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1.1 INTRODUCTION

Forest degradation is directly or indirectly affecting lives of millions of innocent and innocuous forest dwellers in India. But not many studies have been conducted to assess the impact of forest degradation on the quality of life and the livelihoods of the forest dependent communities. Many studies and many reports are available on several aspects related to the effect of deforestation on wildlife, soil, climate, ecosystems and so on. Unfortunately, most of these studies have viewed the subsistence of the forest dependent communities as a major factor threatening the sustainability of forest ecosystems and their management.

1.2 FOREST ECOSYSTEM

Forest management and silvicultural principles have been focused towards timber production while neglecting the following aspects, viz.

(i) Ecosystems for human existence
(ii) Habitat for Wildlife
(iii) Source of tribal culture and institutions
(iv) Source of medicinal plants and non-timber forest products.
(v) Source of livelihood for forest dependent communities.
(vi) Recreational benefits.

1.2.1 Forest Policy and People

After almost 150 years since the British introduced scientific management of India's forests, the National Forest Policy, 1988, recognised people, despite the fact that 50 million people obtain their livelihood from forests. The National Forest Policy, 1988, has clearly indicated the need and means for involving forest dependent communities as partners in the management of the forest resources. In 1990, the Government of India, Ministry of Environment & Forests has directed all State Forest Departments to initiate participatory forest managements at village level and the programme is popularly named as Joint Forest Management (JFM). At present, as many as twenty states in India have started Joint Forest Management (JFM) programmes, under which the local communities and the state represented by the
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Forest Department (FD) will jointly plan and manage the forests, and also share the responsibilities and benefits.

1.2.2 Joint Forest Management

JFM programmes are now about 18 years in age. Now there is a mixed evidence from many parts of the country indicating the success of the programme in improving the cover and quality of the forests and also in providing substantial usufructory benefits to the participating communities. Sustainability of such programmes comprises three parts i.e. (i) Ecological sustainability, (ii) Economic sustainability and (iii) Social sustainability. The programmes should ensure continuous flow of usufructs, continuous income generation for the stakeholders and formation of social capital. Unless, the natives receive good economic benefits from the programme, they will not be able to provide collective support to make the programme a success. Besides usufructs like timber and bamboo, Non-Timber Forest Products (NTFPs) collection and value addition have assumed immense importance under the Joint Forest management as their contribution to the lives of many forest dependent communities is invaluable.

1.2.3 N.T.F.P. and Livelihood

Most of the forest dwellers depend heavily on non-timber forest products for their daily subsistence needs such as food and medicine, fodder and firewood, fiber, fertilizer needs, as well as for religious and cultural uses. About 30 per cent of the diet of tribal groups of Maharashtra forests is derived from forest products; over 90 percent of the wood harvested in the country was used as fuel wood (World Bank, 1993). India has one of the largest tribal populations in the world that stood over 84 million in 2011 census. More than 70 per cent of this group depends to a significant extent on the NTFPs for their subsistence.

The commercial importance of NWFPs can be gauged from the fact that it is estimated to generate Rs. 3 billion annually and 70 percent of employment in the forestry sector. Another estimate indicates that NWFPs generate 2 million person-years of work annually (Ramji and Amit Bhatnagar, 2000).

The above mentioned information clearly suggests that NTFPs can have great potential in meeting the needs of the forest dwelling communities especially by way
of providing cash incomes and by generating employment that can significantly result in their economic development. High demand for these products, clubbed with the poverty of the communities may result in excess and indiscriminate collections and harvests of the NTFPs. The growing commercial trade of natural products in particular plant medicines and crafts has resulted in the harvest of increasing volumes from wild plant populations (Kuipers 1997; Lange 1998) and has therefore generated copious concern about overexploitation (Robelo and Holmes 1988; Tewari 2000). High demand for firewood has reduced many forests to mere scrubs; indiscriminate tapping of gum has killed many gum trees in an Eastern Ghats Forest (Kameswara Rao et al., 2000). Indiscriminate felling of Litsea trees for its bark has almost decimated its population in the natural forests. Thus, it is dire need to harvest NTFPs in a sustainable way that ensures the quality of the stock as well as its capacity for yield. Despite growing concern over the conservation of these species, as well as their potential to foster forest conservation information on ecological implications of harvest is available only in disparate case studies (Tickin 2004).

1.2.3.1 Sustainable Harvest of N.T.F.P.

Unfortunately, for most of the NTFPs, such levels of sustainable harvests are not known or reported (Kameswara Rao et al., 1996). In all possibility, for a given NTFP type, the levels of sustainable harvest could be either site specific or forest type specific or both. Thus, it is important to understand the status of the NTFP species in their community, and their contribution to ecology and economics of the forest and its dependents, respectively. Similarly, knowledge of the yield and factors that promote or limit the yields is necessary for all NTFPs.

Through this study, an attempt has been made to present the status of NTFPs at forty forest villages, each representing a forest division of Eastern Ghats tracts of Seshachalam Hills. Although many types of NTFPs are available in this region, only few varieties are being collected by the tribal inhabitants who are now protecting the forests under the JFM programme. The study besides reporting the status of the NTFP species, has well documented the tribal practices related to the collection or harvests, value and NTFPs contribution to the economy at household and village levels. Based on the observations, a few recommendations are made so as to manage the NTFP resources in a sustainable way.
Promotion of commercial extraction of NTFP as a conservation strategy is based upon the argument that forest conservation may be able to offer economic incentives to rural peoples in order to counter the threat from destructive land uses such as logging and cattle ranching (Nepstand and Schwartzman, 1992; Plotkin and Famolare, 1992). Decreasing forests due to over exploitation has not only affected the quality of the ecosystem and environment but also resulted in increased poverty among forest dependent communities by reducing the diversity and yield capacities of the NTFPs. On the one hand, collection of relatively high value, low income NTFPs, such as fuel wood fodder and mulch has raised concerns about degradation of forest resource potentially resulting in hardships for the household and negative environmental externalities. On the other hand, collection of relatively high value, low income NTFPs, such as speciality food products, inputs to cosmetics and crafts, and medicinal plants, has drawn interest as an activity that could raise standards of living while being compatible with forest conservation (Sills, Pattnaik and Holmes, 2000). Thus, it is important to review the present state of the NTFPs.

Non-Timber Forest Products (NTFP) refer to all the plants, animals and their parts or products, and all forest produce other than timber (Saigal et al., 1997). However, it has been a common error to ignore the animal and other products while enlisting the NTFPs of a given area. These products of forest origin are also referred to as Non-Wood Forest Products (NWFP).

Non-wood forest products include all goods of biological origin other than wood in all its forms, as well as services derived from forests or any land under similar use (FAO, 1993; Chandrasekharan, 1995). The scope of these products has been expanded in the range of products and from the areas from where they have been collected. In India, around 3000 NTFP species are known to be in use, but only 126 have developed marketability (Maithani, 1994).

Local communities, since ages, were fond of utilising as many species as possible from the native flora, for different needs. Malhotra et al., (1991) have reported that in a West Bengal forest, out of 214 species of wild plants, the locals were using around 155 species for various uses. In Chittorgarh district of Uttar Pradesh hill region, over 88 herbs of economic value were reported by Patel (1993).
In Uttar Kannada district of Karnataka, the locals besides collecting 20 varieties of NTFPs, have been using 14 species of wild fruits as food, 11 species as medicinal plants and seven species for oil extraction or as nuts (Eco Consultants, 1996).

In Kerala, about 600 plant species have medicinal properties and over 100 species are extracted on commercial basis (Saigal et al., 1997). About 372 species of medicinal plants are reported from Jammu and Kashmir (Saigal et al., 1997). In Andhra Pradesh, over 350 species of medicinal plants are reported from different forests (Hemadri, 1994).

Collection of tendu leaves is the most important economic activity for the forest-dependent communities of central India on which more than 65 per cent of the Indian tribal population lives. Madhya Pradesh contributes 60 per cent of the total tendu leaves in the country (Saigal et al., 1997) and during 1989-94, the average revenue obtained by the Madhya Pradesh Government over tendu leaves was approximately Rs. 200 crore (M.P. Govt., 2011).

1.2.3.2: Important N.T.F.P.s in India

Poffenberger et al. (1990) has listed out important NTFPs being collected in eight different states where the products are of commercial importance. The products include in the NTFPs are presented in the Table 1.1.

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>State</th>
<th>Important Minor Forest Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>West Bengal</td>
<td>Sal leaf-plates, tendu leaves, mushrooms, medicinals, Sal seeds and tasar silk.</td>
</tr>
<tr>
<td>2.</td>
<td>Haryana</td>
<td>Bhabbar rope, bamboo baskets, fodder grass</td>
</tr>
<tr>
<td>3.</td>
<td>Orissa</td>
<td>Sal leaf-plates, fruits, leaves and tubers, tendu leaves and sal seed.</td>
</tr>
<tr>
<td>4.</td>
<td>Himachal Pradesh</td>
<td>Leaves for compost, mushrooms and medicinals.</td>
</tr>
<tr>
<td>5.</td>
<td>Gujarat</td>
<td>Mohua flowers &amp; fruit, dhak leaf-plates, bamboo, fruits and gums.</td>
</tr>
<tr>
<td>6.</td>
<td>Uttar Pradesh</td>
<td>Pine resin, fodder and medicinals</td>
</tr>
<tr>
<td>7.</td>
<td>Jammu &amp; Kashmir</td>
<td>Fodder grass and fuelwood</td>
</tr>
<tr>
<td>8.</td>
<td>Tamilnadu</td>
<td>Green leaf manure, fodder and basket fibres.</td>
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</tbody>
</table>
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The people living on the forest fringes use NTFP collection as a safety net to augment their livelihoods. Studies have shown the existence of a definite trend of: (a) collection of NTFP by those with lower wage earning opportunities, especially women, children and elderly people; (b) a greater dependence of lower income group families on NTFP income and (c) greater incidence of collection in agricultural lean seasons and drought years (Saigal et al., 1997).

Millions of peoples living in and around forests in India rely on NTFP for their sustenance (World Resources Institute, 1990). It has been established that half of the employment generated in the forestry sector is through NTFP. Tendu leaves, Sal seeds and Mohua flowers provide the bulk of the employment in the plains and resin and medicinal plants play the same role in the Himalayan region. According to one estimate, NTFP income accounts for 55 per cent of the total employment in the forestry sector (Pachauri Rashmi, Undated). The total employment generated by this activity is estimated to be around 2 million person years (World Bank, 1993).

Apart from meeting subsistence and cash income needs of the dependent communities, NTFPs also support large number of small to large scale enterprises engaged in processing and/or trading of NTFP and NTFP based products. In many states NTFPs contribute major proportion of the revenue of the State Forest Departments, for instance, during the last 5 years more than 70 per cent of the revenue of Orissa Forest Department was contributed by NTFP. The states of Madhya Pradesh, Chhattisgarh, Orissa, Maharashtra and Andhra Pradesh account for more than 75 per cent of traded NTFP in India (MoEF, 2008). Though precise estimates are lacking, it is estimated that the total production of NTFP is worth about Rs 4200 crores annually (IEG, 2002).

As NTFP economy grows because of market valuation of the product, complex changes take place that need to be reviewed carefully. Private trade is by and large extractive in nature with least regard for regeneration or sustainability. Studies indicate that while collectors of NTFPs often belong to lowest income groups in India, they may receive only 5-20 per cent of the retail value of their goods (Chambers et al., 1989). Saxena et al. (1997) suggest, “the most critical need is to strike a balance between maximising collector’s income and promoting sustainable harvesting of NTFPs”.

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1.2.3.3 Unorganised Sector

Due to unorganised collection and market imperfection, NTFP collectors were exploited. Lack of infrastructure and training for primary level processing was partly responsible for the exploitation of NTFP gatherers. The NTFP gatherers were not only paid less, on account of underweight, but also exploited in the name of quality, drainage and contamination. Many times, the collector is forced to make distress-sale. In brief, it has been a buyer's market and not of seller's (Ram Prasad, 1988).

As the over exploitation of forests has resulted in severe economic losses to the forest dependents, it is dire essential to improve the forest quality and thereby the productivity of NTFPs on scientific lines and through participatory approach.

The present information for most of the NTFPs exists widely scattered and highly localised. Different types of products are managed and regulated by various agencies, each in their own way. For instance, in Andhra Pradesh, Beedi leaf and Bamboo are regulated by the state FD; about 25 items of forest products are reserved by the Girijan Co-operative Corporation (GOAP, 1995); several pharmaceutical and other industries organise their own collections. No single state agency has ever tried to document the flow of all the NTFPs of any geographical unit. The forest department being the manager of the system should be able to monitor the NTFP flows. But unfortunately, the FDs have considered the NTFPs as incidental or subsidiary productivity to the timber production and therefore were not interested. All these have resulted in not paying due attention to these valuable resources in terms of inventory, resource development, management, and development of the necessary skills for the sustainable use of NTFPs.

Consequent to the support extended by the governments and the forest departments to the communities involved in participatory management of the forests, during the past one decade, several reports and works have been published enlightening the importance of the NTFPs and their role with special reference to social, economic, ecological, financial and cultural aspects.

A list of 27 databases on MFPs of the world prepared by different organizations were surveyed and reported by Centre For International Forestry
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Research CIFOR (Shiva, 1996). Among these, many databases were confined to medicinal plants and bamboos, while the databases of India, UK, Indonesia and Kenya contain NTFPs of all categories.

In India, the Centre of Minor Forest Products (COMFORPTS) based at Dehra Dun is engaged in research, educational, training and information dissemination activities focusing exclusively on Minor Forest Products or NTFPs. This organisation has contributed extensively to organise information and thereby inspiring research on various issues related to conservation of NTFP resources in India. This organisation has prepared lists of NTFPs for all major states in India under a series, State NTFP Resources.

Unfortunately, for most of the NTFPs including many commercial species, information related to their growth, yield and ecology is lacking; even silvicultural practices for most of them have not been established. Status of these species in their plant communities also is not known. In view of the circumstances, a national network of several institutions and NGOs are now working in various regions of India to study the ecology and economic aspects of the NTFPs to understand their sustainable management practices (EERN, 1998). With this back ground the present study has been undertaken in an NTFP collection region in Seshachalam Hills of Chittoor district:

1.3: OBJECTIVES

The main objectives of the Study are

1. To document the diversity of the NTFPs in the study areas in Chittoor East, and Wild Life Management Division, Tirupati.

2. To assess the quantum of NTFPs collected from the area and understand the dependence of the collectors on the NTFPs for their livelihoods;

3. To assess the impacts of the harvest practices on the sustainability of the NTFPs at the sample sites selected and

4. To evaluate the potential for NTFPs development and thereby their conservation and suggest measures to ensure ecological sustainability and economic improvement of the dependent communities.