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Reliance and livelihood significance of non-timber forest products available in Odisha: A review

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Abstract

Odisha is a rich source of forest produce but the Non-timber forest products (NTFPs) has been given a mere importance by the people and the government. Most of the tribes of rural areas basically depend on NTFPs for their livelihood and it acts as a backbone to them. Women from different tribes in Odisha are mostly involved in NTFPs collection and marketing, generating a huge income. Many major and minor NTFPs are collected in Odisha from various parts of forest trees such as sal seed, kendu leaves, lac, broom grass, bahada, harida, amla, karanj, etc. This paper outlines the availability of non timber forest produce in Odisha, their scope and importance for tribal people. It also include a brief idea and challenges which are faced by the rural people during the collection, processing and marketing of NTFPs and some strategy and policies to overcome the issues and challenges of overexploitation of forest produce.

Keywords: Kendu leaves, lac, Mahua flower, OFDC, policies

Introduction

Forest, the heaven on the earth replenish a lot of resources for the livelihood of the organisms prevailing on this planet. It has been many years that the humans have recognised about agriculture and agricultural products, But till now the overall importance of forests is not being perceived completely. Usually, when anyone say about forest products primarily people think about the timber and the NTFPs (non-timber forest products) are given mere importance. Any products or service other than timber that is produced in forests can be defined as NTFP (non timber forest product). These include fruits, nuts, vegetables, medicinal plants, gum, resins, essences, bamboo, rattans and palms, fibres and flosses, grasses, leaves, seeds, honey and lac, etc. More than billion of people over the globe rely on the forests for their livelihood and depend on forest for numerous purposes like economic, social and environmental issues. Studies show that over 80% of the forest dwellers depend exclusively on NTFP for their daily subsistence and livelihood. Nearly 60% of NTFP collection are consumed locally. Some Strategic policies are required to ensure the sustainability of NTFP resources, which must consider biodiversity, ecological sustainability, security of environment, preservation of watersheds and rivers, revenue maximization and deforestation (Mallik, R.H., 2000) [9]. It is estimated that 275 million poor rural people in India depend on NTFPs for at least part of their subsistence and cash livelihoods. About 70% of the NTFP collection in India takes place in the tribal belt of the country, nearly 55% of employment in forestry sector is attributed to NTFP sector. Forest produces the desirable traits which differ from tree to tree and the desirable characters ultimately leads to enhance the quality of NTFP products. In different situations NTFP contribute to household self sufficiency, food security, income generation, accumulation of savings and risk minimisation. It can be important in filling seasonal and other food or income gaps, can provide a buffer in times of hardship or emergency, be an activity of last resort, or can present an opportunity for improving household income and security (Ojha, 2006) [11]. Majority of rural households in developing countries and a large proportion of urban households depend on the products to meet some part of their nutritional, health, house construction, or other needs (Shackleton *et al.*, 2014). The agencies which contributed to the promotion of NTFPs are FAO, WB, CIDA, IDRC, CIFOR, IUCN and BSP.

Importance of NTFPs

It is one of the major unorganized sector with a business turnover of more than Rs. 6000 crores per annum. In-spite of dependency of more than 275 million population of India (27% of the total) for their subsistence and cash livelihoods (Malhotra, 2010), this sector remains unrecognised. It provides earnings mainly at the time of stress i.e during lean seasons to the

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disadvantageous and landless communities. In Odisha, the contribution of NTFPs to total household income range from 10– 55% and about 80% of forest dwellers depend on forests for 25 to 50% of their food requirements. Usually the NTFP collection is done by women so it indirectly leads to women's financial empowerment. As per an estimate the NTFP sector alone is able to create about 10 million workdays annually in the country. It is believed that the promotion of sustainable use of NTFPs could lead to a win-win situation for poverty reduction and biodiversity conservation. Promoting the value of forest for local users can lead to forest conservation as well as reduction in poverty(Ahenkan *et al.*, 2011) [1].

Availability of NTFPs in Odisha

Odisha, with 4.7% of India's land mass and 36.7 million people (GoI, 2001) [4], accounts 3.6% of the population of the country. Odisha is the second largest state producing NTFPs and 37% of its population depend on NTFPs for their day to day requirements (Kandari *et al.*, 2012) [8]. In Odisha, up to 40% of the income of the rural people comes from the collection of forest products (Dash, 2001) [3]. Orissa is a state consisting of 30 districts with 3000 plant species including 120 orchid species and 63 varieties of mangrove trees which make the state second largest mangrove ecosystem in India. Classification of NTFPs can be done on the basis of purpose of use, part of the which is harvested and the level of use. The trade of NTFPs equip to the livelihood of the rural poor people. They are the source of nutrition as they provide vegetables, fruits and food of domestic animals and medicinal plants from which ayurvedic medicines are made prominently. NTFPs including medicinal plants remained as important source or raw material for traditional systems of medicines like Ayurveda, Chinese, Unani, Sidha, Tibetan and others across the globe. In fact, the percentage of people using traditional medicines is 40%-50% in Germany, 42% in USA,

48% in Australia and 49% in France. (Pandey *et al.*, 2016) [12]. A study was conducted in five-forest division covering 12 villages having an average 345 households of Keonjhar district in Orissa on various NTFPs products. A total of 24 plant species of NTFPs are collected from the forest. The collected NTFPs were used in different purposes i.e. medicines, vegetables, essential oils, dye yielding, food items and other miscellaneous items by the tribal people. There are many NTFPs used in odisha listed below in a tabular form and unlike these, other NTFP produce like lac, banasag, shokokoy, indrajab, harra, jackfruit, etc which also contribute towards the income and source of employment in Odisha condition. They are also important in generating income through harvesting, processing and trading of products such as gums, resins, oils, leaves, fruits, fodder, honey, mushrooms, tanning materials, bush meat, medicine (Anup K.C., 2014) [2]. Fuel wood, fodder and tooth brush are collected and marketed throughout the year while sal leaf plates, lac, fruits and vegetables are sold for 9-10 months by the tribes. Oilseeds and ethno-medicine are vended for 5-6 months whereas mahua flower is traded only during the months of summer, spring and autumn its abundance is seen against to rainy season (Islam *et al.*, 2017) [7].

Major and minor NTFPs collected from different plant parts

Grasses and Fibres: Most commonly used grass in Odisha is sabai (*Eulaliopsis binate*) is a perennial in nature. In Odisha it is mostly available in districts like Mayurbhanj, Keonjhar, Sundargarh and angul districts (Gupta AK, 2017) [6]. This grass is beneficial for handicraft industries and in manufacturing of households like sofas, beds, chairs, etc. *Thysanolaena maxima* is one of major grass in Odisha used in broom making. Table -1 describe the most common NTFP produce collected in Orissa.

Table 1: Most common NTFP produce collected in Orissa

SI No	Scientific Name	Common Name	Plant part used	Uses
1	<i>Diospyros melanoxylon</i>	Kendu leaves	Leaves	Making of bidi
2	<i>Shorea robusta</i>	Sal leaf	Leaves	Making of leaf plates
3	<i>Shorea robusta</i>	Sal dammar	Resin	Used as astringent in ayurvedic medicines.
4	<i>Madhuca longifolia</i>	Mahua	Flower	Used to produce alcoholic drink
5	<i>Bambuseae</i>	Bamboo	Shoots and twigs	Used in construction, decorations, cooking, weapon
6	<i>Sterculia urens</i>	Genduli	Gums and resins	Used for medicinal purpose
7	<i>Woodfordia fruticosa</i>	Dhataki	Flower	Used for medicinal purpose
8	<i>Phyllanthus emblica</i>	Amla	Fruit	Used for medicinal purpose
9	<i>Salvia hispanica</i>	Chia seeds	Seeds	Used as food
10	<i>Thysanolaena maxima</i>	Broom grass	Leaves, Roots, stem.	Used to feed livestock, soil conservation, staking in vegetable growing fields.
11	<i>Albizia procera</i>	Siris	Whole plant	Used as wood
12	<i>Terminalia bellirica</i>	Bahada	Fruits	Used as food and medicine for stomach problem
13	<i>Terminalia chebula</i>	Harida	Fruits	Used as food and medicine
14	<i>Cinnamomum tamala</i>	Tejpatta	Leaves	Used as spices
15	<i>Pongamia pinnata.</i>	Karanj	Fruit	Used as herbal medicines
16	<i>Schleichera oleosa</i>	Kusum	Seeds	Used as Oil seed and medicines
17	<i>Boswellia serrata</i>	Siali	Fruits	Used as medicines

Twigs and Branches: Sal twig commonly known as "dantakathi" is the most collected NTFP. In some rural areas it is preferred instead of toothbrush. The tribes near forests collect it regularly and sell in the daily markets.

Leaves: Kendu leaves are mostly used for rolling bidi and as serving plates in the poor families. It is a slow growing plant and for ease of collection, the plants are repeatedly pruned to retain in the bush stage. Khajur leaves are used for roofing

and also as sleeping mats in districts like Angul, Dhenkanal, Sambalpur.

Vegetables and Flowers: The rural households get their food supplements from the nearby forests by collecting vegetables and flowers like- pitalu, mahua leaves. Mahua flowers are eaten as fried, powdered and as cake and also used as fodder. They are usually stored after proper drying and consumed in the time of distress. Now a days the villagers prefer to sell the

flowers rather than storing because of the scarcity of storage facilities.

Fruits: A well known fruit based NTFP is mango which are abundant in forests and a natural associate of sal can also be planted along the roadside and village wastelands. Ripe mangoes are used for consumption and un ripened mangoes are used for pickles. The second most vital fruit based NTFP is the tamarind which has a great market craze in South India. But, tamarind production is less in central and western Odisha with comparisons to other part of Odisha. The major production areas for it are Koraput, Kalahandi and Ganjam districts of southern Odisha.

Oil Seeds: In Odisha, Main tree borne oil seeds are sal, kusum, karanj, mahua. Mahua oil is used in making of good quality soaps and after oil extraction the residue is made into cake which used as a fertiliser. The Karanj oil is in lamps, as body oil and sometimes or consumption. Commercially, it is used for manufacture of soap. De-oiled seeds are rich source of nitrogen so used as manure. It is sometimes used as insecticide and termite deterrent. Kusum oil is often used in manufacturing soap along with sal, mahua and karanj oil. Sal seed is major source of cheap fatty oil. It is prominently used in manufacturing cheap grade soaps while when fresh in the hydrogenation of vegetable oils.

Gums and Resins: The chief gums yielded from odisha forests are dhaura, karaya, semul and bahada. Most prominently used gums are exuded from dhaura and karaya.

Tassar and Lac: In odisha, the forest department take tassar as NTFP as it is produced in forest. Forest areas are also provided as lease for cocoon rearing. Lac is basically a resinous secretion of lac insects for protection. These insects found in the trees like *Schleichera oleosa*, *Butea monosperma*, Two types of lac is produced from the insect *Laccifera laccai*, kusumi and rangini. Among those kusumi is the better quality lac.

Medicinal Plants: It has a minor part in NTFPs in Odisha, species collected are chirota and ban tulsi. Liquor is also one of the minor NTFPs in Odisha, liquor is prepared from mahua flowers and rice beer herbs known as "akana" (Rath, 2015).

Collection and processing of and marketing of NTFPs: The NTFPs are available over the entire year according to the respective season of growth. The whole family get engaged in collection of NTFPs in the forest they self employ themselves in this work. They get deeper into the forests in search of NTFPs. Mainly it is done by the women and children of the family. All the NTFPs cannot be consumed or used in the form it is bought, some NTFPs like kendu leaves, lac, resin, etc are to be processed before sold or used. The method of processing varies from product to product and purpose of its use. The OFDC and the TDCC purchase the NTFPs and other agriculture surplus from the tribal gatherers so that they will get fair amount in returns. But they failed to fulfil their objectives due to lack of institutional and financial support. It has been seen that even though there are many NTFPs present they only collect major produce only. The consequence of this is that the primary gatherers has to sell their products to private traders or in their own village or nearby villages. Some sell the products at a very lower price even below the price fixed by the district committee. The Gram Panchayat

has been procured for NTFP collection but it failed to reach its objectives because it also lacks organisational and financial support (GoO, 1999) [5]. OFDC, TDCC, ORMAS and TRIFED start operating as market development and promotion bodies, no substantial gains can be achieved in the trade in sal seed. From the point of view of trade expansion, it is important that more and more traders are identified and involved in the process. The co-operatives from TRIFED, could buy about 50 NTFPs including gum karaya, niger seed, sal seed, myrobalans, mahua, tora, tamarind etc. In addition to TRIFED, the Collector also mobilised silkfed and oilfed, state level parastatals, to buy kosa cocoons and oil seeds respectively (RGDM, 1999) [14]. There are about 620 medicinal plants in India which are in trade, out of which 100 species are found in Odisha (the Samaj, 11-2-02). Out of the top 20 medicinal species which are in trade in the country 10 have their habitat in Odisha. The impact of global trend at policy level has been quite remarkable in certain ways. Twenty nine species were banned for export under the Foreign Trade and regulation Act, 1992 so as to check their overexploitation in the wild for export purpose; and the list contained some medicinal plants like *Rawolfia serpentine*, *Podophyllum hexandrum*, *Acontium spp.*, *Nardostachys grandiflora (Jatamansi)*, *Swertia chiraita* and *Saussurea costus* (Anonymous).

Processing of some major NTFPs in Odisha

Bidi leaves: The leaves obtained from *Diospyros melanoxylon* are called bidi leaves or kendu leaves. It is one of the most important NTFPs which gives a huge profit. Large leaves with inconspicuous veins are taken as superior quality of leaves. It is a medium sized tree with light demanding characteristic, tolerant to water logging condition but susceptible to frost. The soft and least pubescence leaves are collected manually due to its good quality. Usually collection of leaves is carried out in morning time. Then the collected leaves are made into bundles. The bundles are dried by spreading on the ground and turned upside down 2-3 days. It should not be under dried because it will cause mould growth at the same time it should not be over dried which makes the leaves brittle that cannot be used for bidi rolling. Water is sprinkled on the dried leaves which results in softening of leaves. After that the leaves are packed in gunny bags and it is ready for transportation. For rolling of bidi the leaves are kept in a moist gunny bag for 12 hours. There after those leaves are cut into rectangular shape and the tobacco mixture is stuffed in it and one of its end is tied. Then it is dried and packed for selling purpose (Manikandan, 2012) [10].

Lac: It is a resin like substance which is secreted by lac insects, commonly used in varnishing and sealing wax. Two strains of lac insects are seen i.e. Kusumi and rangini. A healthy brood lac is used for inoculation purpose. Brood lac sticks of 15-30cm length are tied to the branches for full inoculation. The crop is to be harvested fully within a week of larval emergence. The branches bearing the lac are cut and carried to a depot. The lac obtained from it is purified by heating and filtering in thin orange and yellow flakes is called shellac. It is used as raw material in moulding and gramophone industries as well as it is a component in varnishes, polishes etc.

Sal seed: Traditionally, tribes those are living in sal zones used sal oil for cooking though the method of sal fat extraction through conventional methods is a time taking

process and fuel consuming. Availability of substitutes led to rapid decrease in demand for extraction of sal fat. As sal fat is used as a substitute for cocoa butter boosted its demand and installation of many solvent extraction plants in the state made it easier. Sal De Oil cake had a great demand internationally, considering these specialities of sal seed its trade was nationalised. But it had not given any benefit to either primary collectors or government bodies rather it benefitted private monopolists who have been accorded long term lease all over the state. It is a naturally grown product without using pesticides and fertiliser. The trade was nationalised in 1983 and denationalised in 2006 the main cause for it was it gave low returns to the primary collectors (Saigal *et al.*, 2008) [15].

Mahua flower: Mahua flowers are basically used for making country liquor which is consumed by local people. Natural fall of flowers occurs during the month of March – May, a large proportion of people are engaged in its collection but they do not get even the minimum officially fixed wage. The collectors sell the flowers immediately because of inadequate storage facilities and they will get higher profit in off season selling. In Odisha each family is allowed to store only up to five quintals of mahua flowers in the season and just one quintal during the off season (Singh M *et al.*, 1988) [19]. The value addition and product diversification of mahua is not being given importance. One of the important issues during collection of mahua flowers is the land under the tree is kept on fire which is a threat to the whole forest.

Challenges during the collection, storage and marketing of NTFPs

There are the areas where challenges are major, and strategy are necessary for the overall development of the NTFP sector. Volatility of market is one of the major challenges but the government is not supposed to control the market as that would be unsustainable in many ways. Over use of the produce and unscientific way of collection is the main cause of scarcity of products and the plant species (Solomon, 2016) [20]. As the demand increases collection of NTFPs are more but the amount of tree in forest is not increasing as per the requirement. It is difficult to avail demand and supply data until a proper system prevails, Collection of NTFPs is seasonal so it is difficult to mitigate the demand and supply data where demand is more than the supply. The primary collectors get bound to sell the products at lower price and also without proper value addition because till now there are no proper storage facilities available and inadequate knowledge about value addition (Saxena, 2003) [16]. Sometimes some NTFP products left unsold or sold at lower because of their unattractiveness without value addition. So government must provide MSP to meet this loss but it is not applicable in crop failure which got increased due to climatic changes.

NTFPs collection policies by the Odisha government

According to the policy, procured by the Government of Odisha about the trade of NTFPs in resolution no.5503/F&E dated 31st march, 2000. It is mentioned that the Gram Panchayats have the authority to regulate the purchase and get hold of trade of NTFPs including 68 items of MFPs. It is bought up to assure that the primary gatherers will get fair price for their collection of NTFPs.

Salient features: Panchayats are empowered to fix procurement price to be paid to primary collectors in respect of each of the NTFP items listed in the resolution. Traders are required to register themselves with the Gram Panchayat for purchase of any NTFP items. No permits are required to cover transit of any of the NTFP items within the state. No royalty is to be paid or deposited with the Government in respect of procurement of NTFP items. Government of Odisha, brought up a resolution on 12th October 2001 concerned to price fixation mechanism of NTFP. So that the primary collectors should get legitimate price. It was an alteration of an earlier notified resolution dated 9th July 2001, in which the state level price fixation committee was dissolved and in place of it a district level price fixation committee was set up. In accordance with this resolution the district collector has the power to decide the minimum procurement prices of NTFPs including 68 MFPs. For further discuss regarding this the collector should consult DFO(Territorial), District Panchayat Officer, District Welfare Office, local representative of TRIFED, the local representative of Odisha Forest Department Corporation. Ltd and the local representative of the Women and Child Development Department.

Benefits of these policies

The foremost reason behind making these policies is that the poor livelihood dependent on NTFPs can get some income. Usually the middle man gets the higher profit during trade so Government of Odisha has made these policies for the benefit of primary collector. These policies would also check illegal trade of NTFPs without over exploitation of the forest and nationalize some important NTFPs like bamboo, kendu leaves, etc. It also give emphasis on storage, transportation, processing and marketing of NTFPs and check the impact of private monopolies on Government revenue and the revenue of primary collectors.

Conclusion

This study goals to highlight the significance of NTFPs in the livelihood of forest dependent communities and some strategies for their sustainable development and judicial utilisation. It also includes about the challenges and strategies of NTFP management which will be beneficial in sustainable development of resources and to provide opportunities to the poor section of people of the society. The forest department of Odisha have some policies to assure the collection and towards the marketing of NTFPs produce, so that the overexploitation of forest and degradation of tree can be minimize and the supply can also be maximize.

Acronyms

FAO-Food and Agriculture Organisation.
WB-World Bank.
CIDA-Canadian International Development Agency.
IDRC-International Development research Centre.
CIFOR-Centre for International Forestry Research.
IUCN-International Union for the Conservation of Nature.
BSP-Biodiversity Support Programme.
TRIFED -Tribal Cooperative Marketing Development Federation of India Limited.
OFDC-Orissa Forest Development Corporation.
TDCC-Tribal Development Co-operative Corporation.
MSP-Minimum Support Price.

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