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Status of Forest Products Production and Trade

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Abstract

There has been increasing trends in the trade of forest products particularly that of Non-Wood Forest Products (NWFPs). 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. 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. The present study based on secondary data related to availability, production, marketing and the dependency of rural population on forest products. The study intended to understand the production and trade status of forest production and how these products can be used in an improved way to reduce poverty. Thus, the present study endeavored to assess the trade status of forest products and their role in economy at global, national level as well as regional level.

Introduction

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-wood 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-wood forest products. Globally, 4 percent of the world's forests are designated for the provision of social services (FRA, 2010).

Total Production and Trade in forests products- International and National (India)

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>)

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Table: 1 International and National Import and Exports Value (1000 US\$) of total 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: FAOSTAT, 2013

Global trade (exports) in primary wood and paper products in 2006 excluding intra-regional trade is 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)

Global Production and Trade in Timber Products

Global production of wood is estimated at 3469 million M3 in 2011, of which 1891Mn Cu.m is fuel wood and 1578 Mn cu.m is industrial roundwood. While fuel wood is consumed domestically, almost 10 percent of (115 Mn cu.m) is traded internationally. Out of 406 Mn cu.m sawn wood produced globally 120 Mn cu.m enters global trade. Similarly out of 288 Mn cu.m production of wood panels, 71 Mn cu.m is traded globally. 403 Mn cu.m paper and paperboard is produced of which 112 Mn cu.m enters global trade. The total value of global trade in forest products is estimated at \$US 246 billion in 2011 by FAO (FAOSTAT, 2013).

Production of tropical industrial roundwood (logs) in ITTO member countries increased from 40.4 million m³ in 2009 to 141.4 million m³ in 2010, which dropped to 137.7 million m³ in 2011. Four countries – Indonesia, Brazil, India and Malaysia – accounted for almost three quarters of total production in 2010 and the bulk (63 percent) of production was in the Asia-Pacific, of which with most of the decline attributed to an 18 percent drop in Malaysia’s production.

Table: 2 Change in Production and Trade of Forest Products in 2011 compared to the years 2010, 2000 and 1980

Items	Unit	Production 2011	Change (in %) compared to:			Exports 2011	Change (in %) compared to:		
			2010	2000	1980		2010	2000	1980
			Roundwood	million m ³	3469		2	1	11
Wood fuel	million m ³	1891	1	4	12	8	19	112	
Industrial roundwood	million m ³	1578	3	-3	9	115	10	1	23
Sawnwood	million m ³	406	4	6	-3	120	5	5	71
Wood-based panels	million m ³	288	3	55	184	71	1	24	334
Veneer and plywood	million m ³	97	1	46	120	28	7	25	242
Particleboard & fibreboard	million m ³	191	5	60	233	43	-2	24	423
Wood pulp	million tonnes	173	1	1	38	53	7	39	152

Other fibre pulp	million tonnes	18	-3	17	145	1	13	76	161
Recovered paper	million tonnes	211	1	47	317	59	8	140	976
Paper & paperboard	million tonnes	403	1	24	138	112	0	14	221
Forest Product's Value	US\$ billion					246	10	70	334

Source: FAOSTAT, 2013

The proportion of tropical roundwood to total industrial roundwood production from all forests in ITTO member countries was 13 percent in 2010 (ITTO, 2011).

Table: 3 Global status of Timber Production and Trade (in millions) – 2010

Particulars		Production	Imports (m ³)	Imports (\$)	Exports (m ³)	Exports (\$)
Logs	All	1126.3	109.9	12930.9	61.1	8015.5
	Tropical	141.4	14.1	4186.9	11.7	2877.1
	(%)	(13)	(13)	(32)	(19)	(36)
Sawnwood	All	303.3	87.9	23,629.5	86.8	22024.9
	Tropical	43.2	8.1	3622.5	10.2	3238.3
	(%)	(14)	(9)	(15)	(12)	(15)
Veneer	All	10.0	2.1	2346.1	2.0	2163.0
	Tropical	3.9	0.7	594.3	0.7	672.5
	(%)	(39)	(35)	(25)	(35)	(31)
Plywood	All	78.1	18.4	9197.5	20.9	10920.5
	Tropical	18.9	6.8	3467.6	7.5	3794.3
	(%)	(24)	(37)	(38)	(36)	(35)

Source: ITTO, 2011

In the Africa region, the proportion of all logs produced that were converted domestically to further processed products has increased from 81 percent in 2009 to about 84 percent in 2011, reflecting increasing government restrictions on log exports in many ITTO member countries. Tropical sawnwood production by ITTO members increased slightly in 2010 to 43.2 million m³ (ITTO, 2011). Regionally, Asia-Pacific and Latin America/Caribbean each accounted for approximately 44 percent of production in the ITTO producer regions, while Africa accounted for the remainder. Brazil accounted for 37 percent of production in 2010 while all other major producers were located in the Asia-Pacific region (India, Malaysia, Indonesia and Thailand). Tropical veneer production in ITTO member countries estimates as 3.9 million m³ in 2011. Tropical plywood production in ITTO producer countries has dropped to 10.9 million m³ in 2011. Tropical plywood production in ITTO consumer countries increased in 2009 to 7.5 million m³ and remained at that level to 2011. The other major producers of tropical sawnwood in 2010 were India (4.9 million m³), Malaysia (4.3 million m³), Indonesia (4.2 million m³) and Thailand (2.9 million m³) (ITTO, 2011).

China and India continued to dominate trade in tropical roundwood imports and their share of total ITTO imports has accounted for over 85 percent of tropical roundwood imports in 2010, compared with 22 percent in 1995, when Japan was the major importer. ITTO imports of tropical plywood rose 19 percent in 2010. The bulk (over 70 percent) of the global tropical sawnwood trade lies within Asia. Thailand was the second largest tropical sawnwood importer in 2010, with more than 92 percent of her imports coming from Laos and Malaysia. Taiwan POC's imports rebounded strongly in 2010, by nearly 90 percent to 333 000 m³ with most of the supply (almost 80 percent) from Malaysia (ITTO, 2011).

Production and Trade in Timber Products in India

The total production of timber in India from forests is reported at an average 2.3 million cu.m in 2010 while the total estimated production of timber from trees outside forests in the country is about 44.3 million m³.

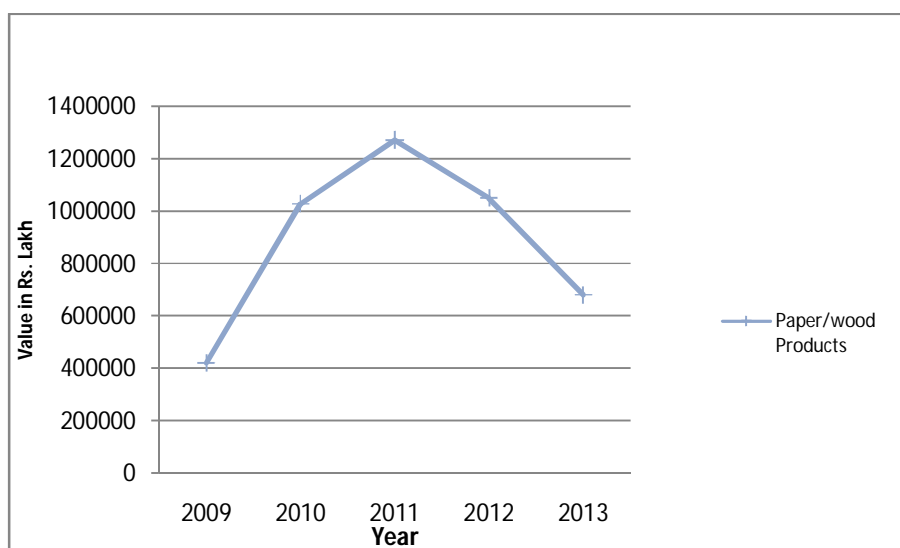
Table 4: Import Status of Forest Products at National Level

Year	Wood based products	Pulp & Waste Paper		Newsprint		Paper Board & Manufacturers		Printed Books, Newspapers, Journals	
	Value (in Rs. Lakhs)	Qty (in Ton)	Value (in Rs. Lakhs)	Qty (in Ton)	Value (in Rs. Lakhs)	Qty (in Ton)	Value (in Rs. Lakhs)	Value (in Rs. Lakhs)	Total Value (in Rs. Lakhs)
2009	523983.09	2060649	286350.42	611685	160649.44	599510	369855.81	171231	93241024.9
2010	912572.75	3586497	600749.91	1176592	338468.2	2922159	538640.29	192515.79	146315258
2011	1052177.67	2719335	576914.27	1341122	452626.83	1215162	726163.15	331669.35	356696711.1
2012	1341148.7	3305663	687136.11	1237076	443006.19	1301780	818195.41	369249.68	260742436.1
2013	875756.88	2097320	439976.97	733776	258106.13	881644	517338.41	187809.61	159965566.5

Note: Import data for the year 2009 is the sum of nine calendar months i.e. from April to Dec and for the year 2013, it is the sum of seven calendar months i.e. from January to July

Source: Computed from Data from the Directorate General of Commercial Intelligence and Statistics (DGCI&S), Kolkata

Table 4 depicts the data on imports of forest products, which shows that India imports maximum in the category of wood based products followed by Paper Board, Pulp & Waste paper and Newsprint in terms of value.



Source: Computed from Data from the Directorate General of Commercial Intelligence and Statistics (DGCI&S), Kolkata

Figure 1: Export status of Paper and Wood Products at National level

The wood and wood products imports to India have gradually increased since 1998 and have reached 6.3 million cu.m in 2011 with a total import value of Rs 9800 crores. Though wood is imported from about 100 countries, six countries namely Malaysia, Myanmar, New Zealand, Ghana, Ivory Coast, and Gabon constitute bulk of the timber imports to India (about 80 percent). Teak constitutes about 15 percent of total timber imports to India and the major

teak exporting countries to India include Myanmar, Ivory Coast, Ghana, Ecuador, Costa Rica and Benin.

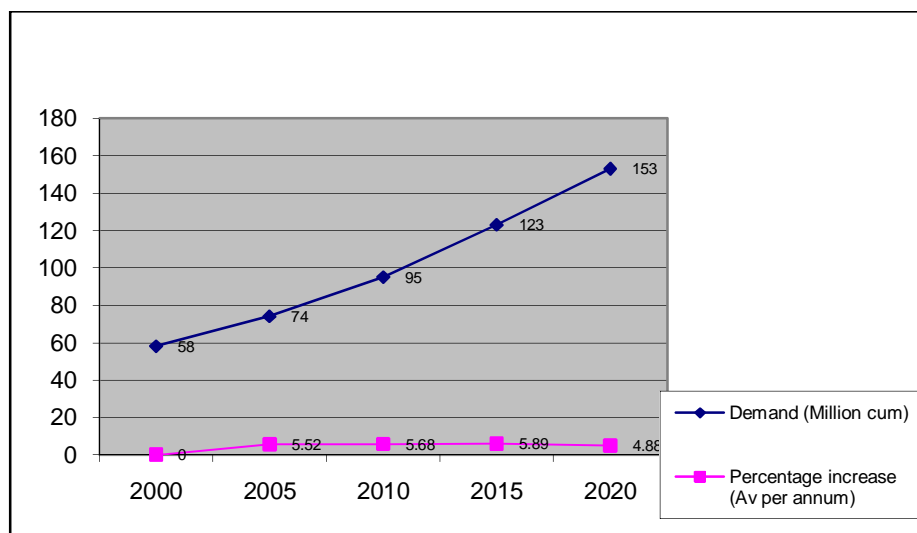
Table: 5 Official Production and imports of Timber from forests in India (in '000 m³)

Year	Production	Import (in '000 m ³)	Value of imports (in crores)
2005-06	2349.10	3487.43	4178.25
2006-07	2405.04	3607.76	4844.23
2007-08	2615.18	4153.62	5685.87
2008-09	2324.02	4155.77	6264.90
2009-10	2185.09	5909.36	7688.23
Total for 5 years	11878.44		
Average of 5 years	2375.69		

Source: Forest Sector Report India 2010

As per one study the projected demand of panel wood in India in 2010 was about 18.8 million cu.m, in which the share of particle board was about 6 percent and of MDF only 4 percent (Forest Sector Report India, 2010).

The total fuel-wood consumption estimated in household sector is 248 million m³ and about 13 million m³ additional fuel-wood is consumed in hotels and restaurants, cottage industries and cremation of dead human bodies. This makes the total annual consumption of fuel-wood to be 261 million m³ which comes from different sources. The production of fuel-wood from forests has been estimated to be 52 million m³ (FSI 2009) and remaining 209 million m³ from farmland, community land, homestead, roadside, canal side and other wastelands (Forest Sector Report India, 2010).



Source: Annual Review, ITTO, 2011

Figure 2: Expected Timber Market Growth – 2020 in India

India produces about 23.19 million cum of timber log domestically and imports nearly 20 percent of its requirement from countries, such as Malaysia (57 percent) and Myanmar (18 percent).

Average annual production of timber from different states in India during 2005-10 is estimated as Madhya Pradesh (13 percent), Utrakhhand (12 percent), Uttar Pradesh (11 percent), Himachal Pradesh (11 percent), Haryana (7 percent), Chhattisgarh (7 percent), Andhra Pradesh (7 percent), West Bengal (7 percent), Maharashtra (5 percent), Punjab (4

percent), J & K (3 percent), Karnataka (2 percent) and other states (11 percent) (Forest Sector Report India, 2010).

Table: 6 State-wise Production of Timber in India during 2005-10 (in '000 m³) (Official extraction from natural forests)

States/UTs	2005-06	2006-07	2007-08	2008-09	2009-10	Total	Average
Andhra Pradesh	111.38	293.11	191.85	88.64	116.05	801.03	160.21
Arunachal Pradesh	40.66	40.50	30.78	35.05	31.37	178.35	35.67
Assam	11.97	27.49	13.63	13.93	7.33	74.35	14.87
Bihar	15.62	7.23	7.23	6.87	5.99	42.94	8.59
Chhattisgarh	113.61	176.45	209.32	173.49	199.32	872.20	174.44
Gujarat	25.05	29.10	48.81	42.51	32.44	177.90	35.58
Goa	0.45	0.42	0.51	0.17	0.18	1.73	0.35
Haryana	151.16	165.73	140.76	166.66	164.12	788.42	157.68
Himachal Pradesh	356.91	220.82	246.97	227.98	272.00	1324.68	264.94
J&K	86.40	80.85	68.49	71.55	61.32	368.61	73.72
Jharkhand	3.38	0.56	10.76	11.62	4.67	30.99	6.20
Karnataka	77.53	65.69	44.84	44.91	45.28	278.24	55.65
Kerala	43.41	26.79	48.65	50.60	50.60	220.05	44.01
Madhya Pradesh	345.45	313.42	372.06	336.95	143.74	1511.62	302.32
Maharashtra	88.05	119.12	132.61	141.00	125.47	606.26	121.25
Manipur	9.07	9.11	8.58	2.67	6.41	35.85	7.17
Meghalaya	0.08	0.98	1.02	0.88	0.52	3.49	0.70
Mizoram	2.32	4.41	11.62	11.71	3.13	33.19	6.64
Nagaland	25.00	25.00	25.00	25.00	25.00	125.00	25.00
Odisha	19.03	22.61	21.84	27.80	20.79	112.07	22.41
Punjab	134.63	129.06	72.33	69.76	79.58	485.36	97.07
Rajasthan	37.90	35.40	38.50	36.30	36.30	184.40	36.88
Sikkim	0.09	0.05	0.03	0.07	0.05	0.30	0.06
Tamil Nadu	4.90	5.50	4.78	4.01	4.12	23.31	4.66
Tripura	2.10	2.10	2.10	2.10	2.10	10.50	2.10
Uttar Pradesh	218.73	200.58	310.67	300.08	313.13	1343.13	268.64
Uttarakhand	331.32	283.08	310.58	271.62	242.62	1439.22	287.84
West Bengal	85.99	114.59	231.58	151.12	183.40	766.68	153.34
A & N Islands	6.91	5.29	9.28	8.97	8.06	38.50	7.70
Total	2349.10	2405.04	2615.18	2324.02	2185.09	11878.44	2375.69

Source: State Forest Sector Report 2010

Global Production and Trade in Non-Wood Forest Products

NWFP are defined as "Non-wood forest products consist of goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests" (FAO, 1999). Non-Wood Forest Products (NWFPs) 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. 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-wood forest products, such as fruits and herbs, for their primary health and nutritional needs (FAO, 2008; www.agroforestry.net). The

most used categories of NWFPs are medicine, edible, miscellaneous and fuel wood (Bouri and Mukharjee, 2013)

The estimated total value of the most economically important NWFPs in world trade is about US \$11 billion annually (FAO, 2007). The reported value of non-wood 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 NWFPs 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 NWFPs (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 NWFPs 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 NWFPs and services is much greater.

Every year between 10,000 and 15,000 tonnes of NWFPs are harvested in Nepal, the trade of these NWFPs contribute an estimated equivalent of US \$ 8.6 million to its economy. Income from 161 species of NWFP 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 NWFP 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 MAP 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, NWFPs 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 NWFP 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 NWFPs are capable of generating 4 million man-years of employment annually (FAO, 2002; FAO, 2005). A study in Zimbabwe revealed that small-scale NWFP-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 NWFPs 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).

Production and Trade in Non-Wood 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's 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 NWFP 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 NWFPs 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 NWFP 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 NWFPs to the total households' income varied from 20.1 percent to 34.1percent 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 NWFPs are estimated to generate Rs. 3 billion (US\$ 100 million) annually in India. It exports a large number of NWFP 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 NWFPs such as Karaya gum (*Sterculia urens*), myrobalans (*Emblica officinalis*, *Terminalia chebula*), Sandalwood chips and dust (*Santalum album*).

The export of NWFP has grown by 20-25 percent over the past few years and during 2006-07, India earned Rs 39.7 billion from export of NWFP 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 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 NWFP 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 NWFP to be Rs 1671.54 per hectare and Rs. 41.89 billions as the estimate of gross value of NWFPs

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 NWFP, 17 percent landless depend on daily wage labour mainly on collection of NWFP and 39 percent people are involved in NWFP collection as a subsidiary occupation (www.tropecol.com).

The tribes (Girijans) are considered to be the most economically impoverished community of India. Girijan NWFP collectors in Kerala display a heavy dependence on the forest – the average contribution of NWFPs 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 NWFP (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 wood 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 NWFP 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 NWFPs to state forest revenue was high in the past (53 percent decadal growth). The growth in revenue earning from NWFPs 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).

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

NWFP 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 NWFP value) among the NWFPs and comes only next to that from timber. But, at the household level, other NWFPs dominate in terms of returns (Choudhury, 2007).

Average return from NWFP 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 NWFP to be 12 percent (Rs 1587- US \$ 40) of the total income (GDS, 2004). Such incomes from NWFP 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 NWFP (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). NWFP contributes to 40 percent of their total income, while for marginal, small and large farmers the share of NWFP in total income is 34 percent, 14 percent and 4 percent respectively. The return per person day in NWFP 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 NWFPs, 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 NWFPs (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 NWFPs 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 NWFPs (Rao and Singh 1996). In Bihar about 17 percent of total revenues from forest production is received from NWFPs, while in southwest Bengal it is only 1.7 percent.

The annual production of resins has been estimated as in Andhra Prades (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 Utrakhand (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 lacs 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 qtl/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 NWFPs 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: 7 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	17.06	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 NWFPs harvested in Karnataka include Honey, tamarind, gums, nuts and canes (Table 7).

Table 8: NWFPs in Karnataka

NWFP	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
Seegekai	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.

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