

# **Role of Non-Timber Forest Products in income generation of the tribal population – A Review**

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## **ABSTRACT**

Non-Timber Forest Products (NTFPs) encompasses all the biological materials, other than timber, which are extracted from the forest for human use. NTFPs can be of two types. They are tradable and non-tradable. The tradable NTFPs are significant in international trade. NTFPs also constitute a critical component of food security and are a crucial source of income for the poor in many developing countries. Around 58 per cent of the entire income earned by the tribes in Kerala is through NTFP collection. Most of the employment (54.04%) was generated by the wage sector followed by NTFP collection (33.77%). About 84 species of NTFPs were found to be collected and used by the tribals for various purposes such as food, medicines, and raw materials for making implements and also as a source of income. NTFPs are marketed through different marketing channels depending upon several factors such as the nature of the product, demand, the distance to the market etc. If the society and EDC can start the value addition units of the NTFPs with the involvement of indigenous communities, it guarantees effective utilization of their free time and a better livelihood through enhancement of their income from NTFP's.

**Keywords: Food security, Harvesting of NTFPs, Marketing channels, Non-Timber Forest Products (NTFPs), Tradable**

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## **INTRODUCTION**

The forests provide timber and non-timber forest products besides invaluable environmental services. Non-Timber Forest Products (NTFPs) refer to all biological materials other than timber extracted from natural forests for both human and animal use. It has both consumptive and exchange value. Different terms such as secondary forest products, Minor Forest Products (MFP), Non-Wood Forest Products (NWFP) and Non-Timber Forest Products (NTFP) are being used by governments, institutions and academics.

### **What are NTFPs?**

Globally NTFPs or NWFPs are defined as “forest products consisting of goods of biological origin other than wood, derived from the forest, other woodland and trees outside

forests” (Chandel *et al.*, 2018). These products include plants or plant products for food, forage, fuel, medicine, fibre, bio-chemicals, as well as animals, birds, reptiles and fishes for food, fur and feathers. It can also be referred to as all the resources/products that may be extracted from forest ecosystem and are utilised within the household or are marketed or have social, cultural or religious significance (FAO, 1990). These products are very important for a society especially tribal community because it helps in diversified economic growth and sustainable rural development. There are a large number of species providing various NTFPs. Unfortunately, many of such species are either presently under threat, endangered or extinct, as a result of overuse, misuse and destructive utilization. Unlike timber-based products, NTFPs come from a wide range of plant parts and are formed into a diverse set of products *ie*, leaves and twigs that may be a component of decorative arrangements, food items such as fruits, fungi and juices, wood carved or woven into pieces of art or utilitarian objects and roots, leaves and bark processed into herbal medicines. Like timber, NTFPs are also processed into consumer-oriented products.

### **Classification of NTFPs**

The United Nations Food & Agricultural Organisation claimed that at least 150 Non-Wood Forest Products are found in international markets (Adepoju and Sheu, 2007). Classifying these products is an important first step in understanding the NTFPs industry. NTFPs can be mainly classified into edibles and non-edibles. The former include edible plants and animals, honey, oils, fish, spices etc. while non-edible products include grasses, ornamental plants, oils for cosmetic use, medicinal products etc. These two classes can further be divided into four general categories:

**1. Edible plant products:** Edibles such as mushroom, the most well known and documented edible forest products and many other food products are gathered from the forest. Since most of these products are not traded widely and are usually collected and consumed by the harvesters themselves, it is difficult to assess their economic magnitudes. These products include ferns, berries or other fruits, nuts, ramps (wild onions), herbs and spices.

**2. Medicinal and dietary supplements:** This includes plant-based products that are processed into medicines. Beginning in the late eighteenth century, over 100 plant species were commonly accepted for their medicinal properties. The majority are wild harvested and traded as botanical products (Foster, 1995).

**3. Floral products:** Forest products may appear in floral arrangements, dried flower decorations, and ornaments. Common example includes products made from pine boughs, grapevines, moss, ferns, flowers, cone, mistletoe and holly (Hammett *et al.*, 1998).

**4. Speciality wood products:** It includes handicrafts, carvings and turnings, musical instrument containers, special furniture pieces as well as utensils. In general, speciality wood products are considered non-traditional if they are produced directly from trees and not from timber purchased from mills. The trees need not be cut down to produce these items.

### **Economic value and growth of NTFPs.**

Nearly 80 per cent of the population in developing countries is dependent on NTFPs for subsistence, both economically and for nutrition. Suryaprakash and Girish (1999) revealed that NTFPs are important in the employment front too. NTFP sector is important as a major source of employment accounting to half the total employment of household. The tribals seek employment and derive income from other sources like farming and wage employment. Markets for NTFPs adding value at the local level are not well known, but are thought to have a significant impact on rural economies. A few of the edible forest products are prominent enough to generate national economic data. According to Foster (1995), the U.S exported about 77 tonnes of wild-harvested American ginseng valued at more than \$21m in 1993. NTFPs sector is growing rapidly, perhaps faster than the timber industry and it is expected to grow more in the future. According to Mater (New York Times, 1996), the market for forest products other than trees has mushroomed by nearly 20 per cent annually over the past years. It was also noted that the U.S herbal medicine market grew at an estimated annual rate of 13 to 15 per cent with sales of medicinal herbs, a forecast that the US economy would earn \$5 billion in the year 2000. New York Times (1996) reported that in the Pacific Northwest, mosses, ferns and other plants have sustained the commercial floral products industry and contributed more than \$125 million to the region's economy.

### **Indian Scenario**

Out of the 3,000 NTFP species in India, only 126 have developed the marketability (FAO, 2005). These include medicinal plants, edible plants, starches, gums and mucilages, oils & fats, resins and oleo-resins, essential oils, spices, drugs, tannins, insecticides, natural dyes, bamboos and canes, fibres and flosses, grasses, tendu leaves, animal products and edible products. According to FAO (2005), the commercial NTFPs are estimated to generate Rs.3 billion (US\$ 100 million) annually in India and also have a 42 per cent share of total removals in the category of other plant products, such as tendu leaves and lac, followed by Brazil and Mexico. India holds the monopoly in world trade over some of the NTFPs such as Karaya gum (*Sterculia urens*), Myrobalans (*Phyllanthus emblica*), *Terminalia chebula*, Sandalwood chips and dust (*Santalum album*) (Yadav and Basera, 2013). The marketing of NTFPs was regulated by different mechanisms in different states. Under the Forest Produce (Control and Trade) Act 1981, trading is largely controlled through public institutions, such as State Development Corporations, Federations, Cooperatives and tribal societies (Prasad *et al.*, 1996).

In Kerala, the NTFPs are marketed through different channels depending upon a variety of factors such as the nature of the product, demand, the distance to the market etc. (Muraleedharan *et al.*, 1999). The Kerala State SC/ST Federation, private traders and tribals are the three main marketing agents dealing with the marketing of NTFPs in the state. About 36 Tribal Service Cooperative Societies (TSCS) are engaged in the NTFP collection, which covers about 398 tribal settlements. There are mainly three marketing channels for the trade of NTFPs in Kerala. In the first channel, the products are marketed through the federation. In the second channel, the products are marketed through private traders. In some part of the State, the Forest Department also undertakes the marketing of some products (Shylajan and

Mythili, 2007). The main activity of the Federation is the marketing of NTFPs. There are two stages in the marketing of NTFPs in Kerala, sale of collected products by the tribes to federation through society and marketing of the collected products by the federation (Sasidharan *et al.*, 2008). The people living around the forest area depend heavily on the forest resources for sustaining their livelihood. The collection of NTFPs is the major occupation of more than 68 per cent of the tribals in Palakkad, Thrissur, Wayanad and Kannur districts of Kerala (Shanker, 1999). The tribes residing in the interior areas depend on the forest resources for food, medicine, construction, religious ceremonies, firewood purpose and commercial collection of NTFPs. Studies have shown that the NTFP collection contributed 58 per cent of the total income of the tribes in Kerala (Thomas, 1996). The tribals of Wayanad make use of 434 flowering plants for various purposes, of which 184 are used for food (Hema *et al.*, 2006), 244 for medicinal use (Silja *et al.*, 2008) and 68 plants are used for other purposes (Pramod *et al.*, 2003). These studies show that there is a greater dependence of the tribal people on NTFP species and also highlights the contribution of the NTFP sector to the livelihood of the tribes. This underlines the need for conserving the forest resources, especially the NTFP species. Through the conservation of NTFP species, we could sustain and enhance the livelihood opportunities of the tribes for a better life. Proper functioning of the various marketing institutions and a vibrant mechanism is needed for ensuring a better livelihood to the indigenous people who are dependent on these forest resources.

### **Analysis of Non-Timber Forest Products**

Value of Non-Timber Forest Product is the worth of a product or service to an individual or a like-minded group in a given context, often involving a complex of relationships (Brown, 1984). Economic values are human-oriented and human assigned. Values are specific to a given context and situation. Forest valuation should, therefore always be situation-specific and the result should be attributed back only to the group studied and to the actual context and situation studied (FAO, 1995). An appropriate method of valuation depends on the objective of the study.

Murthy *et al.* (2005) surveyed to assess the progression of Non-Timber Forest Products in a region in India where NTFPs were gathered in four diverse forest zones of the locale. The study aimed at preparing an inventory of the NTFPs extracted in the region, to estimate the quantity of NTFP gathered by local people and the forest department and finally to estimate the financial income derived from NTFPs extracted. The households were classified into three i.e. large farmers, garden owners and landless labourers based on the farm holdings. In each class, if the number of the household was under five, 100 per cent sampling was done; otherwise, 25 per cent of the household were arbitrarily taken for the survey. The result indicated that all classes of NTFPs were available in the district forest zones and they were classified depending upon the kind of species extracted. For example, fuelwood measured in kilogram/year i.e. weight of fuelwood fetched on an annual basis. Fodder, honey, mushrooms, wild mangoes and so forth gathered was measured in kg/household/year. The financial valuation of NTFPs which indicate the income of the farming household was carried out irrespective of the gathering household. That is, the total

population of each forest zone was considered as a whole. The financial valuation of the quantities of NTFPs gathered was estimated by utilizing the current market value and measured in kg/ha/yr. There were variations in the estimated value realized per household as well as differences in their financial value across the zones considered. It was also reported that a comparison of the annual value of timber with a ten year mean (1985-94) of Rs.239 million and NTFPs value of Rs.685 million for the year (1995-96) indicates that NTFPs contribute doubly to the economy and benefits flow directly to local communities. The authors were able to value NTFPs by directly using the current market price to estimate the income of the communities with the quantities of NTFPs gathered. However, financial valuation using market prices could not account for the elements of the cost involved in the production and distribution of NTFPs e.g. cost of labour and transportation. Economic analysis would have given a clearer picture of the real value. An inconsistency in the unit of measurement was observed, while some NTFPs were measured in kg/households/year, some were measured in kg/year without an indication of the value of land cultivated. But the financial valuation considered the land value utilized. Also, the author didn't indicate what was responsible for the observed variations in the estimated value of NTFPs realized by the households as well as the differences in the financial value per hectare of NTFPs across the four zones considered.

Alex and Kattany (2016) attempted to analyse the significance of different marketing agencies involved in the marketing of NTFPs, to the livelihood of the indigenous communities of Attappady. There are mainly three tribal communities namely Irula, Muduga and Kurumba in Attappady. Three marketing agencies, Kurumba Cooperative society, Eco-Development Committee (EDC) Vanasree Eco shop and Private traders were involved in the marketing of NTFPs used for edible and industrial purposes. Among the 23 NTFPs marketed, nine products were solely marketed through the society and one product exclusively through the private shop, 10 products through society and private shops, one product was marketed through the Eco-Development Committee (EDC) and private shop and two products through all the three channels. The price spread was estimated to understand the share of the final price going to the primary collectors. The difference between the price paid by the final consumer and the price received by the primary collector is price spread. It includes the costs and margins of different marketing agencies. The costs of transportation, storage, grading and handling comprise the marketing costs. The returns to the intermediaries for their functions were included in the margin.

$$\text{Price spread} = \text{Price paid by the consumer} - \text{Price received by the primary collector}$$

or

$$\text{Price spread} = \text{Marketing costs} + \text{Marketing margin}$$

NTFP collector's share in sale price is the price received by the primary collector expressed as a percentage of the sale price of NTFP (i.e. the retail price paid by the consumer) (Smith, 1992).

Although the procurement price given by the private shops and EDC for commercially important NTFPs was higher than that by the Kurumba society, the indigenous people were more benefitted by marketing through the society. It is because the EDC and private shops do not share their profit with the collectors, whereas society gives a certain level of their profit back to the primary collectors in addition to the procurement price. But the financial constraints during the lean seasons are forcing the indigenous communities to sell their products to the private shops. If the society and EDC can start the value addition units of the NTFPs with the involvement of indigenous communities, it guarantees effective utilization of their free time and a better livelihood through enhancement of their income from NTFPs.

Kumar (2014) undertook a study which attempts to assess the contribution of NTFPs to income and employment by ensuring food and livelihood security for the tribal economy in the Peechi Vazhani Wildlife Sanctuary, Western Ghats, Kerala. The major tribal communities surveyed were Kadar (66.7 %), Muthuvar (18.5 %), Mannan (8.3 %) and Malayan (6.5 %). These communities are considered as descendants of nomadic primitive tribal groups dwelling in the interior parts of the forests. About 84 species of NTFPs were found to be collected and used by the tribals for various purposes such as food (19), medicines (31), and raw materials for making implements (6) and also as a source of income (18). This indicates that more employment (54.04 %) was generated by the wage sector followed by NTFP collection (33.77 %). This study suggests that NTFP as a development mechanism for poor communities may have disadvantages. Firstly, those collectors who need income support from NTFPs are least able to benefit from an NTFP-based development strategy. It is mainly because they have the poorest developed skills, lack resources to store, process and market their produce, and they also face prejudice and unfair treatment because of their social status. Secondly, it can expose collectors and their dependents to widely fluctuating incomes because of price variations in local and global markets (Arnold and Perez, 2001; Rai and Uhl, 2004, Gopalakrishnan *et al.*, 2005, Vikas *et al.*, 2013) and extremes in seasonal and biological production (Mahapatra *et al.*, 2005). Thirdly, in the long-term, there is also the risk that the price for some NTFPs will decline as factory-made alternatives such as plastic containers for bamboo and reed baskets, and plastic for rattan furniture, become more widely available and more durable. Fourthly, the institutions and practices for monitoring harvesting rates and capacity building for commercial NTFP production require more time and resources than other development options (Barrett and Arcese, 1998, Ballabh *et al.*, 2002, Gubbi, 2006). In conclusion, it suggests that NTFP collection is unlikely to generate positive outcomes for biodiversity conservation or poverty alleviation. The new laws which give rights of land and resource use, including NTFPs collection, to communities living within forests and protected areas are therefore probably misguided in terms of livelihoods and harmful to conservation in protected areas. So it suggests that the Indian government consider the provision of alternative farm-based livelihoods and investment in improved access to education for collectors and their families. However, further research is required to compare NTFP revenues within other protected areas to understand further the social, economic and legal factors affecting incomes from NTFPs.

Suryaprakash and Girish (1999) undertook a study which attempted to analyse the role of NTFPs in the employment of tribals and their income, consumption pattern and factors that influence NTFP activities of tribals. The study was conducted in Kanara forest circle of Karnataka state. It comprises of five territorial forest divisions. Here NTFPs contribute to more than half the household's total income. They account for nearly two-thirds of the non-cash income of tribal households. Five marketing channels existed in the NTFP trade. However, only two channels were prominent in the trade of NTFPs by tribal households. NTFP sector is important as the major source accounting to half the total employment of household. The tribals seek employment and derive income from other sources like farming and wage employment. The tribal households spend more on cosmetics, tea and alcohol than on children's education. Households depend on NTFPs both for meeting their livelihood needs and to seek cash income from the NTFP sale. Larger the number of NTFPs extracted larger is the proportion of the products sold. Fuel wood is the most important NTFP collected for domestic use in the household. Women account for more of the household's time spent in collection and processing of NTFPs than that of men. However, when it comes to the quantity of NTFPs collected, men collect more quantity of the majority of the products than that collected by women of the household. Income from farming, income from allied activities, family size and number of dependents per family have a positive influence on NTFP income of households. The NTFP sector exhibited stronger linkages with the rest of the economy in the region with relatively larger tribal population than in the region with a lesser tribal population.

## **CONCLUSION**

As we know historically, NTFPs have been neglected by governments when compared to timber products. Also, existing expertise and knowledge is not well documented or is inaccessible. Also, lack of appropriate methods and tools to promote sustainable use of NTFPs and successfully regulate trade and to form development policy is still missing as observed from field experiences. There is a challenge for the coming years to develop proper tools and methods for sustainable extraction of NTFP and regulation of its trade. This can be achieved by efficiently using the existing knowledge and experience of facilitators, entrepreneurs and researchers in the region. This involves steps such as identifying, connecting and engaging such people in a range of networking activities that stimulate the flow of information and learning, and those yield products of immediate interest and utility to the concerned NTFP conservation initiative. When coming to the issues of sustainable production of NTFPs, there are a lot of challenges to be met. Some of which includes the disappearing of forest cover, inequitable market access of marginalized population and monopolization of high-value NTFP by logging and poaching mafia etc. In the articles reviewed, there was an assumption that underestimates possible post-harvest losses and the market cost of perishable NTFPs. The authors also assumed that all the NTFPs are tradable; this may not be always true. For non traded NTFPs, non-market prices are supposed to be used. The future studies will be richer if the authors didn't separate the NTFPs between traded and non-traded before estimating their financial value. Also, indications must be made about the estimate of the value of NTFPs used for the domestic purpose by households.

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