

Issues in NTFP marketing

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1. Introduction

The Agenda 21, Chapter 11 adopted during the United Nations Conference on Environment and Development (UNCED) in 1992 strives for combating deforestation, includes the promotion and development of NTFPs through value addition, domestic processing, and promotion of small-scale forest-based enterprises for rural income and employment. Many countries are now preparing plans for implementing Agenda 21, and NTFP programmes can be incorporated. Government commitment, the absence of which had previously posed a major constraint to NTFP development, appears serious.

On December 17, 2007, the UN General Assembly adopted the Non-Legally Binding Instrument on All Types of Forests (2007). Among the four global forest objectives, the second objective talks about - enhancing forest-based economic, social and environmental benefits, including by improving the livelihoods of forest dependent people.

Forests around the world provide variety of valuable products aside from the timber. The world's total forest area is just over 4 billion hectares (corresponding to 0.6 ha per capita), which includes Primary forests (36 percent of forest area), Plantation forests (7 percent of total forest area) and other naturally regenerated forests (57 percent). The forests designated for the conservation of biological diversity account for 12 percent of the total forest area or more than 460 million hectares. Around 1.2 billion hectares of forest are managed primarily for the production of wood and non-timber forest products, which is 30 percent of world's forests. An additional 949 million hectares (24 percent) are designated for multiple uses – in most cases including the production of wood and non-timber forest products. Globally, 4 percent of the world's forests are designated for the provision of social services (FRA, 2010).

NTFP are defined as "Non-timber forest products consist of goods of biological origin other than wood, derived from forests, other wooded land and trees

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outside forests” (FAO, 1999). Non-Timber Forest Products (NTFPs) have been welfare, subsistence or livelihood commodity since long and are traditional source of food, fiber, medicine, etc for the forest dwellers. The forest dwellers mainly belong to tribal communities. There is strong evidence that forest products play a significant role in the livelihoods of the world’s rural poor. Forest products are the main source of income for the forest dwelling population in many countries including India.

It is estimated that of the 6.2 billion people on the planet, 25 percent depend to varying degrees on the forest’s resources for their livelihood and 350 million people living in or near dense forest depend highly on them for their subsistence or livelihood (Killman, 2003). Some 80 percent of the people living in developing countries depend on non-timber forest products, such as fruits and herbs, for their primary health and nutritional needs (FAO, 2008; www.agroforestry.net). The most used categories of NTFPs are medicine, edible, miscellaneous and fuel wood (Bouri and Mukharjee, 2013).

It is estimated that 275 million poor rural people in India - 27 percent of the total population - depend on NTFPs for at least part of their subsistence and cash livelihoods (Malhotra & Bhattacharya, 2010; Bhattacharya & Hayat, 2009). This dependency is particularly intense for half of India’s 89 million tribal people, the most disadvantaged section of society, who live in forest fringe areas. According to an estimate the NTFP sector alone is able to create about 10 million workdays annually in the country. Sizable populations of rural and tribal poor are involved in NTFP collection, processing and marketing. Probably an equal number are engaged in health care practice based on these resources. The environmental, social and economic importance of NTFPs including medicinal plants to the countries like India is enormous. However, the rich and diverse heritage of traditional medicine systems in the country is increasingly threatened by the interplay of factors: rapid deforestation and habitat destruction, indiscriminate collection and spurious substitutes in the market. India is home to an amazing diversity of plants, with over 46,000 plant species recorded to occur there. Many of these species are used for medicinal purposes, with approximately 760 known to be harvested from the wild for use by India’s large herbal medicine industry (Jain, 2004).

Historically, the NTFP sector was neglected for many decades from main stream forestry, and they were considered as ‘minor’ (Minor Forest Produce), despite the fact that monopoly rights over several such NTFPs/MFPs fetched a good income for the Forest Department. After the ban on green felling, the income from NTFPs in the total income of the Department became the major one with that from timber marginalized, in many states. Export of NTFPs and its products contributes 68% of the total export from forestry sector.

Non-timber forest products (NTFPs) are of socio-economic and cultural importance for the forest dwelling communities, particularly for the tropical countries like India (Yadav and Dugaya, 2013). Public concern for the environment has grown remarkably during the last few decades, both in developed and developing countries, and as a result, environmental issues are beginning to take more of a center stage in global economic and trade policies (Perera and Vlosky 2006). The emergence of “eco-labeling”; a process that attempts to provide an indicator of how well a product is environmentally adapted, is a contemporary example of how consumer interests have driven information processes aimed at differentiating the environmental appropriateness of goods and services. The basic concept of eco-label is derived from the word eco, which means natural environment, and label, which means a sign on a product that differs from other products (Yadav et al. 2011). More recently, NTFPs have received international attention with a steady growth of green consumerism; awareness of biodiversity conservation and sustainable and protective use of forest resources; paradigm shift in forest management from ‘sustained yield’ to conservation focused; importance of joint forest management for sustainable management of forest resources; more open international markets; etc.

1.1 Production and Trade in forests products - International and National

Forestry & logging contributes to 1.2% of India's GDP (Economic Survey, Ministry of Finance, 2011). The Indian forest products industry had total revenue of \$65,844.6 million in 2011, representing a compound annual growth rate (CAGR) of 5.5 percent between 2007 and 2011. Industry consumption volumes increased with a CAGR of 0.2 percent between 2007-2011, to reach a total of 355.4 million cubic meters in 2011. The performance of the industry is forecast to accelerate, with an anticipated CAGR of 7.7 percent for the five-year period 2011 - 2016, which is expected to drive the industry to a value of \$95,467 million by the end of 2016 (<http://store.marketline.com>).

Table 1: International and National Import and Exports Value (1000 US\$) of Forest Products

Year	Imports		Exports	
	International	National (India)	International	National (India)
2010	226385115	3479703	224014593	571457
2009	191115216	2751696	188514810	390061
2008	242039046	3305937	234786725	444714
2007	230996710	2456089	227745897	277967
2006	201498893	2352598	197594466	280315

Source: Yadav and Basera, 2013

Global trade (exports) in primary wood and paper products in 2006 excluding intra-regional trade was estimated as in America (4 to 6.5 billion US\$), Africa (1 to 2 billion US\$), Asia (1 to 2 billion US\$), Oceania (0.5 to 1 billion US\$) (FAO, 2008a; <http://www.grida.no>). Europe accounts for nearly half of the world's trade in forest products with imports of US\$158 billion and exports of US\$184 billion (FAO, 2007).

1.2 Global Production and Trade in Non-Timber Forest Products

There has been increasing trends in the trade of forest products particularly that of Non-Timber Forest Products (NTFPs). Increasing trade in forest products (both timber and non-timber) has supported economic growth and has helped in reducing poverty in a number of emerging countries.

The estimated total value of the most economically important NTFPs in world trade is about US \$11 billion annually (FAO, 2007). The reported value of non-timber forest product removals amounts to about US\$18.5 billion for 2005, in which food products account for the greatest share (FRA, 2010).

Among the most important NTFPs contributing to international trade are medicinal plants (US\$ 689.9 million), nuts (593.1), ginseng roots (389.3), cork and cork products (328.8), and essential oils (312.5) (Walter, 2003). At least 150 NTFPs (e.g. honey, gum arabic, rattan, edible bamboo, cork, forest nuts and mushrooms, essential oils, and plant and animal parts for pharmaceutical products, etc.) are significant in international trade (FAO, 2005). More than 200 species of NTFPs are harvested in British Columbia. More recently, the commercial value (measured as payments to harvesters) of mushrooms and floral greens was an estimated \$40 million and \$29 million, respectively, every year over the past 10 years (Cocksedge et al., 2006). If forest-based tourism is included, the commercial value of NTFPs and services is much greater.

Every year between 10,000 and 15,000 tonnes of NTFPs are harvested in Nepal, the trade of these NTFPs contribute an estimated equivalent of US \$ 8.6 million to its economy. Income from 161 species of NTFP in Nepal is US \$35 million (Binayee and Gyawali, 2006). The world trade in essential oils and their value-added products is vast. World production of essential oils (excluding turpentine oil) is estimated to be about 105 000 tonnes to the tune of US\$ 922 million (Varshney, 2001). The subsistence production of Non-market timber and other NTFP enriches South Africa's economy by 3.63 million rands (Shackleton and Shackleton, 2004).

According to WHO, the majority of the world's human population, especially in developing countries, depends on traditional medicine based on MAP (WHO, 2002). A survey of published medicinal floras conducted by members of the Medicinal Plant Specialist Group of the Species Survival Commission, the World Conservation Union (IUCN) suggests that 72,000 species of higher plants are used medicinally worldwide, approximately 17 percent of the world's higher plant flora. Relatively few NTFPs including medicinal plants species are cultivated. The great majority is still provided by collection from the wild (Lange & Schippmann 1997; Srivastava et al., 1996; Xiao Pen-gen, 1991). Despite the globalization of the World's economy and the rise of industry, NTFPs still remains an important source of income for hundreds of millions for rural livelihoods (Poffenberger, 2006). One study revealed that in Dhading district of Nepal the NTFP sector generated maximum employment (60.72 percent), followed by agriculture (22.30 percent), allied activities (15.83 percent) and other sources (1.16 percent) (Pervaz, 2002).

FAO estimated that NTFPs are capable of generating 4 million man-years of employment annually (FAO, 2002; FAO, 2005). A study in Zimbabwe revealed that small-scale NTFP based enterprises employed 237,000 people, compared to only 16,000 employed in conventional forestry and forest industries in the same year (FAO 1995). The market for NTFPs has grown by nearly 20 percent annually over the last several years, and the related herbal medicine market at a rate of 13-15 percent annually (Hammet, 1999).

1.3 Production and Trade in Non-Timber Forest Products in India

In India, out of the total land area of 329 million ha, only 78.29 million ha are classified as forests. This represents only 23.81 percent of the total geographic area as against the recommended forest coverage of 33 percent. Total growing stock of India' forests and trees outside forest is estimated as 6047.15 m cum. The annual estimated production of wood and fuel wood from forests is estimated to be as 3.175 m cum and 1.23 m tones (SFR, 2011).

India's rich biodiversity of 45,000 plant species is spread across 16 Agro-climatic zones. Out of these, about 3000 NTFP species yield are found but only 126 have developed marketability (Maithani 1994; FAO 2002; FAO, 2005). These include medicinal plants, edible plants, starches, gums and mucilage's, oils & fats, resins & oleo-resins, essential oils, spices, drugs, tannins, insecticides, natural dyes, bamboos & canes, fibers & flosses, grasses, tendu leaves, animal products and edible products.

In India over 50 million people are dependent on NTFPs for their subsistence and cash income (Hegde et al., 1996). India also has a 42 percent share of total removals in the category of other plant products, such as tendu leaves and lac, followed by Brazil and Mexico (FRA, 2005). Minor forest products contribute about 50 percent to Indian government forest revenue and 70 percent of forest-based product exports (ICCF, 2005). The monetary value of Medicinal and aromatic related global trade is over 60 billion USD (Karki and Nagpal, 2004). About 70 percent of the NTFP collection in India takes place in the tribal belt of the country (Mitchell et al., 2003). Around 55 percent of employment in forestry sector is attributed to the sector alone (Joshi, 2003). In the case of Gujarat, the contribution of NTFPs to the total households' income varied from 20.1 percent to 34.1 percent while in the case of West Bengal, it ranged from 26.5 to 55.5 percent (Kant, 1997). One another study highlighted that tendu leaves were estimated to provide employment nearly to 4 million persons annually by way of Bidi (Local cigarette) manufacturing (Namdeo and Pant, 1994). He observed that forest based enterprises provided up to 50 percent of income for 20 to 30 percent of labor force in India (Pillenhalli Basavarajappa, 2008)

Commercial NTFPs are estimated to generate Rs. 3 billion (US\$ 100 million) annually in India. It exports a large number of NTFP to other countries earning foreign exchange revenue to the tune of Rs. 10 billion (US \$ 384 million) annually (FAO, 1995). India holds monopoly in world trade over some of the NTFPs such as Karaya gum (*Sterculia urens*), Myrobalans (*Emblica officinalis*, *Terminalia chebula*), Sandalwood chips and dust (*Santalum album*). The export of NTFP has grown by 20-25 percent over the past few years and during 2006-07, India earned Rs 39.7 billion from export of NTFP and their valued added extracts (Ganguli, 2007). Total export value of Ayush and Herbal products from India is estimated as Rs. 764.25 and 570.76 crores respectively during 2009-10 (NMPB; State Forest Sector Report India, 2010).

India stands at third position with a share of about 16 percent in global essential oil trade. Indian production of the essential oils is estimated to be 17 000 tonnes valued about US\$ 195 million (Varshney, 2001 & FAO, 2005). India produces 20 000 tonnes of exudate gums in which gum karaya alone contributes about 15 000 tonnes. India earns around Rs. 1200 million by the export of gums (Soni and Bhatt 1999; FAO, 2005). World production of essential oils (excluding turpentine oil) is estimated to be about 105 000 tonnes to the tune of US\$ 922 million. The total value of non-timber goods and services available from tropical deciduous forests in India was estimated from a minimum of \$219 to a maximum of \$357 per hectare annually (Chopra, 1993).

The contribution of NTFP and eco- tourism to the Forestry Sectors' gross value (of Rs 259.85 billion) is 16 percent (MOEF, 2006; Choudhury, 2007). All India average value of NTFP to be Rs 1671.54 per hectare and Rs. 41.89 billions as the estimate of gross value of NTFPs harvested on average in India (Chopra, 2006). Studies in Indian states of Orissa, Madhya Pradesh, Himachal Pradesh and Bihar have also indicated that over 80 percent of forest dwellers depend entirely on NTFP, 17 percent landless depend on daily wage labour mainly on collection of NTFP and 39 percent people are involved in NTFP collection as a subsidiary occupation (www.tropecol.com).

The tribes (Girijans) are considered to be the most economically impoverished community of India. Girijan NTFP collectors in Kerala display a heavy dependence on the forest – the average contribution of NTFPs to total tribal income was 58 percent (Thomas, 1996).

In Orissa, about 4-5 millions poor, who are landless or marginal farmers mostly belonging to Scheduled Caste and Scheduled Tribe communities also depend critically on forests for subsistence and much needed cash during the lean summer months (Choudhury, 2007). Employment of women in forest based enterprises in India was estimated to be approximately 571.533 million days annually of which 90 percent is in small scale enterprises using NTFP (Khare, 1989). Total women labour engaged in the collection of forest produce in Orissa is as high as 300 million woman days. Throughout India, collection of tendu leaf generates part time employment for 7.5 million people - a majority of them tribal women (Arnold, 1995) while in Orissa, 1.8 million women are involved in this, collecting 45,000 tonnes (Rs 450 million) of leaves per annum. The annual revenue from timber, which was more than Rs 200 million during 1990 in Orissa, has reduced to a mere Rs 50 million, whereas the revenue from non timber forest produce including bamboo and kendu leaves is in excess of Rs 900 million annually, as against Rs 250 million in 1985-86 (Choudhury, 2007). In Orissa, the share of NTFP revenue (particularly revenue from Kendu leaf) in total forest revenue has increased from 43 percent in 1985-86 to 89.3 percent (share of Kendu leaf is 85.1 percent) in 2001-02. In one study estimates shows that tribal households get around 23 percent of their total income from NTFPs resources from the forest areas (Behera, 2009). The state earns annual forest revenue of Rupees 1 billion constituting substantial non- tax revenue. Investment in forestry development is about 1.5 percent of the state budget. The contribution of NTFPs to state forest revenue was high in the past (53 percent decadal growth). The growth in revenue earning from NTFPs was 73 percent in 1990–2000 which increased to 85 percent during 2000–2005, while the corresponding return from timber grew by 10 percent, declining to 43 percent during 1990–2000 (Mahapatra and Shackleton, 2011).

NTFPs' contribution to the family income in Gujarat state varies from 15.5 percent in Navsari district to 43.3 percent in the district of Katchh. Average income of a tribal household from collection of NTFP per season is Rs 6953 (US \$ 174) (ORG, 2005).

NTFP revenue of the Uttar Pradesh state from the 18 divisions of Terai, Bundelkhand and Bindhyan region constitutes about 80 percent of the total revenue of the state. In terms of value realized to the state, tendu leave collection returns maximum (42 percent of total value of forest produce and 93 percent of NTFP value) among the NTFPs and comes only next to that from timber. But, at the household level, other NTFPs dominate in terms of returns (Choudhury, 2007). Average return from NTFP collection per household per season in three Bundelkhand forest divisions is found to be Rs 6225/ (US \$ 155). A study in Lalitpur district shows the income from NTFP to be 12 percent (Rs 1587- US \$ 40) of the total income (GDS, 2004). Such incomes from NTFP translate to around Rs 25 per day which is about 43 percent of the minimum daily wage (Rs 58) (Choudhury, 2007). Manipur state gets almost 70 percent more revenue from NTFP (valued at Rs. 135.288 Lakhs) than from the major forest products including timber, teak, pole and firewood (valued at Rs. 94.243 Lakhs) as per the five year average figures for the period 2000-05 (GOM, 2009). NTFP contributes to 40 percent of their total income, while for marginal, small and large farmers the share of NTFP in total income is 34 percent, 14 percent and 4 percent respectively. The return per person day in NTFP collection comes out to be Rs 52 (US \$ 1.4), which is almost double than the return from wage earning in the village and is quite comparable to the minimum wage (Rs 60 - US\$ 1.5) (Choudhury, 2007).

In Kerala state, one hundred and twenty items of the NTFPs, mainly medicinal plants are permitted to be collected from the forests by the tribal people and 96 species by tribal cooperatives. About 56 percent of their total income is from the NTFPs (Thomas, 1996). The largest consumer of the forest products is the state's Ayurvedic industry (Choudhury, 2007; Menon 2003). Nearly 80 percent of the Indian traditional medicine industry is situated in Kerala with a predicted growth rate increase of 35 percent annually (Nath, 2010; Samraj, 2010). Villagers were found to use a wide variety of NTFPs for many purposes in a study of 12 forest protection committees in Midnapore District, India – over 75 species were used regularly for subsistence needs (Malhotra, 1993). A comparison of south Bihar and southwest Bengal, India, indicates the geographical difference in incomes from NTFPs (Rao and Singh, 1996). In Bihar about 17 percent of total revenues from forest production is received from NTFPs, while in southwest Bengal it is only 1.7 percent. The annual production of resins has been estimated

as in Andhra Pradesh (160 tonnes of Rs. 0.10 crore value), Himachal Pradesh (6500 tonnes of Rs 45.5 crore value), J & K (1693 tonnes of Rs. 8.31 crore value) and Uttarakhand (19608 tonnes of 108.48 crore value) during 2009-10 (Forest Sector Report India, 2010).

The potential of production of Tendu leaves in Chhattisgarh is approximately 18 Lakhs standard bags annually, which is nearly 20 percent of the total Tendu leaves production of the country. During the year 2012, around 17.15 Lakh Standard Bags of Tendu patta were collected having value of Rs 646.90 crores. The production of Sal seed in the state has been reported as 646.90 lac quintals worth Rs. 29.68 crores. The approximate potential production of Harra in the state is about 60,000 quintal/year. Gums production is estimated as Kullu gum (760 quintals of sale value 174.81 lakhs).

Madhya Pradesh accounts for among largest forest area and also largest population of tribal people in India. The livelihoods of tribal people are intimately linked to the forest (Prasad and Bhatnagar, 1993). The collection and sale of NTFPs accounts for between 40 percent to 63 percent of total annual income of the rural population and provides an important income generating activity to offset seasonal unemployment rate.

Table 2: Tendu Leaves Trade in MP

Year	Collection in Lakh bags	Collection Rate per standard bag	Collection Wages in Rs Crore	Quantity Stored	Quantity disposed off	Sale Price Rs crore	Expenditure Rs crore	Net receipt Rs crore
1989	43.61	150	65.42	43.58	43.58	405.15	114.70	290.45
1990	61.15	250	152.88	60.57	60.57	248.47	209.12	39.35
1991	46.16	250	115.40	45.79	45.79	298.07	180.00	118.07
1992	45.06	250	112.65	44.64	44.64	285.99	201.47	84.52
1993	41.31	300	123.93	40.98	40.98	252.77	198.29	54.48
1994	42.38	300	127.14	42.08	42.08	299.40	210.95	88.45
1995	39.56	300	118.68	39.36	39.36	289.39	197.80	91.59
1996	44.60	350	156.10	44.43	44.43	338.85	269.38	69.47
1997	40.14	350	140.49	39.95	39.95	338.69	244.05	94.64
1998	45.47	400	181.84	45.23	45.23	407.66	280.39	127.27
1999	49.37	400	194.20	49.12	49.12	402.20	283.87	118.33
2000	29.59	400	114.78	29.49	29.49	176.31	160.08	16.23
2001	21.28	400	83.09	21.22	21.22	111.05	136.07	-
2002	22.74	400	89.04	22.65	22.65	165.77	143.83	21.94
2003	22.25	400	87.56	22.21	22.21	152.95	140.71	12.24
2004	25.77	400	101.61	25.72	25.72	167.71	145.86	21.85
2005	16.83	400	66.37	16.82	16.82	131.41	106.90	24.51
2006	17.97	400	71.88	17.97	17.97	151.33	100.56	50.77
2007	24.21	450	108.95	24.21	24.21	373.64	136.89	236.75
2008	18.25	550	100.35	18.25	18.25	211.26	136.57	74.69

2009	20.49	550	112.67	20.49	20.49	265.49	149.86	115.63
2010	21.24	650	138.11	21.24	21.24	332.89	179.71	153.18
2011	17.0	6 650	110.80	17.06	17.06	310.06	154.10	155.96
2012*	26.06	750	195.45	26.06	26.06	634.14	242.48	391.66

Source: <http://mfpfederation.org>

Rs 98 Crore was distributed as incentive wages in 2011 out of net receipt of Rs 155 crore to some 7 lakh collectors with an average bonus of Rs 1400 per collector. The major types of NTFPs harvested in Karnataka include Honey, tamarind, gums, nuts and canes (Table 3).

Table 3: NTFPs in Karnataka

NTFP	Unit	Quantity in quintals			
		2005-06	2006-07	2007-08	2008-09
Charcoal	MT	7425	0.5		
Honey	MT	55.84	1043.67	1181.32	66.94
Tamarind	MT	1742.4	9081.4	185.02	1255.53
Shikakai	MT	746.16	506.31	805.28	594.89
Cashewnut	MT	123.85	538.2	31.51	87.11
Alalekai	MT	714.92	418.94	391.4	320.3
Gum	MT	171.98	9.8	2	
Canes	Nos.	136540	121700		
Uppige	MT	1469.1	2447.23	591.63	988.74
Dalchinni	MT	2475.81	884.99	1032.34	678.33
Citradora	MT	747.7	502.76		

Source: Forest Sector Report India, 2010.

2. Marketing Issues for NTFPs

In the past few decades the research on NTFPs in India was focused on mainly towards the biological aspects to tackle issues such as useful part; time of collection; nutritive efficiencies; factors influencing the NTFP production, impacts of forest management practices to yield of various NTFP and inventory methods of NTFP. In the recent years the research is gradually integrating market and marketing aspects, and thus market and consumer analyses will become more frequent.

The NTFP market in India is an oligopsony, with relatively few well-informed (and secretive) buyers and a very large number of ill-informed sellers. The limits on information from the demand side are intentional for the purpose of artificially manipulating the market price in their favor, whereas the information flow from the sellers is unintentional. Such opaque market structures are disadvantageous to the collectors and cultivators and also lead to over-harvesting of the natural resource in the absence of reliable and accurate information about market

demand and price. These markets thus suffer from the following imperfections (Yadav and Misra, 2010):

- ✚ Lack of proper information about the demand and supply of the products being traded
- ✚ Lack of assured markets for the collectors and cultivators
- ✚ Unique characters of medicinal plants and uncertainty regarding their availability
- ✚ Inadequate knowledge about the herbs being collected, cultivated or traded
- ✚ Quality issues in collection of medicinal herbs and the processing of final products
- ✚ Stakeholders not aware of intellectual property rights issues related to the medicinal plant products
- ✚ Market barriers for new entrants in a closed market with scarce market information
- ✚ Problems in marginal cost pricing of the medicinal herbs, i.e. with sellers unable to receive fair value.

There has also been depletion of medicinal plant resources as the result of irregular and unscientific collection, uncontrolled forest grazing by cattle, forest fires, shifting cultivation patterns, and biotic pressure, well beyond the carrying capacity of the land given the burgeoning human as well as animal population in India. The government organizations and non-government organizations (NGOs) that attempt to help the cultivators and collectors are also severely hampered by the absence of reliable and accurate market data. In India the sale of the medicinal herbs grown in the wild is usually by locals with the herbs in their raw form without any significant processing or value addition. The producer/collector access to consumers is limited to sales made in local villages or in the weekly village markets. A major portion of their collection is sold to intermediaries like contractors and commission agents who operate in the area, before they get to the organized sector. The market is also geographically limited. Access-to-market issues are more pronounced in the case of perishable items or items containing active principles, which change or deteriorate with time. The relatively small volume of collection further aggravates the problem, forcing the local tribal population into a vicious circle of a small market, low production and (leading to) small marketable surplus. This limited marketable surplus makes them more vulnerable and makes their exploitation possible because it continuously erodes their bargaining capacity as their need for conversion of small production into cash becomes more acute. Wide variation in the content of active principles of the wild varieties of medicinal herbs constitutes yet another supply-side imperfection. Such variations complicate the process of manufacturing herbal

medicines and affect the efficacy rates and quality control. Scientific cultivation of NTFPs including medicinal plants through bioengineering and modern farming techniques could overcome this problem, but progress in this area is almost non-existent (Yadav and Misra, 2010).

Some of the consequences of market imperfections are the lack of information to the needy stakeholders and posing obstacles in the path of commercial exploitation of NTFPs in a sustainable manner. In India, availability of reliable data continues to be an issue; even the statistics for demand, supply and trade related to timber, which is a major produce from the forests, are not reliable and accurate (ITTO, 2003). Similarly, the statistics for Non-Timber Forest Produce are also only estimates and reliable data on exact inventory, extraction and trade are not available.

One of the consequences, as identified in a study by the Associated Chambers of Commerce and Industry of India (Assocham), is that over 70% of the plant collection involves destructive (non-sustainable) harvesting because of the use of parts like roots, wood, stem and the whole plant, whereas traditionally other parts like the (renewable) leaves and fruits were preferred. This problem has increased because demand has been growing very rapidly. This poses a threat to the genetic stock and is not sustainable (Sharma, 2008). There is concern, however, that collection methods for many if not most of these species are destructive and wild populations are declining as a result. NTFP's availability, utilization, commercialization, exploitation, management practices, policies and tenure systems in different parts of India have high diversity and variability, which imposes greater challenge for development of any generic standards for certification, even though many of the principle, criteria, indicators and verifiers are universally applicable for certification. The harvest of NTFP is coming under increasing scrutiny from certification programmers, as it plays a key role in the sustainable forest management and community benefit worldwide. Thus, NTFPs present many new challenges and opportunities in certification due to the wide range of management practices and difficulty in monitoring their harvest and processing (Yadav and Dugaya, 2013).

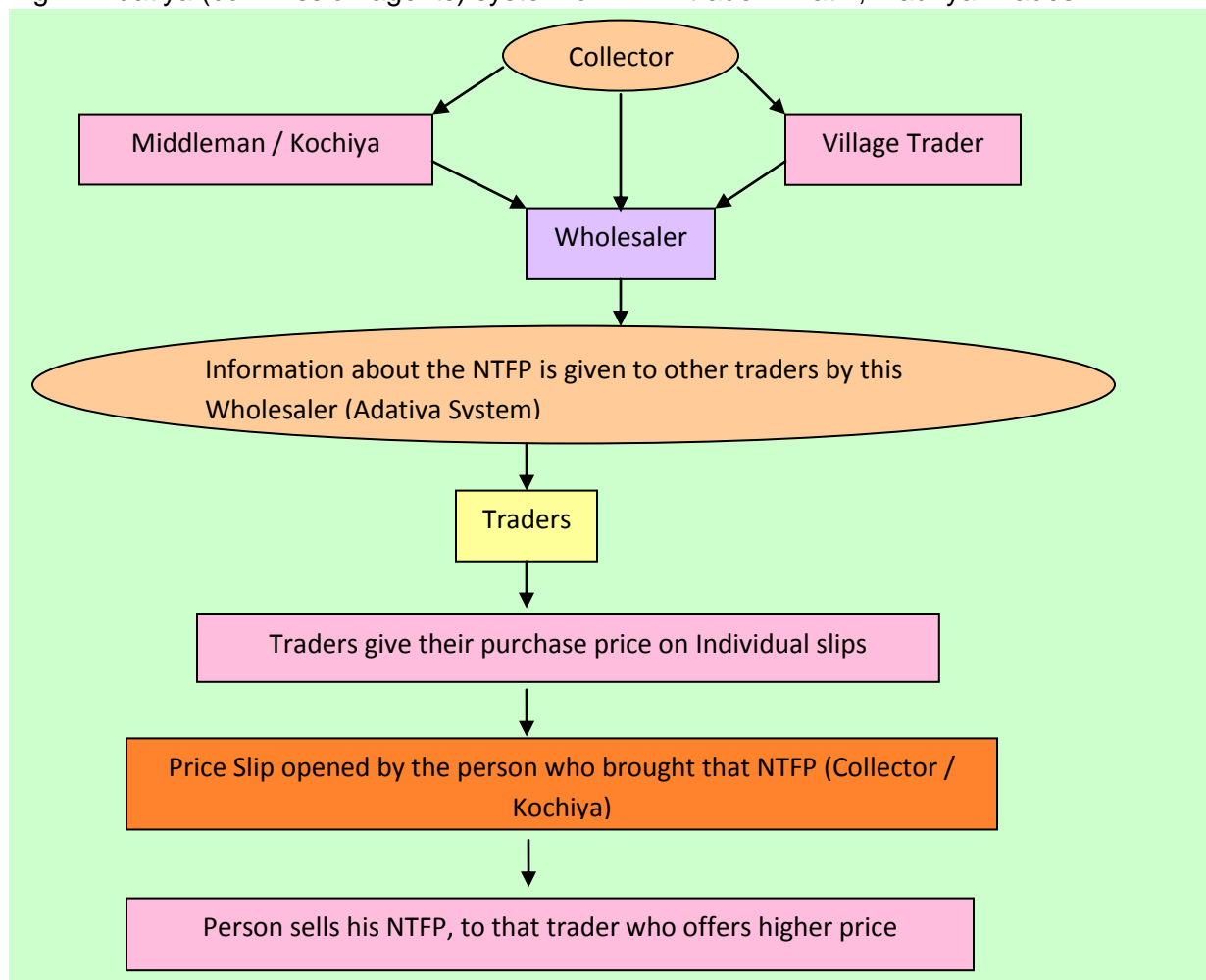
2.1 Complexity of the NTFP Market Structure and Supply Chain

The NTFP market is highly complex with a large number of players at the producer, trader and manufacturer levels. The complexity of the NTFP market is further accentuated because of the different forms of the herbs traded, the lack of proper herb identification and final product classification systems, the lack of governmental control and monitoring of the markets, and an absence of assessment of NTFPs including medicinal plants inventory available in the

forests. Supply of medicinal plants occurs from wild harvest as well as cultivation. As per the study conducted by Yadav and Mishra (2007) in Katni district of Madhya Pradesh there is a special type of trading of NTFP's called *Adatiya* System. In this system the main traders of NTFP do not go to any place for purchase of the forest produce. The Village Trader and Kochiya go to the local market of Katni with their Forest Produces. Village Trader (Kochiya) and collectors rarely go directly to NTFP wholesalers rather they sell to other big traders. These big traders then sell their NTFP collections to the wholesalers.

The next step is that every trader evaluates the NTFP and quotes his own price of purchase on a slip. Then in front of the person (Village Trader and Kochiya), who brings that NTFP, he opens the slip and sees the price given by the Wholesalers and Traders of Katni. Then that person will sell his product to the Trader, who is going to give him more prices. This is called *Adatiya* System. The NTFP market chain is working in this manner in Katni District (Fig. 1).

Fig. 1: *Adatiya* (commission agents) system of NTFP trade in Katni, Madhya Pradesh



Source: From Yadav and Mishra (2007), IIFM study.

The local villagers either consume part of their produce or sell it to local traditional medicine practitioners, local traders, local markets or agents. The middlemen at various levels collect & sell the produce to the next level with the sole objective of making maximum profit in short term (Yadav and Misra, 2012).

Even the largest retailers– who could and do perform some wholesaling functions – are forced to buy medicinal plants from the oligopolistic wholesalers who command high margins. This is a result of the lack of market access, which results in lack of information on the part of these businesses about the source, supply and price of medicinal plants. The issue is magnified at the national level. The NTFP produce is traded in various forms, such as raw, semi-processed or processed, and through various channels; this makes demand assessment at the local level difficult. At the manufacturer or processor level there exist a large number of primary & intermediate processors. Initial processing may be carried out by the collectors or cultivators whereas some intermediate processors buy the herbs from collectors and local traders, process them and sell them to larger manufacturers or at the local markets. The presence of multiple levels of processors and users, traders, manufacturers and exporters combined make the market structure complex and the reliability of data is very low (Yadav and Misra, 2012).

2.2 Lack of Proper Herb Identification and Final Product Classification

A single herb may be identified by different names at different regions and in different languages in different parts of India. This leads to incorrect quantity figures in cases where the local name for each herb is not correctly identified to its equivalent scientific name. The presence of large numbers of species and languages makes the generation of national level statistics a challenge, hence the greater reliance on *estimates* rather than precise data. Development of classificatory codes for herb-based trade could help proper gathering and consolidation of data related to trade in herb-based products.

2.3 Lack of Governmental Control and Monitoring of the Markets

Unlike the control and monitoring mechanisms of the government on production, pricing and supply of the staple food commodities, MAPs are not covered under monitoring mechanisms. Government intervention in developing infrastructure for marketplaces, leading to a competitive market for NTFPs, apart from increasing the NTFPs including medicinal plants trade will also facilitate the monitoring of prices, supply and demand.

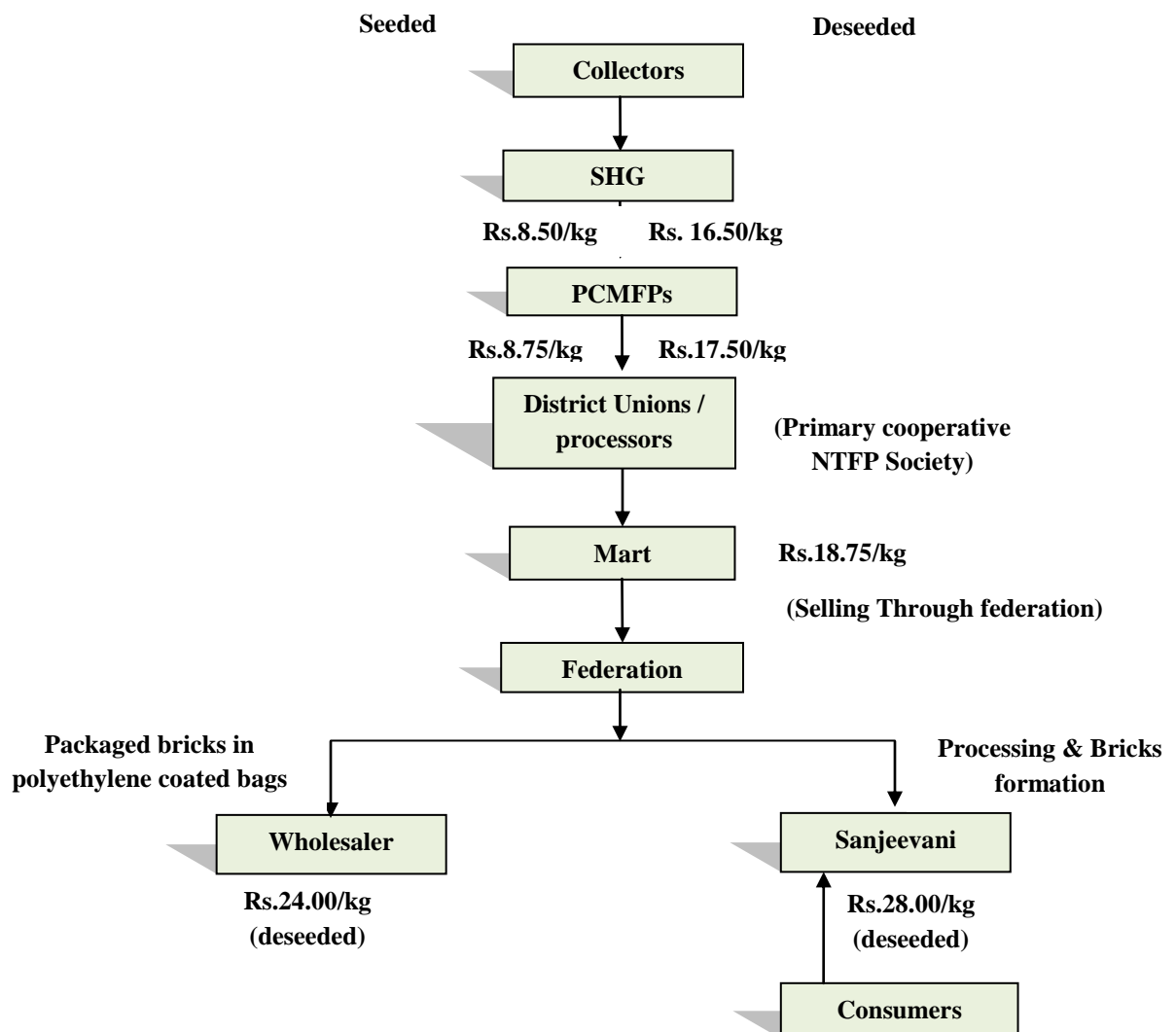
2.4 Absence of Assessment of NTFP Inventory in the Forests

At present, governmental institutions have no system for assessing the forest inventory of NTFPs. Assessment of NTFP inventories; similar to the methods applied to timber, will lead to sustainable use of the forest NTFP resources by means of better policy and planning decisions based on the more reliable data.

3. Suggestions for Policy Intervention

Proper institutional arrangements for procurement, value addition, and marketing of NTFPs can not only ensure sustainable resource extraction but also high-income realization for the tribal collectors. Thus it is desirable to promote infrastructure for storage (including cold storage), processing and organized marketing such as '*Chhattisgarh Herbals*' in the state of Chhattisgarh and '*Vindya Herbals*' in the state of Madhya Pradesh. With appropriate infrastructure and marketing help, the net value realization of the forest dwellers can be improved markedly, so they can also participate in the rising tide of the economy of India (Yadav and Misra, 2010).

Fig. 2: Organized Market Channel (by CG MFP Federation in Chhattisgarh) and Price Spread for Tamarind in Chhattisgarh (2008)



4. Potential Role of a Market Information System (MIS)

Most stakeholders would find it useful to have regular access to information on production trends, prices for specific product lines, product availability, market channel opportunities, and any other information of potential competitive value. The preceding discussion of the present status of information availability and reliability highlights the need for an MIS for the NTFP sector at local, state and national level in India. In the case of staple food commodities and timber the establishment of an MIS has proven effective in providing reliable and consistent information (Yadav and Misra, 2012). The need and potential utility of an MIS for NTFPs is now discussed.

4.1 MIS Application in Eliminating the Demand–Supply Gap

Delay in information transfer from demand side to the supply side can result in time loss in meeting customer demands and/or not fulfilling total demand because of limited availability. Lack of demand information also limits the value realization for producers. Apart from the lack of real-time information there can be other causes for the gap between demand and supply of NTFPs like poor cultivation and collection practices, inefficient processing and storage, and other market imperfections. These include the short-term orientation of wholesalers who attempt to maximize profitability from growing season to growing season (Yadav and Misra, 2012).

4.1.1 Eliminating Poor Cultivation and Collection Practices

This problem by and large exists as a result of a lack of proper knowledge among the stakeholders in the supply side and needs to be addressed. Incomplete knowledge and understanding about the types of plants to be collected, the parts to be collected, and the form in which they are to be collected so as to preserve their active principles all adversely affect supply. A MIS could potentially disseminate this required information to the collectors and cultivators to ensure the quality and quantity demanded. Yet another impact of lack of knowledge is the continuation of unsustainable practices of collection used. According to the CERPA demand and supply study (CERPA, 2001), the supply of some of the medicinal plants is dwindling as the result of unsustainable harvesting practices. That same conclusion was also reached by a study conducted by Assocham (Sharma, 2008). The role of MIS is as a decision support system to make decisions regarding the induction of the plant species in the appropriate danger level (including putting in negative list). The logic of such a decision support system can be based on criteria and indicators for assessing the sustainability of specific medicinal plants. Captive cultivation by industries, where the finished product manufacturer invests in a plantation that produces some of the raw

materials, particularly ones that are limited in terms of supply or which are not allowed to be legally collected from the wilderness. Presently some of the manufacturers are averse to captive cultivation because of limited knowledge and expertise about the species and their characteristics, as well as a lack of market data. Some manufacturers though already have captive cultivation, which can be relied upon. According to one study, manufacturers also require an MIS to provide information regarding species identification (66%), new uses of herbs (68%) and alkaloid analysis (55%) (Majumdar, 2001). The information so provided in an organized manner and at accessible locations can motivate more manufacturers to go for their own captive cultivation, reducing the pressure on the forests. Limited cultivation of medicinal plants as a cash crop by farmers tends to be yet another problem. One course of action would have the Forest Department fix a 'reserve price' for wild collections. The role for MIS lies here in disseminating information regarding the reserve prices set by the Forest Departments. Also, MIS may lead to better interaction between the manufacturers and the suppliers (Yadav and Misra, 2012).

4.1.2 Improving Processing and Storage Techniques

Knowledge about techniques and recent developments regarding the proper handling of perishable herbs, production of herbs with maximum active contents, and minimization of loss of active contents during processing can be best disseminated through an MIS (in printed form where the electronic system is not feasible). This can also enhance the value realization of the suppliers.

4.1.3 Removing Market Imperfections

Demand and supply side imperfections can be dealt with by the real-time market information provided by an MIS along with the additional information regarding cultivation technology, species recognition and by promoting sustainability measures. Another market imperfection of the marginal-cost pricing system can be solely attributed to the presence of large numbers of middlemen between the collector/cultivator and the end-user, who block the price-related information for their own benefit. Implementation of MIS will lead to flow of data like demand and price changes to the collectors/cultivators and other recognized stakeholders. This will result in a transparent and demand-pull based supply chain, ensuring a due share of benefits to the primary collectors/cultivators.

4.2 MIS Application in Generating Awareness about Quality and Property Rights

The quality of raw material or the resultant final product is a low priority for some of the medicinal plant industry stakeholders. Though the product manufacturers tend to be most concerned about the quality of the inputs, they are not able to maintain quality. With the industry growing at 20%, and demand exceeding supply, manufacturers are more inclined to meet the growing demand for the final product without paying much attention to raw material quality. As a result of the large number of collectors and middlemen, with a high degree of variability between them, the quality concerns of the manufacturers are difficult to implement at the best of times. Removing market imperfections through smooth flow of information between the collectors/cultivators and the manufacturers can provide a key to overcoming poor quality problems (Yadav and Misra, 2012).

4.3 MIS Support in Documentation of Traditional Knowledge

In India traditional knowledge of use of plant-based medicines/formulations has been well accepted in various sections of society but such knowledge has not been well documented. This vast domain of knowledge lies scattered among practicing *vaidyas* (traditional health practitioners/healers), researchers and tribal people, and the documentation of this is a mammoth task. Although some of it is documented in ancient texts, a significant portion of this knowledge base has been passed on within families and not documented appropriately. This has resulted in the degradation of and restricted growth of the traditional knowledge and could benefit from proper documentation. Apart from the traditional uses, there are uses devised by newer practitioners with success. The continuous documentation of such new uses could be the dynamic part of a resource building for the consumers as well as manufacturers, which will ensure future sustainable demand for herbal products. An MIS can be the ideal platform for housing such information as well, and can be accessed by all the stakeholders of the medicinal plant industry (Yadav and Misra, 2012).

4.4 MIS Application in Sustainable Resource Usage

The data based on demand, uses and price of different NTFPs and their dissemination to various stakeholders will provide incentive to manage resources in a sustainable manner for long-term economic returns capability. Similarly the information on better storage management and processing technologies will help to reduce waste and encourage better use of the resource. MIS application can help to develop an organized market structure that would be transparent and more effective. Organized markets are generally more stable and are considered to be beneficial to all stakeholders (Yadav and Misra, 2012).

4.5 MIS Application for Better Economic Returns to Collectors/ Cultivators

The UN Conference on Environment and Development held in 1992 has already recognized the role of Non-Timber Forest Products in sustainable management of forests. One of the important steps in realizing these prospects is to ensure better economic returns to collectors of medicinal plant parts. Middlemen often exploit collectors' ignorance of market factors and claim a disproportionate share of value for themselves. With increased availability of market information, producers will have the potential to strengthen their position in markets and obtain better value realization. This should reduce their incentive to overharvest, and practice sustainable harvesting techniques (Yadav and Misra, 2012).

4.6 MIS Application in National Trade Database Creation and Policy-making

The adoption of an MIS structure at national level along with the local and state level MIS, will enable the establishment of a national-level database on the supply, demand, prices and uses of NTFPs including medicinal plants. Such a database with proper management will help to make suitable policy changes at both national and state levels. Such an enabling policy framework will further the development of the NTFPs sector (Yadav and Misra, 2012).

5 Value additions - an option for fine-tuning marketing of NTFPs

Following the international development only a few developing countries have had the resources to carry out large-scale, commercial processing of NTFPs. Historically, most NTFPs have been exported to industrialized countries where they are processed as final products. However, with inexpensive equipment and small-scale operations, local processing of selected NTFPs can be environmentally and economically viable. In India the local people uses simple techniques based on their experience for NTFP collection without conversant from the ultimate end use. Many a times the competition in collection of NTFP leads to pre-matured plant parts with or without destructive harvesting techniques.

The traditional use of an herbal medicine is usually a part of culture. Communities, which possess such knowledge should be involved with research objectives, research planning and be informed of the results generated. They may be imparted adequate training for conservation and sustainable use of medicinal plants.

A little intervention in terms of value addition options will not only fetch the better price but also ensure quality products.

5.1 Collection time

The unhealthy competition among NTFP gatherers make them ignorant of the appropriate stage and season of NTFP collection. Lack of precise information on the best season and proper methods of collection, their processing, drying, grading, storage, transport and such other factors stood in the way of proper exploitation and utilization of number of products. Collections of NTFP especially the medicinal plants require scientific approach. It is necessary to understand in which part of the plant or at which stage of its growth medicinal constituents are high. If the collection is made prematurely or is delayed these medicinal constituents decrease, affect the potency of the drug. With the advancement of science and technology more and more species may come into prominence and even present products may acquire greater importance in future. After a period of disregard and decline, these traditional systems of 'green medicine' are, once again, back to the center-stage of our health-care programmes. There has been a steady increase in demand for such medicine and these systems have now regained respectability among the scientific community, the world over. Aonla (*Emblica officinalis*) is collected green for sale to manufacturers for the preparation of Chyawanprash. Aonla which is collected later in the season is normally dried for powdering and for making of the products. A significant increase in the level of returns may be achieved by drying Aonla collected in February when the fruits are mature. The black Aonla produced as a result of collecting immature fruit and then drying fetches between Rs 600 - 700 per kg. Mature fruit on the other-hand fetches Rs 800 - 900 i.e. 1.3 times more than the immature fruit (Ram Prasad, 1999).

In case of Mahua (*Madhuca latifolia*) flower the time of collection can be segregated in three stages. The traditional Mahua flower collectors have clear understanding of these stages. Mahua flower collected in the initial stage, which last for about 5-6 days retains only about 25% dry weight. However, the flower collected in the second stage which locally called as *Bherwari* is quite fleshy and retains about 50% dry weight. The flower collected in the third stage locally called as *Kanwa* is more or less similar to the first stage Mahua flower.

5.2 Grading

The NTFPs especially the plant based, would never be in uniform in terms of morphologically and genetically. The diversity may be observed within the patch of the same forest area. The time of ripening of part such as fruits are different in the same tree. The little interventions in segregating the quality of NTFPs may

result in remunerative price as well as supply of the quality product to the user/market. The grading will facilitate segregation of edible and non-edible NTFPs like in case of gums, some gums are edible and useful as medicine though some gums are non-edible. The grading of the gum even for the same species with the percentage of impurities fetches different price in the market.

5.3 Primary processing

Returns from NTFPs can be enhanced by taking certain measures during collection, processing, extraction, grading and storage as well as timely marketing. High demand for guthly (kernels enclosed in their hard testa) often leads to harvesting of the fruits at an immature stage. The kernels are then small and the guthly lighter. As a result, the rejection percentage increases and the produce as a whole fetch a low price. As a value adding option, collection should be delayed till such time as the fruits are fully matured. Often the guthly is not properly washed and such produce fetches a lower price. After washing, the current practice is to sun dry for 2-4 hours. This is often insufficient leaving the guthly moist. It is essential that proper drying is carried out. Another step in adding value arises at the stage of extraction of kernels. Crude methods such as hammering invariably results in breakage of kernels. Manually driven mills worked by women who also sieve and winnow the produce cause damage to kernels varying from 10-15%. Power driven kernel extractors are also available. These work 3 to 4 times faster than hand driven ones and the damage to kernels is negligible. Grading of kernels is of great importance. Bigger sized kernels are higher priced than medium or small sized ones. A study carried out on graded material with traders showed that small - sized chironjee sells at prices ranging from Rs. 75 -100 per kilogram, medium size clones average Rs. 150 and large seeds Rs. 200-250 per kg.

5.4 Pulverization

Another possible method of adding value involves powdering using a small pulveriser. This will also reduce the cost of transportation. Ram Prasad, 1999 stated that the price for powdered Aonla is about Rs. 1400 per kg. Likewise the fallen un-ripen Mango found in forest areas can be collected and processed for pulverizing may fetch better price in market.

6. Successful case studies

There are number of agencies both at national and state level mandated to help develop and facilitate marketing of NTFPs. Some of these include The Tribal Cooperative Marketing Development Federation of India Limited (TRIFED), National Medicinal Plant Board (NMPB), Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) at the national level and Girijan

Cooperative Corporation (GCC), MP MFP Federation, Chhattisgarh MFP Federation, Tribal Development Cooperative Corporation (TDCC).

6.1 Tribal Cooperative Marketing Development Federation of India Limited (TRIFED)

TRIFED aims to serve the interests of its members in more than one State for the social and economic betterment of its members by conducting its affairs in professional, democratic and autonomous manner through self help and mutual cooperation for undertaking marketing development of the tribal products. TRIFED engaged in imparting trainings on various issues of NTFP. The TRIFED publishes MFP commodity market rate regularly. Collection of NTFPs including medicinal plant parts are labour-intensive. Majority of times the NTFP gatherers are not receiving fairly remunerative price of their collected products. TRIFED is now attempting to decide for securing Minimum Support Price (MSP) for various NTFPs. This will at least facilitate to get remunerative price of NTFPs.

6.2 Tribal Development Cooperative Corporation (TDCC)

The tribal areas, though widely known as regular source for most of NTFP commodities and the tribes depend on NTFP for their sustenance, there is no substantial market development for the NTFPs. Open market forces are playing havoc with tribal economy. The TDCC, which is one of the main actors in the NTFP trade in Orissa, suffers on account of high managerial overheads.

The TDCCs continue to have a significant role in the tribal economy as they procure major quantities brought by the tribes offering best possible prices irrespective of their demand and supply positions even in extreme market conditions. The trading of NTFP commodities by TDCCs is expected to achieve:

- ✓ Monetary inflow into tribal economy
- ✓ Significantly higher prices and income for NTFP collectors.
- ✓ Gradual stabilization of prices in the market preventing all vagaries of supply and demand conditions.

In order to protect the interest of NTFP collectors and provide remunerative purchase prices, the TDCC needs to maintain the price line without making downward revisions in the purchase prices even when there is a significant downward trend so as to ensure steady income to all the tribal NTFP collectors across the state. The resultant loss is being borne by TDCC from thin margins generated on sale of other NTFP commodities.

6.3 Girijan Cooperative Corporation (GCC)

TDCC's counterpart in Andhra Pradesh, GCC is able to play a pivotal role in providing marketing support to the primary collectors; while TDCC in Orissa is plagued with losses and has come to acquire the reputation of being one of the biggest exploiters of tribals. But theoretically an organization like TDCC can play

an important role in providing marketing support and market information (though not as the monopoly procurer of NTFP items) (<http://planningcommission.nic.in/reports/articles/ncsxna/index.php?repts=vasundhra.htm>).

A glance at the prices paid by Girijan Cooperative Corporation (GCC) would reveal that the policy of TDCCs is to ensure reasonable prices and insulate the tribes from wild market fluctuations. The private traders purchase only certain NTFPs in a limited quantity of selected quality by offering occasionally higher prices. The purchase prices paid for the 25 NTFP items handled by GCC would give us a clear picture on market trends and fluctuations in the prices of NTFP. There are about eight NTFP items like gums and resins, tree born oil seeds and honey, shikakai, where GCC can expect margins. Whereas bulk commodities like tamarind, myrobalans, marking nuts, soapnuts, and gum dikamal, the GCC has to react according to market fluctuations either by downward revision of purchase prices or by incurring losses.

6.3.1 Procurement of tamarind

Tamarind is the single largest bulk NTFP commodity, and as many as 100 000 families of coastal districts of Andhra Pradesh depend on tamarind collection for their livelihood. Hence GCC procures as much as possible and tries to pay remunerative purchase prices year after year and make efforts to dispose stocks through negotiations, auction cum tenders, value addition for retail sales, etc. (Table 4).

Table 4: Seeded tamarind procurement and average purchase prices for 1995 to 2003

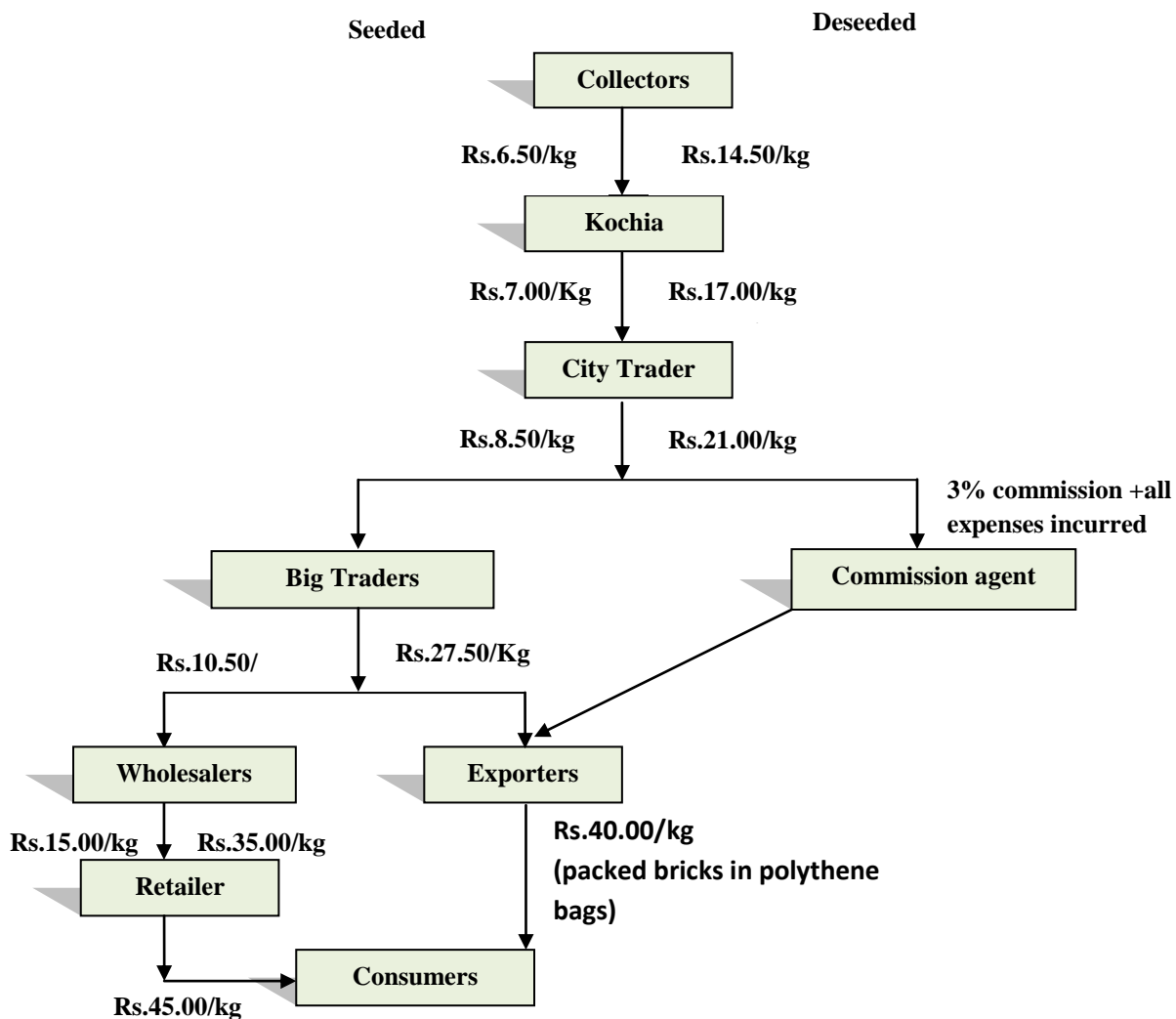
Year	Quantity (Qtls.)	Value (100 000 Rs)	Average purchase price (Rs)
1995	29 900	130.14	433
1996	56 906	293.60	515
1997	65 038	330.60	516
1998	33 610	183.62	546
1999	44 833	317.29	707
2000	51 500	385.92	750
2001	146 787	846.74	578
2002	33 731	124.25	368
2003	50 000	200.00	400

Source: Vidya Sagar, 2003

The above figures clearly show GCC's commitment to pay remunerative purchase prices year after year up to year 2000. During 1999 and 2000 seasons, GCC has entered into an advance tie up with Tribal Marketing Federation (TRIFED) for marketing of tamarind and paid Rs. 650 to 750 per quintal in 1999 and 2000 seasons. Despite a glut in market for tamarind, in order to maintain the price stability, GCC has paid around Rs. 600 per Quintals during 2001 season and procured 146000 Quintals of seeded tamarind and efforts are being continued to dispose of the stocks. During subsequent years, GCC was forced to revise purchase prices downward during 2003 season to act according to market conditions and the tribal communities were deprived of support prices.

A study conducted by Yadav and Misra (2008) focused on NTFP based livelihood potential in the states of Madhya Pradesh, Chhattisgarh, and the Vidarbha region of Maharashtra. These three states are characterized by the presence of a large tribal population, dense forest covers, and therefore substantial availability of NTFPs. These regions also have large sections of their populace living in poverty. Market channel for Tamarind is presented in Fig. 3 (Yadav and Misra, 2010).

Fig. 3: Open-Market Channel and Price Spread for Tamarind in Chhattisgarh (2008)



Source: Yadav et al. 2008.

Three study districts selected in Andhra Pradesh together contribute about 13.2% to the total human population of the state (75.73 million), with district Adilabad contributing the least with 3.3%. From socio-cultural point of view, district Visakhapatnam has a higher diversity of tribal groups compared to rest of

the two districts. Most of these tribal groups earn their living through marginal agriculture, daily labor and collection and sale of forest produce. On an average each land owning family owns about 2-3 acres of agriculture land, which is largely rainfed and, therefore NTFPs plays an important sustenance role in the economy. Of the total 37 NTFP species found in the sample, 28 species are being marketed in the study districts. In the entire state, three main players operate for marketing of NTFPs, they are GCC, Forest Department, and the private traders. Among these, GCC trades in 19 of the NTFPs of which 16 are notified. The non notified NTFPs purchased by GCC are Gargayas (*Garuga pinnata*), Karka (*Terminalia chebula*) and Lac (*Schleichera oleosa*). Forest department deals with collection and trade of beedi leaf (*Diospyros melanoxylon*). Private traders are involved in the trade of 23 NTFPs of which 15 are notified. The notified NTFPs traded by Private traders are Adda leaf (*Bauhinia vahili*), Chirongi (*Buchnanian lanzan*), Karinga gum (*Gardenia gummifera*), Tapsi gum (*Sterculia urens*), Hill broom (*Thysanolaena maxima*), Marking nut (*Semicrapus anacardium*), Kanuka (*Pongamia pinnata*), Mahua (*Madhuca indica*), Mustigenjelu (*Strychnos nuxvomica*), Narmamidi (*Litsea monopetala*), Sheekakai (*Acacia concinna*), Soapnut (*Sapindus emarginatus*) Tamarind (*Tamarindus indica*), Aonla (*Phyllanthus emblica*) and Myrobalans (*Terminalia bellerica*). The presence of private traders exclusively is seen for eight NTFPs. At the same time, in the group discussions it was revealed that the share of produce sold to these private traders is significantly low as compared to GCC when both are involved in the marketing.

6.4 National Medicinal Plants Board (NMPB)

India has 15 Agro-climatic zones and 17000-18000 species of flowering plants of which 6000-7000 are estimated to have medicinal usage in folk and documented systems of medicine, like Ayurveda, Siddha, Unani and Homoeopathy. About 960 species of medicinal plants are estimated to be in trade of which 178 species have annual consumption levels in excess of 100 metric tones.

Medicinal plants are not only a major resource base for the traditional medicine & herbal industry but also provide livelihood and health security to a large segment of Indian population. The domestic trade of the AYUSH industry is of the order of Rs. 80 to 90 billion (1US\$ = Rs. 50). The Indian medicinal plants and their products also account of exports in the range of Rs. 10 billion.

There is global resurgence in traditional and alternative health care systems resulting in world herbal trade which stands at US\$ 120 billion and is expected to reach US\$ 7 trillion by 2050. Indian share in the world trade, at present, however, is quite low.

The National Medicinal Plants Board (NMPB) set-up in November 2000 by the Government of India has the primary mandate of coordinating all matters relating to medicinal plants and support policies and programmes for growth of trade, export, conservation and cultivation. The Board is located in the Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homeopathy (AYUSH) of the Ministry of Health & Family Welfare.

6.5 Ayurveda, Yoga and Naturopathy Unani, Siddha and Homoeopathy AYUSH

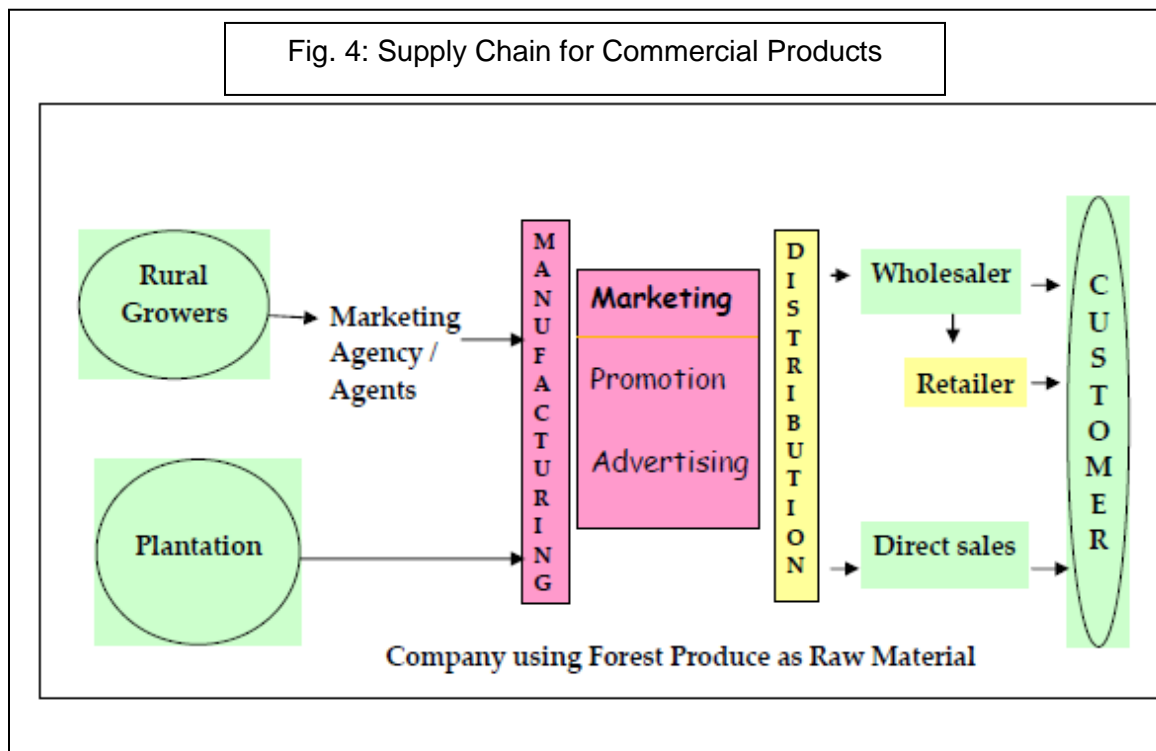
The development and promotion of Yoga and Naturopathy could not be attained as expected at par with Ayurveda, Unani, Siddha and Homoeopathy due to huge dearth for qualified manpower. However, in the recent years, many NGOs and Voluntary Organizations have come up to establish Yoga and Naturopathy Health Homes as well as Degree Colleges. At present, there are 12 such Colleges in India, three in Karnataka affiliated to Rajiv Gandhi University of Health Sciences, Bangalore; four in Tamil Nadu MGR Medical University, Chennai; two in Andhra Pradesh, University of Health Sciences, Vijayawada; one in AYUSH University, Raipur, Chhattisgarh, one in Bharkatulla University, Bhopal & Ayurveda University, Jamnagar, Gujarat. The approach of this medical education course not only encompasses Yoga and Naturopathy philosophy but also emphasizes the clinical tools and modalities necessary to establish a successful practice. These Colleges are endowed with theoretical, practical, clinical facilities which help to train the students multi-dimensionally. In this course, the students are offered to study diverse holistic treatment modalities which are totally drugless and natural in all aspects.

It is quite interesting that many of the Modern Medical Institutes of the country took a serious effort to prove the efficacy of Yoga and its various aspects. Accepting Yoga as a tool for balanced and all-round development of human personality, some of the Universities have established Yoga Department, where Teacher's Training Programmes of one year duration are going on. There are 18 Universities which impart Certificate, Diploma and Degree courses in Yoga. UGC is also promoting Yoga by financing the Universities to start the Yoga courses in the Universities. Some Universities are imparting Yoga education ranging from Certificate to Ph.D level courses. Many Universities are likely to start Yoga Department in the years to come. In many of the foreign Universities, the faculty of Yoga has been established and the research work is in progress. Some of the States are proposing to adopt Yoga in their educational curriculum. About one thousand Yoga teachers have been appointed in different Schools of Kendriya Vidyalaya, Delhi Government and New Delhi Municipal Corporation. There are many countries other than India where Yoga is being practiced regularly for treatment of psychosomatic disorders.

It is quite encouraging to know that in many of the western countries, the education of Naturopathy is greatly emphasised and due recognition has been given. There are several Colleges in various parts of USA, Germany, Britain like National College of Naturopathic Medicine, Oregon and British College of Naturopathy and Osteopathy, London.

6.6 M.P. State Minor Forest Produce Trading & Development Co-operative Federation (MP MFP Federation) - Vindhya Herbals

MP MFP Federation is also processing & marketing herbal products & honey under the brand name "Vindhya Herbals". A processing & research facility "Minor Forest Produce Processing & Research Centre" (MFP-PARC in short) has been established at Van Parisar, Barkheda Pathani, Near BHEL, Bhopal. In addition to MFP-PARC, processing units are also working at Rehti (District Sehore), Barman (District Narsinghpur), Katni, Panna & Dewas, These units are also producing herbal products for "Vindhya Herbals" brand. A herbal extraction plant is also



coming up at Chhindwara.

Madhya Pradesh Khadi and Village Industries Board is a statutory body. The Board provides the assistance for purchasing the raw material to the artisans and production centers, so that, there is a regular increase in the production and regular employment is available to artisans. For selling the products, produce by the rural beneficiaries / departmental centers of state, KVIB provide marketing

assistance through sales counter. KVIB also provides Assistance for attractive packaging, Quality control and standardization. Which help the beneficiaries for regular employment. The KVIB launched a brand name 'Vindhya Valley' with quality product. The Fig. 4 & 5 depicts the supply chain of commercial and Vindhya Valley. The Fig. 6 shows distribution channel for designed for Vindhya Valley products.

Fig. 5: Supply Chain for Peoples' Products (Vindhya Valley)

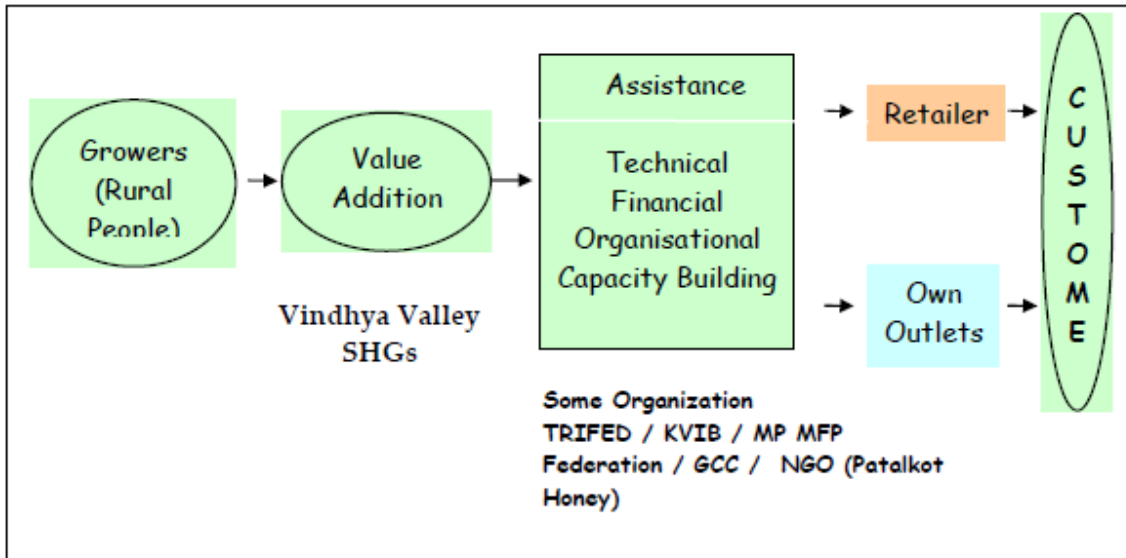
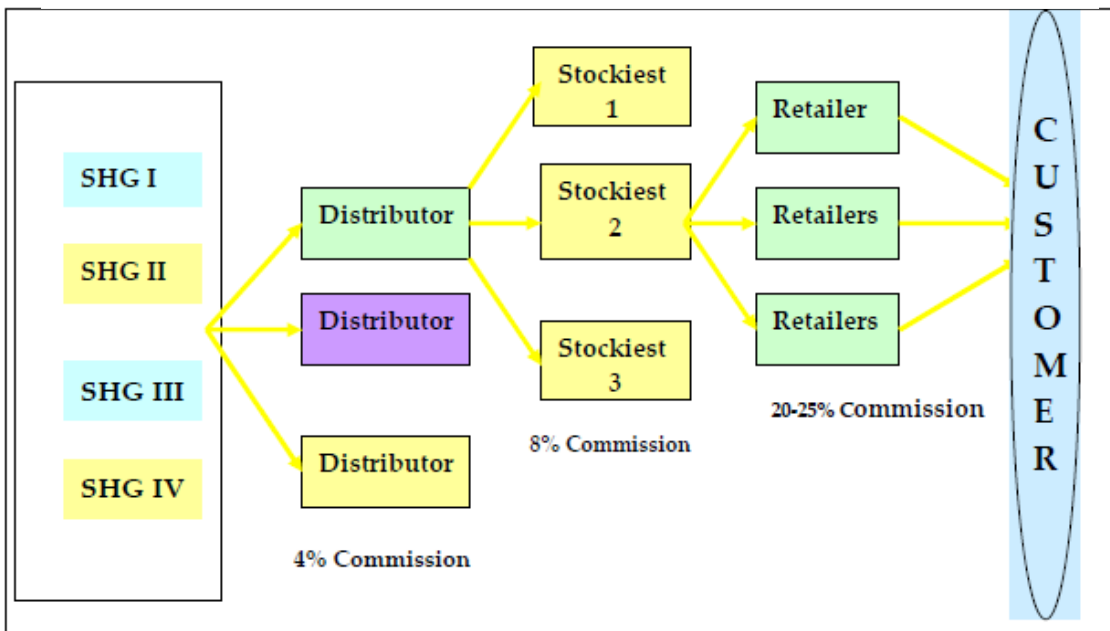


Fig. 6: Distribution Channel Designed for Vindhya Valley



6.7 CG MFP Federation - Chhattisgarh Herbals

Nationalized Minor Forest Produce are the one for which the trade monopoly lies with the state government or its authorized agent CG MFP Federation {Chhattisgarh State Minor Forest Produce (Trading & Development) Co-Operative Federation, Ltd.}. The collection and sale of nationalized forest produce is done by CG MFP Federation only. The Federation sells the collected produce through tenders and auctions on behalf of the state govt. The state monopoly has been created to ensure payment of appropriate price to the rural collectors of forest produce. Tendu leaves, Sal seed, Harra and Gums (grade I & II) are the nationalized non-wood forest produce in the state. Chhattisgarh Tendu Leaves (Vyapar Viniyaman) Adhiniyam, 1964 and the rules made there under regulate the trade of tendu leaves and Chhattisgarh Vanopaj (Vyapar Viniyaman) Adhiniyam, 1969 and the rules made there under regulate trade of Sal seed, Harra & Gums (grade I & II). 6 NTFP Marts have been established in various parts of the state for the purchase and sale of Raw Herbs/ Herbal Product at a fixed price. The Federation has created a chain of retail outlets under the name of Sanjeevani throughout the state to promote retail marketing. The Organization sells the products under brand name "Chhattisgarh Herbals".

6. Conclusion

The market for NTFPs in India is a closed market with little transparency. Current practices lead to collecting and harvesting techniques that are not sustainable, and more so given the rapidly increasing demand for natural products. One of the reasons for 'overharvesting' and other unsustainable techniques is because of the low value realization by the primary collectors / harvesters who live in the vicinity of forests. Value realization for them can be enhanced by removing market imperfections that result in benefiting the large consumers and the middlemen, at the cost of the primary collectors / harvesters. Even policy-makers and implementation agencies, including NGOs, can benefit significantly from the better availability of information.

An open market is a market where market factors such as demand, supply and quality determine the price of the products traded in the market, with each market player competing with others.

Therefore, the primary objective of an organised and formal market may be to transform the market from a closed market to an open market where each stakeholder, whether an established one or a new one, gets a level playing field in terms of market information, which he uses to market his products in a competitive manner. Such competitiveness by the power of knowledge/information may benefit all the stakeholders at all levels of the supply chain. As the majority of market supply is based on the forest produce, it is equally important for the organised to monitor the status of the forest resources

to cater to the needs of the market in the long run. This brings in the issue of sustainable harvesting, constant monitoring of resources, and presentation of resource usage information to the policy-makers and decision-makers so that timely action can be taken to ensure sustainable availability of NTFPs to the market. The policy approach for augmentation of supply position and sustainable use of NTFPs should include a combination of institutional, economic, administrative and legal agenda.

While the increasing demand for herbal products will put further pressures on the already overexploited forest resources, it is high time to promote cultivation of important NTFPs on the farm and on degraded lands. This alternative supply will not only reduce pressures on the collection from the forests but will also help in standardization of the quality of raw materials, which has been one of the major obstacles in establishing the efficacy and credibility of the traditional health product formulations. The setting up of the national medicinal plants board by the government of India in 2002 was certainly a step in the right direction but much more needs to be done to collate all the available information regarding medicinal plant development in the country so as to obtain a comprehensive overview.

However, there is strong need for setting up of National Board for NTFPs as an apex body to provide guidelines for promotion and sustainable management of NTFPs in the country. This will provide the necessary insight for coordinated and effective action to cope with the expanding global NTFP market. Such an overview could form the basis of a renewed development of India's NTFP sector, and a strategic exploitation of its comparative advantage in the global market on a sustainable and equitable basis.

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