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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 the utilization of important and economically viable forest products and linking them to sustainable forest management practices ensuring their sustainable utilization. It includes social, economic, and environmental facets, thereby helping reduce the anthropogenic pressures on forest-based resources and to maintain forest ecosystem services. The western Himalayas provides many non-timber forest products (NTFPs) that are utilized by local people providing various livelihood opportunities to native Himalayan communities. Rhododendron species with bright red-pinkish flowers, belonging to genera of the Ericaceae family, found at an altitude of 1500–3000 m in the Himalayan region, is one such economically viable NTFP in the Himalayas which is harvested extensively for its varied medicinal and economic benefits. As the current trends in forest certification are gaining increasing momentum with positive impacts on people, attention to supply chains (timber and non-wood products) and ecosystem services is rising globally; our study considers the need for forest certification for the harvest of Rhododendrons in the western Himalayas. The study explores Forest Stewardship Council (FSC) certification, which is globally one of the leading forest certification schemes, and its provisions for the Rhododendron NTFP harvest, as the scheme can be used as an efficient mechanism for encouraging sustainable use of the harvest. Certification of the Rhododendron harvest will help in adopting improved harvesting practices, as well as providing support to local communities, without influencing the health of forest-based resources in the long term. The findings of the research are discussed with respect to various benefits and challenges for NTFP certification in the study area.

Keywords: forest certification; Himalayas; NTFPs; Rhododendrons; sustainability

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1. Introduction

Non-timber forest products (NTFPs) play an important role in rural subsistence and the enhancement of livelihoods in local communities. However, with the commercialization of NTFPs, threats to forest-based resources through over-harvesting are a major concern, potentially leading to ecological imbalance and environmental loss. Thus, to maximize the benefits of NTFP commercialization, the sustainable utilization of resources should be sought with the active engagement of the community. Non-wood forest products (NWFPs), as defined by the Food and Agricultural Organization (FAO), are products which are of "biological origin other than wood derived from forests", such as medicinal aromatic plants, wild edibles, fodder and other harvested forest products; similar to NWFPs, non-timber forest products (NTFPs) do not exclude wood other than timber. The increased concern over NTFP harvests in recent years reflects increasing demand, with recognition of the contribution that NTFPs make to supporting the livelihoods of community members in developing countries [1], and the suggestion that NTFPs can be harvested with relatively

little impact on the forest environment [2], though there are different views on sustainable harvesting methods and the possibilities for NTFP extraction.

Certification is a new and increasingly used marketing tool for encouraging responsible resource stewardship through the proper labeling of consumer-related products, fostering 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 of development and are insufficient to properly collect and analyze key information related to NTFP certification. In addition, when considering international markets for NTFPs, the provisions of international laws, rules and regulations for governing trade also come into play. The cost of compliance with certification is also high, which, though adding to the value of the overall product, makes it challenging for small scale forest dwellers and non-competitive markets.

The paper discusses the case of an economically important NTFP, Rhododendrons from the Ericaceae family in the Indian Himalayas, which have a prominent market value in the study area. Rhododendrons are utilized extensively by communities and provide an important source of livelihood support to local people [3,4]. The study explores forest certification for Rhododendrons in the western Himalayas, through the provisions of NTFP certification by the Forest Stewardship Council (FSC), considering its various prospects and challenges. The paper also considers the active involvement of stakeholders and how certification can be made cost-effective as well as aiding in increasing demand for the certified material. Further, awareness-raising about certification and effective measures for the promotion of the sustainable use of the forest resources through national policies and state working plans are discussed.

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 region comprises three agroecological zones including the lower elevation at <1000 m asl, the middle elevation, between 1000 m and 1800 m asl, and the higher elevation at >1800 m asl. This Himalayan region is quite susceptible to anthropogenic pressures and influences posing a risk to overall biodiversity. The region contains vegetation types that include subtropical forest, zones of alluvial grasslands, conifer mountain forests 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 provide local and economic benefits and support to communities [5]. This NTFP has a high market value in the study area providing a good basis for our research of the forest certification of Rhododendrons in the study location.

2.2. FSC Certification

Various studies have focused on the certified production of NTFPs covered by the FSC certification system. In 1999, the FSC approved NTFP development based on case-by-case standards for important NTFPs [6,7]. Subsequently, various other NTFPs have been certified under the FSC system, including chicle latex, maple syrup, Brazil nuts, and palm hearts [8,9]. FSC NTFP standards benefit producers and tend to support biodiversity conservation but also involve various challenges, such as lack of global recognition and available markets for the certified products, and, in some cases, financial constraints. Moreover, heavy competition among the various organic and Fairtrade certification schemes has proven to be a major factor that can contribute to reducing the demand for FSC-certified NTFPs [7,10]. In the present study, FSC certification is the primary focus as it provides many benefits over other certification schemes.

Some of the benefits of FSC certification are highlighted below:

2.3. Benefits of FSC Certification

a. Wide global reach—FSC offers one of the most extensive global reaches of all the existing certification schemes.
b. Highest certification history—the majority of certifications globally have been successfully carried out by the FSC.
c. Good stakeholder diversity—FSC certification directly addresses the main sustainability domains, including environmental, social and economic aspects with stakeholder diversity, and reach among different countries and organizations.
d. Recognition by credible NGOs and agencies—FSC associations includes major global environmental organizations, such as the National Wildlife Federation, Forest Ethics, the Rainforest Action Network, the World Wildlife Fund, Rainforest Alliance and many others, offering a highly credible and renowned certification system.

2.4. Data Collection

For 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 local communities following the methods of [11] to collect information on the usage pattern of Rhododendrons that are harvested to provide local and economic benefits to the native communities in the study area. Rhododendron species, such as R.arboreum, have an overall market value for products including jams, squashes, and juices which are actively processed in cottage industries. The informants to the study were mainly native locals and local traders (n = 62) working in small-scale cottage industries (n = 25) involved in Rhododendron NTFP collection in the community villages of the Garhwal region in our study location of Uttarakhand. The forest certification for Rhododendrons in the western Himalayas was further studied through the lens of Forest Stewardship Council (FSC) certification, and secondary literature focusing on NTFP certification in developing countries such as India. The research findings provide an overview of the various challenges and opportunities with respect to certification of NTFPs and their sustainable use in the study area.

3. Results

3.1. Role of NTFPs in Livelihood Subsidence

NTFPs play an important role in sustaining 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 their harvest in India generate about 70 per cent of all employment opportunities in the Indian forestry sector and that 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 materials and ingredients for foods, together with other products, such as cosmetics, medicines, handicrafts, furniture, and clothing. Some NTFPs have also been used as natural dyes in clothing, medicines, food and cosmetics. The collection and harvesting of NTFPs was initially mainly for self-consumption and local use; however, with increasing demand for natural products and rapid commercialization, NTFPs have become a marketable commodity and are harvested in greater quantities and sold to consumers to drive economic benefits. Thus, in addition to the direct dependence of locals on NTFPs, forest dwellers and rural communities are also able to create livelihood opportunities and increase their cash income from the trade of economically viable NTFPs harvested from the forests.

3.2. Rhododendron NTFP Harvest for Local and Commercial Use

Rhododendrons are used extensively for both local and commercial purposes in the Himalayas. The native communities use harvested Rhododendrons for making jams, juice,

squashes and other beverages. Rhododendrons are very rich in antioxidant and anti-inflammatory properties [14]. The commercial market value is highest for the harvest of Rhododendron arboreum flowers, which have a pinkish color and are used for processing of Rhododendron squash, or 'buransh' in the local language. The bioprospecting potential of Rhododendrons studied by [15] highlighted the high market-value of the beverage, generating many livelihood options for native Himalayan communities.

The various products of the Rhododendron NTFP harvest for consumer usage are detailed in Figure 1. These products range from juices, jellies, sauces and beverages and are used in pharmaceutical industries and cottage industries, as well as different food industries, bringing Rhododendron products to consumers and providing economic benefits to local people.

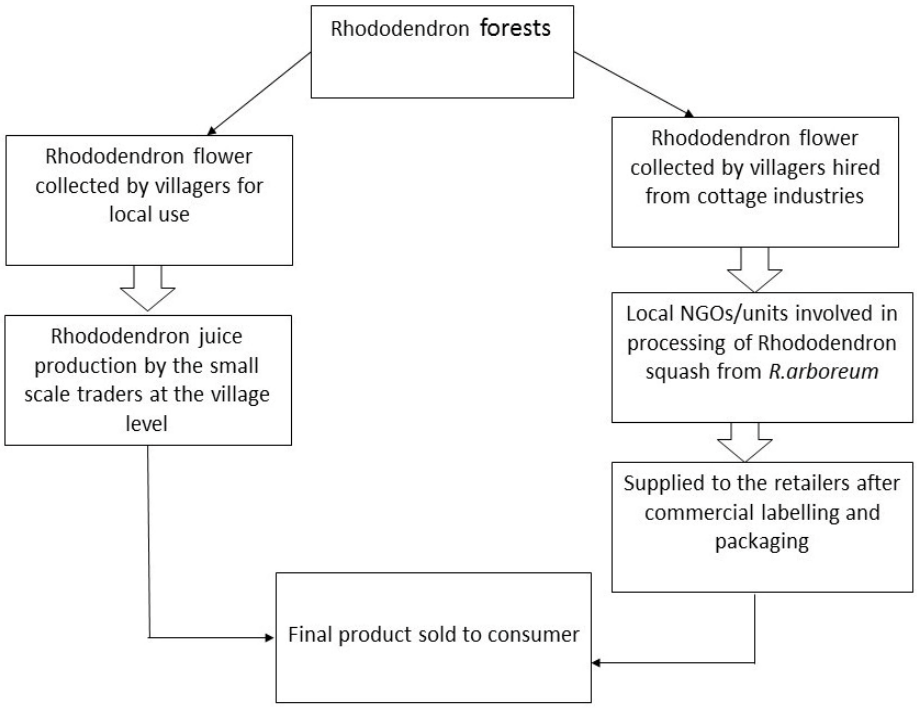

Figure 1. Flow-diagram of NTFP harvest in the study area.

3.3. FSC Certification and NTFPs

FSC certification for NTFPs is of recent origin and only a few NTFPs have been certified in different countries to date. Chicle gum (from the tree Manilkara chicle) from the country Mexico was the first recognized NTFP to be successfully certified and labeled under FSC certification in 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 [16]. In countries such as India, so far FSC certificate has been awarded to a company involved in the making of wooden toys. However, a number of studies assessing the potential for FSC certification in medicinal plants are under development in India [17]. FSC allows countries and certifiers to develop their own regional standards based on the respective local ecological, social and economic conditions, according to the principles and criteria approved by the FSC. The local set of criteria and indicators designed especially for NTFPs, as studied by [18], highlighting the special requirements for NTFP certification, are shown in Table 1.The 10 FSC principles, and their criteria and indicators, aim to address various issues, ranging from relevant laws and regulations to 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

is being revised specifically for NTFP certification. The development of criteria and specific guidelines for NTFPs would certainly require additional research and experimentation [12].

Table 1. Local set of criteria and indicators developed for NTFP certification. Source: [18].

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 overall vigor and growth of related species 1.4 Information on the diversity of NTFP species in the area
2. The involved collection system	2.1 Effective legal procedure for NTFP harvest and collection 2.2 Collection for sustainable harvesting practices 2.3 Effective guidelines for sustainable harvesting related to NTFPs 2.4 Enhancing harvesting practices, such as selective harvesting and rotational harvesting 2.5 Local indigenous people's rights over the usage of resources
3. Related research and development	3.1 Continous assessment for NTFP status and monitoring 3.2 Strenghening research on harvesting-related technology 3.3 Working on facilities for chemical testing 3.4 Exploration of NTFP's ecologically and biologically related characteristics
4. Domestication/cultivation information	4.1 Identification and marking of potential areas for cultivation 4.2 Identification of important NTFPs for domestication 4.3 Strengthening of guidelines for cultivation and domestication purposes 4.4 Working on nursery establishment and effective seedling production 4.5 Strengthening of cultivation-related practices
5. Information on the enterprise development plus value addition	5.1 Strengthening of NTFP-related enterprise development 5.2 Community involvement in value addition 5.3 Looking into private sector investment 5.4 Working on certification and labeling 5.5 Enhancing the overall quality of the products 5.6 Strengthening of government-related initiatives
6. Marketing startegies	6.1 Accessibility to the commercial market for related products 6.2 Strengthening of market information system 6.3 Working on availability of alternative markets for related products 6.4 Strengthening networking ties of related consumers, producers and traders 6.5 Enhancing the transportation facility
7. Consumer Awareness	7.1 Awareness of people regarding NTFP conservation 7.2 Training and awareness regarding 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 rural livelihoods across different

regions. Amongst others, various NTFPs have been certified globally through certification standards, such as the harvest of Brazil nuts (Bertholletia excelsa), rubber extraction from the Amazon area (Heavea brasilenses), and Marula usage (Sclerocarya birrea), for their sustainable utilization [8]. Other researchers, such as Pierce and Shanley [10,19] have also studied the commercialization of NTFPs identifying various opportunities and challenges, while, in India, researchers, such as Yadav and Dugaya [20], have worked extensively to support and develop certification provisions for important NTFPs in the country.

In the present study, certification of Rhododendrons was studied as an important NTFP harvested widely in the Himalayan region and used for various medicinal and local uses. The study covered the utilization pattern of Rhododendrons, the products utilized, and the various challenges and benefits involved with certification for the promotion of their sustainable use and harvest.

4.1. Certification Benefits for the Communities

- Provides a premium on the certified products for involved stakeholders.
- Provides an effective management plan that communities can use to protect their access to forest-based resources and services.
- Promotes sustainable harvesting of NTFPs.
- Promotes forest policies and management practices for long-term forest health.

4.2. Challenges and Prospects of NTFP Certification

- Development of basic certification standards for the utilization of NTFPs in a cost-efficient way.
- Identification of gap areas related to incomplete information on NTFP harvest, economic benefits and market value.
- Establishment of a more robust approach for the sustainable harvesting of NTFPs and efficient forest management practices.
- Reduction in various externalities related to the usage of important NTFPs and their commercial trade and market.

5. Conclusions

Certification related to NTFPs is a growing and advancing field in India. A variety of certification schemes with standards set by different organizations have been emerging over recent years. The aim of ensuring more sustainable usage of forest-based resources is of primary importance for many of these standards. The certification standards focus on particular objectives and promote the benefits to local producers as well as working to reduce the overall environmental impact. Rhododendrons are one such economically important NTFP 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 high potential for certification to ensure sustainable harvesting to maintain its long-term health in the forests. However, it is important to note that 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 environmental, social and economic domains of sustainable development.

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