

## ECONOMIC VALUATION OF NON TIMBER FOREST PRODUCTS' CONTRIBUTION IN TRIBAL LIVELIHOOD IN WEST SINGHBHUM DISTRICT OF JHARKHAND

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### Introduction

Forests and tribals are ethically, culturally and traditionally linked to each other. Forests being a permanent abode for the tribals, they think it as their ancestral home and there exists an emotional attachment between tribal and forest landscape (Sinha, 1992). Given the high dependence of the tribal population on forests for subsistence and livelihood needs, the deforestation and deterioration in the quality of forests affects them most adversely. But the extent of income of people whose livelihood depends on forest is the key to understand their dependence on forest. The livelihood essentially rests on the sustainable harvest of forest timber and NTFPs. Involvement of people in forest protection and management for conservation of biodiversity is desirable to sustain and enrich forests and to ensure continuance of forest livelihood options.

Several scientists have worked out on the aspect of valuation of benefits (Table 1) being derived by the forest dependents in various parts of the world. The revenue contributions of NWFPs in India vary considerably, some estimate that NWFPs contribute US\$ 208 million to the Indian economy while another calculation places the revenues from NWFPs at US\$ 645 million (Lele *et al.*, 1994). Yet another report (Poffenberger, 1990a) estimates that the total annual value of NWFPs from the Central Indian tribal belt alone exceeds US\$ 500 million. All of the estimates, despite their variations, lead to the conclusion that NTFPs contribute substantially to the livelihoods of the collectors.

Forests in Jharkhand extend over 23605 km<sup>2</sup> representing 29.61% of the total geographical area of the State. As per census 2001, the total population of the Jharkhand state is 26.91 million of which schedule tribe constitute 22.50% of the population.

West Singhbhum district of Jharkhand has 58.31% tribal population. The district has 38.71% forest cover of its Geographical area. The district is full of hills alternating with valleys, steep mountains and deep forests on the mountain slopes. The district contains one of the best sal forests of India and the famous Saranda –

(seven hundred) hills area. The natural forest is under the control of forest department, however the study area of W.Singhbhum is being managed by community called as 'Mundari-Khuntkattidari' forest traditionally held by the Munda (Clan) of the village according to the Chotanagpur (Tenancy) Act, of 1908. These forests were notified as private projected forest under the Bihar Private Forest Act, 1948. Later with the abolition of zamindari in Bihar state under the Act of 1950 these forests too were vested in the state and declared as Protected Forest under the Indian Forest Act-1927. However, with protest from the tribal leaders state government withdrew the notifications of vesting of these estates. The legal position of 'Mundari-Khuntkattidari' forest is very diffuse but the community is managing the forest at its own. However, in spite of its rich natural resources the district is one of the most backward districts of Jharkhand because of abject poverty, low literacy, very poor infrastructure, ignorance and exploitation of the poor. The district is also cursed by Naxalism and terrorist activities with the poor tribal population often bearing the brunt of the same.

Most of the local people are dependent on NTFP for income generation. This research focuses the evaluation of the NTFPs contribution in the livelihoods of the tribals, who for most daily life remain involved in collection and marketing of the non-timber forest products.

### Study area

The study area was 50 villages of Bandgaon and Goelkera blocks of W.Singhbhum district of Jharkhand. The villages comes under the Kolhan and Podahat forest division.

### Methodology

For primary data collection, personal observation, organized survey and community meetings and focus group discussions were undertaken. For survey questionnaire was used for recording baseline information. Stratified sampling technique was used for analyzing the area in terms of NTFPs. Random sampling techniques were used to conduct interviews of the target groups. Secondary data was collected from various

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**Table 1**  
*Reports of annual income from forest by different authors.*

	Reported annual income from forest
Godoy <i>et al.</i> , 1995	\$95 to \$820/person, average \$411 NTFP value per household = \$0.12 to \$94.00 or average of 40% of total income
Gunatilake <i>et al.</i> , 1993	\$31.80 to \$745.60/family 63% of total income and 59% of cash income from forest resources; average NTFP income is 16% of total
Anderson and Ioris, 1992	Average gross income \$3172 per household
Padoch, 1988	2-85% of income from fallow or forest
Cavendish, 1996	\$200 per household, 8.2% from woodlands
Melnyk and Bell 1996	\$4696 and \$1902 per household in each of two villages respectively
Campbell <i>et al.</i> , 1995	\$50-85 per household
Peters <i>et al.</i> , 1989	NTFP total \$698/ha, net: \$422/ha Timber \$310/ha per 20 yrs
Caldecott 1988	M\$162 million per year for all of Sarawak for income related to hunting
Singh <i>et al.</i> , 2010	Rs 538/family/year

libraries and departments. The data collected was analyzed statistically.

## Result and Discussion

### Non Timber Forest Products

Non-timber Forest Products (NTFP) include all the products derived from forest other than timber. The importance of the NTFPs is reflected by every aspect of tribal livelihood—it extends a very wide range of support to their livelihoods starting from food (leaves, fruits, fibres, tubers), oil (edible and multipurpose), fodder, building materials for houses (thatching, carpet and roofing materials), the medicines, clothes and ornaments, etc. In most of the forest areas of Jharkhand, NTFPs have been supporting tribal for more than 6-8 months a year both in terms of subsistence and cash income.

In the present study the economic valuation of six major NTFPs (Table 2) for their contribution in the tribal livelihoods is estimated.

### Mahua Flower (*Madhuca indica*)

Mahua Flower is one of the most important produce providing livelihoods to forest dwellers. The

study reveals that mahua flower is being collected by 97.2% of the household during the month of March - April. The flowers are being collected for almost a month and on an average they spend 4-8 hours in collection. Normally the collection is done by children and women. 100% collection is for commercial purpose.

### Mahua Seed (*Madhuca indica*)

Mahua seed is widely collected during June-July in both the blocks. The seed is generally crushed, steam boiled and expelled to extract oil. While the oil is used by the tribals for personal uses like cooking and external application, oilcake is sold to traders, solvent plants wherein the cake is deoxidized for use in feed industry. The entire collection is for commercial purpose. The produce is sold to local traders/ middle men in cash. Total 90.2% of the house holds are involved in collection of mahua seed in the study area. The seeds are being collected for 15 - 30 days and on an average they spent 3-5 hours in collecting this produce.

### Chironji Seed (*Buchanania lanzan*)

Chironji fruit is high valued for its kernel widely used as a flavoring agent in sweets, other confectionary

**Table 2**  
*Status of NTFP collection.*

Major NTFP	Collection period	Period of collection (days)	Duration of collection (hours/days)	No. of HH involved
Mahua Flower	March-April	25-30	4-8	3306
Mahua seed	June-July	15-25	3-5	3067
Chironji Seed	April-May	10-20	3-6	2917
Tamarind	Feb-March	1-4	3-6	354
Sal leaf	May- Feb	270-300	2-4	1586
Siali leaf	June-Dec	200-240	2-3hr	302
Lac	June-July & Oct-Dec	125-150	2-3hr	314

products and other edible items. The price of chaironji fruit depends upon the percentage of seeds having the kernel. Large and intact kernels fetch better price than broken or small ones. Once, the kernel is extracted, it has to be immediately marketed as it can't be stored for more than a month. Hence, the traders collect only the chaironji seeds from the collectors. This is generally collected during April-May. The study reveal that 85.8% of the households are involved in seed collection. The seeds are collected for 10-20 days and on an average they spend 3-6 hours in collection. The entire collection is for commercial purpose for direct selling to local trader/middle men.

#### Tamarind (*Tamarindus indicus*)

Tamarind is collected during February - March from the existing tree in the forest area based on their ownership. The tribal lease out the trees when the plant starts bearing fruit. The study reveals that 10.4% of the households are involved in tamarind seed collection. The seeds are being collected for a week and on an average they spend 3-6 hours in collection but the involvement of trader in collection and plucking of fruit is more as they generally pluck all the pods fruits systematically, for good quality production. The study reveals that 100% of the household who collected the seed is involved in direct selling to local trader.

#### Sal Leaf (*Shorea robusta*)

Sal leaf collection is done generally by tribal women during the month of May to February. In March-

April dried leaves fall down. 46.6% of the household are involved in sal leaf collection. Sal leaf collectors collect leaf for 10 months except during rainy season and on an average they spend 2- 4 hours in collecting the leaves. The study reveals that 46.6% of the households sell the leaves after value addition- i.e. converting them in to leaf plates, however, 7.6% sale the leaves directly.

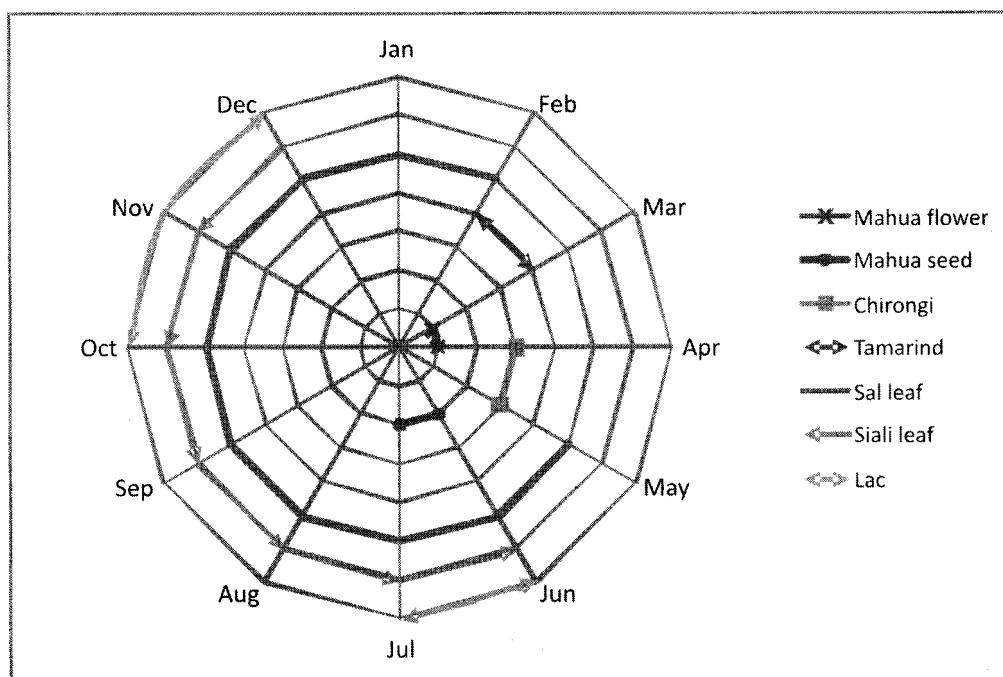
#### Siali leaves (*Bauhinia vahlii*)

Siali is a woody climber of sal forests. After monsoon the new leaves are hand plucked, partially sun-dried and stitched by the tribal women. Siali leaf collection is collected during the month of June-December. Study reveals that 3% of the households are involved in Siali leaf collection. Siali leaf collectors collect leaf for 8 months and on an average they spend 2-3 hours in collection. The study reveals that 8.9% of the household who collected the leaf, only 29% is involved in direct selling rest household is involved in stitching the leaves.

#### Lac (*Laccifer lacca*)

Lac is an important NTFP being cultivated on the trees of Ber, Kusum and Plas available in the forest area. It is a natural resin of insect origin and commercially important as a versatile raw material, useful for variety of purposes. In W. Sighbhum lac is being cultivated by 9.2% of the household which is an important source of livelihood in this area. The study reveals that all 9.2% of the household who cultivate sell it directly to local trader. W. Sighbhum contributes a lot to economy from lac cultivation.

Fig. 1



Period of collection of NTFP

**Table 3**  
*Contribution of NTFP in tribal livelihoods*

Sl. No	NTFP	Total collection in Quintals	% of NTFP based on volume	Market Price of NTFP in ₹/ Q	Income from NTFP (₹)	Average income/hh (₹)/ year
1.	Mahua Flower	6371	63%	600	3822600	1156
2.	Mahua seed	1413	14%	700	989100	322
3.	Chirongi Seed	214	2%	1500	321000	110
4.	Tamarind	1001	10%	450	450450	1272
5.	Sal leaf	603	6%	800	482400	304
6.	Siali leaf	156	2%	800	124800	413
7.	Lac	350	3%	7000	2450000	7803
Total					8640350	

### **Contribution of NTFP in tribal livelihood**

Substantial part of livelihood rests on the income from the sale of NTFPs collected, but with increase of population and reduction in forest area/ productivity the load on forest is increasing. The quantitative documentation and valuations of the NTFPs are recorded in Table 3. The data reflects that forest produce is collected through out the year Fig. 1. The perusal of data show that the major quantity collected is Mahua flower which contributes 63% of the total NTFP being collected similarly Mahua seed is the 2<sup>nd</sup> major NTFP being collected which contributes 14% followed by Tamarind which contributes 10% of the total collection. Sal leaf contributes 6%, lac contributes 3% and chirongi seed and siali leaf contributes 2% of the total NTFP being collected from the forests of study area.

The study of the area reveals that there is marketable surplus of NTFP in the survey area revealing that the available NTFP is being sold at throw away price to local trader in the village and local market for which the villager do not get fair price of the NTFP. The survey reveal that marketable surplus is highest for mahua flower and seed followed by lac, tamarind, chirongi seed, sal leaf and siali leaf respectively.

The average income from the sale of NTFP at the village to local traders and local market reveal that highest return per household is from tamarind. The average income for a tribal household from the amount of NTFP collected is ₹ 2613/-. The detail perusal of table reveal that average income from lac is ₹ 7803/- per household followed by tamarind ₹ 1272/-, mahua flower ₹ 1156/-, ₹ 413/- from siali leaf, ₹ 322 for mahua seed, ₹ 304/- from sal leaf, ₹ 110 for chirongi seed respectively.

The data collected were based on the NTFP collected from the forest and the monetary value of the produce was based on the actual price which the

individual obtain from the village but due to lack of value chain and awareness.

### **Status of NTFP**

The study reveals that the selling mechanism of almost all the products is predominantly individual oriented, which has helped traders (small as well as big) to gain in a big way. It is a fact that the trader lobby enjoys tremendous networking and is surviving on the fact that majority of producers sell their product when they are in dire needs of funds, which upper hands to the buyers for goods bargians. In addition lack of competition and information at the primary producer / collector level provides them with another tool to get the produce at a relatively lesser price (commonly known as distress sales). It is not that collectors have not tried their hand in adopting alternative means to get better prices but chronic dependence on local trader does not allow them any way out.

It is worthwhile to note that majority of the forest produce are sold in the raw form and are traded in the same form (without any value addition except for certain trivial functions) by the succeeding levels of traders.

Thus there is need to think of alternative marketing strategy so that tribal get the best price of the NTFP. The other supports required for enhancing the return from the sale of NTFP are:

1. Provision of storage facility for NTFP
2. Provision of value addition technology packages
3. Provision of capital to encourage organized trade at upper market price
4. Scientific knowledge of cultivation and collection of NTFP.

### **Conclusion**

The livelihood depends to a great extent on Non Timber Forest Produce (NTFP). In the present study the

*Existing Practices, Gaps and Constraints in the major NTFP collected*

NTFP	Existing practice	Gaps and constraints	Option for increased income
Mahua Flower	<ul style="list-style-type: none"> <li>Firing below trees for cleaning</li> <li>Collecting flowers one by one from ground</li> <li>Drying mahua flower on the floor, road side and on floor smeared with cow dung etc</li> <li>Individual selling on estimation basis</li> <li>Selling to local trader in village</li> </ul>	<ul style="list-style-type: none"> <li>Not Cleaning the place of natural fall of mahua flower on ground</li> <li>Lack of awareness on best collection practices</li> <li>Lack of drying infrastructure</li> <li>lack of weighing machine</li> <li>lower price and sale at throw away price</li> <li>Lack of negotiation power and skills with market players e.g. traders and processors</li> </ul>	<ul style="list-style-type: none"> <li>Collection by placing cloths to save time and easy collection</li> <li>Arrangement of drying platform</li> <li>Arrangement of weight instrument</li> <li>Arrangement of collective marketing support</li> </ul>
Mahua seed	<ul style="list-style-type: none"> <li>Hand pick of fruit from ground &amp; Collected in a bamboo basket</li> <li>Removal of first coating of mahua fruit by hand wash &amp; obtaining coated mahua seed</li> <li>Breaking outer cover of mahua seed by applying pressure in ground or by stone hit</li> <li>Selling to local trader in village</li> </ul>	<ul style="list-style-type: none"> <li>Mahua fruit usually not kept on clean surfaces and impurities get mixed with dori making the quality worst</li> <li>Storage mechanism poor, little space inside house to keep dori for a long time and enforcing for distress selling</li> <li>Reducing the quality due to thrashing</li> <li>Lack of negotiation power and skills with market players e.g. traders and processors</li> </ul>	<ul style="list-style-type: none"> <li>Establishment of storage facility infrastructure</li> <li>Grading for separating the quality</li> <li>Technique required for coat removal.</li> <li>Arrangement for drying platform for reducing moisture</li> <li>Arrangement of collective marketing support</li> </ul>
Chirongi Seed	<ul style="list-style-type: none"> <li>Collecting char fruit from branches of tree</li> <li>Manual de-coating of first layer of chirongi seed by stone treatment or by grinding</li> <li>Exchanging Chirongi with rice (90%) and salt (10%) at local trader on market days and sale at road sides at less price</li> </ul>	<ul style="list-style-type: none"> <li>Collection of Chairongi by harming the tree branches and tree.</li> <li>Lack of de coating machines</li> <li>Lack of marketing price information</li> </ul>	<ul style="list-style-type: none"> <li>Machine to be developed to get good seed and fair price</li> <li>Sale support required as the seed fetches a good price in international market</li> </ul>
Tamarind	<ul style="list-style-type: none"> <li>Waiting for ripening of tamarind &amp; its natural fall from tree</li> <li>Climbing on tree and shaking branches by hand pressure and by long stick to allow fall of tamarind from tree</li> <li>Storage in basket and jute bag or in ground</li> <li>Selling to local trader in village individually</li> <li>Distress selling</li> </ul>	<ul style="list-style-type: none"> <li>Tamarind trees leased by the tree owner due to cash requirement and lack of information on market price of tamarind</li> <li>Tamarind fruit collected from ground allows direct de coating of outermost lawyer and brings spots on the tamarind flower, which deteriorates the quality.</li> <li>Quality gets deteriorated due to lack of storage facility</li> <li>Lack of negotiation power with market players</li> </ul>	<ul style="list-style-type: none"> <li>Picking the fruits and direct collection so that good quality is maintained</li> <li>Provision of storage godown</li> <li>Grading of tamarind and selling in different grades</li> <li>Value addition by deseeding</li> <li>Support on marketing and price fixation by govt.</li> </ul>
Sal leaf and Siali leaf	<ul style="list-style-type: none"> <li>Storing in available space inside house and stitching 5 to 7 leaves in bamboo stick</li> <li>Leaf collected daily</li> <li>Leaf sold after stitching individually</li> </ul>	<ul style="list-style-type: none"> <li>Lack of storage and drying facility</li> <li>Lack of information of value addition i.e leaf plate and cup</li> <li>Information on value addition lacking</li> <li>Collective selling lacking</li> <li>No gradation of good and bad leaves</li> </ul>	<ul style="list-style-type: none"> <li>Infrastructure for storage of leaf required</li> <li>Support for installation of machine for sal leaf plate and cup making</li> <li>Grading of leafs for fair price</li> <li>Support on collective production and marketing linkage</li> </ul>
Lac	<ul style="list-style-type: none"> <li>Cultivation done on host plant in traditional method</li> <li>Selling the lac individually</li> </ul>	<ul style="list-style-type: none"> <li>Lack of awareness on management practice reducing the return</li> <li>Lack of negotiation power with market players and prevailing price</li> <li>Value addition not done sole after removal from branches</li> </ul>	<ul style="list-style-type: none"> <li>Awareness/training for scientific lac cultivation</li> <li>Information on current price of the produce</li> <li>Value addition for enhanced income</li> </ul>

valuation of the NTFP has been done based on NTFP collected and monetary values of the NTFP are based on prices prevailing in local market. The labour involved in collection of the produce has been ignored. The data reflects that on average ₹ 2613/- worth NTFP is being extracted by the tribal from the forest per year. But the gross return/extraction to the villagers is worth 86 lakhs/yr. These extractions are made from traditionally managed 'Mundari-Khunkattidari' forest in Jharkhand, India. Although this study establishes substantial

economic contribution from the NTFPs to the livelihoods of the poor tribals, still the scenario of economics is too unrewarding for the collectors because of various bottle necks- the role of opportunity cost and exploitation by middle men ranking the highest. Enormous scope has been visualised through this study for manifold increase in the profitability for the collectors, for which there is need to develop very effective extension and training networks, by involving all line departments, under Jharkhand State Forest Development Corporation's role as a nodal agency.

### SUMMARY

The study has been conducted to evaluate the economic dependency of tribal livelihoods and to explore the economic contribution of NTFP in their livelihoods in 50 selected villages of West Singhbhum district of Jharkhand state. The study reveals substantial contribution of NTFP in the tribal livelihoods. Six major NTFPs of this forests, managed under 'Mundari-khunkattidari' system of traditional management by the Tribals, were included in the present study. The economic returns from NTFP was found to have suffered a lot as a result of some major constraints like- unorganized trade, lack of proper storage and value addition facilities and marketing by The middle men. Besides the economic valuation of NTFPs contribution in tribal livelihoods, the gaps in existing practices and knowledge levels leading to low returns were also identified and factors affecting the profitability were screened with some suggestion to further enhance the economic returns.

**Keywords:** Tribal, economic returns, livelihood, NTFP.

### झारखण्ड के पश्चिम सिंहभूम जिले के आदिवासियों की आजीविका में योग देने वाली गैर-प्रकाष्ठ वनोपजों का आर्थिक मूल्यांकन

प्रवीण कुमार सिंह व एस.एम. सुलेमान कुली

#### सारांश

यह अध्ययन झारखण्ड राज्य के पश्चिम सिंहभूम जिले के 50 चुने हुए गाँवों में आदिवासियों की जीविका चलाने का आर्थिक निर्भरता का मूल्यांकन और जीविका चलाने में गैर-प्रकाष्ठ वनोपजों के आर्थिक योगदान का पता लगाने के लिए संचालित किया गया। इस अध्ययन से प्रकट होता है कि आदिवासी जीविका उपार्जन में गैर-प्रकाष्ठ वनोपजों का अच्छा खासा योगदान है। इन वनों की छः मुख्य गैर-प्रकाष्ठ वनोपजों को, जिनका आदिवासियों द्वारा पारम्परिक प्रबन्धन 'मुण्डारी खूँटीकट्टीधारी' विधि से किया जाता है, प्रस्तुत अध्ययन में लिया गया। गैर प्रकाष्ठ वनोपजों से होने वाली आर्थिक प्रत्याय पर कुछ मुख्य बाधाओं जैसे असंगठित प्यापार, उचित भण्डारण और मूल्यवर्धन सुविधाओं के अभाव और बिचौलियों द्वारा बिक्री किया जाना, के परिणामस्वरूप कुप्रभाव पड़ता देखा गया है। आदिवासियों की आजीविका में गैर-प्रकाष्ठ वनोपजों को आर्थिक मूल्यांकन करने के अतिरिक्त वर्तमान रीतियों की कमियों, ज्ञात स्तरों में छूटे स्थानों का, जिनके कारण इनसे प्रत्याय कम रहती है, पता लगाया गया तथा उन कारकों को भी बताया गया जो इसकी लाभप्रदता पर दुष्प्रभाव डालते हैं जिसके साथ आर्थिक प्रत्याय बढ़ाने के कुछ सुझाव भी दिए गए हैं।

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