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Forest Certification related to Non-timber forest products (NTFPs) in India: Study of NTFP harvest of *Rhododendrons* in Western Himalayas for its Sustainable Use

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Abstract: Forest certification is an efficient tool for utilization of important and economically viable forest products and linking them to the sustainable forest management practices ensuring their sustainable utilization. It includes social, economic, and environmental facets, thereby helping reduce the anthropogenic pressures on the forest-based resources and maintaining forest ecosystem services. The Western Himalayas provides many Non-timber forest products (NTFPs) that are utilized by the locals providing various livelihood opportunities to the native Himalayan communities. *Rhododendron* species belonging from the genera of Ericaceae family, is one such economically viable NTFP in the Himalayas which is harvested extensively for its varied medicinal and economic benefits. Among the many products made from the *Rhododendrons* like jams, juice, tea and local beverages, the harvest of *R.arboreum* which is found at an altitude of 1500m-3000m in the Himalayan region with bright red-pinkish flowers remains prominent as it provides a huge market value in the study region. As the current trends on forest certification are gaining increasing momentum and its positive impact on people, supply chains (timber and non-wood products), and ecosystem services is rising globally, our study caters to the need for forest certification for the harvest of *Rhododendrons* in Western Himalayas. The study lies in exploring the case of forest certification for the *Rhododendrons* in Western Himalayas through the Forest Stewardship Council (FSC) NTFP certification provisions which is globally one of the most leading forest certification agency, as certification for *Rhododendrons* can be used as an efficient mechanism for encouraging sustainable forest practices which allows consumers to gain benefit from the forests without influencing the health of the forest-based resources in the long run.

Keywords: Forest Certification; Himalayas; NTFPs; Rhododendrons; Sustainability

1. Introduction

Non-timber forest products (NTFPs) play an important role in rural subsistence and enhancement of livelihoods for the local communities. However, with subsequent commercialization of NTFPs threats to forest based resource through over harvesting is a major concern leading to ecological imbalance and environmental loss. Thus, in order to maximize the benefits of NTFP commercialization, sustainable utilization of resources should be aimed with the active engagement of the community. The increased concern over NTFPs harvest, in the past few years, have led to an increasing demand with recognition of the contribution that NTFPs make to the livelihoods support of communities in developing countries [1], and the suggestion that NTFPs can be harvested with relatively little impact on the forest environment [2]. But there are different views on the sustainable

harvesting methods and possibilities of NTFPs extraction. In a review of the overall impacts of commercial NTFP harvesting, [3] highlights that the harvest of many of NTFPs are rampant, or in an unsustainable manner and hence have the potential to affect the vitality of the resources.

Certification is a new and advancing market tool for encouraging the responsible use of resource stewardship through the proper labeling of consumer related products, thereby fostering a trust in the consumer regarding the sustainable harvest and legal origin of the harvested produce. One of the problems faced in the certification of NTFPs lies in the fundamental lack of information on their overall production, consumption and trade. Monitoring and evaluation systems are still at an early stage and insufficient in order to properly collect and analyze key information related to NTFPs certification. Also, while considering international markets for NTFPs, the provisions of international laws, rules and regulations of governing trade also comes into play. The cost of compliance with certification is also high which although adds to the value of the overall product, but makes it tricky for small scale forest dwellers and non-competitive markets.

The paper discusses the case of economically important NTFP, *Rhododendrons* from Ericaceae family in the Indian Himalayas with prominent market value in the study area. *Rhododendrons* are utilized extensively by the communities and provides an important source of livelihood support to the locals [4]. The study lies in exploring the forest certification for the *Rhododendron*s in Western Himalayas through the provisions of NTFP criteria and indicators and the certification of Forest Stewardship Council (FSC) with its various prospects and challenges. The paper also suggests pro-active action to be taken by the involved agencies and cottage industries in NTFP trade, with the measures on active involvement of the stakeholders along the chain to be certified, making it cost-effective as well as aiding in the increasing demand of the certified material. Further, through awareness generation, and standards for NTFP certification to be incorporated into the national policies and state working plans for effective management and sustainable use of the forest resource.

2. Material and Methods

2.1. Study area

The location for the present study lies in the Uttarakhand region of the Western Himalayas located at 30°17′N-30°41′N latitude and 79°40′E-80°5′E longitude. The given region provides three agroecological zones such as the lower elevation at <1000m asl; the middle elevation, between 1000m and 1800m asl, and the higher elevation at >1800m asl. This Himalayan region is quite susceptible to anthropogenic pressures and influences posing a risk to the overall biodiversity [5]. This Himalayan region, provides vegetation types that include subtropical forest types, zones of alluvial grasslands, conifer mountain forests types and rich alpine meadows at different altitudes. The Uttarakhand state in the Himalayas is of great ecological importance and is rich in biodiversity providing many ecosystem services. *Rhododendron* forests are prominent in the region and provides local and economic benefits and support to the communities [6]. This NTFP has a high market value in the study area providing good base for our research of the forest certification of the *Rhododendron*s in the aforementioned study location.

2.2. FSC certification

Various studies focus on certified production of NTFPs, covered by the FSC certification system. In the year 1999, the FSC approved the development based on case-by-case standards for important NTFPs [7]. Subsequently, various other NTFPs have been certified under the FSC system, some of them include: chicle latex, maple syrup, Brazil nuts, and palm hearts [8,9] as shown in Table 1. Although FSC NTFP standards benefit producers and tend to support the biodiversity conservation but also involves various challenges. Some of them include a lack of global recognition and available markets for the certified

products, and financial constraints in some cases. Further, heavy competition among the various organic and Fairtrade certification schemes also proves to be a major factor that contributes in reducing the demand for FSC certified NTFPs [7,10].

Table 1. List of Products successfully certified under FSC. Source: [11].

Product	Use	Scientific name	Country
Chicle (latex)	Ingredient in chewing gum	*Manilkara zapota*	Mexico
Maple syrup	Sweetener	*Acer saccharum*	USA
Palm heart Acai juice	Food Beverage	*Euterpe edulis*	Brazil
Oak tree	Bark Incense	*Quercus robur*	Denmark
Brazil nuts	Food	*Bertholletia excelsa*	Brazil
Venison	Food	*Cervus elaphus*	Scotland

2.3. Data collection

For the data collection on the forest certification related to Non-timber forest products (NTFPs), an ethnobotanical survey was carried out in the study location to collect the baseline information for the present study. Structured questionnaires and interviews were conducted among the local communities following the methods covered by [12]. The questionnaire survey mainly covered the usage pattern of *Rhododendron* plant parts which are used to provide economic benefits to the local communities. Personnel interviews were also carried out from the main collectors/harvestors and involved local traders of the small-scale cottage industries in the area to collect information on the overall market value of *Rhododendrons* sp. like *R.arboreum.* The products like jams, squashes, juices have a large commercial market value in the study area. The forest certification for the *Rhododendron*s in Western Himalayas is further studied through the lens of Forest Stewardship Council, FSC certification with the focus on NTFPs for the developing countries like India. The research also highlights the various challenges and opportunities available for the certification for the sustainable usage of the NTFPs and forest-based resources in the study area.

3. Results

3.1. Role of NTFPs in livelihood subsidence

NTFPs play an important role in sustaining the rural livelihoods in developing countries. Various small-scale forest industries depend on the usage of NTFPs, to provide nearly half the income of about 25 % of India's overall rural labor class [12]. It is estimated that NTFP products and its harvest in India generate about 70 per cent of all employment opportunities in the Indian forestry sector and about 100 million local villagers depend on the collection of NTFP forest products for their incomes [13]. NTFP collection and harvesting in India is crucial to the subsistence of local livelihoods and helps in providing livelihood opportunities to communities and forest dwellers. NTFPs can be used either as raw material and ingredient for foods together with other products like cosmetics, medicines, handicrafts, furniture, and clothing. Some NTFPs have also been used as natural dyes in clothing, medicines, food and cosmetics. The collection and harvest of NTFP initially was mainly for self-consumption and local uses however, with an increasing demand for natural products and rapid commercialization, NTFPs have become a marketable commodity and is harvested in greater quantities and sold to the consumers for driving economic benefits. Thus, in addition to the direct dependence of locals on NTFPs, forest dwellers and rural communities are also able to generate livelihood opportunities and increase their cash income from the trade of economically viable NTFPs harvested from the forests.

Table 2. NTFP based Certification Programmes. Source: [14].

	(FSC)	(IFOAM)	(FLO)
List of NTFPs certified or under the process of certification	Chicle, baskets, palm hearts,maple syrup	Berries, coffee, mushrooms, tea, honey, ginseng	tea, honey, bananas, cocoa ,coffee,
Basic approach for NTFP certification standards	Basic principles and criteria, with region specification; NTFP guidelines used on a case by case basis	standards with section for wild-harvested products in addition	Usage of standards on a product to product basis
Current issues faced	Requirement for a consistent framework focussing on NTFP certification	Clarifying boundaries with FSC in regard to the forest based product certification, working on expanding social criteria	Harmonizing the involved criteria and refining the overall process of certification. Further finding and investigating new products for undergoing certification
Chief focus for NTFP certification	Ecologically sound and sustainable with socially responsible forestry	Avoidance to contamination by, chemical pesticides/harmful fertilizers	Equitable distribution and fair sharing of the benefits to producers

Forest Stewardship Council (FSC); International Federation of Org Agri. Movements (IFOAM); Fairtrade Labelling Organizational International (FLO)

3.2. Rhododendrons NTFP harvest for Local and Commercial Use

Rhododendrons are used extensively for both local and commercial purpose in the Himalayas. The native communities use the harvested *Rhododendrons* for making jams, juice, squashes and other beverages. It is also highly rich in antioxidant and anti-inflammatory properties [15]. The commercial market value is most dominant for the harvest of *Rhododendron arboreum* flowers found in pinkish color and is used for processing of *Rhododendron* squash or 'buransh' in the local language. The bioprospecting potential of the *Rhododendrons* studied by [16] shows the high market-value of the beverage generating many livelihood options for the native Himalayan communities.

The *Rhododendrons* NTFP harvest for its various products for the consumer usage is identified in Figure 1. These different products ranging from juice, jellies, sauces and beverages are used in pharmaceutical industries, cottage industries as well as different food industries to bring the *Rhododendron* products at the consumer level and provide economic benefits to the locals.

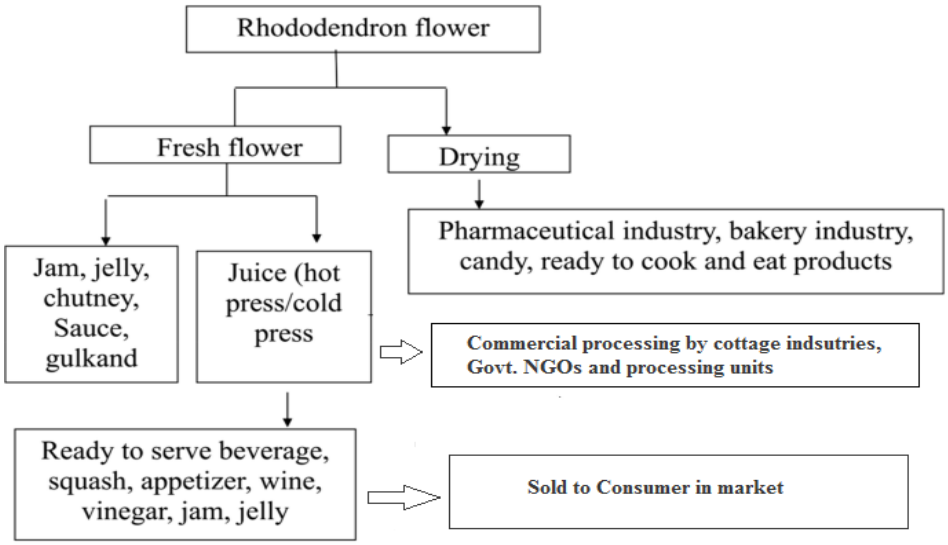

Figure 1. *Rhododendrons* NTFP harvest for Consumer usage. Source: Modified from [17].

3.3. FSC certification and NTFPs

FSC certification in the case of NTFPs is of recent origin and a few NTFPs have been certified in different countries so far. *Chicle gum* (from the tree *Manilkara chicle*) from the country Mexico was known to be the first recognized NTFP to be successfully certified and labeled under the FSC certification in the year 1999. *Erva mate or Yerba mate* (*Ilex paraguariensis*), an important herb used in traditional tea preparation popular in the regions of Argentina, Paraguay, Brazil, and Uruguay, was certified in Brazil [18]. In countries like India, so far FSC certificate has been awarded to a company involved in the making of wooden toys. However, a number of studies assessing potential for FSC certification in medicinal plants are under developments in India [19]. FSC allows countries and certifiers to develop their own regional standards based on the respective local ecological, social and economic conditions, and by the principles and criteria approved by FSC. The local set of criteria and indicators designed especially for the NTFPs as studied by [20] in Table 3 highlights the special requirements for the NTFP certification. Furthermore, the FSC 10 principles and their criteria and indicators aim to address the various issues ranging from the inherent laws and regulations to the local indigenous rights, management planning, worker's safety, protection of wildlife habitat, and overall environmental conservation. These principles can also be applied to NTFP certification. A draft principle 11 has also been proposed and being revised specifically for the case of NTFPs. The development of criteria and specific guidelines for NTFPs would certainly require additional research and experimentation [11].

Table 3. Local set of criteria and indicators developed for the NTFP certification. Source: [20].

Criteria	Indicators
1. Natural status regarding NTFPs	1.1 Abundance of NTFPs in natural forest area
	1.2 Information on level of anthropogenic and other disturbance
	1.3 Information on the oevarll vigor and growth of the related species
	1.4 Information on the diversity of NTFP species in the area
2. The involved collection system	2.1 Effective Legal procedure of NTFP harvest and collection
	2.2 Collection for the sustainable harvesting practices
	2.3 Effective guidelines for sustainable harvesting related to NTFPs

	2.4 Enhancing harvesting practices like selective harvesting, and rotational harvesting 2.5 Local indigenous people right over the usage of resources
3. Related research and development	3.1 Continous assessment for NTFPs status and monitoring 3.2 Strenghethening research on harvesting related technology 3.3 Working on facility of chemical testing 3.4 Exploration on NTFPs ecological and biological related characteristic
4. Domestication/ cultivation information	4.1 Identification and marking of potential area for cultivation 4.2 Identification of important NTFPs for domestication 4.3 Strenghethning of guidelines for cultivation and domestication purposes 4.4 Working on nursery establishment and effective seedling production 4.5 Strenghethning of cultivation related practices
5. Information on the enterprise development plus value addition	5.1 Strenghethning of the NTFP related enterprise development 5.2 Community involvement in value addition 5.3 Looking into the private sector investment 5.4 Working on certification and labelling 5.5 Enhancing the overall quality of the products 5.6 Strenghthening of government related initiatives
6. Marketing startegies	6.1 Accessibility to the commercial market for the related products 6.2 Strenghthening of market information system 6.3 Working on availability of alternative markets for related products 6.4 Strenghthening the networking ties of the related consumers, producers and traders 6.5 Enhancing the transportation facility
7. Consumer Awareness	7.1 Awareness of people regarding NTFP conservation 7.2 Trainings and awareness regard to sustainable harvesting 7.3 Domestication and technique related orientation

4. Discussion

The overall contribution of NTFPs in the lives of forest-based communities has been of significant value worldwide, due to their role in supporting the rural livelihoods across different regions. Various NTFPs have been certified through the certification standards like the harvest of brazil nuts (*Bertholletia excelsa),* rubber extraction from the Amazon area *(Heavea brasilenses),* and *Marula* usage *(Sclerocarya birrea*). [8,11,21]. *Rhododendrons* in India are an important NTFP which is harvested widely and is used for various medicinal and local uses. The study covers the utilization pattern of *Rhododendrons*, the products utilized and the various challenges and benefits involved with the certification for the promotion of sustainable harvest of the NTFP from the Himalayan forests. However, with the expansion of forest certification schemes towards important NTFPs, the certification may work on enhancing:

- development of basic certification standards for the utilization of NTFPs in a cost-efficient way;
- work on gap areas related to incomplete information in NTFPs markets;
- establishment of a more robust approach for the sustainable harvesting of NTFPs and efficient forest management practices.

- Work on the reduction of various externalities related to the usage of important NTFPs and their commercial trade and market.

Certification Benefits for the communities:

- Provides premium on the certified products to the involved stakeholders.
- Provides a measure of good management plan that communities can use to protect their access to a forest- based resource and its services.
- Promotes sustainable harvest of NTFPs.
- Promotes forest policies and management practices for Long term forest health.

5. Conclusion

Certification related to (NTFPs) is a growing and advancing field in India. A variety of certification schemes with standards by different organizations have been rising up from the past few years. The aim to focus on a more sustainable usage of forest-based resources is of chief importance for many of these standards. These certification standards focus on particular objectives and to promote the benefits to the local producers as well as work to reduce the overall environmental impact [21]. *Rhododendrons* are one such economically important NTFPs in the Himalayas which are extracted extensively for generating economic benefits. The market chain of its products is widespread in the study region and has a high potential for certification ensuring sustainable harvest to maintain its long-term health in the forests. However, it is important to note that a certification associated with NTFPs should entail practices within the ecological constraints and ensure social and economic benefits to the local harvesters, processors and native communities. Certification also serves as a tool for quality assurance to the consumers thus benefiting the environment, social and economic domains of sustainable development.

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