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Is Big Business Approach to Managing Non-Timber Forest Products (NTFPs) Benign? Rising Unsustainable Extraction and Looming Policy Challenges

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ABSTRACT Until 1960s, the importance of NTFPs was unnoticed as they were mainly collected free of charge from forests to meet the subsistence needs of poor or forest dwelling communities. The economic significance of NTFPs became well known to people and governments in 1970s; this led to a global surge for the exploitation of these resources. As a result, large scale extractions of NTFPs have occurred and resulted into over-exploitation and extinction in some cases. Frequent occurrences of unsustainable extraction of NTFPs are now well cited in the literature. These concerns necessitate the establishment of a new framework for sustainable management of NTFPs on world-wide basis. This study provides a policy framework which recommends a set of policy initiatives on the part of governments, particularly in the tropical countries, to keep using this resource on sustainable basis.

INTRODUCTION

During the last three decades, the world at large has discovered the economic significance of Non-Timber Forest Products (NTFPs) which were in the past belittled by identifying them as "minor forest products". Several studies around the globe now confirm the significance of NTFPs. For example, recent estimates suggest that NTFPs account for about 50 percent of the government's forest revenue in India and the direct contribution of NTFPs is estimated to be about US$27 billion, compared to US$17 billion from timber products (ITTO 2007: 20). The trade in NTFPs for India is now evaluated at about US$1000 million (Freese 1998). Even though NTFPs contribute greatly to income generation of rural households, it is uneven, as it depends on the availability of forest and the degree to which policies are focused on their sustainability (Melaku et al. 2014). For instance, relatively over 50 percent and 70 percent of forest earnings and exports are generated from trade in NTFPs in India. On the other hand, in Sri Lanka, about 16.2 percent of household total income is derived from trade in NTFPs (Melaku et al. 2014). The significance of NTFPs is not realized in only developing countries but the advanced ones as well such as the USA, where they contributed about US$81 million to GDP in 1989 (Vaughan et al. 2013).

In its 1994 National Poverty Reduction Plan (NPRP), China underscored the important role that NTFPs can play to lift half a billion people out of staggering poverty (Horgarth et al. 2013). In this NPRP, the Chinese government sought to promote the cultivation of forest-based cash crops through the application of supportive policies and other relevant incentives. Horgarth et al. (2013) revealed that an average income-share of 31.5 percent in rural Southern China is attributed to the cultivation of NTFPs. On this basis, China integrated NFTPs into its nation poverty plan and poverty into NFTPs plan.

The report to Forest Resources Assessment 2005 on four categories of NTFP removals—exudates, medicine and aromatics, food and other plant products—revealed that Asia is the world's largest harvester of NTFPs. With a global share of 74 percent, China tops the list of forest products removals for food, especially bamboo shoots, oil seeds and nuts; followed by India, the Republic of Korea and Pakistan in the Asian continent; the Czech Republic, Finland, Italy and Sweden in Europe; and Brazil in South America, respectively (FAO 2006). In 2000, the International Centre for Integrated Mountain Development (ICIMOD) assessed the contribution of medicinal and aromatic plants (MAPs) to world trade to the tune of US$60 billion and anticipated the figure to climb to US$5 trillion by 2050 (Banjade and Paudel 2008). Even in

country like the US, the conservative estimate of the value of NTFPs is estimated about US$5 billion per annum (Alexander and Emery, n.d.). These facts confirm that NTFPs have become a big business around the globe. It is recorded that NTFPs valued at US$ 90 billion are harvested annually across the globe (Pimental et al. 1997). Further, some US$ 11 billion worth of NTFPs are internationally traded, and $55 billion worth are traded within the national economies of the world, and the rest one-third is consumed in the local village economies of the world (Tewari 2005). The World Health Organization argues that about 80 percent of mankind in poor countries of the world use NTFPs for health and nutritional needs (Vantomme 1999). NTFPs also provide employment to many people across the world. In South Asia, for example, close to 80 percent of the population is involved in medicinal and aromatic plants collection (Karki 2000). The Federation of Community Forestry Users Nepal (FECOFUN) involves 11 million people through 14300 forest users groups (Choudhary et al. 2008). Boadi et al. (2014) argued that the exploitation of NTFPs is an important substitute to management practices of forest. Thus, the long term benefits of NTFPs has the potential of outweighing the short term economic value of using the forest for agriculture and logging of timber.

According to Shackleton and Pandey (2014), NTFPs accomplish variant roles in improving living standards through five mechanisms: (1) source of food to households; (2) income generation potentials via both local and international trade; (3) provision of safety-net or insurance in times of a tragedy; (4) preservation of cultural heritage and spirituality; and (5) financial saving by household who use them and rather invest the money into education and other activities.

The above mentioned estimates on income and employment are, however, believed to be on the conservative side; the real size of world NTFP economy has grown since then. The multiplier impacts of the same are hence to be much larger and significant than otherwise thought. The wheel of commercialization has thus augmented the value of NTFPs and made them more profitable to big companies. The worldwide sharp increases experienced in sales of herbal products highlights the expansion of herbal healing across the world. The rapid harvesting of NTFPs in the world during the last three decades have brought mixed results. For example, on one hand, there are large soaring profits that big businesses are enjoying, but on the other hand it is adversely affecting the original user the forest dwelling population of tribal people. It has also resulted into restrictions on them. For example, restrictions on local women from accessing forest resources for broom-making in Limpopo Province in South Africa have been imposed (Shanley et al. 2008). In turn, it has heightened the concerns about their subsistence and livelihood of indigenous people.

Based on the literature of the past three decades, there exist some practical evidences of unsustainable extraction and in some cases extinction of NTFPs across the globe. A few cases are cited for illustration purpose; for example, resin tapping in Malaysia (Peters 1996), uncontrolled exploitation of aloes wood in Malaysia (Jessup and Peluso 1986), destructive harvesting of latex from *Couma macrocarpa* (Vazquez and Gentry 1989), damage to the trees of *Phyllanthus embilica* and *pindofischeri* in Southern India (Sinha and Bawa 2002). Studies also confirm that trade in NTFPs does not reconcile with conservation; in other words, increased incomes from NTFPs through extraction paves way to resource exhaustion (Kusters et al. 2006). Excessive harvesting for profits by the pharmaceutical companies can deplete the resource as evidenced in central India in the case of *Curculacaesia* and *Ravoulfia sepentia* (Mishra 2005).

In the wake of this unequal and unsustainable development, the policy questions that loom largely are: Is "big business" approach to develop NTFPs right one? How should we develop this resource otherwise? Are there some remedies on hand or need to be invented? In the past some studies on NTFPs have expressed concern over the "big business" syndrome that appears in the NTFP sector (Tewari 1994; Tewari and Campbell 1995). However, a comprehensive understanding and analysis is lacking. This study aims at filling this gap. The major objective of the study is to throw light on the inequities created by the "big business" syndrome and to suggest remedies to thwart the impending dangers. More specifically the study aims at:

- understanding the process of "big business" syndrome in the NTFP sector;
- discussing the impacts of "big businesses" and concerns of original users of NTFPs;

- suggesting some remedial policy measures to thwart the "big business" syndrome;
- developing a policy framework which would promote equitable and sustainable use of NTFP resources in general.

The discussion is arranged as follows. The section 2 highlights impacts of commercialization on the NTFP economy in general. A few selected case studies of unsustainable extraction are discussed in section 3 to highlight the real live dangers of commercialization. A policy framework for sustainable management of NTFPs is proposed in section 4. The summary, conclusions, and policy recommendations are discussed in section 5.

Impacts of Commercialization on NTFPs: A Conceptual Model

The process of commercialization and formation of big businesses in the NTFP sector are intricately related. An abstract understanding of this process can be rendered with the help of Figure 1. The original consumers of NTFPs are the forest dwelling population and which happens to be primarily tribal/indigenous in nature. They are part of subsistence economy. The formal health care is more or less absent and people resort mainly on to indigenous medicare which uses NTFPs intensively. In addition, NTFPs also provide various other forms of food such as wild fruits/berries and thus ensure food security to the tribal population. The NTFPs thus meet the personal or household needs of primarily tribal/indigenous population group. The resource in general is well protected as there are no opportunities for personal gains in this subsistence economy, resulting into sustainable extraction of NTFPs. For almost many centuries, the cycle of subsistence economy remained undisturbed and exploitation of NTFPs went on a sustainable basis (Fig. 1). Vaughan et al. (2013) noted the commercialization of NTFPs is characterized by the following: (1) flexibility, low or the absence of market entry costs; (2) low returns to some NTFPs due to the lack of competitive pricing; (3) insufficient market information, supply and demand fluctuations; and (4) quality and standards of NTFPs are being improved through forest certification.

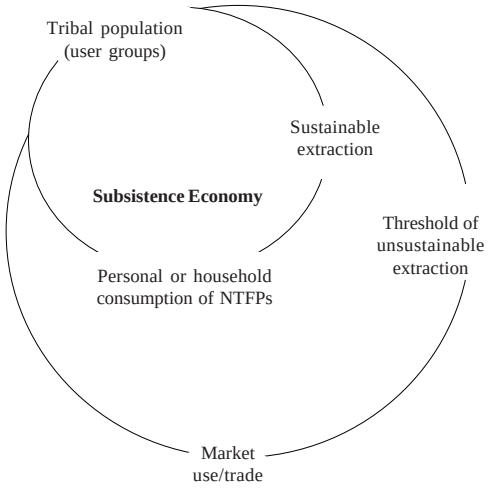

Fig. 1. A schematic model of big business syndrome in the NTFP

Meanwhile, things began to change as trade in NTFPs increased around the world. Increasing trade led to the enhanced demand for the NTFP resources. This opened new markets for NTFPs and thus a new alternative to generate income by selling in local and distant markets emerged. The process of marketization went on over the years and brought three significant changes in the business of NTFPs.

Firstly, the products which were once used by indigenous population are now being demanded in the distant places in the regional, national and international economies. Most of this demand for NTFPs originates from the developed world including US, European Community [EC] and Japan. Some 60 percent of annual imports of NTFPs originate from the above three regions (Iqbal 1995). For example, Brazil produces some 42 thousand tonnes of raw Brazil nuts per annum at an estimated value of US$ 34 million; of this total, approximately 80 percent is exported into USA, Canada, U.K., Australia and Germany (La Fleur 1992: 1-22). Some 150 NTFPs are of major commercial significance in the international trade (Iqbal 1995: 3). Many more would be of commercial significance in the national and regional economies. In other words, the center of consumption has moved from local village economy to faraway national or international markets. Thus, to meet the needs of distant urban consumers, changes in the product quality and information systems were necessitated. Changes in product quality demanded new techniques and strategies for product processing, transport, and storage. Similarly the new infor-

mation systems which can cover large areas and multiple consumers, producers, and traders were also needed.

Secondly, as the demand for NTFPs increased, the pressures on the resource increased and sometimes reached the threshold of economic extinction. Therefore, to meet the extra demand, some of NTFPs are required to be cultivated or domesticated; thus, a shift in production from natural stands to the domesticated production is taking place. A large number of NTFPs are now being domesticated and there is a growing need for it. Commercialization of NTFPs has also brought a change in the collection strategy. For example, in subsistence economy, individual families harvested plants for domestic use only. However, with access to market economy, the incentive to collect maximum is high and now 2 to 4 households group them together to collect maximum possible for monetary gain (Singh 1999). Further, people now start harvesting early and end it late, thus stretching the collection period. This finally damages the resource, in particular, its regeneration capacity (Singh 1999). Sustainable exploitation of NTFPs is highly driven by the prevailing market price, demand size and the institutional setup of organization meant to conduct monitoring. At a very high price brought about by increased demand, collectors are usually induced to extract NTFPs beyond their regeneration limits to enable them obtain the maximum resource rent prevailing at the local markets. Astronomical increase in the prices of NTFPs at the local level can therefore contribute to excessive exploitation of these products leading to their extinction (Dangi 2008). Destructive harvesting can also damage the resource and lower regeneration capacity (Pandey et al. 2011).

Thirdly, during the last 2 or 3 decades, the world has been swept by many macro changes such as rising wave of privatization or promotion of free enterprise economy, freer trade and trade liberalization and so on. These changes have imparted more control of resources in the hands of individuals, firms, and other marketing entities. As a result of these changes, a sophisticated marketing system has emerged in the global economy. The marketization of NTFPs has enabled the original user population to harvest the resource for personal monetary gains. The NTFPs hence moved out from the frontiers of local economy to a regional/national/international economy. The change-over to market economy has thus promoted the big businesses to take over the command of NTFP economy. The size of market economy is much larger than subsistence economy and it requires a larger volume of NTFPs to maintain a sustainable profitable business. This leads to the enhanced extraction of NTFPs, often pushing the system toward the threshold of unsustainable extraction (Parameshwarappa 1992).

As the business in NTFPs grew over time, the small businesses were replaced by large ones because of their better access to national and international markets and better co-ordination of information. This brought a variety of changes that we would visit in this section. These changes can be classified primarily in two categories; (1) people-related changes, and (2) resource-related changes (Fig. 2).

The people-related changes refer to those that affect the people or tribal collectors primarily. People can be affected through income and employment transfers created by big businesses, promotion of migration from centers of production to centers of consumption of NTFPs, reduction of food security to local villages, amplification of the income differential between rural and urban people.

Various studies confirm that NTFPs generate income and employment for tribal or indigenous collectors as the business in NTFPs grows (Pimental et al. 1997; Tewari 2010). For instance, collectors of *Lokta* (*Daphne bholuwa*) in the Suspa Community Forest User Groups in Dolakha District in Nepal, for instance, earned more cash per day (NRs 125-200 or US$2-3) than what they receive from other jobs in the village (Banjade and Paudel 2008). This happens primarily by increased labor absorption in collection of NTFPs. The income and employment generation potential is increased tremendously when NTFPs are processed and value is added. Most times this is done in big cities, far away from areas of collection of NTFPs. It is believed that income and employment generation potential through value added activities is many times of that in sheer collection of NTFPs. This value addition in places distant to rural areas (where raw NTFPs are collected) exports jobs and incomes, which otherwise would have remained in the local village economy, to cities. This displacement of income and employment has far-reaching effects in terms of underdevelopment of rural areas.

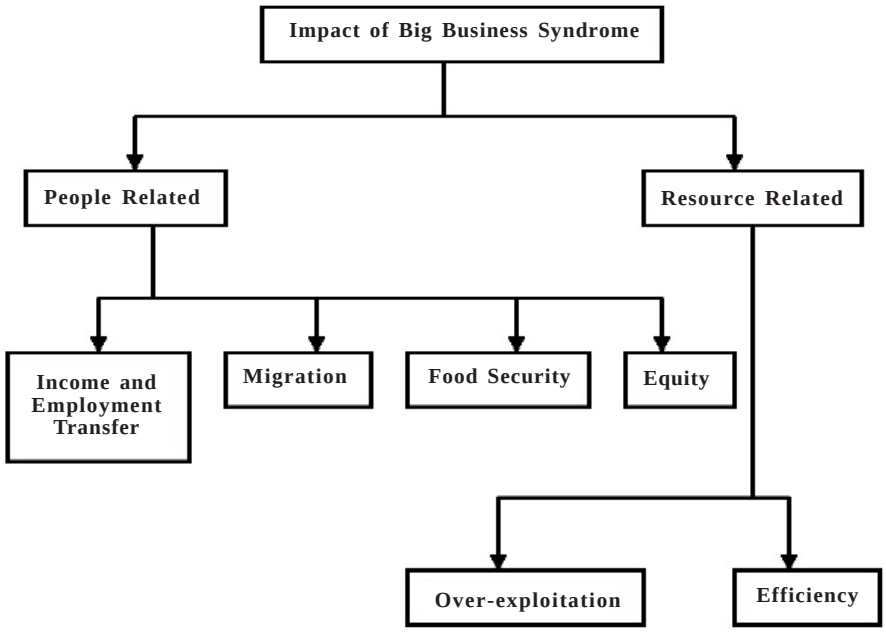

Fig. 2. A classification of impacts of big business syndrome

Lack of adequate employment opportunities in villages drives people out in cities, contributing to the congestion and more pressure on cities. Marketization of NTFPs has also reduced the food security to village people. In olden days when NTFPs were not sold, ample quantities of wild fruits and berries were available in the forest; and anyone facing hunger could resort to this freely available natural resource. However, with increased access to market, villages now sell everything that is available in the forest and try to make as much money as possible. Since the NTFPs are common property resource and tribal collectors do not pay any price for it, the resource is extracted too soon from the forest, and very little is left to meet the needs of hungry people when required. Besides the above, the monetization of NTFPs has widened the gap between rich and poor. The capital-rich large businesses can take advantage of this natural resource whereas the capital poor tribal people can only get a meager income.

The benefits derived from NTFPs trade is not accordingly shared between collectors and businessmen. The collectors of NTFPs receive, in general, a small proportion of the consumer's price (Tewari 1998). Even the government intervention through cooperatives has not been successful in leveling prices for NTFP collectors. For example, the Large Agriculture Multipurpose Societies (LAMPS) in India offer some 7 to 15 percent of consumer's price to collectors (Sekar et al. 1996).The meager compensation to collectors and the co-operatives' incompetence to boost price levels for NTFP collectors are aggravated by the soaring exposure of traditional collectors to competition (FAO 1995), which ends up attracting outsiders in the business and excluding the local people/collectors from enjoying the benefits of the opportunity.

The other types of changes that occur as a result of big business in NTFPs are related to the resource use. The resource related changes entail the over-exploitation of resource and thus has raised concerns for the sustainability of it per se. Some of the trends are not fully visible at this time but would be recognized a few years from now and by then most of the damage would be already done. Many studies confirm this conviction; for example, increased demand for NTFPs has led to the increased pressure on extraction; and, as a result, many NTFPs are on the verge of economic extinction. A brief discussion of some case studies indicating unsustainable extraction is covered in the next section.

At this point, it is quite obvious that the exploitation of almost any type of NTFPs produces a measurable ecological impact. To achieve economic viability and ecological sustainability, there is a need to implement management activities that seek to reduce the magnitude of this impact instead of ignoring it as has been the case for decades now. The extraction of NTFPs can still be unsustainable even with low intensity of extraction. Unsustainable exploitation of NTFPs is largely associated with a number of factors such as: the lack of property rights, insufficient know-how on conservation practices; and rising demand for NTFPs (Rabindra 2010).

NTFPs are marketed through either informal or government-controlled channels. In the informal channels fixed price list are absent and the system of barter sometimes become the dominant medium of exchange (Ghosal 2013). The government-controlled channels are methodologically arranged through an auction and permit system. Some state agencies are mandated to provide monopoly rights to some cooperative bodies to harvest NTFPs on public lands and pay royalty on them (Ghosal 2013). Dlamini (2013) indicated that to effectively market NTFPs suppliers and sellers should adhere to the following: (1) understand the needs of their customers and respond to them; (2) availability and accessibility of the product; (3) sellers attend to the needs of customers quickly and effectively; and (4) sellers should undertake just-in-time delivery of the products and in their right quantities.

Selected Evidences of Worldwide Unsustainable Extraction of NTFPs

To conserve space, only a few significant evidences of unsustainable extraction NTFPs around the world are produced here and in no way this exhausts all situations. Some salient and well-known evidences are reproduced here based on the literature review. These case studies/ location specific situations emanate from different parts of the world.

Unsustainable Extraction of Gums, Flower, Seeds, Barks, Bamboo, and other NTFPs from India

It has been reported that *Salai* (*Boswellia serrata*) gum trees in north Gujarat in India are diminishing rapidly. During 1970s the average annual extraction of *Salai* gum was about 4000 quintals and which dwindled to 1500 quintals in the late 1990s (Tewari, 1998). *Kadaya* (*Sterculia urens*) gum trees met the similar fate. The *Kadaya* gum production declined from 3000 quintals per annum in 1970s to nil in 1990s (Tewari 1998).The major reason for this decline was excessive harvesting beyond sustainable limit and unscientific tapping practiced by collectors (Tewari 1998).

In the *Mahua* (*Madhuca indica*) belt of Gujarat, the production of *Mahua* flowers and Mahua seeds have also shown declining trends. For example, the average annual *Mahua* flower collection declined from about 45000 quintals during 1970s to 29000 quintals during 1990s; Of the several reasons for decline, the primary reason was that a large number of *Mahua* trees were being cut for furniture from private fields (Tewari 1998). Other examples include the extensive loss of *Gulmavu* (Machilus spp) trees in Malnad and Coorg district of Karnataka due to unscientific or over-exploitation of their bark (Parammeshwarappa 1992).

Bamboo extraction, for example, in the Tamil Nadu explains how overexploitation has led to reduced yield and income earnings. For example, yields declined from 11108 tons/ha in 1985/ 1986 to 2399 tons in 1990/1991 and to about 1100 tonnes in 2010 (Hall and Bawa 1993; Anonymous 2011).In the Western Ghats of South India, for example, honey and gooseberry have shifted from survival collection to extensive business extraction from the forest of Biligiri Rangan Hills [BRH] (Hall and Bawa 1993). As a result, both harvesting practices and intensity of extraction of these forest products have changed rapidly over the last decades as have other human influences like fire. The study by Shankar et al. (1998) demonstrated that the over-exploitation of *P.emblica* and *S potatroum*, resulted into a decline in the density and basal area in BRH. High intensity of collection of seeds from forests reduces the regeneration capacity (Peters 1996).

Rattan Harvesting in Kalimantan, Indonesia

In Kalimantan, Indonesia, about 80 to 85 percent of harvested rattan originated from natural forest (Haury and Saragih 1995). However, nearly doubling of prices made rattan collection a profitable activity which led collectors to explore more remote areas and diminish the natural stock

of small cane rattan. Small cane rattans are capable of sprouting once cut unlike large cane rattan (Manokaran 1985). The overharvesting thus led to the extinction of rattan in some areas of Indonesia. The excessive cutting of young plants was found to be the major cause of the resource depletion in West Malaysia (Ave 1988), Phillipines (Siebert and Belsky 1985), East Kalimantan (Jessup and Peluso 1986) and Sabah (Marsh and Gait 1988).

Species Extinction in Nepal

In Nepal, more than 90 percent volumes of the commercial NTFPs are gathered from forests, implying that the existence of certain species of plants is endangered (Poudel 2007). Some 60 species of non-endemic plants are in danger of extinction in Nepal (Shrestha and Joshi 1996; Sharma et al. 2004 as cited in Poudel 2007) and 29 among them are medicinal aromatic plants (MAPs). To prevent this unsustainable extraction, the Nepalese government published in *Nepal Rajpatra*a list of species proscribed from collection, exportation and commercial purposes, include: *Kutki* (*Neopicrorhiza scrophulariiflora), Okhar bokra* (*Juglans regia)*and *Panchaunle* (*Dactylorhiza hatagirea, Jatamansi* (*Nardostachys grandiflora), Sugandhawal* (*Cinnamomum glaucescens), Jhyau* (*Parmelia spp), Lauth salla* (*Taxus baccata), Sarpagandha* (*Rauvolfia serpentine*), *Sugandhakokila* (*Cinnamomum glaucescens), Silajeet* (*Rock exudates*) and *Talis patra* (*Abies spectabilis)* (Nepal *Rajpatra* 2001 as cited in Tiwari et al. 2004; Poudel, 2007). The following species are banned for felling for commercial purposes: *Bijaya Sal* (*Pterocarpus marsupium), Chanp (Michelia champaca), Khayar* (*Michelia champaca*), Okhar (*Juglans regia), Sal* (*Shorea robusta),Satisal* (*Dalbergia latifolia*) and Simal (*Bombax ceiba)* (Nepal *Rajpatra*, 2001 as cited in Tiwari et al. 2004).

Extinction of Palm Trees in Peru

Similarly, in Peru, the female *Dioeciousaquaje* (*Mauritia flexuosa*) palm trees are regularly cut down by business fruit collectors. Afterwards, only sterile male trees dominate the forest which in the end leads to total extinction of the species in the forest (Vazquez and Gentry 1989). Uncontrolled felling has virtually eliminated the *Aquaje* palm from the forests surrounding *Liquitos* in Peru, and local collectors are now forced to travel up to some days to find unharvested palm stands (Padoch 1988). Uncontrolled harvesting has also adversely reduced the population of the *Ungurahui* palm (*Jessenia bataua*), the *Babassu* palm (*Orbygnia phalerata*) and a wide range of vital Amazonian fruit trees (Sada and Joyce 1988). In Peru and Nicaragua, palm is on the verge of disappearing not only because of rapid deforestations as already mentioned earlier but also due to over-harvesting (Salick et al. 1995).

Unsustainable Extraction of Dipterocarpus Trees and Other NTFPs in South East Asia, Amazon and Mexico

In Southeast Asia, several species of *Dipterocarpus* trees generate an aloe-resin or dammar, which serves in varnishing, painting and coating, and in recent times in making fragrances (Gianno 1986). In many parts of Peninsula of Malaysia, the standard method of tapping this resin is known as "boxing and firing" (Peters 1996). The creation of two or more different holes or box into the trunk of a *Dipheracarpus* tree, which may extend inward one-third of the diameter of the tree, to collect the aloe-resin dropping, undoubtedly it severely weakens the tree and reduces fruit production and growth (Peters 1996). Similarly, the *Aquillaria* tree in the Malaysian forest are cut to extract heartwood (Peters 1996).

Moreover, the destructive harvesting of exudates is not restricted to resinous tree or to Southeast Asia. *Couma macrocarpa*, for example, is precious latex and fruit generating tree in Amazonia. The species produce plentiful quantities of creamy white latex utilized in manufacturing chewing gum, and sometimes Para rubber. Although the species can be tapped repeatedly and exploited every year, unscrupulous harvesters have cut down countless number of *Couma Macrocarpa* trees to extract their latex contents (Vazquez and Gentry 1989).

Apical buds are another category of NTFPs harvested from the forest, with palm hearts being the widely exploited by collectors. In *Amazonia, Oleracea* and *E precatoria* are the preferred source. Harvesting the heart of *apicalmustem*in a single stemmed palm species kills the tree. The same scenario applies to *E. precatoria*. The setting of an industrial plant for canning palm tree in Liquitos, Peru, in mid-1980s ruined the population of this species and the

factory had to shut down due to lack of raw materials. Unlike *E. precatoria* which grows in western Amazonia, *E. oleracea* is found in Eastern Amazonia. The latter is equally harvested for palm hearts.

The collection of roots and bark tissue undoubtedly weakens the exploited tree species (Peters 1996). This becomes severe if large-scale collection is done. In Amazonia, for example, the subsequent cultivation of *Barbasco* in the region was undoubtedly caused by commercial collectors digging up, and not replacing a significant percentage of the *lonchocarpus* plants found in the forest (Villarejo 1979). Similarly the large-scale collection of *Amate* bark (*Ficus spp*) for making bark paper handicrafts in Mexico has virtually eliminated this tree species from the forest surrounding San Pabito, Puebla where the paper is made (Peters et al. 1987). Worst still, the bark, which is used in the manufacturing of mosquito repellant coils, is typical stripped from felled trees.

Declining Canada Yew Trees

Ground Hemlock (Canada Yew) and *Taxus*species are harvested for medical purposes in Canada. However, about 30000 kg of yew branches are needed to produce 1 kg of taxol and given that this plant specie develops comparatively slowly, the urge to satisfy pharmaceutical industry for the plant exposes it to the threat of over-harvesting (Falls Brook Centre [FBC] 2002).

The Need for a Policy Framework

The NTFPs collected by the rural poor are sold out to middlemen or government agencies which sell them into national or international markets at high prices. Only a small proportion of final price comes to the original users of the NTFP resource (TERI 2004). The long and secretive marketing chain also deprives the collector of high prices beside the high cost it imposes on them (Awasti 2009). This happens for three possible reasons. Firstly, some NTFPs are bulky and they are transported in raw form to distant markets/collection points; since transportation costs are high, it finally reduces net price to the tribal collectors. Secondly, most collectors are less informed about access to better production techniques, which gives high margins to middlemen (Tewari 2008). Thirdly, in many developing countries, the NTFPs markets and marketing channels are not well developed. As a result, the marketing margins are very large for those who indulge in this business. This finally translates into low price to NTFP collectors; but, at the same time, it promotes exportation of jobs and income to distant places.

To boost income and employment in local economy, we need to reverse the process by promoting value addition activities in the local village economy. For instance, only 6 out of 38 NTFPs collected at Andhra Pradesh were processed (TERI 2004). Value addition would give (a) higher net prices to collectors, (b) stop the migration of rural people to urban areas in search of jobs, (c) improve quality of life in village economy, and (d) provide security in terms of food and income. Bringing value addition activities in local economies should also be consistent to sociocultural values of people; for example, recruitment of wood-carvers from far-away places for an urban-based small scale NTFP-based enterprise in Java (Indonesia) did not take the progress too far, mainly because of chronic absenteeism (Karr 1991).

The best way to initiate value addition activities in the local village economy is to promote the small-scale enterprises. Converting NTFPs into different uses augments value to the unprocessed NTFPs. For example, from experience in West Bengal, it was noticed that *Sal* leaves grow in value and become ten times more valuable when sewed into plates and pressed with polythene inserts; in the absence of value addition villagers sell raw products at 5 to 20 percent of market price (Poffenberger et al. 1990). Gharai and Chakrabarti (2009) found that that price of raw *Mahua* and *Karanj* seed was only 50 percent of the market value of processed products. Also, processed NTFPs fetch higher export prices as well; for example, the value of rattan reexported from Hong Kong was found to be 17 times higher than the price of raw rattan exported from Indonesia (Business News 21/10/1981). The Forest-Based Small-Scale Enterprises (FBSSEs) are thus considered to be better for value addition for their efficient handling of collection, processing, and marketing of NTFPs, as opposed to large-scale enterprises.

In the collection and processing of NTFPs, the large-scale enterprises do not have comparative advantage due to their higher private cost of collection and processing; and, at the same

time they cause large environmental costs to the society as well (Campbell 1991). This is because NTFP resources are scattered and hard to reach, thus mass extraction and transfer costs are high, and extraction of NTFPs is less likely to be sustainable. The FBSSEs are seen by local indigenous people, who gather or collect NTFPs, as part of their livelihood strategies. The major objective of FBSSEs is hence to provide a steady or supplemental income and help meet subsistence need of the local people over the long run. On the contrary, large enterprises are interested in short -run profit maximization and may have less or no concerns for sustainable extraction of NTFPs. Large scale enterprises require a large amount of NTFPs in order to break-even; in other words, their minimum scale of output is very large. In addition, the large scale enterprises have a greater propensity to move in and out of the market thus induces instability in the market and uncertainty to tribal collectors. Furthermore, the minimum scale of output for large firm is much larger than that for the small firms. As a result, the large firm diminishes the stock of NTFPs much faster than smaller ones. In other words, large scale enterprises would diminish the stock of NTFPs more rapidly and are prone to destroy the renewing capacity of forests as well. As opposed to large business firm, the local people are less inclined to move to other occupation and can operate with small outputs of NTFPs, without destroying the regeneration capacity of the forests. For example, indigenous rattan collectors in Indonesia have been collecting and processing raw rattan out of dense local rain forests for hundreds of years to feed growing non-wood industry (Campbell 1991). Similarly, Sal-leaf plucking in West Bengal and in Madhya Pradesh, India have been found to be a sustainable practice (Deb 1990).

Small-Scale Enterprises (SSEs) are also more efficient in serving local markets, particularly when certain market infrastructures such as roads and other fast communication channels are absent. The small-scale enterprises do well as they have cheaper means of accessory market information and can quickly respond to demand signals received from the immediate processing or manufacturing units. For example, small scale splint and veneer producing enterprises in southern India provide a reliable supply of intermediate goods to thousands of small enterprises scattered within the region. The Sal leaf plates making household industry in West Bengal is mainly run by women and is found to be meeting demand very cost-effectively (Dutta and Adhikari 1991). The wood carvers and rattan crafts people in central Java (Indonesia) are able to claim a large market share which large mechanized furniture factories could not do (Campbell 1991). This however should not be mistaken to mean that FBSSEs have always got a competitive advantage over large-scale enterprises. For example, the traditional umbrella making industry in Indonesia became less viable compared with cheaper factory-produced plastic substitutes from Taiwan. Many NTFPs have been marginalized by chemical and synthetic substitutes, and this potential threat may exist for any NTFP.

Case studies from India, Indonesia, and Latin America and African countries reveal that FBSSEs have some common characteristics. The most common characteristics are that they all are small in size and based in household; they are frequently seasonal in nature, providing seasonal employment and supplementary income for local people. All of FBSSEs are labor-intensive and based on simple technologies. In addition, they have low capital requirements. That is why they are accessible to low income and socially disadvantaged groups and are most often managed by women (Campbell 1991; FAO 1987).

The SSEs do not perform well always as they face various types of constraints. It is imperative to take cognizance of these so that a proper environment can be created for them. Various constraints can be classified into six categories: (1) diminishing supplies of NTFPs, (2) problems with access to institutional finance and lack of tax incentives, (3) highly market environments and poor infrastructural support systems, (4) income-sharing problems, (5) poor management capabilities, and (6) poor availability of appropriate technology and skills. Knowledge of these constraints is one step towards improving the FBSSEs in the industry (FAO 1987; Awono et al. 2010).

As the demand for the NTFPs is rising with increasing trading opportunities, the impacts are being felt on the stocks of NTFP resources too. Some of the NTFPs are being over-exploited. Unlike, in the past, extraction of NTFPs is no longer a part-time activity of many tribal collectors; rather it has become a major source of income to some people and it is a part of a more

formal, market oriented enterprise, competing with major forest products such as timber. For example, the Indian match industry is increasingly finding it difficult to meet raw material demand as pressure to produce fuelwood is too high. Similarly, rattan collectors in Indonesia find themselves helpless in fighting against large timber extracting companies which destroy the NTFPs resource base. The long-run survival of FBSSEs depends on well-balanced management plans which limit removals to annual increment and regeneration strategies which increase production rates.

Although investment in FBSSEs is small, the rural poor have very few assets to keep as collateral, a prerequisite for getting loans from any institutional finance as most banks resort to risk-averse lending. People borrow money from local traders/contractors or from moneylenders in the form or advances and pay it back by harvesting NTFPs at low prices (Gupta 2010). Banks should rather use the productivity or income generation potential as collateral and extend loans to the FBSSEs. Tax incentives are also important policy instruments for promoting the small businesses in NTFPs. Any easy access to finance and tax incentives could produce very promising results. For example, the small-scale sector of match industry in India has been very successful on account of government's tax incentive policies (Campbell 1991).

Markets faced by small-scale enterprises are local, small and uncertain. FBSSEs hence need to be diversified, or swings in demand can destroy their existence because of their very low risk-bearing capacity. Despite instability in demand, they face competition from international markets and from the manufacturing sector in terms of innovating and producing substitutes. Adaptability to new market situations and diversification of activities is therefore essential for improving the risk-taking capacities of small enterprises. For example, due to its adaptability the carved wooden furniture industry in Indonesia has been able to recognize new demand and new designs and has survived. On the other hand, the traditional umbrella and craft industries in Indonesia have given way to plastic substitutes. Most FBSSEs depend upon government for infrastructural support and perhaps survival to a great extent. For example, the Indian match industry has benefited a lot from the government support, whereas Indonesian furniture handicrafts from rattan and wood have gained from easy access to loans and better training facilities.

Income-sharing within FBSSEs depends upon who owns them. A concentrated ownership is not of much advantage. For example, the ownership of medium match factories in India is concentrated in the hands of 18 families who hire women and under-aged children at very low wage (Campbell 1991). The lack of government support forces this to continue. The share of NTFP-collectors in consumer's rupee is very small; a large proportion goes to intermediaries. The share of NTFP collector can be increased by checking the exploitation by intermediaries and increasing extraction efficiency through improved harvesting, storage, transport, processing of NTFPs (Wickens 1991).

The poor management skill is a big constraint and this results into a failure of business; up to 80 percent of small enterprises go out of business; within five years due to poor management (FAO 1987). The major reasons for failure is that most times FBSSEs are run by one person as owner-cum-manager who has to deal single handedly with all activities, ranging from creation of enterprise, identification and procurement of inputs, organization of production, finding markets and then marketing, planning future course of action, etc. Also, unlike large enterprises, FBSSEs do not have hard market data, and planning very much rests on intuition and causal understanding of market factors. A large number of FBSSEs (up to 10 workers) do not use machinery and depend upon simple tools (El-Namaki 1987). As a result, their labor productivity is very low and which in the long run hampers the growth of FBSSEs.

Commercialization of NTFPs is hence aimed at enhancing the marketing plans and incomes of the local people. This can be accomplished by promoting small scale cost effective businesses that are involved in NTFPs. Strategic marketing such as commodity chain analysis, employment of vertical and horizontal integration and training of harvesters on how to market their produce in distant markets are suggested by experts (Ndoye 2005). The enterprise development of NTFPs is now a key activity and is sometimes known as Market Analysis and Development (MA and D) approach. This comprises 4 stages: 1. Assessment of existing situation or diagnosis of needs and resources, that is to

examine the existing NTFPs and their marketing systems and eliminate those are non-viable. 2. Identification of products, markets, means of marketing which requires selecting most promising existing and potential products to be evaluated further; 3. Data collection and analysis for the plan; and 4. Development of an enterprise strategy and a sustainable business plan (Lecup et al. 1995). A number of measures have been suggested to harvest NTFPs on a sustainable basis; these include: creating protected areas to prevent undue access; enhancing the forest management techniques; introduction of multifunctional assessment of NTFPs to motivate the harvesters to protect them (Manuel 2005).

A Suggested Policy Framework Model

Tewari (2008) has reviewed three of management models for the NTFPs: These include models of privatization, nationalization and community management. The privatization model would give entire NTFP resources to private firms or individuals. Such a management system will rob communities of their rights to forest produce and would lower their welfare in general.

The nationalization model envisages government as owner of resources. Various arguments have been advanced in support of nationalization. The Government of India, for example, opted for this route in the past. However, the results have not been very encouraging. The community management model entrusts the community with ownership and responsibility to manage the resources. Thus, a sustainable management of NTFP resources however needs to answer the following four questions:

1. What is the objective of policy of NTFP management?
2. What are the constraints?
3. How can collectors be incentivized to exploit the NTFPs on sustainable basis?
4. What should be the role of government in achieving the sustainable management of NTFP?

The major objective of managing NTFPs is that they are managed on a sustainable basis. If NTFPs are exploited purely for profit without due consideration from the sustenance, they will extinct as it has already happened in many cases. The objective therefore should be set to generate income and employment for tribal indigenous population as much as possible subject to the sustainability rule. A balance between profit and sustainability has to be worked out. The most important role player in sustainability management of NTFPs is the collector. They should be properly incentivized to exploit the resources efficiently and on a sustainable basis.

Under the above circumstances, the role of government becomes very crucial in allowing communities to manage their own resources. Government becomes an enabler and has to provide three things:

a). Enough income and employment opportunities are to be generated by intervening in the price formation in the local market;
b). Extraction of NTFPs should not be allowed to diminish the existing stocks of resources; and
c). The incentives for collectors should be properly streamlined and safe guarded.

From the above discussion, it is obvious that promotion of FBSSEs would meet the objective of more equitable distribution of profits and also the sustainable extraction of NTFPs. The major concern hence is to outline the policy measures which would promote the development of small-scale enterprises. A six-pronged strategy is suggested (Fig. 3). This would certainly require initiatives and efforts from governments of respective countries. The strategies include: (1) transfer of management and organization skills to the collectors of NTFPs; (2) promotion of value addition activities at the local and regional level; (3) improvement in marketing channels so as to pass benefits on to collectors of NTFPs; (4) exploring the regional and national markets; and (5) strengthening the local institutions; and (6) building local research and development on NTFPs.

The first and foremost thing for regenerating the FBSSEs is the development of skills among the rural people. Many collectors who pursue the small-sale enterprises do not have the skills required for running a business; these include skills of organization, marketing, and bookkeeping. This is because many of these collectors are not literate and not exposed to the outside world. The non-governmental organizations or NGOs can fulfill this role.

The second most important task is to promote the value addition activities in local village or regional economy, thus saving the exportation of jobs and income to faraway areas. This also gives a higher net price to the local collec-

tors. The value can be increased by sorting produce by quality grades or by performing simple value adding operations such as separation of dirt, pulverizing, powdering, and making tablets and so on. For example, the Gujarat State Forest Development Corporation (GSDFDC) in India enforced the standardization and grading of NTFPs and thus passed on large benefits to tribal collectors. It is interesting to note that price differential between lowest and highest grade of NTFPs varied from Rs 55 per quintal in the case of *Doli* (seeds of *Madhuca indica*) to the highest of Rs 1383 per quintal for *Musli* (*Cholorophytum tuberosum*) (Tewari 1998). Similarly, the GSFDC undertook various simple processing operations on NTFPs of medicinal value and at times this resulted into as high as 4000 percent increase in the value of raw NTFP through simple technology (Tewari, 1999). Another good example is the efforts of Kalahan Educational Foundation (KEF) in Philippines. In 1980, the KEF members started a food processing center and began making jam and jellies from forest fruits, with an intention to capture 10 percent of the high-end market in Manilla. By 1995, the center was providing cash incomes to some 150 local families (Rice 1995). Several such success stories exist and teach us that local processing is a key to the sustainable management of NTFPs.

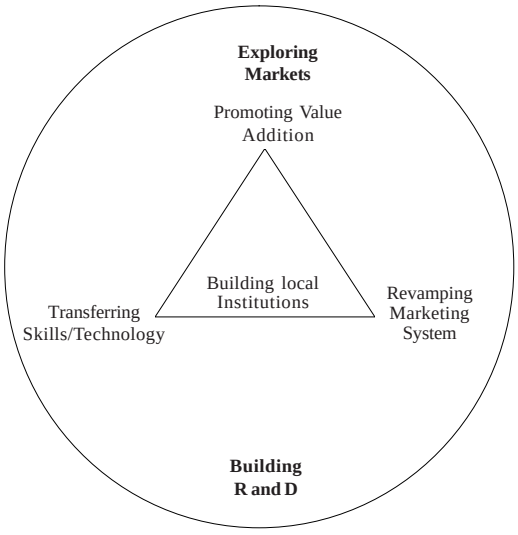

Fig. 3. A six-pronged policy framework for sustainable management of NTFPs

The third important change is to revamp the marketing system. Currently, there exist many middlemen in marketing chain from collectors to final consumer. This finally reduces the net price to the NTFP collectors as marketing margins constitute a big proportion of consumer's price. The higher marketing margins can be associated with high risk involved but they can be exploitative if middlemen use their bargaining power to their advantage. In these circumstances, the co-operative or community-based enterprises have worked better.

The fourth most important is to explore the regional and national markets. International demand alone is likely to yield short-term benefits unless the product in question is well-established. Search for regional and national markets can be more rewarding, for it is cost-efficient and hassle-free. Regional markets can thus serve as key to the NTFP trade (FAO 1995). For example, *Amla* (*Emblica officinalis*) a fruit tree which grows in the forests of Gujarat, India, is an important NTFP; tribal collectors sold its raw fruits at a very low price as they could not store it long. But, once they learn to dry it fruits, the prices climbed up. Thus, simple processing allowed them to store itlong and also to sell their produce throughout the province of Gujarat (Tewari 1998). In Thailand, the extraction and processing of *Catechu* (*Acacia catechu*) flourished well when they found a regional and export market in India (Wanida et al. 1993).

The fifth most important is to provide a set of local institutions which can help the change to take place in the rural setting. The strong local institutions and supportive national policies are a must for making small-scale enterprises a success. Strong community based traditions are a plus factor which augur the success of local businesses. These can be in terms of some collective and co-operative venture.

CONCLUSION

The NTFPs have become an economically important output in terms of their economic significance and trade. It is estimated that some US$ 90 billion worth of NTFPs are extracted every year and some $13 billion worth of products are traded internationally. However, the commercialization of NTFPs has benefitted more to the big companies than the poor collectors

who depend on NTFPs for their livelihood and food security, and medicine. The rights and privileges of these collectors are hence encroached by big companies and no mechanisms exit for correcting the same. The commercialization has thus engendered more inequity and more poverty and more unsustainable use of NTFPs. These symptoms– inequity, poverty, and unsustainability— are part of, what I call, the Big Business Syndrome (BBS). The BBS is characterized by increasing value addition away from the center of production, increasing monetization of the resource, and increasing poverty and inequity in the local village economy, increasing unsustainable extraction of the resource as such.

POLICY GUIDELINES

The forest-based small-scale enterprises are suggested to be a solution to counter the impacts of big business syndrome. For various reasons the small-scale enterprises are considered to be more efficient than large scale enterprises and they are also found to be using the NTFP resources on sustainable basis. However, they are besieged with various constraints such as access to credit, poor management capabilities, uncertain markets, and so on. But they can be made effective if sufficient policy initiatives are taken. A five pronged strategy is suggested to increase the share of small-scale enterprises in the profits from NTFPs and manage them on a sustainable basis. For this a five - pronged strategy is suggested. These include: (1) transfer of management and organization skills to the collectors of NTFPs; (2) promotion of value addition activities at the local and regional level; (3) improvement in marketing channels so as to pass benefits on to collectors of NTFPs; (4) exploring regional and national markets, (5) strengthening the local institutions, and (6) legal barriers raised for the entry of any business firms. Additionally bringing together the right mix of actors and foreign NTFP buyers (PPA Annual performance Report 2003) would also be helpful.

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