Chapter 1

GENERAL INTRODUCTION

- Growth of NTFPs sector
- NTFPs and rural livelihood in India
- Tribals and forest dependence
- R&D on NTFPs
- NTFPs in North East India
- Research needs
Non-timber forest products (NTFPs) are considered an important sector for rural development and forest conservation, and the past two decades have witnessed a rapid growth of interest in NTFPs among conservation and development organizations (Arnold and Ruiz-Pérez, 1998; Wollenberg and Ingles, 1998; Ruiz-Pérez and Arnold, 1996; Neumann and Hirsch, 2000). The perception, that NTFPs are more accessible to rural populations, especially to the rural poor (Saxena, 2003) and that their exploitation is more benign than timber harvesting (Myers, 1988) favoured NTFP becoming economically acceptable and ecologically most potential for development. Worldwide, it is estimated that several thousands of species are collected from the wild for a variety of purposes (Mayers, 1998). Besides fuel and fodder, NTFPs basically provide the world the vital forest resources, such as foods, medicines, essential oils, spices, resins, gums, latex, fibre, bamboos and canes, etc., supported by other benefits and services (de Beer and McDermott, 1989). The contribution of NTFPs to the forestry sector in most countries is significant, and recent studies have suggested that they were undervalued in the past (Tiwari and Campbell, 1995). Some of these products have important commercial markets and generate substantial revenues (Phillips, 1993). At least 150 NTFPs are internationally traded that comprised nuts, honey, palm heart, plant and animal parts, rattan and bamboo, cork, essential oils, and gum arabicum (FAO, 1997). At the global level, the estimated value of the market in the herbal medicines alone, a large portion of which collected from the wild, is estimated about $14 billion (CBD, 2001). NTFPs are often the only source of cash income for people in remote areas, as is the case for incense harvesters in Bolivia (Enriquez et al., 2006). In the high diversity forests of Amazonia, for example, more than two-thirds of all tree species are used by indigenous peoples (CBD, 2001). NTFPs have potential to contribute to the conservation of tropical rain forests and participatory forest management thus making forests more valuable to local users that can encourage forest conservation (Plotkin and Famolare, 1992; Ros-Tonen, 2000). This can be attributed to increasing recognition of the contribution that NTFPs make to the livelihoods of large numbers of people in biodiversity rich countries (Arnold and Ruiz-Pérez, 1998). It is suggested that NTFPs harvesting make relatively low impact on the forests than the timber harvesting (Neumann and Hirsch, 2000). Therefore an understanding of the role and potential of NTFPs for livelihood improvement of rural people and conservation of biological resource desired systematic collection of data (Belcher et al., 2005).
Forests of India are richly endowed with NTFPs and the country has also one of the largest population of forest dependent people in the world (Arnold and Ruiz-Pérez, 1998). In India alone, it is estimated that over 500 million people are dependent on NTFPs for their subsistence and cash income (World Resource Institute, 1990; Hegde et al., 1996; Anonymous, 2007). NTFPs provide nearly 40% of total forest revenue and 55% of forest based employment (Tewari and Campbell, 1995). The Ministry of Environment and Forests, has estimated that 220 million tonnes of fuel wood, 250 million tonnes of grass and green fodder, and 12 million cubic meter of timber are removed from India’s forests annually, which collectively worth US $10 million (Mukherjee, 1994).

It is claimed that 1.6 million person years of employment in India are met from NTFP while the forestry sector in total provides 2.3 million person years of employment (Shiva and Mathur, 1996). In another estimates, 1062.7 million person days of employment in India are from NTFPs sector (Khare and Rao, 1993). As such the contribution of NTFP and eco-tourism to the Forestry Sector’s gross value of Rs. 259.85 billion is 16% in India. (MOEF, 2006).

NTFPs collection is important for women, for whom few alternative income-generating options may exist (Marshall et al., 2006; Shackleton, 2006). Even where the absolute value of NTFP-derived income is not high, its timing may complement that of other activities, providing an income at critical times of the year and/or in years when other activities fail (Schreckenberg et al., 2002; Shackleton, 2006).

Tribal communities have been highly dependent on forest resources for centuries, at the same time they were involved in management of NTFPs without destroying the resource base, e.g., tribals of Madhya Pradesh, Chattisgarh, West Bengal, Andhra Pradesh, Orissa and North East India have been intimately dependent on forests for their sustenanace. In Madhya Pradesh alone, the NTFPs of worth Rs. 21 billion (US $700 million) annually are collected mainly by tribal women (World Watch Institute, 1991). Tendu leaves have been the major source of this revenue (Bhattacharya, 2004a). In West Bengal, the villages in selected areas earn Rs. 234 to Rs. 5569 per hectare per year from NTFPs (Malhotra et al., 1991). In Andhra Pradesh substantial income is generated from Tendu leaves, Mahua flower, Tamarind fruit and bamboo culm selling (Yadav, et al., 2007). Similar situation prevails in Orissa. However, no such estimates are available from any part of the north east India. NTFPs can form an integral part in conservation and development strategies (Ogle, 1996), but this can only be undertaken with the full knowledge of a range of interlinked issues and requiring a
multidisciplinary approach which incorporates social, economic, cultural, ecological and policy contexts, which is so often missing in integrated conservation and development projects (Lawrance, 2003).

Researches focused on exploring the contribution of NTFPs can contribute significantly to sustainable development by increasing income to rural communities and by enhancing value of forest resources, which may ultimately provide an incentive for forest conservation (Richards, 1993; Wollenberg and Ingles, 1999; Neumann and Hirsch, 2000), and subsistence needs (FAO, 2001; Tiwari and Campbell, 1995). There are many other species that were traded internationally (Peters, et al., 1989; Martin, 1995). Researchers have tried to deal with methodological approaches issues in NTFPs extraction (Godoy et al., 1993; Hall and Bawa, 1993; Martin, 1995; Wollenberg, 2000). Some studies also explored valuation of NTFPs (de Beer and McDermott, 1989; Schwartzman, 1989; Campbell, 1988; Padoch and de Jong, 1989; Malhotra et al., 1991; FAO, 2001). Some authors also tried to classify NTFPs and other wild resources that are valuable for communities (Berlin, 1992; Cotton, 1996; Cunningham, 2001; Koppell, 1995; Peters, 1994, 1996; FAO, 1999, 2001). Issues related to value addition and organization management of NTFPs are also discussed for South East Asia (FAO, 1991a, b, 2001). The guidelines for sustainable use of natural resources, including NTFPs, have been desired by International Tropical Timber Organization (ITTO) that also speaks potential values of NTFPs (Ametz, 1993).

The relevance of forest based economy with respect to economic development of tribals was realized during the seventh five year plan, and the National Forest Policy of 1988, also puts emphasis on NTFP development as an essential component of forest management (Shiva, 1995). Owing to heavy logging in many areas, tree felling was banned by Hon'ble Supreme Court, thus major focus shifted to NTFPs, which are providing material to many small and big industries (Shiva, 1995).

Development of NTFP based enterprises is an approach for conservation of biodiversity and enhancing livelihoods. There is huge diversity of NTFPs (both animal and plants) that are used for subsistence need as well as in trade (FAO, 2001). These species derive a significant share of household income (Malhotra et al., 1991). There is high scope to increase export of NTFPs. The revenues from NTFPs have been growing fast than revenues from timber in past few decades (Tiwari and Campbell, 1995).
The North East India, despite of its vast natural resource base, large untapped hydel power, mineral resources, virgin forests, sturdy people and vast water resources, remains in the backyard of development. Eastern Himalayan States harbor more than 33% of the total Indian flora with unique taxa and large number of genetic resources making it a cradle of speciation and center of origin of number of cultivated plants (Khoshoo, 1992). In the twenty-first century the crucial challenge facing North East India is how to achieve a balance between economy and ecology in order to ensure sustainable social and economic development preserving the basic cultural matrix, ethical values and equalitarian ethos. Arunachal Pradesh state accounts for 2.54% of the total geographical areas of the country and is a custodian of more than 23.52% of the flowering plants and 76.93% families of India (Chowdhary et al., 1996). The state is also rich in biodiversity with more than 214 mammals, 770 birds, 83 reptiles, 130 fishes and 7 non-human primates and innumerable species of insects, micro-organisms and other life forms (Hegde, 2002). The state falls under one of the 25 “Biodiversity Hotspots” in the world. There are 26 major tribes and 111 sub-tribes living harmoniously with nature (Hegde, 2002). Arunachal Pradesh is store house of a large variety of medicinal, aromatic and other economic plants, which can help as a driving force for sustainable development of the state.

The realization of the role of NTFPs in local livelihood has led high interest in such produces for increasing rural incomes, and stimulating forest management. Development of NTFPs for subsistence and commercialization for any region should ideally be based on sustainable exploitation of the products (FAO, 1997). For sustainable management of NTFPs, there is need to identify major issues that can directly contribute to the development of this sector, viz., assessment of the NTFP resource diversity, quantum of volume collected, collection procedures and people involved; production capacity and harvest levels of species; benefit accrued by Forest Department and communities; management of both formal and informal local knowledge about the NTFP management, and cultivation and propagation technique, if any; feasibility of NTFP-based enterprises and finding finance for such initiatives; and developing an understanding of certification and other institutional issues related to NTFPs.

It emphasizes the need to have a minimum set of information on NTFPs species diversity, types of products, use pattern, resource base as well as their status in the natural habitat, market status and value chain, profit share among the stakeholders, and the existing customary rules and regulations of the forest dwellers. Considering this, a detail study was
undertaken in the state of Arunachal Pradesh, mainly focused on Western part, which is considered biologically richest location in the entire north east region. To assess the role of NTFPs in local livelihood, it was examined that what NTFP resources are useful at household and/or commercial level; what is the temporal variation in the species harvests and status of highly traded species; what types of institutions, regulations and policy environment prevalent in the state; and what could be the consequences of unabated exploitation of NTFPs on the resources itself. Considering that, the present study focuses on the diversity of NTFPs used by different ethnic communities in the district, plant/animal parts or products used, consumption pattern, and distribution pattern of the species based on their use and availability. The dependence of the local communities and economic gain from this sector was also studied at different villages inhabited by different ethnic communities. The status of a highly demanding and most preferred species was also investigated in its natural habitat along with its germination and growth characteristics. Nutritional value was analysed for highly preferred edible NTFPs. The temporal patterns of harvests as well as the location specific management strategies were also studied.

It is expected that the study would help to develop an understanding about the diversity of NTFP resource of the state and its status, use pattern by local communities, there dependence and consumption pattern, main traded species and their temporal availability pattern, extent of revenue generated from NTFPs and details on the structure and pattern of distribution, production potential and regeneration potential of selected species. Such base line information would hopefully help to develop NTFPs sector in the state that could provide substantiate revenue and employment in Arunachal Pradesh. More over, it will help the future planning and policy making to upgrade the NTFPs sector in the state.