Teak forest in Mandla district, Madhya Pradesh. Credit G. Meldrum/Bioversity International

Recognizing marketability and nutritional benefits of non-timber forest products in eastern Madhya Pradesh

A case study in the programme "Linking agrobiodiversity value chains, climate adaptation and nutrition: Empowering the poor to manage risk"

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Abbreviations

A4NH	CGIAR Research Programme on Agriculture for Nutrition and Health
CCAFS	CGIAR Research Programme on Climate Change, Agriculture, and Food Security
CGIAR	Consultative Group for International Agricultural Research
ASA	Action for Social Advancement
IFAD	International Fund for agricultural development
NGO	Non-governmental organization
NTFP	Non-timber forest products
Project	The IFAD and EU supported initiative “Linking agrobiodiversity value chains, climate adaptation and nutrition: Empowering the poor to manage risk”

Introduction

Non-timber forest products (NTFPs) are resources other than timber that are extracted from forest areas. The term was first used by DeBeer and McDermott in 1989. The UN Food and Agriculture Organization (FAO) describes NTFPs as “all goods for commercial, industrial or subsistence use derived from forests and their biomass”. These consist of a variety of products ranging from medicines, dyes, fruits, resin, bark, roots, leaves, flowers, seeds, honey, and others (FAO, nd).

All across the world, there are communities living in and around forest areas who depend on the produce they provide. It is estimated that more than two billion people depend on forests for subsistence, income and livelihood (Vantomme and Walter 2003). NTFPs are used to help meet the health and nutritional needs of nearly 80% of the population of the developing world (FAO 2008). In India, in particular, over 50 million people were seen to earn some income from NTFPs (Hegde et al 1996). This is particularly true for the tribal peoples who inhabit the lands close to forests. Several tribal communities in India, including the Baiga and Gonds, who are the focus of this study, live in isolation close to forest regions and depend on the produce from these areas for subsistence. These products have also emerged as a source of income for these peoples with the recognition and heightened demand for forest products. Overall, 70% of forest-based export income and 50% of forest revenue in India comes from NTFPs (Tejaswi 2008).There are about 9,500 licensed herbal industries in India and a host of non-licensed ones which have links with NTFPs (Ved et al 2007).

With the large variety of income linkages, as well as their subsistence role, it seems NTFPs would be indispensable in terms of their importance for many rural communities. However, recent studies suggest that there may not be enough evidence for the livelihood benefits that NTFP provide for local communities (Gubbi & McMillan 2008). The idea of the forest becoming a steady source of income for people is also considered to provide a direct benefit for forest conservation, which otherwise may appear to have little financial significance (Cottray et al 2003). Because of perceived importance of the forests, people may be less likely to destroy or cut the forest and this may help preserve biodiversity and forestation. However, evidence also suggests that extractive collection of forest products has, in reality brought down the forest concentration, because of unsustainable practices of collection (Tiwari 1995). Hence NTFP can be translated as both a bane and boon for forestation.

This study examined NTFP use in Mandla and Dindori districts in Madhya Pradesh. It aimed to document the important NTFPs in the region, and to examine the impact that their use has both on the forests and the tribal populations in the region. It questions if these products can become sustainable sources of food security, income, nutrition, and medicinal uses for inhabitants of the region.

Study Area

The area where this study was conducted lies in the eastern region of Madhya Pradesh, India. Villages included in the study were located in Mandla and Ghughari blocks of Mandla district and Mehandwani and Shahpura blocks of Dindori district (Figures 1 and 2). The area receives about 2100m of rainfall annually, has medium to shallow soil and 61% forest cover. Most of the families in the area belong to the Baiga and Gond tribes. The population is 77% scheduled tribes (ST), 4% scheduled castes (SC), and 19% others. Local livelihoods are dependent on agriculture, as they grow most of the food they have to eat. Farmers have more recently started selling some of their production in order to increase their household incomes. Table 1 provides basic information about the region.

Table 1. General statistics about the regions of Mandla and Dindori where the study was conducted

Indicator	*Mandla*	*Dindori*
Area (km^2)[a, b]	8771	7470
Literacy of total population in 2001 (%)[a, b]	60	54
Population of scheduled tribes (%)[a, b]	57.23	64
Literacy among scheduled tribes (%)[a, b]	51	49
Population per health care centre in 2006 (#)[c]	2720	3333
% area under forest [d]	49	37

[a] Mandla District Administration nd, [b] Census of India 2011, [c] Directorate of Health Services 2007, [d] Forest Services of India 2011

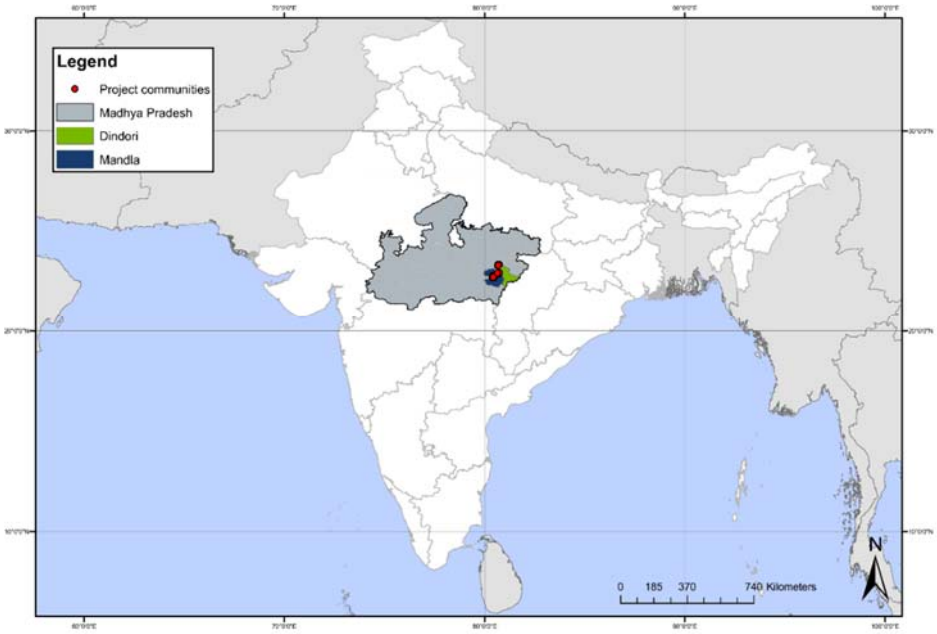


Figure 1. Targeted area of the study in eastern Madhya Pradesh, India

Methods

This study was conducted by way of focus groups sessions at the village level, community interactions, and semi-structured interviews. The people were asked about the NTFPs that they come into contact with and collect for personal or commercial uses. Traditional knowledge about the nature of those products and their uses were also explored. The ownership of the forest was also discussed in terms of how they allocate the resources to and within households. In order to examine the market value and the demand and supply chains for the locally important NTFPs, interviews were conducted with the traders of these products at several levels. The weekly village markets were surveyed in Ghughari, Linga Paudi (Mandla), Kheesi (near Mehandwani), and Dhirvan (Shahpura). The next process in the value chain occurred at the local market (mandi) level of the semi urban markets of Mandla, where small traders were interviewed, along with big traders who deal in high volume trading of the NTFPs. Additionally, the work being undertaken by Minor Forest Products (MFP) Federation, for both east and west Mandla were interviewed and details were examined about how they manage the NTFP markets, promotion, and value chain management of the produces from the region. The factory of the state medicinal brand Vindhya Herbals in Bhopal was visited and surveyed about the composition of their products. In addition, work being undertaken on NTFPs by organizations in the region was also examined. Ghughari block of Mandla houses the processing centre of the Centre of Research and Development (CARD), an NGO working extensively with NTFPs and rural livelihoods, including honey harvesting. Interviews were conducted with groups of villagers that were working with CARD on these initiatives.

Results

Important NTFPs in the region

Table 2 provides a list of the major NTFPs in Mandla and Dindori districts of Madhya Pradesh. Most of the NTFPs are tree fruits or nuts, some are plant fibres and two—lac and honey—are insect products. Some NTFPs stood out more than the rest. In both districts, mahua (*Madhuca latifolia)*, bael (*Aegle marmelos*), bhilawa (*Semecarpus anacardium)*, bamboo, chakora (*Cassia tora)*, and moya grass (*Pennisetum hohenackeri*) were important. In Mandla, honey, chironji (*Buchanania lanzan)*, lac (produced by *Kerria lacca*), jackfruit (*Artocarpus heterophyllus)*, and mango (*Mangifera* sp.) were other major NTFPs that were less important in Dindori. Instead, harra (*Terminalia chebula)*, bahera (*Terminalia bellirica*), and mahul (*Phanera vahlii*) were more important in Dindori region.

Value Chain mapping for NTFPs in Mandla and Dindori

Nationalized products

India has nationalized several NTFPs. In Madhya Pradesh, tendu leaves (*Diospyros melanoxylon*) were the first item to be nationalized in 1964 by the Tendu Leaves Adhiniyam. It was followed by harra, sal seeds (*Shorea robusta)* and gums. Compared to other states in India, the number of nationalized products in Madhya Pradesh is relatively few.

Table 2. Important NTFPs in Mandla and Dindori districts of Madhya Pradesh

Family	*Species*	*Common name*	*Products produced*
Anacardiaceae	*Buchanania lanzan*	Chironji	Seed; achar
	Mangifera sp.	Mango	Fruit; dry mango, powder, candy, pickle, juice, RTS, pulp, jam, jelly, mango pappad
Annonaceae	*Annona squamosa*	Sita Phal	Fruit; jam, jelly, powder
Asparagaceae	*Agave sisalana*	Sisal	Fibres; rope, decorative goods, mats, carpet, pedestal etc.
Combretaceae	*Terminalia bellirica*	Bahera	Powder, extract and oil
	Terminalia chebula	Harra	Powder, extract
Fabaceae	*Cassia tora*		
	Millettia pinnata	Karanj	Oil and oil cake
	Phanera vahlii	Mahul	Dona and pattal (leaf crockery)
	Tamarindus indica	Imli	Fruit; dry imli brick, powder, cake, sauce, acid, starch (seeds)
Moraceae	*Artocarpus heterophyllus*	Jackfruit	Fruit
Myrtaceae	*Syzygium cumini*	Jamun	Vinegar, powder
Phyllanthaceae	*Phyllanthus emblica*	Amla	Fruit; pachhak amla, triphala, squash, powder, murrabha, candy, pickle
Poaceae	*Pennisetum hohenackeri*	Moya grass	Fibre; thatch
	Various	Bamboo	Fibre
Rutaceae	*Aegle marmelos*	Bael	Power, squash, murrabha, RTS
Sapindaceae	*Schleichera oleosa*	Kusum	Oil and oil cake
Sapotaceae	*Madhuca latifolia*	Mahua	Mahua kismis, dry mahua, powder, mahua jam, chikki, laddu, bread, toast, oil and oil cake
Various	Various	Aromatic / Medicinal Plants	Oil, powder
Apidae	*Apis* sp.	Honey bee	Honey
Kerriidae	*Kerria lacca*	Lac	Shellac

The collection of these items takes place on a three-tier system, which includes the Primary Cooperative Society (PCS) at the village level, District Union at the District level, and the Madhya Pradesh Minor Forest Produce (MFP) Federation at the State level. The PCS is responsible for the collection at the village level, which is then passed on to the District level, where grading and storage takes place. The products are then acquired by the MFP Federation and used for their local brand of forest products (Vindhya Herbals). Traders are invited to purchase the products for final distribution to consumers. The PCS are the direct beneficiaries from the profits of the mechanism as all of the profits, with subtraction of apparatus costs, are transferred to them. Farmers collect the NTFPs and bring them to a registered buyer from the forest department who pays for the products in cash. There may be a delay of a few weeks at times, but by and large the gatherers claim that they are reimbursed for their items in a fair and timely basis.

Though the framework presents an inviting picture for the NTFPs, it was seen during the study that the mechanism is not fully functional and is completely dependent on the enthusiasm of the persons who head the MFP Federation at the District level. It was observed in Mandla that the eastern region is highly active, whereas the western region has nearly no NTFP functions with the MFP Federation and there is lack of knowledge and non-existence of PCS at the village level.

Non-nationalized products

For other NTFPs which are not nationalized, there were disputes about the ownership of the forest produce until recently. The Recognition of Forest Act, 2006 (Government of India Ministry of Law and Justice 2007) helped clarify these right issues. Before the act was put into place, there were several disagreements about the produce of the forest. The forest people, who had been the dwellers of the area for generations claimed the forest as their homes and its produce as their property but the government stopped the communities from taking advantage of the forest for their own gains. The Recognition of Forest Act has given the rights of the forests to the Gram Sabhas, meetings of all the adults who live in a panchayat, who decide the resource allocation for the dependent communities, while ensuring protection of the forest. Regular meetings of the Gram Sabha are held in which all members of the communities are invited.

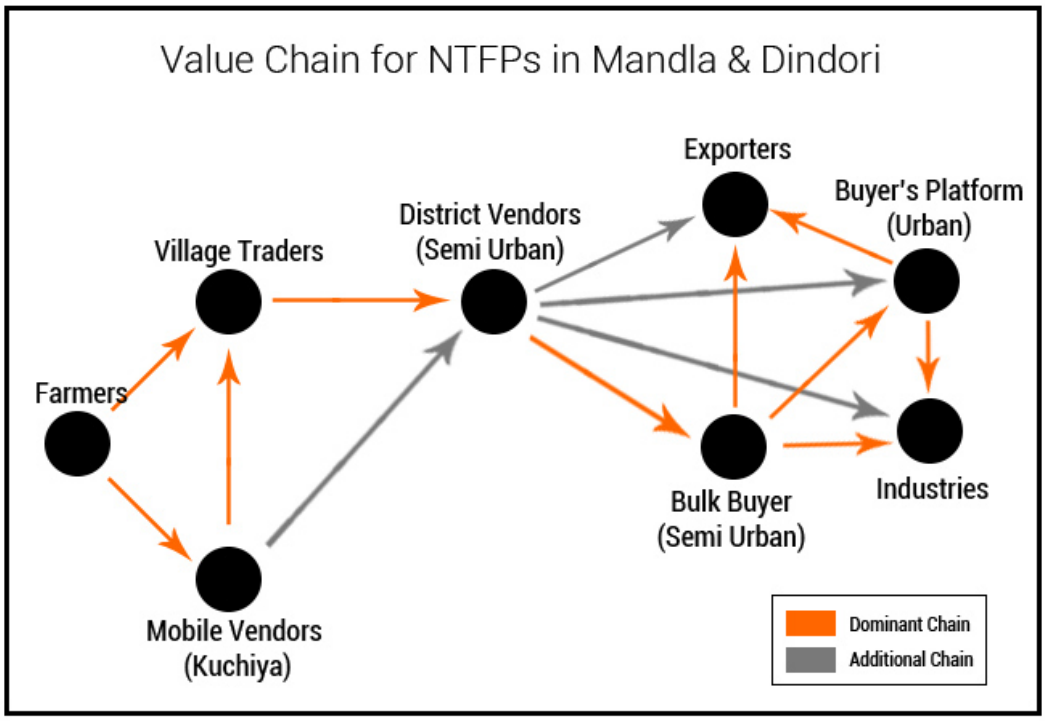


Figure 2. Value Chain for NTFPs in Mandla and Dindori. The produce flows through several chains, with a distinction in the more dominant flows and existence of alternated flows

Figure 2 shows the value chains for non-nationalized forest products which are prevalent in the study areas. The farmers who collect the products tend to disburse them in two ways: Either trading them at local, village-level weekly markets, or selling them to mobile vendors who come into the village and buy the products. The mobile vendors sell the products to the weekly markets, noting that this intermediary creates room for the farmers to be exploited. The village traders collect the products and sell them to vendors at the district level, who may be small traders in a semi-urban setting. For example, in Mandla district, the

produce is sold to small traders at the village level in the weekly markets of Linga Pauri (Friday) and Bakori (Monday), where the traders gather a fairly large amount of the product, which they then sell at the regulated market (mandi) in Mandla city. At this point, the products are passed on to bigger traders at the district level, who are bulk buyers of the product. While the small traders may buy volumes of a few quintals of a certain product, the bulk buyers collect the products in tons from several district-level vendors. From here, the products may be sent to the major centres in the country where they are bought by exporters, industries, or bigger buying platforms and who also may do the job of supplying to exporters and industries. The grading process generally takes place at the buyer platform level. In case the bulk buyer has ties with exporters and industries, they must also undertake grading and quality control measures.

In an alternate channel, mobile vendors, who may have storage facilities, may sell to the mandi at the district level. Additionally, the semi urban trader may have ties with industries, exporters, and city level buyer platforms. In this case, the grading and quality control mechanisms take place with the trader at this level.

Issues in the value chains of NTFPs in Mandla and Dindori

Transportation and other costs

Probably the most important factor in the value chain for the forest produce is the volume traded and the transportation cost incurred for the same. For the small farmer who gathers the produce, there is a lack of storage facilities and they are constrained to trade the products immediately. The mobile vendors come in handy for them because they save on travel costs and time. However, it was observed in the focus group discussions that the mobile vendors only provide the farmers with approximately 62% of the price that they get at the village market. This amounts to a greater loss for the farmers than what they gain in terms of the opportunity cost (time and transportation cost to go to the market).

For the village market traders, costs are incurred depending on the volume they procure from the local gatherers. The rights to the land where the markets take place are owned by the Gram Panchayat. In the Linga Pauri market, the average cost that traders had to pay to the Gram Panchayat for use of their land was approximately 6 INR per sack of produce procured. The cost varied by the size of the market in other districts. The transportation cost for the products procured was estimated to be 15 INR per sack for taking them to the semi-urban centres using small loading vehicles, and additional warehousing costs were also incurred by these small traders.

Further down the chain, costs are incurred in terms of warehousing, grading, and interstate transportation of goods. The need for licenses renders there to be very few market players who have the ability to trade with larger urban centres, exporting companies, or industries which may be out of the State.

Bargaining power of the gatherers

In some cases, the preparation for the products takes a lot of time, and gatherers found that the time spent in preparation of the product was not compensated by the prices they achieved. There are several factors that inhibit collectors' bargaining power and contribute to them receiving lower prices than possible for their products. These factors include access to market information, access to markets, legal restrictions, limited

buyers, legal restrictions, credit status, and availability of processing and storage facilities, as described further below:

- **Market Information**: There are limited ways to disseminate complete market information to the gatherers. It was also seen in other studies that there is often variation in the price of products dependent on their quality but the gatherers can be unaware of these price differentials, causing them to sell higher quality products at lower prices.
- **Market Access:** Because transportation of the products is problematic for the gatherers, most are limited to sell to village traders and mobile vendors.
- **Legal restrictions on traders:** The functionaries of the market require licenses to buy products from the farmers. These licenses are difficult to obtain. This causes there to be only a few functioning buyers who work under an oligarchical setup.
- **Limited buyers:** Unlike a competitive system, the fundamentals of a larger number of buyers is missing in this setup. The gatherers collect small amounts and do not bring their produce to the bigger towns because of the risk involved with such an activity. Mobile vendors are often seen as a problem in this setup because they do not offer the best prices.
- **Credit status of the gatherers:** The poverty of the gatherers, who are often indebted to local middlemen and landlords, creates a problem of serfdom. They do not secure the complete benefits from the high prices of the NTFPs they gather. They are often obliged sell their products at rates much lower than the actual market value due to the prices they are offered by local buyers.
- **Lack of processing facilities:** Farmers sell the products in an unprocessed form so they do not benefit from value added pricing.
- **Lack of storage facilities:** There is also a lack of storage facilities with the villagers. The NTFPs are collected seasonally, yet they are demanded all throughout the year. The flushing of the products during the collection season causes a supply excess, thus causing the traders to have low prices.

Upon visiting the market at the rural level, it was observed that there is a great amount of space for the small local traders to form an oligopoly where they can determine the prices by collusion. Lack of information available to the gatherers, attributed to the low level of education and gaps in infrastructure, renders them powerless. Saxena (1999) observed that tamarind was sold for rupees 11 per kg in the urban areas, while in the villages, the gatherers received just 1.40 INR per kg. Similar price differentials were observed for NTFPs in this study.

Importance of gender

A whole range of studies have been conducted on the importance the NTFPs have in the lives of women in collection areas and the problems mentioned above seem to be accentuated for women in several situations. In the areas included in this study, there was not much distinction between men and women when it came to the collection and the compensation for NTFPs. Unlike other regions, where the collection is solely dependent on women, the regions of Mandla and Dindori showed that there does not seem to be such distinctions. Both men and women tend to contribute equal amounts in the collection and sale of the forest products.

Ownership in the forest

Individual households in the study area did not have specified ownership over the trees and the forest, with the exception of trees in their personal gardens or farmland. If a tree was away from the house, it was available for all. There was one clear exception to this rule, in the case of mahua trees. Households divided the ownership of the mahua trees and their produce. They were required to take care of the trees and claimed rights over the produce. The ownership of the trees, while not in writing, was passed on from ancestors for generations.

Environmental repercussions

The Biological Diversity Act, 2002 (Government of India Ministry of Law and Justice 2002) has made it a requirement to ensure sustainable utilization of biological resources. However, several problems with overexploitation and unsustainable practices in NTFP collection can be seen. The Quality Council of India delineates Good Field Collection Practices, but policy action for the same cannot be observed on the field (National Medicinal Plants Board, 2001).

Whereas NTFPs can be a mechanism to keep biodiversity of the forest intact, the over-commercialization of the products has led to their decline. It was revealed during the study that mahul leaves, which are used to make leaf crockery, have reduced to about one tenth of their quality from a few years ago. A similar fate has been borne by amla, which has dramatically decreased in the Dindori district. Unlike seasonal crops, the trees in the forests have a very long gestation period before they become mature enough to yield output. It was noted that the gatherers of NTFPs did not seem to understand this reality. The requirement of financial assets in the wake of their extreme poverty leads gatherers to employ unsustainable methods of collection of the products. Cutting down a dominant branch of the tree is not uncommon. The Forest Department has mechanisms in place to keep in check of gathering practices, however they were found to be ineffective in several cases for mahul trees, amla trees, sagon, and sal trees which have dramatically decreased in number after the commercialization of their produce.

The oligarchical market formation impinges on the sustainability aspect of the goods traded. Because of the greater financial emphasis on the products that the traders place, there is a pressure to gather more of the forest product, often in an unsustainable manner. While the MFP Federation has yearly market summits, where buyers and sellers from across the world come together to decide on minimum support prices for certain products, the free market prices are often higher. The MFP Federation finds it difficult to compete with them. While the minimum support price protects the interests of the gatherers, it puts no bar on the level of exploitation of the forest. While people tend to value current income gain rather than the future gains, the gatherers have a tendency to go beyond what the forest is capable of reproducing.

Case studies on three NTFPs

Bael (*Aegle marmelos*)

In the forests, bael trees are found in abundance, however they are not consumed as a major part of local peoples' diet. The fruits are generally plucked while they are still not ripe for commercial purposes. The method for preparation of bael for selling involves plucking the immature fruit, boiling it in water, breaking

Bael fruit. Credit Bioversity International/G. Meldrum

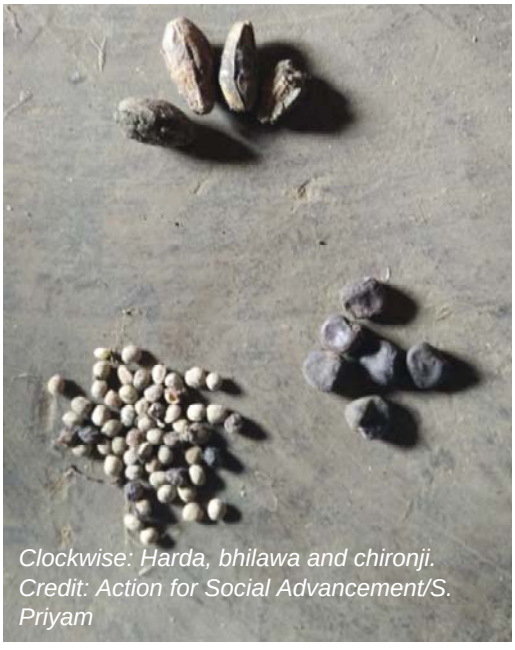
the outer shell, and drying the pulp for about a week in the sun before selling them. The farmers invest a substantial amount of time in gathering and preparing the product. They do not use the dried pulp for anything themselves. There is a small level of consumption of the ripe fruits which takes place. The farmers realize the medicinal potential of the fruit and know that it is used for digestive issues, but this practice did not seem to be very prevalent in the study areas. Bael contains several medicinal and nutritional qualities with include digestive benefits, antidiabetic activity, cardioprotective effects, antimicrobial effects, radioprotecive effects, analgesic effects, and protection against respiratory infections (Sharma et al 2007) among other benefits.

The value chain for bael is similar to that mentioned in Figure 3. The average price local gatherers obtained for bael in the previous season was around 13 INR per kg, and the village traders sold them at with a 2 INR profit. The produce is then used for making incense and Ayurvedic medicines. The MFP Federation's home brand Vindhya Herbals mentioned that they use about 5 to 10 quintals of bael on a yearly basis. The MFP Federation is now in the process of starting a new bael processing plant in Maneri, where various types of drinks will be made out of bael. Although bael currently lacks an established market for its products, for the medicinal and nutritional properties it possesses, a greater consumption and use of this fruit at the village level can help improve the wellbeing and nutrition of local people.

Bhilawa (*Semecarpus anacardium*)

The nut of the bhilawa tree is known as marking nut because it is used extensively by washer men to mark clothes. Bhilawa is found all across the Indian terrain, mainly in Chhatisgarh and surrounding areas. The fruit is eaten and the nut is used for several medicinal purposes. The fruits, oils, and seeds are used to treat a wide range of diseases including leukoderma, scaly skin, allergies, poisonous bites, leprosy, cough, asthma, and dyspepsia. It is also found to be beneficial for piles, colitis, diarrhoea, worms and tumours (Market Information System-Non Timber Forest Product, nd). The way bhilawa is used in the traditional sense is by burning it and mixing the ash with bael seeds, honey, and chironjee. It is said to have antiatherogenic, anti-inflamatory, antioxidant, and antimicrobial effects (Semalty et al 2010).

Because bhilawa has limited uses and is available in abundance from all over India, there is limited scope for additional development of the value chain for this product.



Clockwise: Harda, bhilawa and chironji. Credit: Action for Social Advancement/S. Priyam

However, it has tremendous medicinal uses, of which much of the local community seemed to be unaware. The produce gathered in Madhya Pradesh is directed towards Akola, in Maharashtra, where it is processed and used for Ayurvedic medicines. The MFP Federation's Vindhya Herbals tend to use limited amounts of bhilawa, from 5 to 10 quintals on a yearly basis. The market price at which the villagers sell this to their local markets is about 14 INR per kg. The supply is not so great that it could sustain a highly developed value chain. However, information about the medicinal uses of this product could be propagated at a local level, where health facilities are limited.

Chakora (*Cassia tora*)

Chakora is found all across India as a wild weed growing on road sides and in fields. Up until a few years ago, not much emphasis was laid upon its produce. In the last season, however, the price of chakora suddenly shot up more than 200%. Previously, the price offered from chakora seeds was approximately 15 to 18 INR per kilo, while in the study year, traders reported a price as high as 70 to 90 INR per kilo. The mode rate remained somewhere around 65 INR. This suddenly gave the forest gatherers a bump in their incentives to collect chakora seeds. Families claim to have earned up to 15,000 INR only from the sale of chakora.

Cassia tora. Credit Action for Social Advancement/S. Priyam

When the prices jumped, the villagers claim to have used unsustainable methods of procurement of the seeds. They admit that compared to last season, only about 25% of the chakora bushes are left in the forest areas. When the traders were questioned about predictions of prices about this season, they mentioned that the price of chakora may not get as high as it was in the last season because the push in prices may have led to exploration of several other sources of chakora. The current running prices are at 45 INR per kilo. This number was bound to decline after two months when the supply of chakora seeds increased.

Examining the value chain of chakora, it seems as if it is being largely exported to China and other East Asian countries to be used as slim tea. Alternatively, it is being sent to Australia and Germany for cancer research. From the district level, the leaves are largely sent to Mumbai, for sorting and grading purposes, after which they are exported. Companies in India do not claim to use chakora for medicinal or other consumption purposes. Chakora has the capacity to be used in coffee as a thickening agent, however since this process is adulteration, companies do not claim to use it. Similar can be said for herbal companies like Vindhya Herbals, who said that they had zero consumption of chakora.

The consumption benefits of chakora leaves, which forms a vital, yet underutilized part of the rural tribal diet seem to be immense. What is particularly interesting about the chakora leaves is the amount of protein they possess, which is far beyond WHO and FAO recommendations. In rural diets, the lack of proteins is a major problem that chakora can be used to correct. The large nutritional benefits of chakora leaves cannot be ignored (Kubmarawa et al 2011). In Mandla and Dindori currently there are various other NGOs working for promotion of chakora, like IORA and Pragya. The local-level wild bush is regarded as a food for poor, for

those who have nothing else to eat. As incomes increase, there may be a tendency to shift from this highly nutritious source of energy.

Discussion and conclusions

The areas studied in Mandla and Dindori are not high NTFP zones. They are more inclined towards agriculture, and in comparison with other regions in the same district, they have smaller forest spaces. Nonetheless, NTFPs are important components in the income of their households. Most products are sold informally, with limited or no information about the prices in the general market, which makes the gatherers vulnerable to exploitation.

Madhya Pradesh has very few forest products that have a national monopoly. Most produce can be sold freely in the market. While this gives the villagers a potential for gaining more income, the commercialization of these products being determined by the market forces causes problems in terms of the overexploitation of the forest resources. It can be seen that this has already happened with the mahul trees in the region. With the prices of chakora spiking in the past year, the amount of chakora in the region has also reduced substantially. The regulating body—in this case the Forest Department—should put a check on the level of exploitation. The over-commercialization may cause a decrease in overall biodiversity. The education of the villagers in these matters should also be a concern of NGOs working locally.

Many of the NTFPs are highly nutritious yet, they are not extensively consumed by households. The importance of the diet of the villagers should be made clearer to them, so they do not discontinue their practices. There is a presence of immense traditional knowledge in terms of medicines made from these forest products which already seem to be depleting. Considering the lack of health facilities, a propagation of traditional medicines and associated knowledge could improve local health.

In the lights of the foregoing, it is easy to see that there are immense potentials in the forest to provide of nutrition and medicine for local populations. The level of significance NTFPs exhibit for nutritional and medicinal needs at the local level cannot be discounted. The recent commercialization of forest products has led to a loss in biodiversity in several places. Whether a valuable supply can be constructed for income gains from these forest products, not inhibiting the natural circumstances, is debatable. Commercialization of NTFPs could be promoted through farmer producer companies, where proper storage facilities could be created in order to leverage the gains from selling the produce in time periods of low supply. This process will require a long gestation period.

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