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Multidimensional challenges in Non-Timber Forest Product (NTFP) activities and strategic recommendations for livelihood enhancement of forest dwellers in Chhattisgarh

¹Shubham Kumar, ²ML Sharma, ³PK Joshi and ⁴Undi Anush

^{1,4}Ph.D. Scholar, Department of Agricultural Extension Education, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

²Professor, Department of Agricultural Extension Education, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

³Professor and Head, Department of Plant Breeding and Genetics, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

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Corresponding Author: Shubham Kumar

Abstract

Non-Timber Forest Products (NTFPs) constitute the primary livelihood base for a large proportion of forest-dwelling communities in Chhattisgarh, one of India's most forest-rich states. Despite the immense potential of NTFPs, forest dwellers continue to face complex, multidimensional challenges across the entire NTFP value chain from collection and processing to storage, marketing, and value addition. The present study was conducted to identify and analyse the constraints faced by forest-dependent communities in Chhattisgarh and to document strategic recommendations for improving their livelihoods. A total of 315 respondents were purposively selected from NTFP-dependent households across forest fringe villages. Data were collected through structured interview schedules and analysed using frequency, percentage, and ranking techniques. Results revealed that deforestation (94.29%) was the most critical collection constraint, followed by time-consuming collection processes (77.14%). In processing, the absence of primary processing units (73.02%) and lack of technical knowledge (64.76%) were the principal barriers. Environmental factors (93.65%) and insect damage (81.90%) emerged as dominant storage challenges. Unfair pricing (60.63%) and limited buyers (47.62%) were the foremost marketing constraints, while lack of knowledge about value addition (75.87%) and low interest (68.89%) hindered value-enhancing activities. Among recommendations, strengthening afforestation (77.78%), organising regular training programmes (67.30%), and community sensitisation on value addition (56.51%) were ranked highest. The findings underline the need for integrated policy interventions, institutional support, and capacity building to transform NTFP activities into a sustainable livelihood engine for Chhattisgarh's forest communities.

Keywords: Non-timber forest products, forest dwellers, livelihood, Chhattisgarh, value chain constraints, NTFP marketing

Introduction

Forests have historically been the cornerstone of survival for millions of tribal and forest-dependent communities across India. Non-Timber Forest Products (NTFPs), also called Minor Forest Produce (MFP), include a wide range of plant- and animal-based items such as fruits, seeds, leaves, roots, resins, gums, bamboo, honey, lac, and medicinal plants, forming the foundation of food security, income, and cultural identity for forest-dwelling households (FAO, 1995) ^[6].

Chhattisgarh, formed in 2000, has about 44.21% of its area under forest cover, making it one of India's most forest-dependent states (Champion and Seth, 1968) ^[5]. Over 32% of its population is tribal, with communities such as Gond, Baiga, Oraon, Kamar, and Halba depending heavily on forest ecosystems. NTFPs like tendu leaves, saal seeds, mahua, harra, bahera, and bamboo are their principal sources of cash income.

The economic significance of NTFPs for tribal livelihoods is well documented globally (Hegde *et al.*, 1996; Shackleton *et*

al., 2001; Sunderlin *et al.*, 2005) ^[7, 13, 14] and in India (Bahuguna, 2000; Mahapatra and Mitchell, 1997) ^[2, 8]. Yet, converting this potential into real livelihood gains remains constrained by structural, institutional, and knowledge-related challenges (Belcher and Schreckenberg, 2007) ^[3].

While individual dimensions have been studied, a comprehensive analysis spanning the entire NTFP value chain in Chhattisgarh is lacking, and community-derived recommendations are rarely documented in policy frameworks. This study was designed to fill this gap by examining constraints across five dimensions of NTFP activities and documenting community-derived strategic recommendations for sustainable livelihood enhancement.

Objectives

- To identify the challenges in collection, processing, storage, marketing, and value addition of NTFPs.
- To document strategic recommendations proposed by forest dwellers for overcoming these challenges and

improving NTFP-based livelihoods.

Methodology

The study was conducted in Chhattisgarh during the period 2024–2025, employing an ex-post facto research design. Out of the six forest circles in the state, three circles Raipur (Chhattisgarh Plains), Kanker (Bastar Plateau), and Surguja (Northern Hills) were purposively selected to ensure representation of all major agro-climatic zones. From the 17 forest divisions within these selected circles, 9 divisions (approximately 50%) were selected using a simple random sampling technique. Further, out of 42 Van Dhan Kendras located in these divisions, 21 Kendras (50%) were randomly selected. Subsequently, 15 respondents were chosen from each selected Van Dhan Kendra through simple random sampling. This resulted in a total sample size of 315 respondents, comprising 105 from Raipur, 95 from Kanker, and 120 from Surguja. Data were collected using a pre-tested, structured interview schedule focusing on challenges across collection, processing, storage, value addition, marketing,

and institutional support, and on strategic recommendations for livelihood enhancement. Data were coded, tabulated, and analysed using frequency and percentage. The percentage was calculated as:

$$\text{Percentage (\%)} = (f / N) \times 100 \quad \dots (1)$$

The findings obtained through frequency and percentage analysis were used to assess the severity and prevalence of challenges across different dimensions of NTFP activities and to formulate suitable strategic recommendations for improving the livelihoods of forest dwellers in Chhattisgarh.

Result and Discussion

Constraints Faced by Forest Dwellers in NTFP Activities

The multidimensional challenges encountered by forest dwellers in their NTFP activities were examined across five critical dimensions: collection, processing, storage, marketing, and value addition. The findings are presented in Table 1.

Table 1: Challenges faced by the forest dwellers in various dimensions of NTFPs

Constraints	Frequency	Percentage	Rank
Collection			
Deforestation	297	94.29	I
Forest fire	210	66.67	III
Time consuming	243	77.14	II
Away from Home	108	34.29	V
Competition among NTFPs collector	122	38.73	IV
Processing			
No primary processing unit	230	73.02	I
Lack of knowledge about processing	204	64.76	II
Available in small quantities	139	44.13	III
Insufficient labor	59	18.73	IV
Storage			
Inadequate storage facilities	254	80.63	IV
Lack of knowledge	188	59.68	V
Insect damage loss	258	81.90	II
Financial constraints	168	53.33	V I
Environmental factor	295	93.65	I
Decrease in quality	256	81.27	III
Marketing			
Unfair pricing of raw product	191	60.63	I
Limited buyer	150	47.62	II
Unorganized market	90	28.57	IV
Market Far From Home	77	24.44	V
Poor transport	102	32.38	III
Value Addition			
Lack of knowledge about value addition	239	75.87	I
Unavailable of appropriate market of value added product at local level	179	56.83	III
Lack of infrastructure for value addition	177	56.19	IV
Lack of interest	217	68.89	II
Unavailable marketing channels	70	22.22	V

Collection Constraints

Deforestation was the most critical collection constraint (94.29%, Rank I), driven by encroachment, illegal logging, and conversion of forest land for agriculture. Time-consuming collection (77.14%, Rank II) reflected increasing distances travelled to collect diminishing NTFP stocks. Forest fire (66.67%, Rank III) was a major seasonal hazard reducing yields, while competition among collectors (38.73%, Rank IV) and forests located far from home

(34.29%, Rank V) were additional barriers, particularly for elderly and women collectors.

Processing Constraints

Absence of primary processing units was the leading processing constraint (73.02%, Rank I), forcing most NTFPs to be sold raw at lower prices. Lack of processing knowledge (64.76%, Rank II) further limited value addition, highlighting the need for community-level processing infrastructure and

training. Small, scattered availability (44.13%, Rank III) and insufficient labour during peak seasons (18.73%, Rank IV) were additional constraints.

Storage Constraints

Environmental factors (heat, humidity, rainfall, and temperature fluctuations) were the most significant storage constraint (93.65%, Rank I), reflecting Chhattisgarh's climatic conditions that accelerate spoilage. Insect damage (81.90%, Rank II) and quality deterioration (81.27%, Rank III) indicated substantial post-harvest losses, while inadequate storage facilities (80.63%, Rank IV), lack of knowledge (59.68%, Rank V), and financial constraints (53.33%, Rank VI) compounded the problem. These findings align with Saxena (2003) ^[12], who reported post-harvest NTFP losses of 20-40% in Central India due to inadequate storage infrastructure.

Marketing Constraints

Unfair pricing of raw NTFP products was the primary marketing constraint (60.63%, Rank I), reflecting the disproportionate market power middlemen hold over collectors. Limited buyers (47.62%, Rank II) and poor transport connectivity (32.38%, Rank III) further curtailed market access, while unorganised markets (28.57%, Rank IV) and distant markets (24.44%, Rank V) highlighted the need for organised market development and better transport infrastructure.

Value Addition Constraints

Value addition remains the least developed segment of the NTFP value chain. Lack of knowledge about value addition techniques (75.87%, Rank I) was the dominant constraint, followed by low interest among community members (68.89%, Rank II). Unavailability of local markets for value-added products (56.83%, Rank III) and lack of processing/packaging infrastructure (56.19%, Rank IV) further discouraged value addition; while absent marketing channels (22.22%, Rank V) meant that even attempted value addition lacked remunerative outlets.

Recommendations Given by Respondents to Overcome NTFP Challenges

Respondents' recommendations for improving NTFP-based livelihoods are presented in Table 2, ranked by percentage of endorsement. Strengthening afforestation was the top-priority recommendation (77.78%, Rank I), reflecting the grassroots understanding that sustainable NTFP livelihoods depend on healthy forest ecosystems, consistent with Murali *et al.* (1996) ^[9] and Ticktin (2004) ^[15]. Regular training in scientific collection, processing, marketing, and value addition ranked second (67.30%, Rank II), underscoring the role of extension education. Community sensitisation on the economic benefits of value addition (56.51%, Rank III) suggests forest dwellers recognise this potential but need awareness and motivation to act on it.

Table 2: Recommendations given by the respondents to overcome the challenges

S.N.	Suggestions	F	P	Rank
1.	Strengthening afforestation for sustainable forest resources	245	77.78	I
2.	Provision of flexible forest rules and regulations for NTFP collection	56	17.78	XIV
3.	Monitoring and regulation of overexploitation of NTFP by outsiders	78	24.76	XIII
4.	Fixation of fair selling prices by the government	155	49.21	V
5.	Procurement of all NTFPs by the government	157	49.84	IV
6.	Provision of low-cost storage facility at local level by government	55	17.46	XV
7.	Organizing regular training programme for enhances skills in scientific collection, processing, marketing and value addition of NTFPs	212	67.30	II
8.	Development of road connectivity between villages and markets.	84	26.67	XII
9.	Provision of Timely and reliable market information on NTFPs to producers and collectors.	92	29.21	VIII
10.	Provision of Subsidies and bonus incentives by the government.	87	27.62	XI
11.	Organizing Regular awareness programmes about deforestation and forest fires.	91	28.89	IX
12.	Enforcement of Strict rules and regulations to prevent deforestation and forest fires.	117	37.14	VII
13.	Establishment of primary processing units and provision necessary training to promote local level processing by government.	126	40.00	VI
14.	Sensitization of Communities regarding economic benefits of value addition activities.	178	56.51	III
15.	Provision of Training to ensure safe storage and proper handling of NTFPs.	89	28.25	X

Government procurement of NTFPs (49.84%, Rank IV) and fair pricing mechanisms (49.21%, Rank V) were also strongly recommended, pointing to the need for market regulation to protect collectors from exploitation. Primary processing units with training (40.00%, Rank VI) and strict enforcement against deforestation and forest fires (37.14%, Rank VII) followed. Timely market information (29.21%, Rank VIII), conservation awareness (28.89%, Rank IX), safe-storage training (28.25%, Rank X), and subsidies/bonuses (27.62%, Rank XI) rounded out the key recommendations, with road connectivity (26.67%, Rank XII), monitoring overexploitation (24.76%, Rank XIII), flexible regulations (17.78%, Rank XIV), and low-cost storage facilities (17.46%, Rank XV) ranked lowest.

Conclusion

This study provides a comprehensive, multidimensional analysis of the constraints facing NTFP-dependent forest communities in Chhattisgarh, and documents their strategic recommendations for livelihood enhancement. Challenges are embedded across the entire value chain ecological pressures of deforestation and forest fires impairing collection, infrastructure and knowledge gaps limiting processing and storage, structural market failures depriving collectors of fair returns, and skill and awareness deficits preventing value addition.

Piecemeal interventions addressing a single dimension will be insufficient. An integrated policy framework is needed that combines afforestation for forest conservation, targeted

training and extension, community-level processing and storage infrastructure, market regulation for fair pricing and government procurement, and awareness of value-added NTFP products. Strengthening institutional architecture Forest Rights Committees, Van Dhan Vikas Kendras, and tribal cooperatives and linking them to market access will be essential for transforming NTFPs into a vibrant engine of rural livelihood development for Chhattisgarh's forest-dwelling communities.

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