

NTFPS VALUE CHAIN DEVELOPMENT FOR RURAL COMMUNITIES OF MADHYA PRADESH, INDIA- A CASE STUDY OF CHAKODA (CASSIA TORA L.)

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ABSTRACT

The value chain approach is a heuristic, analytical, and strategic tool that provides a framework for identifying and examining different actors of a value chain, the dynamics of processing and value creation, reward and distribution. Present study was carried out to develop a suitable value chain mechanism for “Chakoda” (Cassia tora L.). The study was carried out in Ghughri block of Mandla district and Chakoda species have been identified for value chain development through a series of assessment and analysis. Market linkage was developed between traders, processing companies (FPC) and seller for Chakoda to promote sustainably harvested organic products of the C. tora in local and international markets. This would enable large scale aggregation and processing of Chakoda for trading. Due to its multiple uses and benefits, Chakoda was found to be a viable business model for Mandla district where large number of farmers are involved in collection, consumption and sale of Chakoda seeds. Chakoda value chain development and establishing market linkage is ensuring better economic return for the farmers and rural poor involved in collection, processing and marketing.

KEYWORDS

Farmer’s Producer Company, Sustainable harvesting, livelihood, market linkages and assessment, NTFP, value chain analysis

1. INTRODUCTION

The Non Timber Forest Products (NTFPs) play a significant role in rural incomes and contributing more than 60 per cent to their annual income in Madhya Pradesh State (Shukla and Pandey, 1983), similar conclusion was also drawn in studies conducted in other States of India and have also shown 10 to 70 percent contribution from NTFPs; majority of the forest dwellers (~50 per cent) depend on forests for fulfilling their food requirements. It is estimated that about 100 million people especially rural and tribal communities living in forest fringes derived ecosystem services from forests including food, shelter, medicine, fodder for their bovine and cash income for substantial livelihood. Apart from needs of subsistence and cash income, NTFPs also support large number of small to large scale enterprises in processing and/or trading of species. The States of Madhya Pradesh, Chhattisgarh, Orissa, Maharashtra and Andhra Pradesh account for more than 75 percent of traded NTFP in India (Saxena 2003).

Forest gatherer communities who rely on NTFPs for their livelihood are often poorly organized and have great difficulty in selling NTFPs even at local markets. However, it requires market cleverness, and an institutional and administrative set-up that is far beyond their reach (Pierce et al, 2003). Primary collectors, due to their geographical limitations, cannot sell their goods directly to the end users or consumers. By promoting collection by gatherers one can not only assure their income, but also allow proper utilization of NTFPs (Johnson et al, 2013). A host of marketing intermediaries stands between the producers and the end users performing a variety of functions and bearing different tags like traders, commission agents, retailers, suppliers, wholesalers and exporters. There are groups and subgroups within the trade channel with various levels of bargaining power. But the business instrument of NTFP trade control is different from that of traditional business systems denying benefits to the procurers.

Thus, value chain creation is very important as it links the steps between the farmers (sellers) to the consumers, it's an empirical, analytical, and strategic tool that provides a framework for identifying and examining various actors of a value chain, the dynamics of processing and value creation, reward and distribution, power relation structures, and knowledge transfer (Hoermann et al, 2010).

Study on NTFPs for value chain development in India is limited and mostly focused on processing and sale (Hoermann 2010; Report of Planning Commission's Working Group, 2011; Pellissery and Nath, 2012; Choudhary et al., 2014). Research on endorsing development of farmer Producer Company for promoting, processing and developing market linkage in rural areas is lacking in the country. Thus, present study is focused on identifying commercially important NTFP species of Mandla district of Madhya Pradesh, India and developing a suitable value chain mechanism for one of the commercially viable species i.e., *Cassia tora*. It has long been known for its multiple use and benefits in Ayurvedic System of medicine, commercial importance for food and medicinal value (Shukla, et al. 2013) and also found to possess diverse number of pharmacological activities (Chandan et al. 2011).

This study is a part of the United States Agency for International Development (USAID) funded project IEMaC (Innovations in Ecosystem Management and Conservation) to develop innovative models for reducing pressure on India's forests through NTFP based alternative livelihood creation and alternate technology deployment resulting in a substantial decrease in fuel wood. The aim of this study is to explore potential leverage points that will help in developing a systemic competitive value chain which enables inclusive and sustainable economic growth of rural communities.

2. MATERIALS AND METHODS

This study was carried out in Ghughri block of Mandla district in Madhya Pradesh during 2014-15. There are about 176 villages in Ghughari block out of which about 14% villages were selected for the above study (Figure 1). A list of available NTFPs of the area was developed with survey, focus group discussions with various user groups and Four Cell Analysis (FCA) technique (Sthapit et. al., 2012) to identify the commercially important NTFP species of the area and for developing the value chain. Out of the total 25 villages selected for survey work, seven villages were considered for study on identification of commercially important NTFP species and value chain development.

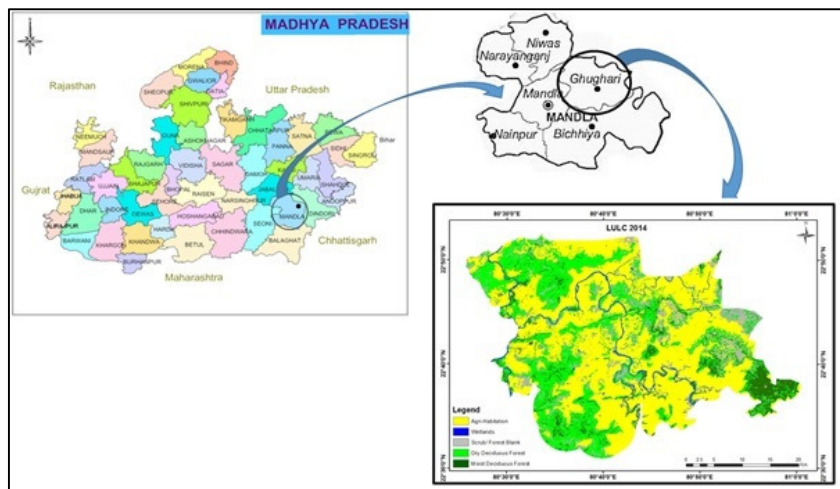
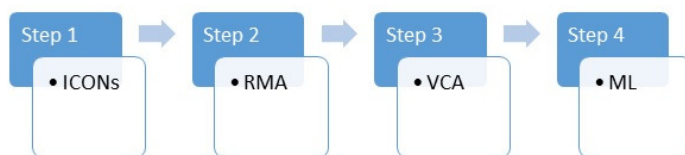


Figure 1. (a) Map of Madhya Pradesh showing location of Mandla, (b) Map showing location of Ghughri block under Mandla district, (c) View of Ghugri tehsil of Mandla district.

Steps undertaken to identify NTFPs for value chain development are as follows:



For Four Cell Analysis (FCA), both male & female farmers and stakeholders were considered. Details of the each steps followed for the above are elaborated below.

Step 1. ICONs (Identification of commercially important species)

For identification of commercially important species, survey was conducted in seven project villages i.e. Kandra, Katangi, Ramhepur, Khamariya, Dongarmandla, Bilgaon and Bisandhar under Ghughri block of Mandla district. These seven villages are basically member of Farmer Producer Company (FPC) already existing in the project area. FPC was supported technically by the research team to strengthen the NTFP based value chain developed by the company in the due course of its functioning in the area. All the available NTFPs in the region were then scored on a scale from 0-10 against the following parameters:-

- Number of project villages that reported collection
- Percent of households collecting NTFPs
- Marketable surplus present of that NTFP
- Demand in the local markets and beyond
- Level of convenience while collection, processing and marketing.

Step 2. RMA (Rapid Market Assessment)

Rapid Market Assessment of major NTFP species was conducted with following two broad objectives:

- Understanding of market dynamics and trade mechanism of potential NTFPs
- Identification of key gap areas to identify scope of Partnerships

A qualitative approach was adopted to conduct rapid market assessment in the project locations. A blend of secondary and primary research was employed to carry out the assessment. Checklists, In-Depth Interviews (IDI) and FGDs were developed and used as research tools to assess the major NTFPs marketing channels, prevalent trade mechanisms and need gaps across NTFP markets. It also helped in identification of areas of partnerships. In addition, this approach helps in identifying major NTFP species for value chain development.

Step 3. Value Chain Analysis (VCA)

Value chain describes the full range of activities which are required to bring a product or service from conception, through different phases of production involving a combination of physical transformation and the input of various producer services, delivery to final consumers, and final disposal after use. It encompasses the full range of activities, whether local, regional, national or global activities and includes input suppliers, producers, processors and buyers supported by a range of technical, business, technology and financial service providers. Along with information about market channels and segmentations, market prices at every level helps in preparing business plan. Information about all stakeholders involved (viz., direct and indirect stakeholders) helps develop linkages and market based strategies. It can be applied to all products existing in rural and urban areas. A detailed analysis of the whole value chain of the product enable to identify:-

- end markets and market segments
- market channel trends within the value chain
- the primary actors in the value chain, their roles, and interrelationships and create a value chain map
- constraints and opportunities that are holding back growth and competitiveness of primary producers
- commercially viable solutions that can address value chain constraints

For an in-depth analysis of value chains for the selected NTFPs, interviews with key stakeholders including input suppliers, producers, traders, service providers etc. were conducted. An interview guideline was prepared for all the stakeholders for retrieving maximum information on NTFPs related input supplies, technology, market access, management and organization, policy, finance and infrastructure. The data from all the interviews was then filtered and analysed to prepare a value chain map for selected NTFPs.

Step 4. ML (Market linkage)

This is the final step of the process. As a thorough understanding of the local and international markets has been obtained through the VCA, linkage would be facilitated with traders and pharmaceutical companies under the project, keeping in mind to promote sustainably harvested organic products of the selected NTFPs in local and international markets. Through the stakeholder interviews conducted under VCA, the terms and conditions of NTFP procurers (traders or pharmaceutical companies) were also understood and conveyed to the primary collectors. Process followed for building market linkages with various NTFPs procurers is shown in figure 2.

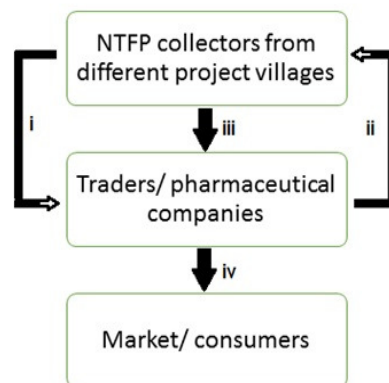


Figure 2. Process followed for building market linkages

Market building process shown above involves three major steps as follows:-

- Step 1:** The NTFPs collected by collectors is aggregated and/or processed under an institution such as FPC and samples of the product sent to the traders/ pharmaceutical companies for check-up.
- Step 2:** After the sample passed from the quality tests, the procurers provide their demand for a specific quantity of the product at a specified rate with their terms and conditions.
- Step 3:** The aggregated product is then sold to the procurer at the decided rate based on the quality of the product.

This would enable large scale aggregation and processing of NTFPs for trading. It would increase the bargaining power of collectors for fetching better (and fairer) prices from the middlemen and would also increase their market reach (as they can compete for large quantum orders). In addition, a FPC ensures the return of equitable benefits from any trade by the company to all the primary collectors who are shareholders in the company.

In order to develop market linkages, to promote value chain and to raise capacity of the stakeholders in value addition and marketing of *Chakoda*, a series of meetings were conducted with *Chakoda* processor, Board of Directors (BoDs) of FPC, village committee, Ghughri trader.

In order to support and promote NTFP marketing in Mandla area, Balganga Farmers Producer Company (FPC) have been involved in the process, which was operational in the area from the last 10 years and registered under SFAC (Small Farmers Agribusiness Consortium). It is a Society promoted by Department of Agriculture and Cooperation, Ministry of Agriculture and Farmer Welfare, Govt. of India.

3. RESULTS

A total of 25 villages i.e., Bamhani Barwani, Bhainswahi, Bilgaon, Bisandhar, Chalni, Chhatarpur, Chhiwlatola, Dadargaon, Dalkagopangi, Dhangaon, Dongarmandla, Gorakhpur, Junwani, Kaknu, Kandra, Katangi, Khajri, Khamariya, Khoda khudra, Khudia, Patan, Paudi, Ramhepura, Sajpani, were surveyed in Ghughri block of Mandla district during 2014-15 to identify major NTFPs collected by the forest dependent communities for self-consumption as well as for sale (Figure 3).

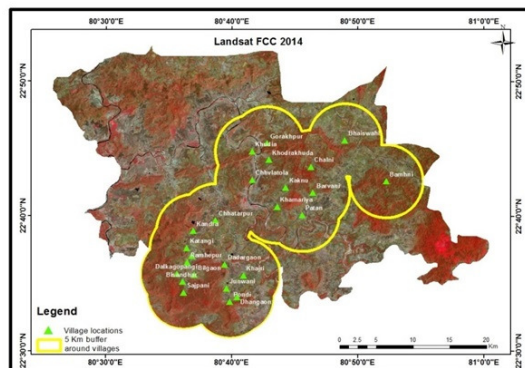


Figure 3. False colour composite of 2014 Landsat satellite imagery showing village locations with 5 km buffer in Ghugri tehsil, Mandla district.

Survey of NTFP species collected for consumption and sale by rural community was carried out in 25 villages of Mandla district. NTFP survey in 25 villages revealed that about 43 plant species are being collected by villagers for self-consumption as well as for sale in the local markets. About 80% of the NTFP species are collected for sale.

Among the NTFPs collected for sale, most of the species collected were of tree category (49%) followed by climbers (16%), shrubs (12%), while the lowest number of NTFPs (5%) were recorded under grass category (Figure 4).

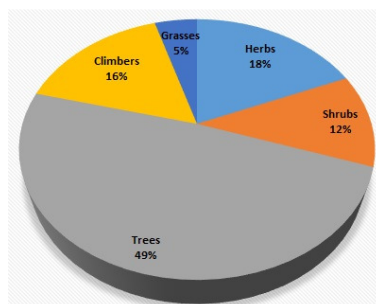


Figure 4. Pie chart showing categories of NTFP species on the basis of its growth and habit

Out of the total 43 NTFP species recorded from 25 villages, 10 NTFP species with higher commercial significant as compared to other species were shortlisted on the basis of ICoNs, considering several qualitative and quantitative parameters including, available quantum, household dependency, number of collectors/gatherers, ease of collection/processing/ marketing and market demand at local and outside etc. The shortlisted species were *Cassia tora*, *Madhuca latifolia*, *Buchanania lanzan*, *Hyptis suaveolense*, *Terminalia chebula*, *Phyllanthus embelica*, *Semicarpus anacardium*, *Syzygium cumini*, *Tamarindus indicus* and *Aegle marmelos*. Detailed information on above and their local uses is highlighted in Table 1.

Table 1. NTFP species identified from ICONs and their uses.

S. No.	Name of Species	Uses
1.	Cassia tora	Seeds have economic value used in coffee industries also have significance in preparing cattle feed etc.
2.	Madhuca latifolia	Flowers are being used for making local wine and seeds have oil which is edible and also used in soap industries.
3.	Buchanania lanzan	Seed Kernel have economic value as dry fruit, which have high content of vitamin E.
4.	Terminalia chebula	Used in pharmaceutical industries, as an important ingredient of Trifala and also for tanning purposes.
5.	Phyllanthus embelica	Fruits used in pharmaceutical industries as an important ingredient of Trifala. Aonla juice, candy, jam, pickle etc.
6.	Aegle marmelos	Fruits used in pharmaceutical industries, as well as for making squash, juice, jam, marmalade etc.
7.	Semicarpus anacardium	Used in the Ayurvedic system of medicine for the treatment of various ailments, mainly alimentary tract and certain dermatological conditions.
8.	Syzygium cumini	Fruits are commonly consumed and have medicinal value, its dry seeds have anti diabetic property.
9.	Tamarindus indicus	Used in culinary.
10.	Hyptis suaveolense	Have antifertility, anti-inflammatory, and antibacterial properties, also used in preparation of mosquito repellent.

Out of the 25 villages, seven villages were identified as focus villages in order to coordinate the NTFP accumulation and its marketing activities. These seven (7) villages are the part of FPC.

The total households in the above seven (7) villages were 1378 (during 2014-15), out of which 1118 (81%) were scheduled tribes (Table 3) who were mostly involved in collection of NTFPs. About 62% of the total households (i.e., 868 households) in the village were involved in NTFP collection and their annual NTFP collection was about 237 quintals/season. Among the seven villages, maximum involvement of households (100%) in NTFP based livelihood activities was recorded in Khamariya village followed by Bilgaon village (50%), while in Ramhepura village only 0.7% of the households were involved in NTFP based livelihood activities. Other 18 villages of the area were also associated with these seven villages in collection and sale of *Chakoda* from the wild.

Table 2. List of seven villages surveyed for ICON with their total population and collected quantum of *Chakoda* (*Cassia tora*).

S. No.	Name of Villages	No. of FIGs * involved	Village members of FPCs**	Total Population (Household)	Average Quantum aggregated at village level (quintal) and household involved
1	Kandra	5	100	275 (ST: 223)	20 (152)#
2	Khamariya	3	100	418 (ST: 277)	100 (100)
3	Katangi	7	140	120 (ST: 115)	2 (120)
4	Ramhepura	1	20	181(148)	1 (140)
5	Bilgaon	1	20	112 (ST: 108)	56 (112)
6	Bisandhar	3	40	124 (ST: 115)	55 (124)
7	Dongarmandla	3	40	148 (ST:132)	3 (120)

* FIG: Farmers Interest Group; ** Farmer Producer Company
figure in the parenthesis indicate total households involved in collection of raw material.

After Rapid Market Assessment (RMA) of the above 10 species, four most viable species viz., *Chakoda* (*Cassia tora*), Chaar (*Buchnanian lanzan*), Mahua (*Madhuca latifolia*), Harra (*Terminalia chebula*) were selected for further analysis and market linkages are being developed for them. Amongst four selected NTFPs, in the present paper detailed study on *Cassia tora* locally known as “*Chakoda*” was chosen on the basis of its availability in the wild and its market potentialities at local, national as well as at international level.

Chakoda (*Cassia tora* L.) plant is known for its significant medicinal and food value. The *Cassia* plant mainly grows in the tropical regions of India and its seeds are commercially supplied in bulk from regions of Uttar Pradesh and Madhya Pradesh. Its leaves and seeds are collected for self-consumption as well as for sale in the local market. Young leaves are cooked as a vegetable while the roasted seeds are used as a substitute to Coffee. *Chakoda* powder is also used in the pet food industry. The seeds and leaves are being used to treat skin diseases and its seeds are also used as a laxative. *Chakoda* tea is also consumed as herbal, pure, natural and non-polluted green health beverage. In Mandla district of Madhya Pradesh, it is a natural growing shrub species found commonly in degraded forests, plantation sites, agricultural lands, road sides, etc. (Photo 1). It is a customarily accepted species in the district and widely collected for marketing.



Photo 1. *Cassia tora* plant with flower and seeds

Flowering initiates in *Chakoda* (*Cassia tora*) in the first week of August and attain peak by the end of August. Fruiting starts at the end of August and attain peak in September. The pods are matured by October. The senescence of plan occur in the month of October and November. Maximum collection of *Chakoda* seed from the wild is done during October to December.

Quantum of product available determines its market sustainability and higher business prospects. In order to assess the village level quantum of *Chakoda* production, collection and willingness to aggregate through FPC was assessed through meeting with villagers. Around 40% members (400 individuals) of Balganga FPC reside in focus villages i.e. Kandra, Katangi, Ramhepura, Khamariya, Dongarmandla, Bilgaon and Bisandhar. Based on the availability of villagers, members of FPC and availability of selected NTFP species, ‘enterprise clusters’ were identified wherein community-centric NTFP based enterprises have been initiated. A common understanding was developed between BoD and Market Players of *Chakoda* at Mandla and Ghughri on the terms and conditions such as quality specification, price mechanism, negotiations with market players etc. through round table meeting.

A minimum quantum of *Chakoda* required to sustain the FPC was decided to be 3 MT per season. To alleviate the load of transportation cost on the market price of the product, processor of *Chakoda* agreed to bear the transportation cost from collection area (Ghughri village) to the market (Mandla and other parts of the state). Processor also offered to pay advance money of 50% to the buyer on the date of aggregation. Through this method, the buyer can collect

Chakoda from primary collector and pay 50% advance on that day's rate. After collection of product from farmers, BoD FPC was provided power to decide when they want to sell their produce depending upon the market rates. In order to facilitate business development of *Chakoda* in the area, processor agreed to provide 1% of the total business turnover as facilitation fee to Balganga Farmers Producer Company. Similarly, to mitigate "weighing losses" during storage and natural drying, processors used to deduct 100 grams of *Chakoda* per kg. Therefore, in a 60kg bag, 6 kg of dry seed is deducted.

Value Chain:

The identified value chain gives an account of *Chakoda* (*Cassia tora*) as it voyages from primary collectors in Mandla to the buyers in national and international market. The value added to the NTFP at each step can be visualized from the presented figures of value chain (Figure 5).

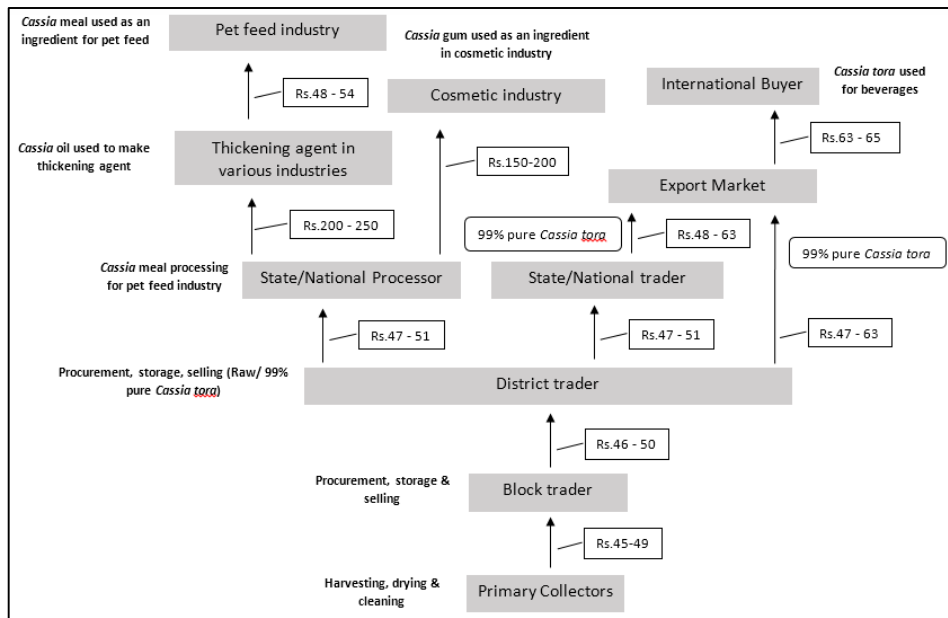


Figure: 5: Representation of *Cassia tora* Value Chain

The dried and cleaned *Cassia tora* seeds sold by the villagers at Rs. 45-49 per kg were procured and stored by block level traders, who use to sell it to district level traders from where the NTFP is sold to national and international buyers. The biggest identified markets for *Cassia tora* are the cosmetics industry, pet feed industry and export market for coffee supplements. Even though proper established markets are present for the NTFP, primary collectors still struggle to obtain good value on their collection.

Market Linkage

A market linkage was developed between the collector, seller/ traders through FPC. As *C. tora* produces seeds during dry season, FPC decided to collect *Chakoda seeds* for developing market linkage in the month of November. FPC collected about 89 kgs of sorted, graded *Chakoda* from 32 beneficiaries of seven villages and physically linked to the Ghughri trader (traders in Ghughri village). Market survey showed that the availability of *Chakoda* seed in Ghughri market is maximum (~10 MT). *Chakoda* seed availability in Mandla and Raipur market is about 3 MT each during the peak season. The price of *Chakoda* in the market is susceptible to high

fluctuations on a daily basis. The average market price per kg and minimum linkage quantum in local markets in the month of November when the linkage was done was as follows:-

Primary collectors received Rs. 45 per kg within village, which is ~ 10% higher price than the prevailing market prices. The local traders could sale it at the rate of Rs. 46 per kg including one rupee as facilitation fees for FPC

4. DISCUSSION

Commercial NTFPs can provide a significant means for monetary growth and sustainable forest management to local communities (Farinola et al. 2014). Perhaps with the increasing demand for natural, wild health products across the globe, many products which were previously only locally consumed are finding expanded markets (Schippmann 2002). In Mandla, *Cassia tora* is one of such species collected for commercial sale. Besides having established NTFP market of *Chakoda* in the district, primary collectors were struggling to obtain good value on their product due to lack of awareness among them, regarding the quality specifications and requirements in the market. The rural poor involved in harvesting NTFP were the least paid people in the whole trade chain and are subjugated by the middlemen as they were less alert about the price trends in the markets. Furthermore, to maximize their profits, the local traders prejudiced the poor gatherers to increase the quantity of raw materials (Kala 2013).

The low pricing of *Cassia tora* in the state is due to unscientific processing and quality deterioration. The traditional practice of drying *Cassia tora* on roadsides increases the content of foreign material in the collection and lack of proper grading/ cleaning practice, the collectors are unable to sell their harvest at average grade prices. Another problem is posed by the premature harvesting of *Cassia tora* seeds due to which the villagers end up having low quality collections. Value chain developing through FPC in the area is helping the farmers and other stakeholders in adopting scientific process of harvesting, drying and grading their products. Though, scientific value chain developing is in emerging stage in the area, but is gaining its importance amongst the stakeholders rapidly. FPC is also ensuring post-harvest handling and value addition through semi processing to ensure higher return to the farmers. Similar findings were also reported earlier by various researchers across the world (IMF 2010, Saigal 2008). It was found that state and block traders deduct buying cost of the NTFPs if the quality recommendations are not met. Therefore, in order to fetch higher market price, capacity development of farmers about the market price trends and quality assurance through value addition to raw product is essential. FPC is directly and indirectly helping farmers in developing their understanding about the products being collected for commercial sale and its value addition. It has been realized that the demand of 99% pure *Cassia tora* by the international exporters can only be met through proper trainings and consultations with the primary collectors to promote hygienic, sustainably harvested mature seeds and post-harvest handling.

The huge demand for *C. tora* in the international market provides an opportunity to utilize this NTFP as a viable economic livelihood option. The value chain facilitates an improved understanding of competitive challenges, helps in the identification of relationships and coordination mechanisms, and assists in understanding how chain actors deal with powers and who governs or influences the chain. Developing value chains is often about improving access to markets and ensuring a more efficient product flow while ensuring that all actors in that chain to be benefitted. Although the final outcomes of above value chain development yet to be analysed, however, the above study indicate that value chain analysis development of *Chakoda* in Mandla district has ensured better economic return of their raw materials not only to the harvester/ collector but to all the stakeholders involved. With the value chain development through FPC,

the local farmers are getting 8-10% higher price of their raw material as compared to their selling price to middle man directly.

In a value chain marketing system, farmers are related to consumers' needs and work closely with processors and suppliers in order to yield the specific goods as per consumers demand (Altenburg 2007). Likewise, flows of information and products ensures linking of consumers to the needs of farmers. By this approach, and through continuous innovation, the returns to farmers can be increased which will improve their livelihoods (FAO 2014). Proper and regular management of sub-collection centres at each village by PC representatives/VLRPs (Village level resource person) has to be ensured. Ensuring proper and adequate availability of market infrastructure e.g. weighing machines in project villages for aggregation by PCs. An analysis of the backward linkages from global markets to the village is also needed. It is important that both consumers and processors are made aware of factors limiting production, just as much as farmers and other producers are made aware of consumer requirements.

Value chain development of *Chakoda* not only ensured higher return to the farmers but also ensures conservation-through-utilisation paradigm (Kusters et al. 2006; Sunderlin et al. 2005). Value chain development of NTFPs needs to be promoted for forest dependent communities to ensure their economic development and to promote sustainable harvesting. Initiatives like creation of new opportunities in international markets, fair trade initiatives, product certification schemes and deregulation of markets will enhance product value and ensure better market return of NTFPs. Promoting conservation and cultivation of NTFP species for commercial utilization will increase productivity, lower deforestation and ensure sustainable development. It will not only improve income to local communities but also creating incentives for conservation of trees and forested ecosystems which is apparently a win-win situation (Marshall et al. 2006). Yet, the momentum largely lies outside of rural spheres (Belcher and Schreckenberg 2007).

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