**Exploring Certification Pathways for Non-Wood Forest Products: A Study of Opportunities and Challenges**

**Abstract**

Non-wood forest products (NWFPs), including medicinal plants, nuts, and bushmeat, serve as a source of sustenance and income for hundreds of millions of individuals. The global trade in NWFPs presents significant potential profits but also considerable risks of unsustainable exploitation or unfair allocation of benefits. In this context, a dialogue is developing on the benefits and obstacles of certification as a means to encourage the sustainable utilization of natural resources, encompassing NWFPs. Certification programs related to NWFPs encompass forest management, social responsibility, organic standards, and product quality certification. These plans emphasize, to varying extents, social, economic, ecological, and/or product quality concerns. Essential criteria for the certification of NWFPs encompass the creation of a restricted and overseen permit system, the formulation of explicit tenure rights, controlled access to harvesting locations, the establishment of niche markets, and the execution of quality control protocols. Data on NWFP certification remains inadequate to accurately evaluate the utility and impact of certification as a means to encourage the sustainable use of NWFPs. The existing literature reveals opportunities, limitations, and ambiguous matters that necessitate deeper examination to deliver reliable information on the advantages and disadvantages of NWFP certification

**Keyword:** NWFP, certification, forest management, organic agriculture, sustainable forest.

1. **INTRODUCTION**

Forests offer a wide variety of goods and services beyond timber, such as food, medicines, fibers, resins, and other essential materials now grouped together as Non-Wood Forest Products (NWFPs) (Bhattacharyya et al. 2009; Bhardwaj et al. 2023). For centuries, these goods have been essential to the livelihoods of rural populations, especially in developing nations, providing direct income, resources for subsistence, and job opportunities (Kumar et al. 2023). Nevertheless, rising global demand, along with unsustainable extraction methods and alterations in land use jeopardize the long-term availability and robustness of various NWFP resources. Non-wood forest products (NWFP) refer to biological goods, excluding wood, sourced from forests, other wooded areas, and trees outside forested regions" (FAO, 1999). They consist of consumable nuts, fungi, fruits, herbs, seasonings, resins, fragrant plants, wild game, feed, and plant or animal items for health, beauty, or cultural purposes (Hanson, 1992; Mandwa et al. 2024; Tiwari et al. 2024). Even today, hundreds of millions of individuals, primarily in developing nations but also in developed ones, obtain a substantial portion of their subsistence requirements from utilizing NWFP like medicinal herbs, building supplies, or food items (Mallet, 2000). Earnings from plant and animal products collected from forests are obtained through local, national, transnational, and international commerce.

 The global trade in NWFP carries significant opportunities and dangers. The primary advantage of international trade in NWFP is the elevated market value that products attain relative to local or national markets (Chandra et al. 2024). Nonetheless, elevated market values along with significant demands can result in unsustainable usage, as they may trigger the overexploitation of species that supply NWFP (Kumar et al. 2022). Furthermore, elevated product values may not be uniformly distributed among all stakeholders engaged in the collection, processing, manufacturing, trading, and marketing of NWFP.

Certification is viewed by different stakeholders as a means to encourage the sustainable utilization of natural resources, including NWFP (Chandra et al. 2021). The three main aspects of sustainability are i) ecological responsibility; ii) financial feasibility; and iii) social justice. Due to the varying interests and perceptions of 'sustainability' among stakeholders in NWFP certification, certification often emphasizes specific elements rather than covering all dimensions of sustainable natural resource use/NWFP (Vaishnav et al. 2025). This study seeks to explore the ability of NWFP certification to promote beneficial changes in the management and use of these important resources, recognizing the inherent difficulties of establishing and sustaining reliable certification systems in varied and frequently complicated socio-ecological settings.

## STATUS OF FOREST CERTIFICATION

### 2.1 Global status

On a global scale, two rival certification systems exist with distinct functioning methods. The Forest Stewardship Council (FSC) offers all essential components of certification via centralized decisions regarding standards and accreditation (Pierce and Laird, 2003). The Program for the Endorsement of Forest Certification (PEFC) functions as a mutual recognition system among national certification systems. Nearly two-thirds of the globe’s accredited forests hold a PEFC certification, while the FSC represents 28%; the leftover forests are certified exclusively through national certification systems (Pierce et al. 2008).

**2.2 India status**

In India, several forest certification initiatives have been carried out, including two FM certificates granted in 2002, one in UP and another in West Bengal, for small private plantations adhering to FSC standards. The inaugural certification awarded in India was a FSC CoC certification, granted in January 2001 to a toy manufacturer in Shaharanpur, UP for Babul (*Acacia nilotica*) and Shisham (*Dalbergia sissoo*) timber species (Rametsteiner and Simula, 2003). The second certification in India was for FM & CoC certification granted by FSC in 2002 on 432 acres for Kadam (*Ailanthus grandis*) plantations located in West Bengal. Nonetheless, both of these certificates were terminated within one year of being issued for reasons that are unclear (Shanley and Stockdale, 2008).

 In 2002, the third and fourth CoC certifications were issued for Silver Beech (*Nothofagus Menziesii*) wood species from France, brought in by hand tool manufacturers located in Jalandhar, Punjab (Stark et al. 2008). The hand tools are shipped to the European nations. Both of these certifications are still active today, making them the oldest CoC certifications in India. IIFM has conducted pioneering work by implementing Forest Certification pilots for bamboo resources in the northeastern states of Tripura, Arunachal Pradesh, and Nagaland (Yadav et al. 2003). A collective of farmers growing indigenous bamboo varieties in the Katlamara area of Tripura has been inspected by a certified FSC organization, and the certification nearly reached completion in 2003; nonetheless, due to reasons unknown to the authors, it did not culminate in a successful outcome. This nearly ten-year-old initiative is being revived in 2012 by the farmers themselves, potentially with the backing of state agencies such as the Tripura Forest Development and Plantation Corporation (TFDPC) Limited (Barhag et al. 2024).

At present, there exist merely 4 FSC Forest Management Certificates in India, located in Karnataka, Orissa, Andhra Pradesh, and Tamil Nadu, covering an area of 39,160.49 ha. A few additional FM certification evaluations are being conducted in various regions of the country (Andhra Pradesh and Madhya Pradesh) following the FSC standard. These regions consist of farm-forestry backed by corporations or are plantations started by the community.

Recently, there has been a notable surge in chain-of-custody (CoC) certifications in India, especially since 2006. By July 2012, there were 328 FSC CoC certifications and eleven PEFC CoC certifications granted to various kinds of businesses in India (Bargah et al. 2024). Initial analysis of these CoC certifications granted to Indian businesses reveals that most CoC certifications are held by small and medium-sized forest enterprises. These businesses include pulp and paper mills, woodcraft and hand tool manufacturers, printing and publishing companies, plywood, paper and board industries, as well as timber merchants and exporters. Nonetheless, none of these pertain to NTFP certification.

**Certification schemes relevant to NWFP**

Certification programs associated with natural resource utilization have primarily been created for timber and agricultural goods. Four primary types of certification schemes have been recognized as highly relevant for the utilization of NWFP and are succinctly outlined below: Forest management, social, organic, and product quality certification. For additional details regarding these certification schemes, refer to Walter (2002a, 2002b). Based on their fundamental concepts, these certification programs emphasize various aspects like production, processing, manufacturing, along with trade and marketing. Nevertheless, numerous schemes do not concentrate solely on a single domain but encompass, to varying extents, multiple areas (Turner and Loewen 1998). As a result, significant overlaps and possible synergies among the various certification programs are present. The certification programs mentioned below are voluntary initiatives that must comply with mandatory national and international laws, regulations, and conventions. Instances of international treaties and conventions that are legally enforceable for signatory nations encompass the World Trade Organization agreements, the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), along with additional associated laws and regulations (Wiersum et al. 2008). They establish the legal framework for all voluntary certification programs.



**Fig. 1. Overview of relevant certification schemes in the field of NWFP.**

Forest management certification programs primarily evaluate ecological elements of resource management, both at the forest level and for specific species or products, incorporating chain-of-custody certification. Numerous programs are available at the international, regional, and national levels that primarily target timber products while only slightly incorporating NWFP.
 Social certification systems, like fair and ethical trade, ensure that working conditions are satisfactory and that benefits are fairly distributed among all participants in production and trade. Such trade initiatives promote business collaborations and the management of supply chains, encompassing secure and equitable commercial agreements while facilitating the availability of market information (Kruedener, 2000). Key criteria addressing social issues encompass: i) Land tenure and traditional rights; ii) Equitable compensation and sufficient advantages; iii) Secure and healthy workplace; iv) Effects on local/indigenous populations; v) Economic sustainability; vi) Nonexistence of child labor; and vii) Responsible marketing (Mallet, 2000). Organic farming is a comprehensive management system that supports and improves the health of agroecosystems, encompassing biodiversity, biological cycles, and soil biological activities (FAO/WHO, 1999a). Wild harvested and semi-cultivated NWFP can likewise be regarded as organic, with numerous NWFP like pine nuts, mushrooms, and herbs being progressively marketed as organic food items. Product quality certification focuses on verifying that established production standards have been addressed. These standards may concentrate on the product itself as well as on its processing and manufacturing methods. Parameters of product quality encompass product identity, purity, effectiveness, and safety. These parameters are significant for various globally traded NWFP primarily utilized in the food and pharmaceuticals sector. A pertinent illustration of global commodity and general standards applicable to the food sector is the Codex Alimentarius, which focuses on creating and spreading international food standards to safeguard consumer health and to promote equitable international trading practices in food products.

### INDIAN INITIATIVES FOR DEVELOPING NTFP CERTIFICATION STANDARDS

Creating standards that offer a quantitative or qualitative measure or reference point is common in various industries and is utilized to establish criteria for raw materials, manufacturing processes, end products, and services (Ervin and Elliott 1996; ISO 2002). Standards may be compulsory (e.g., regulations by the government) or optional. Standards alone do not ensure a specific level of performance. Instead, the value and impact of standards are determined by the process of their development, the technical precision of the standards, and the consistency and skill with which they are implemented (Pierce and Laird 2003). Some of the limited initiatives (research and trials) aimed at establishing standards for NTFP certification in India encompass creating sustainable harvesting and management guidelines for wild Medicinal & Aromatic Plants (MAPs) (Bhattacharyya et al. 2009) backed by the National Medicinal Plants Board (NMPB), pilot projects conducted by IIFM with assistance from the Ministry of Environment and Forests (MoEF), as well as other research carried out by IIFM independently. The preliminary structure created by IIFM was founded on the idea that NTFPs can be classified according to the components utilized in medicinal and other preparations. This approach categorizes NTFPs into eight groups based on the traded parts utilized (IIFM 2007) (Table 1).

# Table 1 Types of NTFPs and plant parts used

| **S no.** | **Plant part** | **Type of NTFP** | **Some examples** |
| --- | --- | --- | --- |
| 1. | Leaf | Biri making, leaf plate making, etc. | *D. melanoxylon*, *Bauhinia vahli*, *Shorea robusta,* etc. |
| 2. | Flower | For food, medicine, dye, etc. | *Madhuca indica*, *Woodfordia fruticosa,* etc. |
| 3. | Fruit | For food and medicine | *E. officinales*, *T. chebula*, *T. bellirica,* etc. |
| 4. | Seed | Edible and oil | *B. lanzan*, *Shorea robusta*, *Schlishera oleosa,* etc. |
| 5. | Stem | Bark, gum, resin, etc. | *Terminalia arjuna*, *Sterculia urens*, Anogeissus *latifolia*, *Shorea robusta, Pinus roxburghi,* etc. |
| 6. | Underground parts | Root, rhizome, tuber, etc. | *Chlorophytum* spp., *Cyperus* spp., *Vetiveria zizanoides* and the like |
| 7. | Entire plant | Mostly the herbs, medicinal importance | *Andrographis paniculata*, *Boerhavia diffusa*, *Phyllanthus niruri*, *Centella asiatica,* etc. |
| 8. | Animal products [excluding the scheduled species under wildlife (protection)] | Honey, lac, fishes | *Apis* spp., *Laccifera* spp. |

**4. OPPORTUNITIES FOR NWFP CERTIFICATION**

* **Enhanced Market Access and Price Premiums:** Certification can create opportunities in new markets, especially in developed nations where consumers are more focused on sustainability. Certified NWFPs can draw higher prices, compensating producers for meeting elevated standards and enhancing their livelihoods. This is especially important for products aimed at specific markets such as organic food, natural cosmetics, and traditional medicine.
* **Improved Resource Management and Biodiversity Conservation:** Certification standards frequently mandate sustainable harvesting methods, supporting the enduring accessibility of NWFP resources and safeguarding biodiversity. Through encouraging responsible practices, certification can aid in the preservation of forest ecosystems and curb over-exploitation. Requirements may involve sustainable harvesting limits, safeguarding vital habitats, and overseeing resource replenishment.
* **Strengthened Stakeholder Empowerment and Community Benefits:** Numerous NWFP certification programs highlight the importance of engaging local communities in managing resources and making decisions. This can enable communities, bolster their land rights, and guarantee that they gain fairly from the utilization of forest resources. Fair trade certification specifically seeks to enhance the economic and social circumstances of underprivileged producers.
* **Credibility and Trust:** Third-party certification offers external validation of sustainable methods, improving the credibility of NWFP products and fostering consumer trust. This clarity can set apart certified products in the market and enhance consumer trust.
* **Promoting Sustainable Development Goals (SDGs):** NWFP certification can help fulfill various SDGs, such as those focused on poverty alleviation (SDG 1), sustainable production and consumption (SDG 12), terrestrial ecosystems (SDG 15), and promoting decent work and economic development (SDG 8). Through the encouragement of responsible resource management and the backing of local communities, certification can aid in fostering a more sustainable and fair future.

**5. CHALLENGES FOR NWFP CERTIFICATION**

* **Defining Sustainability for Diverse NWFPs:** In contrast to timber, which is fairly uniform, NWFPs include a wide variety of species, ecosystems, and extraction techniques. Establishing sustainability standards that are environmentally responsible and financially feasible for a range of products poses a considerable challenge. Broad principles must be tailored to particular contexts and ecological situations, taking into account aspects such as species recovery rates, harvesting methods, and indigenous ecological wisdom.
* **Complexity of Certification Schemes and Auditing Processes:** Navigating the different NWFP certification programs can be challenging, especially for small-scale producers with restricted resources and technical knowledge. The auditing process can be expensive and labor-intensive, necessitating extensive documentation and compliance with strict standards. This may establish obstacles for smaller businesses and restrict the availability of certification.
* **Lack of Harmonization and Recognition:** The lack of a globally acknowledged NWFP certification system creates obstacles for market acceptance and consumer comprehension. Diverse programs can possess distinct criteria and expectations, resulting in confusion and possibly jeopardizing the trustworthiness of certification. Aviation towards aligning certification systems and encouraging mutual recognition is essential for simplifying the process and improving market accessibility.
* **Ensuring Traceability and Chain of Custody:** Ensuring traceability of NWFPs throughout the supply chain is essential for upholding the integrity of certification. Nonetheless, this can be difficult in intricate and informal supply chains, especially in distant regions where infrastructure is scarce. Creating strong traceability systems that are affordable and available to small producers is crucial for preserving the integrity of certification.
* **Addressing Social and Ethical Considerations:** In addition to environmental sustainability, NWFP certification should focus on social and ethical issues, including equitable labor practices, benefits for communities, and honoring traditional knowledge. Guaranteeing that certification advantages local communities and encourages fair distribution of benefits is vital for establishing trust and promoting lasting sustainability.
* **High Costs of Certification for Small-Scale Producers:** The expenses related to certification, such as auditing costs, training, and paperwork, can be excessive for small NWFP producers, especially in developing nations. Financial and technical assistance is required to enable these producers to address these obstacles and seize certification opportunities.
* **Limited Consumer Awareness and Demand:** Although consumer demand for sustainable products is increasing, knowledge of NWFP certification still tends to be quite limited in numerous markets. Boosting consumer awareness and demand for certified NWFPs is essential for transforming the market and encouraging producers to implement sustainable methods. Marketing initiatives and educational campaigns can significantly aid in promoting certified NWFPs to consumers.

**6. CONCLUSION**

NWFP certification presents considerable chances for advancing sustainable resource management, aiding local communities, and improving market access for products obtained responsibly. Although obstacles persist in defining sustainability for various NWFPs, managing intricate certification systems, and guaranteeing fair benefit distribution, these issues can be tackled through cooperative initiatives with governments, NGOs, industry players, and local populations. Through advocating for responsible harvesting methods and encouraging a fairer and more sustainable forestry industry, NWFP certification can aid in realizing the SDGs and creating a stronger future for both individuals and the environment. Future studies need to evaluate the lasting effects of NWFP certification on resource management, community livelihoods, and conservation of biodiversity, while also investigating new certification methods that are easier and more affordable for small producers.

**DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

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