

## Role of NTFP-based Micro-enterprises in Livelihood Improvement of Forest User Group: A Case of a Sishnoobased Micro-enterprise in the Mid-hills of Nepal

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#### Abstract

The research delves into the impact of non-timber forest products (NTFPs) on rural livelihoods, with a specific focus on the Sishnoo powder enterprise situated within the Pairakhet community forest in Nepal. Employing a combination of primary data collection techniques such as surveys and interviews alongside secondary data from diverse sources, the study meticulously evaluates the benefit-cost ratio of the enterprise. Moreover, it employs sophisticated statistical analyses, including the Likert Scale and Kendall Tau test, to gauge users' perceptions regarding the enterprise's influence on economic and social conditions. By scrutinising the economic, social, and human dimensions of livelihoods, the study unveils notable positive transformations, mainly in employment generation and skill enhancement. Sishnoo-based micro-enterprises emerges as a potent agent for bolstering economic prosperity and fostering capacity building, especially among marginalised communities. The findings underscore the critical necessity for nurturing NTFP-based micro-enterprises and implementing targeted business awareness initiatives to fortify rural livelihoods comprehensively.

Keywords: NTFPs, micro-enterprise, community forest, livelihood

#### INTRODUCTION

Community forestry (CF) and the utilisation of non-timber forest products (NTFPs) have garnered significant attention due to their potential to alleviate poverty and foster sustainable development in rural area (FAO 1978). Around 1.6 billion individuals in rural areas rely on forest resources for their livelihoods, with approximately 0.30 to 0.35 billion depending on forests for both income and subsistence (Chao 2012). NTFPs have emerged as vital resources for millions worldwide, particularly those in rural and forest-dependent regions (Ahenkan and Boon

2011). NTFPs, encompassing forest products beyond timber, are increasingly recognised worldwide for their vital role in enhancing the resilience and livelihoods of rural communities in Africa and Asia, including both developed and developing countries (Mukul *et al.* 2010). Scholars such as Rasul *et al.* (2008) underscore how NTFPs contribute to poverty alleviation, especially among forest-dependent communities.

## **Economic impact**

NTFP-based micro-enterprises have become key contributors to both the forestry GDP



and rural household income in Nepal (AEC/ FNCCI 2012). NTFP-based enterprises make up over 90 per cent of rural household income in Nepal. In hilly and mountainous areas, these enterprises play a major role. According to Pandit et al. (2009), in Nepal over 700 plant species can produce NTFPs. About 150 of these species are regularly traded internationally (Shrestha et al. 2020). Despite their potential, the impact of CF and NTFPbased enterprises on local livelihoods and economic opportunities has been minimal in certain regions (Gilmour 2016). More than 90 per cent of Nepal's NTFPs exported to India are in crude forms, resulting in fewer benefits to the local and national economy compared to the potential gains achievable through value-adding processing within the country (Subedi et al. 2000).

## Social impact

Forest dependent society tends to be economically challenged and isolated from the constructive development initiatives (Choudhary 2008). Moreover, there is a need for accurate benefit evaluations to harness the economic potential of Nepal's forest-based industries (Subedi et al. 2014). Improved management and marketing of NTFPs can significantly enhance employment opportunities in rural areas leading to positive social benefits (Lamsal et al. 2017). Ludvig et al. (2016) has also stated that the NTFPs are found to be successful where individual involved use their own ideas and innovation in running enterprise. In Nepal, local communities and Community Forest User Groups (CFUGs) have received training and other capacity-building opportunities solely because of the presence of the microenterprises (Paudel et al. 2018). Apart from the monetary exchange through enterprises, the social networks with a communal area have also improved.

This necessitates a deeper understanding of NTFP-based micro-enterprises role in

improving the livelihoods of user groups, particularly in areas like Myagdi district of Nepal. This study aims to assess the role of NTFP-based micro-enterprises in enhancing the livelihoods of user groups in Nepal. Specifically, it seeks to evaluate the impact of micro-enterprises, such as the Sishnoo (Urtica dioica) powder production enterprises, on livelihood improvement, determine the benefit-cost ratio of these enterprises, and identify the challenges and prospects they faced. By achieving these objectives, the study contributes to the existing literature on community forestry, NTFPs, and rural development, with the ultimate goal of informing and guiding policies and practices in this domain.

## Study area

The study was carried out in Pairakhet CF in Myagdi district, Nepal (Figure 1). Myagdi district is known for its diverse range of forest-based micro-enterprises, including Sishnoo powder production, Allo weaving, incense stick making, Lokta paper production, mudha making, and bamboo-based furniture. Pairakhet CFUG was chosen in consultation with the Division Forest Office (DFO) and other stakeholders due to its active engagement in the Sishnoo powder producing microenterprise. This enterprise is notable for its successful operation and involvement of active users. It was also a recommended enterprise by local authorities and organisations.

Notably, the Sishnoo powder producing enterprise in Pairakhet is led by women, reflecting a significant aspect of gender involvement in forest-based activities in the region. The enterprise operates as an extension of the Pairakhet CF and does not have a sperate name. It is managed by the user group members of the community forest. Raw materials are collected from the bunds of the agricultural field, fallow lands in the community and from the road sides. Tender shoots, specifically four leaves along with the



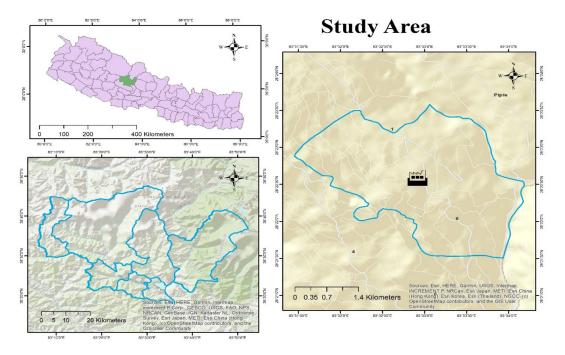


Figure 1: Pairakhet community forest, Myagdi district

buds are harvested. These are then dried in the solar drier or the shade until the moisture content reduces to 7 to 8 per cent. Once dried, Sishnoo leaves are then grinded into a fine powder. Consumers use this Sishnoo powder to prepare soup by mixing it with water and cooking it for five minutes. The soup has significant therapeutic properties such as anti-inflammatory, anti-rheumatic, acute diuretic, and hypotensive effects.

#### METHODOLOGY

This study employed a multifaceted approach for data collection and analysis, integrating both quantitative and qualitative methods to ensure a comprehensive understanding of the NTFP-based micro-enterprise. The methodology is detailed as follows:

## Data collection

## Primary data

**Ouestionnaire** survey: Α structured questionnaire was administered to a total of 26 individuals involved in the NTFPbased micro-enterprise. This survey aimed to capture quantitative data on various aspects of the enterprise, including income growth, job opportunities, food provision, use of local materials, and overall improvements in the standard of living. The sample size of 26 was determined based on the total number of individuals involved, ensuring that a complete census was performed within the available population.

**Key Informant Interviews (KIIs):** Five key informants were selected for their extensive knowledge and experience with the NTFP-based enterprise, and interviewed. These



informants included chairperson of the enterprise, local leaders, organisation like Sangam Myagdi who worked on business related to enterprise and experts in the field like DFO. The interviews provided in-depth insights into the operational challenges and successes of the enterprise, offering a qualitative perspective to complement the survey data.

Focus Group Discussions (FGDs): Three FDGs were conducted consisting of eight participants. The discussions were designed to facilitate dialogue among various stakeholders, including employees of the enterprise and community members. The discussion aimed to explore themes and perceptions related to the enterprise's impact on the community, gathering qualitative data through group interaction and consensus-building.

**Direct observation:** Field observations were carried out to collect real-time data on the daily operations and activities of the microenterprise. This method provided contextual understanding of the enterprise's functioning and its interaction with the community.

## Secondary data

Secondary data were collected by reviewing from published books, reports, journals, and articles relevant to NTFP-based enterprises.

## Data analysis

Quantitative Analysis: The quantitative data obtained from the questionnaire survey were tabulated and analysed using MS-Excel and SPSS. Descriptive statistics were employed to summarise the data, and visual representations such as charts and tables were used to illustrate key findings. The Likert scale (1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree) was used to gauge respondents' attitudes, and Kendall's Tau correlation coefficient was calculated to assess the strength and significance of relationships between variables. Kendall's Tau was chosen

due to its effectiveness in handling small sample sizes and its robustness in dealing with ordinal data.

**Qualitative analysis:** Qualitative data from KIIs and FGDs were analysed thematically. This analysis involved identifying recurring themes and patterns to derive insights into the impact and operational dynamics of the enterprise through MS-Excel.

Benefit-Cost Ratio (BCR) calculation: To evaluate the economic viability of the enterprise, a Benefit-Cost Ratio (BCR) was calculated. The BCR analysis involved projecting income and expenditure over the next five years, using historical data as a reference. The present value (PV) of benefits and costs was calculated using the formula:

$$PV = \frac{Future\ Value}{(1+i)^n}$$

Where, i is the discount rate and n is the number of years. The Net Present Value (NPV) was computed as the difference between the present value of benefits and the present value of costs. The BCR was determined using the formula:

$$BCR = \frac{PV_{Benifits}}{PV_{Costs}}$$

## Sampling methodology

**Surveys:** The sampling for the questionnaire survey involved all 26 individuals associated with the NTFP-based micro-enterprise. This complete enumeration ensured that the survey results were representative of the entire population involved in the enterprise.

Interviews and focus groups: The selection of key informants and focus group participants was purposive. Informants were chosen based on their expertise and significant role in the enterprise. Focus group participants were selected to represent various stakeholder



perspectives, including employees and community members. This purposive sampling approach aimed to capture diverse viewpoints and ensure that the data reflected a range of experiences and insights relevant to the enterprise's impact and operations.

#### **RESULTS**

## Role on social aspect

The significant increase in relationships, partnerships, and networking among users' post-establishment of the microenterprises (Figure 2) is a critical indicator of social capital formation. 84.62 per cent of people agreed that their relationship with each other and understanding has increased among the women involved in enterprise.

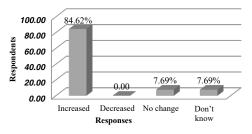


Figure 2: Relationship, partnership and networking among the users

There is increase in participation of women involved in enterprise in general assemblies and decision-making processes (Figure 3). The small percentage of respondents reported "No Change" or "Don't Know".

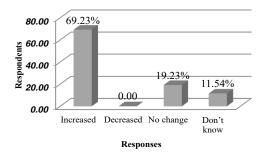


Figure 3: Participation in general assembly and decision making

## Role in human aspect

The data on leadership development (Figure 4) showed that the most of the community member involved in the enterprise developed the leadership skills. This has enhanced their skills and knowledge (Figure 5) on the enterprise related work an also common knowledge on forest product utilisation. The decision-making by women involved in the enterprise within households has also increased by 74 per cent (Figure 6).

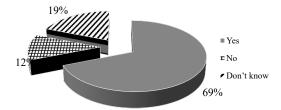


Figure 4: Leadership development

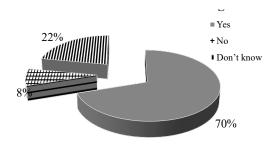


Figure 5: Rise in skills and knowledge

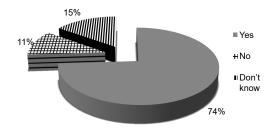


Figure 6: Role on decision making at their own different household activities



## Role in economic aspect

# Level of agreement in economical aspect

The strong positive correlations observed in the Kendall Tau analysis (Table 1) between various economic factors such as income, employment opportunities, and living standards highlight the interconnected nature of economic development within the community. For example, the significant correlation between "Raise in source of income" and "Improvement of living standard of entrepreneurs" (0.933) underscores the critical role that income generation plays in enhancing overall quality of life. As income levels rise, entrepreneurs can invest more in their families' health, education, and wellbeing, which can lead to a virtuous cycle of economic and social improvements.

Table 1: Kendell Tau correlation calculation

| Variables  | Kendall Tau Correlation |            |            |            |            |        |  |  |
|------------|-------------------------|------------|------------|------------|------------|--------|--|--|
|            | Variable 1              | Variable 2 | Variable 3 | Variable 4 | Variable 5 | _      |  |  |
| Variable 1 | 1.00                    | 0.667      | 0.690      | 0.748      | 0.933      | < 0.01 |  |  |
| Variable 2 | 0.667                   | 1.000      | 0.942      | 0.876      | 0.676      | < 0.01 |  |  |
| Variable 3 | 0.690                   | 0.942      | 1.00       | 0.846      | 0.702      | < 0.01 |  |  |
| Variable 4 | 0.748                   | 0.876      | 0.846      | 1.00       | 0.728      | < 0.01 |  |  |
| Variable 5 | 0.933                   | 0.676      | 0.702      | 0.728      | 1.00       | < 0.01 |  |  |

Variable 1: Raise in source of income\* Variable 2: Opportunity of employment \* Variable 3: Provision of food \* Variable 4: Utilisation of Local material \* Variable 5: Improvement of living standard of entrepreneur \*

Similarly, the correlation between "Opportunity of employment" and "Provision of food" (0.942) suggests that the enterprise's ability to create jobs is directly linked to food security within the community. Employment opportunities not only provide income but also ensure that households can secure adequate food, which is fundamental for health and productivity. These findings points to the enterprise's role in addressing both economic and basic needs, which are essential for holistic development.

The economic viability of the enterprise, as shown by the Benefit-Cost Ratio (BCR) analysis

(Table 2), further reinforces the potential for long-term impact. The positive NPV and BCR indicate that the enterprise is not only sustainable but also capable of generating significant returns over time. This financial sustainability is crucial for the continued success of the enterprise and its ability to contribute to community development. The upward trend in income, despite the challenges of low market demand faced in 2021, reflects the resilience of the enterprise and its capacity to adapt to market fluctuations. This resilience is a critical factor in ensuring that the benefits of the enterprise are sustained over the long term, providing a stable source of income and improving livelihoods.

The dip in income in 2021 due to low market demand highlights the importance of developing robust marketing strategies to mitigate such risks in the future. Diversifying



the market base, enhancing product quality, and establishing strong distribution channels could help buffer the enterprise against such downturns. By addressing these challenges, the enterprise can ensure a more stable and continuous growth trajectory, which would further strengthen its role in community development.

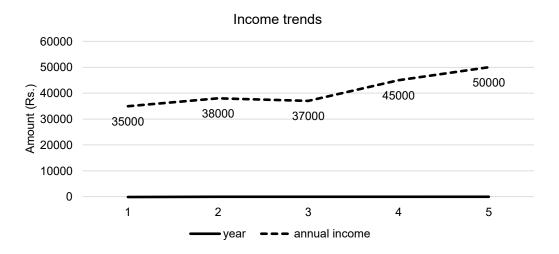


Figure 7: Annual income trends of the enterprise

NPV for the first year will be Rs. 9090.91, while for the fifth year it will be 52558.51,

leading to 1.23 BCR (Table 2), indicating that it is safe to run the enterprise.

Table 2: Benefit cost ratio calculation

| Years  | Benefit (Rs.) | PV-B (Rs.) | Cost (Rs.) | PV-C (Rs.) | NPV (Rs.) | B/C ratio |
|--------|---------------|------------|------------|------------|-----------|-----------|
| First  | 10000         | 45454.55   | 40000      | 36363.64   | 9090.91   | 1.23      |
| Second | 15000         | 57851.23   | 55000      | 45454.55   | 12396.69  |           |
| Third  | 24000         | 60105.18   | 56000      | 42073.63   | 18031.56  |           |
| Forth  | 10000         | 54641.08   | 70000      | 47810.94   | 6830.13   |           |
| Fifth  | 10000         | 62092.13   | 90000      | 55882.92   | 6209.21   |           |
| Total  | 45153.04      | 280144.18  | 311000     | 227585.67  | 52558.51  |           |

Interest rate 10 %

## SWOT analysis of adopted microenterprise

Users accepted the micro-enterprise as a good and supportive means to sustain their

livelihood because they can get much more benefit than from agricultural crops on same investment, time and labour. Despite these, entrepreneurs are also facing the problem related to run the enterprise.



#### Table 3: Strengths, weaknesses, opportunities and threats of the enterprise

#### Strengths

- Sustainable resource management
- Economic resilience through employment
- Diversified market opportunities
- Environmental stewardship and a positive image
- Community involvement for local support
- Empowering women in CFUG

For example: By implementing sustainable harvesting practices for least used plant: Shishnoo, the enterprise has earned the trust and support of both local communities and environmentally conscious consumers. As a result, 26 women from the CFUG were empowered through employment opportunities, with their incomes showing a positive annual trend (Figure 7). Initially, the market was limited to a few neighbouring areas, but by the fifth year, the enterprise had expanded its reach to the neighbouring districts of Baglung and Parbat. This positive image has not only strengthened customer loyalty but also garnered robust local support, further enhancing the enterprise's sustainability initiatives and market position.

#### Weaknesses

- Ineffective marketing strategies
- Low product prices
- Dependence on the local workforce
- Vulnerability to raw material destruction
- High transportation costs

For example: Despite the superior quality of its products, the enterprise struggles with ineffective marketing strategies and has been unable to expand its reach across the country. The current approach relies heavily on word-of-mouth within the local community and district, with limited efforts in online presence or branding. While the enterprise can sustain the livelihoods of its workers, it is still unable to afford the high transportation costs needed for broader distribution.

#### **Opportunities**

- Expansion into new markets
- Collaborative value-adding processes
- Leveraging environmental stewardship
- Partnerships for sustainable livelihoods
- Innovative product development
- Self-growth and empowerment in CFUG

For example: With further advancement like ecofriendly packaging, the CFUG can add value to the product and expand the market to other regions as well. Innovative product development, such as Sishnoo-infused teas and skincare products, will diversify the product range and attract a broader customer base. Finally, the enterprise's focus on self-growth and empowerment, particularly for women in the CFUG, through training and capacity-building, strengthens the overall community and ensures long-term sustainable development.

#### **Threats**

- Competitors with better marketing
- Pressure on profit margins
- Continued migration of members of CFUG to urban areas
- Persistent raw material destruction
- Escalating transportation costs

For example: Competitors with superior marketing strategies leverage online platforms and partnerships to reach wider markets, making it difficult for the micro-enterprise to expand beyond its local region. This, combined with escalating transportation costs due to its remote location, pressures profit margins and limits market expansion. Additionally, the continued migration of young people to urban areas reduces the local workforce, while persistent threats to the forest ecosystem jeopardise the availability of raw materials. These challenges collectively threaten the long-term viability of the enterprise and the livelihoods of the 26 women involved.



#### DISCUSSION

The analysis of the NTFP-based microenterprise highlights its significant potential for improving the livelihoods of rural communities. With a favourable benefit-cost ratio (BCR) of 1.23, indicating profitability, and positive impacts on human and social aspects, microenterprises emerge as a viable option for sustainable economic development. However, despite these promising indicators, several challenges persist, particularly with regard to market access. The limited marketing reach, primarily confined to the district and neighbouring areas, poses a substantial barrier to the scalability and sustainability of NTFP-based enterprises. This finding is consistent with findings from previous studies, such as Paudel et al. (2018), which identified the lack of adequate market access as a major constraint in Nepal's NTFP sector. The absence of technical expertise, financial resources, and reliable market channels for processed NTFPs exacerbates this challenge (Shrestha et al. 2020). Moreover, the growing trend of foreign employment and urban migration has led to reduced engagement in local enterprises (Pandit et al. 2009). Not only this, the NTFPs sub-sector is well positioned to counteract this trend by offering job opportunities and income-generation avenues for rural populations for rural populations. In doing so, it holds potential mitigating poverty and curbing youth migration for employment opportunities elsewhere (Karki and Bhattarai 2012). The results also indicate that different variables like income-generating prospects and employment opportunities within NTFP-based micro-enterprises are strongly correlated and development in one can lead to overall community livelihood development. This underscores the relevance of community forestry as not only an ecological conservation model by also a socioeconomic development tool (Gauli and Hauser 2009). Therefore, fostering the potential of NTFP-based enterprises to provide sustainable livelihood options within rural communities meaningfully contributes to the rural poverty and sustainable forest governance in Nepal. This notion is further supported by increasing community willingness to participate in such enterprise, particularly for NTFPs (Paudel et al. 2022). Additionally, this research states the positive impact of micro-enterprises on enhancing leadership skills and decisionmaking abilities among members, a finding also reported by previous research (Pandit et al. 2009). This capacity-building aspect is crucial for navigating global challenges, particularly the inequality crisis (Paudel et al. 2022). Inclination of the community has also increased towards the conservation activities, as a result they are being aware about biodiversity conservation (Villanger 2015). Furthermore, the active involvement of women in CFUGs and their collaboration with other stakeholders signal a promising trend, echoing findings from Rasul et al. (2008). Such collaboration fosters inclusive decisionmaking processes and strengthens community resilience.

#### CONCLUSION

The study underscores the substantial potential of NTFPs-based micro-enterprises, exemplified by the Sishnoo powder producing microenterprise, in bolstering rural livelihoods across Nepal. Encouraging outcomes were observed in terms of enhanced social cohesion, improved leadership skills, and strengthened financial assets, further supported by a benefit-cost ratio. favourable However, persistent challenges related to market accessibility, product pricing, and resource management continue to impede progress. Proposed solutions entail providing training on sustainable methods, establishing effective marketing channels, and empowering women within the enterprises. Crucially, governmental and non-governmental interventions essential to optimise market operations and foster broader social engagement. Looking ahead, concerted action is imperative to



address existing constraints and fully harness the potential of NTFP-based enterprises for poverty reduction and sustainable development. Recognising the study's limitations, including its narrow geographical scope and reliance on self-reported data, underscores the necessity for future research to adopt broader, mixed-method approaches for a more comprehensive understanding of NTFP-based micro-enterprises in Nepal.

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