



## Potential of non-timber forest products in the household income of Tengenoupal district, Manipur, India

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Available online at: [www.isca.in](http://www.isca.in), [www.isca.me](http://www.isca.me)

Received 23<sup>rd</sup> January 2023, revised 5<sup>th</sup> July 2023, accepted 8<sup>th</sup> July 2023

### Abstract

*This investigation was carried out to explore the role of non-timber-forest-produce to household livelihood of income of the tribal people in Tengenoupal District, Manipur, India to ensure their food security and local employment. A randomized questionnaire based sampling was done among different tribal communities from different villages. Cost, income and returns were estimated of NTFPs collection. This study reveals that 50% employment was generated from NTFPs collection wages. The highest average income per household is Rs.75000. The higher income is generated from the bamboo among all the NTFPs in study area (Tengenoupal district). Thus, income generated from the NTFPs in sustainable manner for food and livelihood security. The main problems facing by the tribal is inappropriate benefits, lack of processing activity in the area, low cost of products once it is sold in bulk. The processing activities must be improved through regular training and skill development to ensure continuous livelihood income and employment.*

**Keywords:** NTFP, sustainable income, Tengenoupal District, livelihoods, social and cultural values.

### Introduction

Non-Timber Forest Products plays a vital role in livelihood of people in and around the forest<sup>1</sup>. NTFPs includes medicinal plants, dyes, mushrooms, fruits, resins, bark, roots and tubers, leaves, flowers, seeds, honey, etc. NTFPs are sources of food and livelihood security for communities living in and around the forests<sup>2</sup>. As per the FAO<sup>3</sup>, NTFPs defined as “*all goods for commercial, industrial and subsistence use derived from forest and their biomass*”. Initially NTFPs collection by local populace was done for fulfillment of their daily needs, later these activities acquired commercial arena which leads to larger trade and income levels due to increasing market demand. Revenue from NTFPs trade could be used for forest conservation activities<sup>4</sup>.

There are huge number of forests produces used by local people and industries<sup>5</sup>. These forest produce are known by (1) timber and (2) non-timber produces (NTFPs). Among these, timber products are considered highly valuable in the world, on the other hand, NTFPs also play great role in subsistence livelihoods of communities living around forest areas, hence underrated till date. Besides this, they contribute considerably to household income, local food and healthcare as well as, providing many more socio-cultural values<sup>6,7</sup>. Even after their importance, local NTFPs are not accurately evaluated as a revenue component for the livelihoods of indigenous people<sup>8</sup>. Furthermore, systematic data for income generation from NTFPs is not well available at national level in many developing countries<sup>9</sup>.

NTFPs plays varied role from place to place on the basis of economic and cultural features at local level. As in developed countries, NTFPs get importance for their cultural and recreational activities, biodiversity conservation, and rural economic development. In some developing countries, including Africa and Asia, NTFPs are mainly used for subsistence and income generation<sup>7,10</sup>, where non timber forest produces are considered as suitable alternative to cope with the gaps due to less beneficial agricultural production or other emergencies<sup>11,12</sup>. Therefore, needful prioritization of NTFPs-based activities by the government and other stakeholders can be used to enhance the economic and social wellbeing of people living around forest areas<sup>13</sup>.

India has been described as a “melting pot” of races and tribes. India has one of the largest and diverse tribal populations of about 645 distinct tribes in the country. The tribal population in India according to the 2011 census is 104 million or 8.6% of the total population. In India over 50 million people are dependent on non timber forest produces for their subsistence and cash income, which contribute approximately 50% of the income for 30-40% of the tribal people. Further, non timber forest produces incurred around 50 to 70% of forest-related income for country, which revealed that non timber forest produces are among the chief source of income for large populace around forest areas<sup>12,14,15</sup>. Forest is associated with socio-economic and cultural life of tribal in India. These tribal groups inhabit wide ecological and geo-climatic conditions in different concentration throughout the country. The collection of non timber forest produces by the tribal is mainly for their daily needs. The high rate of extraction from forests is one of the reasons for the rapid

deterioration of the forests<sup>16</sup>. Various studies also showed that poorest forest dwellers are highly dependent on non timber forest produce to sustain daily requirements of family needs<sup>17</sup>, further, non timber forest produces are vital for subsistence and meeting the sources of daily nutrition<sup>18</sup>.

The NTFPs are very important financial support for the people who dwell in forest and who depend on the forest products greater than the timber. Traditional way of using medicinal plants among different communities has been passed from the forefather and it is in use till now. This cultural practice of using NTFPs is now studied in the field of herbal and biomedical research. Concerned people have definite rights to get an equitable share of benefits<sup>19</sup>. On the basis of above mentioned facts, this investigation is conducted to explain the role of non timber forest produces in subsistence food and livelihood security of local tribal populace in the Tengenoupal district located Manipur state, India.

### Methodology

**Study area:** Tengenoupal District includes Moreh, Machi and Tengenoupal sub-divisions<sup>26</sup> with a population of about 59 thousand people, having 30 thousand (51%) male and about 29 thousand (49%) female with 84% ST. This district is the home of about 12 thousand households with an average 5 member family and about 71% (about 42 thousand) population live in rural part while only 29% (about 17 thousand) population live in the urban part<sup>27</sup>.

A randomized survey was carried out during April to May 2022. Data were collected using questionnaire based interviews (primary data) on 28 randomly selected household respondents

from the villages, most belongs to scheduled tribes. Both primary and secondary sources of data were used in this study. The questionnaire was always improved during the course of preliminary survey.

### Results and Discussion

Findings on the importance of non-timber-forest-products in Tengenoupal revealed that about 60% of forest dwellers in Tengenoupal district depends on NTFPs for their income and employment. The percentage of scheduled tribes' population to total population is more than 92% in all the sub-district except Tengenoupal where it is 77%. Even in this sub-district scheduled tribes' population in rural areas is significant being 92.62 % as against 56.24% in urban areas. NTFPs generated most employment (45%) for the tribals' households followed by other sources of income. Further, it contribute 45% to the total income of the household, which was closely followed by farm income (25%) and then by other sources. During forest produce collection season, each tribal family would make between 1000 to INR 1500. The percentage of family income from the NTFPs is about INR 45000 max per annum<sup>28</sup>.

There is rich diversity among tribal communities in Tengenoupal district in terms of culture and composition, major tribal communities are Maring, kuki, chothe, aimol, khoibu and theses all are occasionally depends on non timber forest produces for their livelihood. The tribal communities use to cultivate bamboo, banana, ginger etc on small land pieces, besides this, they also are expert in wild mushroom collection, bamboo shoot, fishing, hunting, collection of fruits and medicinal plants (Table-1).

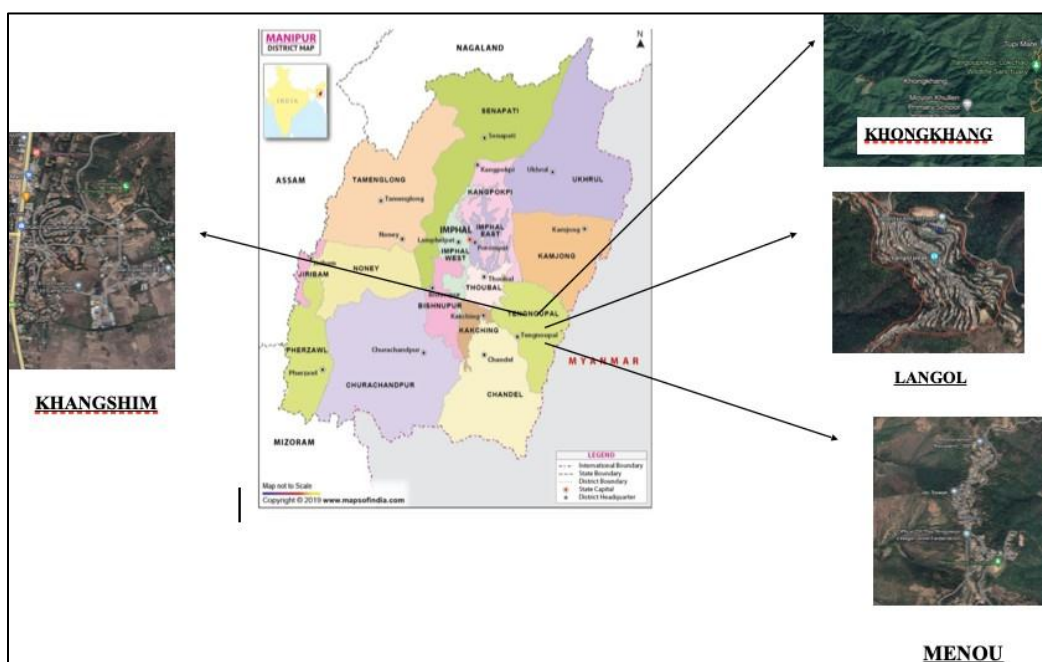


Figure-1: Study area location map.

**Table-1:** Major tribal communities surveyed in the study area.

Community	Respondents
1. Maring	17
2. Chothe	8
3. Khoibu	19
4. Kuki	7
5. Aimol	5
Total	53

Majority of the tribal households collect non timber forest produces as part of their traditional activity since long time not only to meet food and income, which indicates that non timber forest produces collection and marketing is an important source of income for these communities. Thus, non timber forest produces considerably contributed to sustainable income generation and improved livelihood of dependent communities. Main sources of income in the study area is NTFPs (48000) max/year, followed by wage earning, agriculture, services, and allied activities (Table-2).

**Table-2:** Average household income in Tengenupal.

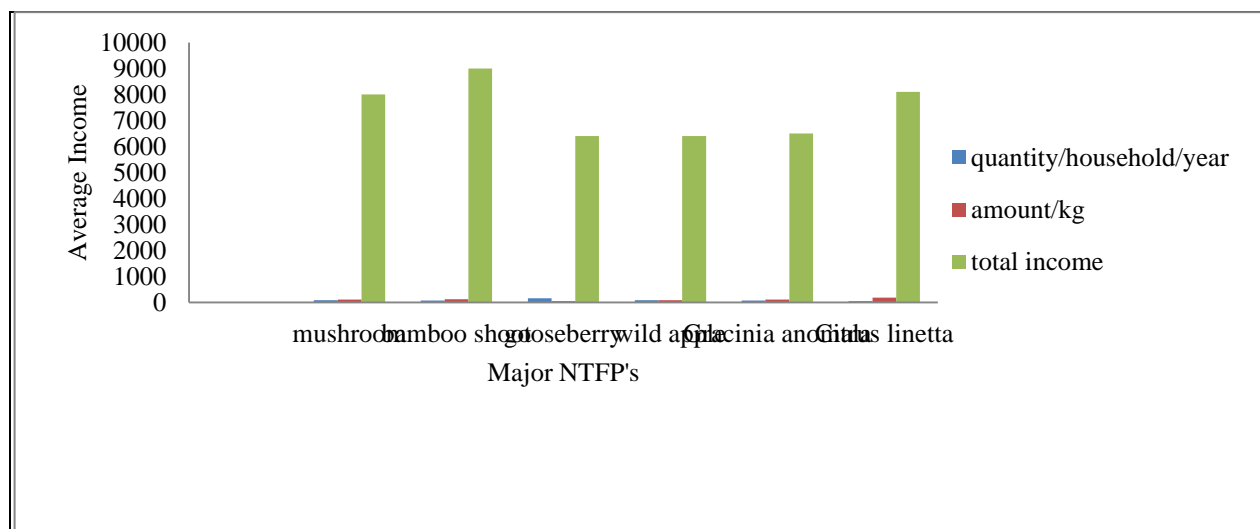
Source	Avg. income/year
Non wood forest produce	40%
Agriculture	26%
Wages earning	20%
Services & alliedactivities	14%

Findings reveal that agriculture (26%) and other sources are also suitable alternative source of income. Small land holdings and other miscellaneous factors affect farm production in this region. Thus, most households grow crops usually for their own consumption, it results in less contribution of agriculture sector to cash income. Therefore, non timber forest produces, agriculture and wage earning were considerable income sources. Moreover, non timber forest produces becomes the primary activity for landless tribals especially during certain periods of the year. Thus, households depend on NTFP not only for their livelihood but also to earn cash income. Non timber forest produces and wage earnings combine are found to be more beneficial as compare to agriculture (Table-2).

**Table-3:** Total income shares of households from different activities.

Species	Quantity/ household/year	Amount /kg	Total income
Mushroom	80	100	8000
Bamboo shoot	75	120	9000
Gooseberry	160	40	6400
Wild apple	80	80	6400
<i>Gracinia anomala</i>	65	100	6500
<i>Citrus linetta</i>	45	180	8100

The total income from selling NTFPs like gooseberry, bamboo, bamboo shoot, mushrooms and medicinal plants helps in the household income for the tribals to meet their daily needs (Table-3 and Figure-2).



**Figure-2:** Total income shares of households from different activities.

**Non-timber-forest-products of the Tegnoupal district:** In the study area, major NTFPs are bamboo, cane, mushrooms, honey, medicinal plants, roots, nuts and fruits. All most non timber forest produces are collected on seasonal basis. February to May is considered as the peak season, some wild fruits are collected during December to February (Table-4).

Frequency of NTFP collection may vary as per prevailing climatic conditions and the respective collection season. NTFPs are collected by both men and women. Women mostly take part in collecting mushrooms, roots, fruits, and medicinal plants. While men go for hunting and collecting bamboo shoots, etc.

The incomes generated through different non timber forest produces vary with each other, only few of these contributed considerably to income. Further bamboo shoots, cane, mushrooms, gooseberry, wild apples accounts for more than 50% of annual non timber forest produces income in the study area. It was found that, bamboo shoots contribute 20% of NTFPs, mushroom 40%, cane 17%, Indian gooseberry 5%, medicinal plants 10%, and the remaining 8% includes, honey, fruits, lichens, etc. (Table-5).

Our findings w.r.t. composition, uses etc of NTFPs are at par with those of Timunpi<sup>20</sup>, who reported that forest can be the main sources of the economy of people residing in around forest areas of Tegnoupal district. Further, NTFPs share greatly to livelihoods for major communities living around forests of most tropical countries<sup>21</sup>. NTFPs would play important role in supporting livelihoods of rural communities in continuity as long as the resources are utilised sustainably<sup>22</sup>.

Numbers of indigenous communities in this region are traditionally dependent on NTFPs, which play a considerable part in maintaining the subsistence, food and medicine. About 60–94% of the tribal population in Arunachal Pradesh, Nagaland, Manipur, and Tripura states are dependent on forest resources for various purposes<sup>23</sup>. These findings reveal that the non timber forest produces were the potential sources for livelihood and income generation in Tegnoupal district. NTFPs may surely supports people’s livelihood security particularly for forest dependent people<sup>24,25</sup>.

### Conclusion

In present study, combination of non timber forest produces and agriculture was found to be most suitable source of income, especially among low-income households and becomes the main activity for peoples with less or no cultivable land. Among all recorded household income sources, the agriculture and collection of non timber forest produces contribute more income as compare to earning from wages and other services with allied activities. This indicates that the non timber forest produces collection may have the potential to start small entrepreneurship with technical support of NGO and Government organizations as well as traditional knowledge of tribal groups residing there. As one hand the collection of non timber forest produces play an important role in the livelihood of tribal but on the other hand, it may also leads to unmanaged harvesting of non timber forest produces. Therefore a technically sound approach in integrated manner is needed for sustainable utilization of these non timber forest produces.

**Table-4:** Collection & utilization of NTFPs in Tegnoupal district.

Local name	English name	Scientific name	Season	Parts harvested	Uses
Heikru	Gooseberry	<i>Phyllanthus emblica</i>	Oct- Jan	Fruit	Dry fruit,
Chengum	Mushrooms	<i>Auricularia delicata, Lactarius volemus, Lentinula edodes</i>	April- Oct	Whole mushroom	Medicinal & food.
Soibum	Bambooshoot	<i>B. tulda, B. melocanna</i>	Sep-Dec	Shoot	Pickle, fermented bamboo
Waa	Bamboo	<i>Bambusa nutans, Dendrocalamus giganteus</i>	Oct- Dec	Shoot, Stem	Handicrafts, building
Heitup	Wild apple	<i>Garcinia pedunculata</i>	Oct- Dec	Fruit	Fruit pickle,
Lee	cane	<i>Calamus floribundus</i>	Nov- Feb	Stem	fruit

**Table-5:** Income generated by various non timber forests produces.

Particulars	Quantity	Price/kilo	Total
Bambbo shoot	80 kg	100	8000
Mushroom	75 kg	120	9000
Fruits-(gooseberry, wild apple) etc	250kg	Price varies with season	11,500 Approx.

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