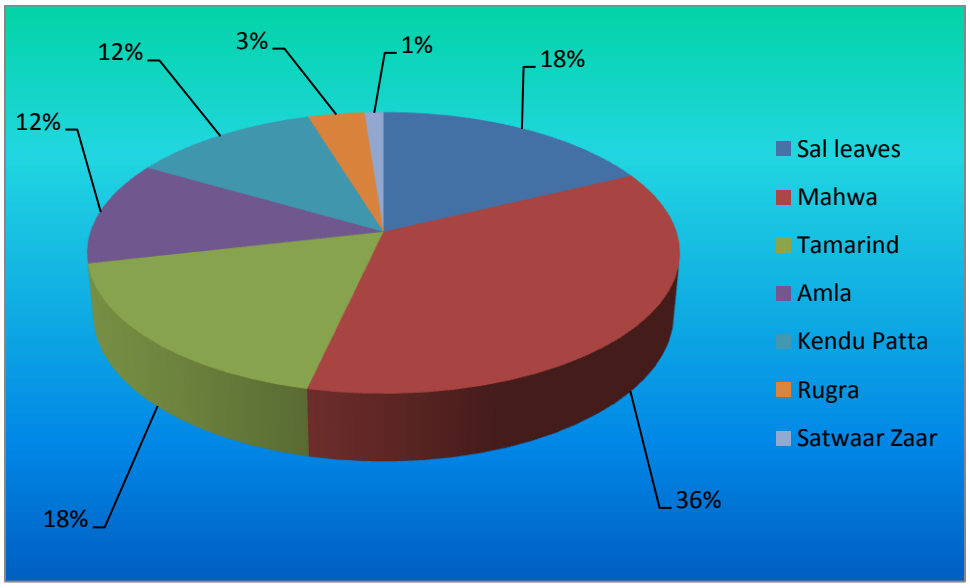


Figure 3: Percentage income contribution from sale of different sources of NTFPs

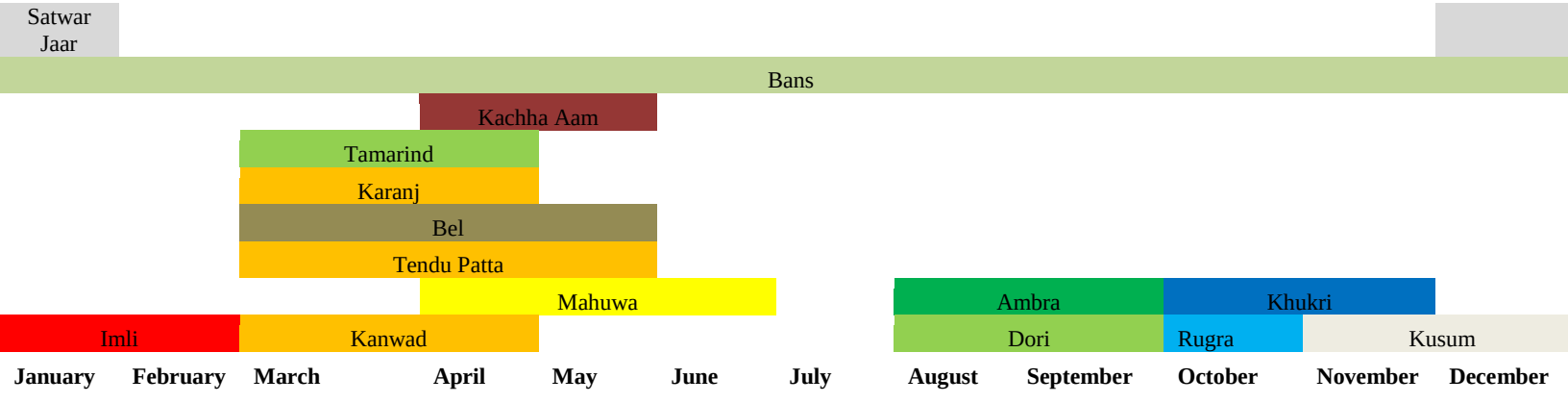


Figure 4: Seasonal Calender of Commercial NTFPs

Composition of NTFP employment pattern

Mahwa was the major employment source contributing 26.09 % (30 days/HH) to the total NTFPs employment (Table 10). The collection of Mahwa was a labour intensive activity and time consuming process. Sal leave collection were the next important employment generating activity which provides 24.35 % (28 days/HH) to the total NTFPs employment. The collection of Kendu leaves, Satwaar Zaar, Amla, Rugra, and Tamarind contributing 18.26%, 3,48%, 8.70%, 12.17%, and 2.61% respectively to the total NTFPs employment. Thus, based on the employment generating capacity, Mahwa and Sal leaves could be considered as the major employment share in the study area. Altogether, the collection of all the available NTFPs generated 115 days of employment per NTFPs collector household.

Table 10: Contribution of NTFPs in employment Generation

NTFPs		Season	Employment Generated (days/HH/year)	Quantity sold
Mahwa		March – May	30 (26.09)	200Kg (after drying)
Tamarind		March – April	03 (02.61)	100kg (after processing)
Sal leaves		March – June & Nov - January	28 (24.35)	20 bundal (1bundal=1000 leaves)
Amla		January – February	10 (08.70)	150Kg
Kendu leaves		April – May	21 (18.26)	1,00,000 leaves
Rugra	White	July – August	14 (12.17)	20Kg
	Black			5kg
Karenj		April – May	05 (04.34)	25Kg
Satwaar zaar		December – January	04 (03.48)	3Kg
Total			115 (100)	

Economic Values of NTFPs

Economically, income from the forest sector has been quantified on a national level. Gross contribution to economic product in developing countries from the forest sector was estimated to be US$100 billion in 1989 (Sharma 1992). However, NTFPs are vital to many forest-based communities and provide a source of income and subsistence living (Peters, Gentry, and Mendelsohn 1989). The first thorough study of the economic role of NTFPs was conducted by the International Tropical Timber Organization in 1988 (Panayotou and Ashton 1992).

Economics of NTFPs include costs and returns involved in NTFPs collection and marketing. The opportunity cost of labour is estimated considering average labour mandays involved in NTFPs collection. Opportunity cost is an important economic concept that measures the economic cost of an action or decision in terms of what is given up to carry out that action (USDA, 2007). For example, the opportunity cost of labour for the tribal is often measured using wage rate in off season (INR.140/day). The cost of time spent for NTFPs collection is imputed from the opportunity wage rate prevailing in the study area. The gross income per household derived

from the sale of products, was calculated by considering difference between total quantity collected and sold. The costs and returns of different NTFPs obtained during collection season is shown in Table 11.

The total opportunity cost of labour was amounting INR. 16,100 of which Mahwa was highest (INR. 4200), followed by Sal leaves (INR. 3920), Kendu leaves (INR. 2940), Rugra (INR. 1960) and so on. This was mainly due to a higher number of days spent for collection. Table 11 shows household income from NTFPs collection. The gross income per household was INR. 25,500.

Net returns from NTFPs are calculated using a simple concept as the difference between gross returns and costs excluding the opportunity costs of labour and transportation costs. Therefore, a total net return from NTFPs was INR.7230. Out of this, the most important product in the category on the basis of net returns generated was AMLA which contributed the highest net return (INR. 4570) due to medicinal use and women SHGs outlets. On the other hand, the net return from Rugra was negative (Table 11).

Table 11: Economics of NTFPs collectors (HH/year)

NTFPs	Quantity sold (Kg)	Price/kg (INR/kg)	Gross returns (INR)	Transportation cost (INR)	labour mandays	Opportunity cost of labour* (INR)	Net Returns (INR)
Mahwa	200Kg (after drying)	30/Kg	6000	30.00	30	4200	1770
Tamarind	100kg (after processing)	25/Kg	2500	30.00	03	420	2050
Sal leaves	20 bundal (1bundal=1000 leaves)	200/1000 leaves	4000	30.00	28	3920	50
Amla	150Kg	40/Kg	6000	30.00	10	1400	4570
Kendu Patta	1,00,000 leaves	100/2500 leaves	4000	30.00	21	2940	1030
Rugra White	20Kg	60/Kg	1200	30.00	14	1960	-760
Rugra Black	5Kg	150/kg	750				-1210
Karenj	30Kg	25/Kg	750	30.00	05	700	20
Satwaar zaar (Processed)	3Kg	100/Kg	300	30.00	04	560	-290
Total			25,500.00	240.00	115	16,100.00	7230.00

Note: *Off seasonal wage rates were considered (INR 140/Day)
Exchange price of Karenj, 3Kg of Karenj = 1Kg Karenj Oil
Processing of Satwaar zaar, Steaming followed by Drying

In Table 12, details of NTFPs availability in study area are given i.e., local name, botanical name, period of availability, method of collection and their end use.

Table 12: Details of NTFPs in the Study Area

Local Name	Botanical Name	Period of availability	Method of Collection	End Use
Imli	Tamarindus indica	Jan. – April	Taken out from trees	To make things lime/Paste
Bansh	Babusa spp.	Jan. – Dec.	Cutting	Household use
Sakhwa	Shorea robusta	Jan. – Dec.	Plucking of leaf from branches of tree	Making leaf plate
Karenj	Pongamia pinnata	March – May	Plucking of fruits	Extraction of oil
Satwaar zaar	Asparagus racemosus	December	Taking out roots	Medicine
Kendu patta	Diospyros melanoxylon	April	Plucking of leaves	Tobacco
Amla	Emblica officinalis	Jan. – Feb.	Plucking of fruits	Pickle, Medicine
Mahwa	Madhuca indica	April – June	Picking flowers from ground	Wine, Medicine
Dori	Madhuca indica	August - September	Picking fruits from ground	Extraction of oil

Contribution of NTFPs

Subsistence Use

A study conducted by Mahapatra and Tewari (2005) in the dry deciduous forests of India reveals that forests in India produce a wide array of NTFPs, which contribute towards subsistence livelihoods of rural people. They are consumed for food, fuel, fodder and medicines. Besides, some part of the income they spend on the education of their children which is one of the basic needs.

Varieties of sag (leaves) are used apart from vegetables as common household food and make a substantial contribution to the subsistence livelihood of the tribal people in many parts of Bishunpur block. Among the 20 households, from both the villages Banalat and Nirasi, it is observed that every household consumes a variety of seasonal fruits such as Mango, Jamun, Karoda, Bair, Bel etc. Most of the seasonal fruits and vegetables are collected by women, though men also contribute towards the collection, and processing.

Moreover, besides seasonal fruits and vegetables, honey plays an important role in their life. As Banalat and Nirasi villages are within the forest and no medical facilities within the village or nearby areas, they rely very much on the forest and its produce for minor health problems. Honey is used for medicinal purposes such as the treatment of cold and coughs. Both men and women collect as it is easy to harvest.

They use bamboo for various purposes including making ladders use for honey hunting and even for household repair. Interestingly, the construction materials such as bamboo are generally collected and used by men. For fire wood there is no particular gender bias as it is found that among the sample households, all of them collect fire wood irrespective of gender and age though use mostly by women.

Commercial Use of NTFPs

NTFPs commercialization is defined as a process of increasing the value of these products in trade so as to improve income and employment opportunities. Measuring the risks involved in the commercialisation of Non Timber Forest products, (Belcher and Schreckenberg 2007) found that NTFPs are often the last source of cash income for people in remote areas. The commercialization of NTFPs has the potential to combine ecological and economical benefits (Neumann & Hirsch, 2000); it can enhance economical development and alleviate poverty in combination with the conservation of natural ecosystems (Arnold & Ruiz Perez, 1996).

Tamarind, Sal leaves, Mahwa, Amla, Kendu leaves, Karanj, Satwaar zaar, Mushroom, etc. are important source of cash income. Mahuwa is usually synonymous with alcohol in the context of tribal life and culture. However in the Bishunpur block of Gu, it was observed that a grass-roots organization was successful in discovering other uses of the mahuwa collected by tribal communities. Drying of mahuwa flowers was done at the village level, where three machines for the purpose have been installed by the NGO. The organization called Vanwasi Kalyan Kendra was instrumental in motivating the tribals to sell their collections to local wheat mill owners, who ground the mahuwa into powder, which was then taken to bakeries to make mahuwa flavoured biscuits. These biscuits were packaged by the organization and sold at fairs organized by institutes like IIM, Ahmedabad. Other products like mahuwa flavoured ice-creams, brahmi snacks and herbal cosmetics were sold, which enabled, first, to link the tribal communities with larger markets and second, to earn monetary incentives out of the NTFP. Most collectors have been organized into self-help groups of both men and women and are encouraged to take care of their own accounts.

Institutions and Collective Action

Institutions are the structure of property rights and rules that govern human interaction and the centrality of property relations arises not because property relations connect people to land and other resources, but rather because such relations connect people to each other with respect to the land and related natural resources (Bromley, 2001; Schmid,2004). Works by Ostrom (1990), Wade (1988) and (Baland and Platteau 1996) are among the most significant analyses that develop conditions for successful collective action based on a large number of case studies.

Box 1: Case Study of the UNDP intervention under Private Public Partnership with the Jharkhand State Government

In Goelkera block, in Chaibasa district of Jharkhand there are some indigenous, low-cost Sal-leaf plate making and oil extracting machines made available under a UNDP supported project. Women SHGs are promoted under this program to work collectively. These groups have been encouraged to collect, process and market MFP collectively. They are now aware of the benefits of economies of scale and the potential of better prices through collective bargaining and trade.Different types of Sal-leaf plates are made and grading is done based on the quality of the end product. These are then packaged and loaded in trucks and transported to the 'Upper Bazar' where they hope to strike a good deal. A machine to extract oil is being promoted as easy to use by the women of the village.

Source: Ministry of Panchayati Raj, GOI

In pursuance of the National Forest Policy 1988, the Government of India (GoI) issued guidelines in June 1990 instructing all states to adopt the new concept of managing forests, popularly known as Joint Forest Management (JFM), in which the local people protect forest lands and help in the regeneration and management of these, in collaboration with the forest department (FD). The villages, in return, are entitled to the usufruct rights over Non Timber Forest Produce (NTFP) , fodder, fuel wood and a share in the timber proceeds of the final harvest.

The Joint Forest Management program following the success of participatory management efforts in some parts of India, with a view of designing institutions that would provide local villages an incentive to protect the forests. Local participation in the management of forests takes place through the formation of Forest Protection Committees (FPC) composed of the members of the villages in the forest region who are responsible for the protection of forestland.

A joint forest management programme between the villagers of studied villages Banalat and Nirasi and the Forest Dept. Of Bishunpur are working to protect the deciduous forests of Bishunpur range. The area is well-known for its nexalite activities and deciduous forests and its tribal communities. Banalat and Nirasi villages covers a total area of approx 2,750 ha, of which 80 per cent is forest. The forests form the basis of the local economy and culture. The tribal communities depended on the forests for all their needs before they were taken over by the State. The government leased the forests out for commercial ventures like charcoal-making and stone quarrying but, strangely enough, imposed restrictions on the tribals utilising the forests.

The people mobilised themselves to take control of their forests. A Van Suraksha Samiti (VSS) was formed to take decisions and ensure protection pertaining to the forests. At least one member of every household in the village is registered as a member of the VSS.The local people decided that all their domestic requirements would be met from the forests without paying any fee or bribes to the government. No outsider, government official or private citizen would be allowed to carry out any activity pertaining to forest use without permission from the Gram Sabha. The villagers entered into a Joint Forest Management (JFM) arrangement with the Forest Dept for sharing the benefits of the forest. The Gram Sabha ensures that even the villagers do not encroach into the forests to construct houses or other settlements.

The villages have become somewhat sustainable, both economically and environmentally. The villagers have become better informed about 'outside' processes through study groups. In any government programme, the locals get first preference for employment. The village has also built up its own funds from the sale of products, contribution of villagers and money left over from government schemes. The greatest achievement, however, is the protection of the forests. The villagers, too, have to seek permission from the Gram Sabha and then use the forest and forest products.

The conditions for successful collective action suggest that the establishment of the right institutions can create incentives that would make cooperation the rational choice.

Issues and Concerns:

1. **Government Policy**

- The policy adopted by the government has a great impact on the trade of that particular NTFP. Because if the government declares a NTFP as Nationalised that means no one other than those permitted by the

government or the State government itself can trade in that product. The rest of the trade taking place becomes all ILLEGAL. The regulations and restrictions imposed by the Government like issue of transport permits, licences, registration etc. in absence of a strong monitoring and implementing system only creates more chaos, corruption and a strong & prosperous illegal system of trade.

2. **At the primary collector's level**

- There is a general disenchantment among the next generation of primary collectors, towards taking up NTFP collection as their source of income. This generation is not interested in going to the forest because in their opinion this work is not up to their standards. The naxalite movement in the interiors is also a great problem for the primary collectors because they are the ones who get directly affected.

- Capacity building is a major issue at the primary collector's level. Trainings need to be imparted to them on technical know-how regarding processing, storage, about the market it's functioning, their role in the chain, government policies, rules and regulations and value addition.

- Lack of proper storage facility allows for low quality of the product, which in turn amounts to low returns.

3. **At trader level**

- Dearth of capital to maintain adequate stock as most of the times the traders have to sell on credit and the payment gets delayed. The issue assumes importance specifically in case of the small traders involved in making of bamboo based products, Leaflets, Mahua flowers etc. Here the need is to strengthen their linkages with the Banks.

- Since the produce is forest based and so in the interiors but the infrastructure facilities like roads and transportation are found wanting in most of the areas. So the time taken to transport the produce from the local hat to the market takes much of the valuable time thereby affecting the quality and cost of the produce.
- Huge fluctuations in the demand of the produce make this business very risky for the trader.

- Lack of proper storage facility is also a great cause of concern for the local trader. As he has to store the produce for at least some time for the buyer to come or to get good margin from the produce. But with lack of storage facility this margin gets reduced.

- Due to naxal activities there is always a fear of being kidnapped and in fact the people belonging to this cadre collect levy from the big traders.

Concerns:

- Due to lack of proper infrastructure such as roads, transportation facilities the primary collectors as well as the traders have to pay that extra price, sometimes due to improper storing facility and sometimes because of the poor quality of the produce due to the delay.

- There is a looming fear of the naxalites in the minds of everyone involved in the trade, including the government officials, and nothing has been done so far regarding the security aspect of the trade.

- There is a lack of proper documentation of the records as there is no REAL control over the trade of any product. Be it nationalised or non-nationalised. The illegal trade is prospering right under the nose of the government officials.

- Staffing of the Forest department especially at the lower level to effectively monitor the situation on the ground.

Sustainability issues

- The sustainability of the Minor Forest Produce forms the core of all issues. There was a time earlier when these products were in abundance but due to lack of proper management both by the people and the government their sustenance beyond this generation carries a big question mark. The reasons for such a crisis are many but the foremost has been the lack of any clear-cut policy towards these products. The forest Department has its own problems.

- Lack of fund/capital to properly carry out the policy

- Lack of staff at the range level to properly monitor and control irregularities and illegal activities carried out at that level. There is only a single Beat Guard to guard the whole of the forest coming under a particular Range. Besides this the guard does not have the bare minimum infrastructure help like vehicle, communication set etc., from the department to successfully carry out his duty.

- Lack of awareness regarding the various rules, regulations, concessions, permissions, rights, procedures etc. as laid down in the policy/government orders, among the forest officials.

CONCLUSION:

This paper reveals that a large number of the poor continue to generate income, food and medicine from the collection and sale of NTFP's. The Gumla district harbours an incredible diversity of NTFPs and the population possesses a sound knowledge on plant resources. Despite their potential, the contribution of NTFP's to local economy is still negligible.

An effective management of the entire NTFPs collection is a key factor for a successful commercialization of NTFPs in the global market. These include processing and marketing skills, promoting the domestication of NTFPs, provision of credit to NTFPs farmers, prevention of deforestation, effective promotion of NTFPs, up-scaling research on NTFPs and development of NTFPs policy to guide the production, harvesting, domestication and marketing of the products. Improving the management of NTFPs collection in the country will enormously help to boost employment and income-generation opportunities, enhance food security and improve the livelihoods of farmers, their families, and communities.

Present study suggested that locals are dependent on Non Timber Forest Produces for their daily need and income after agriculture. NTFP's of the study area are broadly species of medicinal importance, edible species, industrial useful species, mushrooms, and honey. It has been clear that form this study that agriculture on an

average income is Rs. 7956.88 per households and an average income from NTFP's is Rs. 6263.54 per households. It showed that NTFP's collection and selling for extra income has its greater impact on the rural

tribe economy of two villages of Nirasi Panchyat in Bishunpur block of Gumla district. Hence there is an urgent need of sustainable management practices along with cultivation programmes.

The people mobilised themselves to take control of their forests. A Van Suraksha Samiti (VSS) was formed to take decisions and ensure protection pertaining to the forests. At least one member of every household in the village is registered as a member of the VSS.The local people decided that all their domestic requirements would be met from the forests without paying any fee or bribes to the government. No outsider, government official or private citizen would be allowed to carry out any activity pertaining to forest use without permission from the Gram Sabha. The villagers entered into a Joint Forest Management (JFM) arrangement with the Forest Dept for sharing the benefits of the forest. The Gram Sabha ensures that even the villagers do not encroach into the forests to construct houses or other settlements. The greatest achievement, however, is the protection of the forests. The villagers, too, have to seek permission from the Gram Sabha and then use the forest and forest products.

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Phtographs of NTFPs

Making leaf plate from Sal leaves

Collecting leaves for Cattles and household use

Collection of fuel wood, for both subsistence needs and as a source of income, is a major activity for millions of forest-dependent people

Oroxylum indicum

Tinospora Cordifolia

Sal leaf produced by forest villagers of Nirasi village

Villagers carrying fire wood for cooking purpose

Women carrying NTFPs for Marketing