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Sumberejo Community's Perspective on Non-Timber Forest Products to Support Sustainable Environment

Cynthia Permata Sari[*1)], Supriyadi[2)], Purwanto[2)], Retno Rosariastuti[2)], Malihatun Nufus[3)]

[1]Department of Environmental Science, Graduate School, Universitas Sebelas Maret, Indonesia
[2]Department of Soil Science, Faculty of Agriculture, Universitas Sebelas Maret, Indonesia
[3]Department of Forest Resource Management, Faculty of Agriculture, Universitas Sebelas Maret, Indonesia
*Corresponding e-mail: cynthiapermata@staff.uns.ac.id

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Abstract *– This study investigates how Non-Timber Forest Resources (NTFPs) contribute to community livelihoods and environmental sustainability. Through a combination of in-depth interviews and participatory observation, this study highlights the traditional knowledge and practices of the Sumberejo community in managing these resources. This research uses a qualitative approach that combines ethnobotanical surveys, in-depth interviews, and participatory observation with 50 participants, as well as data analysis using Participatory Rapid Appraisal (PRA). The results show that the majority of respondents perceive the potential of NFTPs in the area as very important (56.25% of village officials) and important (45.83% of villagers). Respondents also consider the natural geophysical potential for NFTPs in the area to be very important (68.75% of village officials) and important (50% of villagers). Furthermore, respondents also considered the natural biophysical potential for the NFTPs area to be very important (56.25% of village officials) and important (50% of villagers). The study underscores the potential for integrating NTFP management into broader conservation strategies to promote environmental stewardship and sustainable development. The community's commitment to balancing economic needs with environmental health offers valuable insights for policymakers and conservationists aiming to implement community-based forest management models. This research contributes to a growing body of knowledge on the importance of NTFPs in sustainable environmental governance, showcasing the Sumberejo community's role as stewards of their local ecosystems while maintaining cultural heritage and securing economic well being.*

Keywords: *community, Non-timber forest product, perception, sustainable*

INTRODUCTION

One of the biggest challenges faced by tropical forest ecosystems worldwide is the development of economically viable and productive systems. Efforts to preserve their intrinsic ecosystem services also experience dynamics that must be addressed. Good management and planning are required in the effort to mitigate changes. A thorough and comprehensive understanding of biodiversity is essential for the intensive utilization of the ecosystem services it provides. These steps are part of the efforts to ensure the sustainability of natural forest resource management. Recognizing the diversity and potential applications of forest products is an important step in building an effective management and governance framework. The integration of these various considerations is necessary to advance our approach to tropical forest management. By embracing a holistic perspective that values both economic feasibility and environmental sustainability, we can pave the way for more resilient and sustainable resource-use models that can adapt to evolving demands, both locally and globally.

Forests contribute to food and nutritional security in several ways. Trees provide healthy foods, including fruits, leafy vegetables, nuts, seeds, and edible oils. Forests are a source of wild vegetables and mushrooms and essential micronutrients for numerous rural and smallholder farming communities, and contribute significantly to household income (Min et al, 2024). Non

Timber Forest Products (NTFPs) are defined as natural resources derived from forests that do not require the harvesting of trees. These resources include medicinal plants, fruits, nuts, resins, fibers, and other materials that contribute significantly to the livelihoods of local communities. NTFPs significantly contribute to food and nutritional security, particulrly for forest-dependent communities and indigenous people (Fungo et al, 2023). Further, NTFPs serve as safety nets during crises such as drought and flood (Tharmabalan, 2023). NTFPs also generate income through sales during food shortages (Hailemariam et al, 2021). While much of the focus in environmental conservation has been on timber extraction, NTFPs play a critical role in promoting both economic well-being and environmental sustainability, particularly in regions where communities depend on forests for their survival.

Forests are among the most vital ecosystems for sustaining biodiversity, regulating climate, and supporting the livelihoods of millions of people, especially those living in and around forested areas. Forest ecosystems are repositories of natural resources that directly and indirectly sustain both people and wildlife (Chen et al, 2020). Forest resource extraction can range in intensity and impact on forests, often based on the number of households involved in extraction practices. It can also vary based on the extent of extraction (quantity of NTFPs extracted and area over which this is extracted), as well as the type and mode of extraction. There is, therefore, utility in categorizing different forms of resource extraction along a gradient of their intensity and purported impact on forests in assessing and identifying sustainable extraction practices (Kazungu et al, 2020). In many rural communities, particularly in tropical regions, Non-Timber Forest Products (NTFPs) represent a critical component of household economies, food security, and traditional health systems. Unlike timber extraction, which often leads to ecological degradation, the sustainable utilization of NTFPs has been widely recognized as a more ecologically sound and socially inclusive approach to forest resource management.

NTFPs encompass a wide variety of biological resources harvested from forests, such as wild honey, rattan, bamboo, medicinal plants, resins, fruits, and mushrooms. Traditionally, forest products have been extracted for local use, with up to 80 % of the rural population in many countries engaging in NTFP extraction (Shackleton & De Vos, 2022). Shackleton & De Vos (2022) also estimate that about 3.5–5.8 billion people consume NTFPs globally, and around half of these consumers are from urban areas or the Global North, hinting at an increase in scale and commercialization of NTFP extraction. At the level of individual households, engagement in NTFP harvest varies and is driven by different local, regional, and global socio- ecological factors, as well as characteristics such as the age of household members, gender of the household head, extent of land holding, and family size (Atinga & Bannor 2024). Regionally, cultural differences in the use of NTFPs in religious or traditional practices and as medicine can drive patterns of extraction (Harbi et al, 2018).

Indonesia, with its rich biodiversity and extensive forest cover, holds substantial potential for sustainable NTFP development. However, the management and policy attention in Indonesia have historically prioritized timber and commercial plantation crops, often marginalizing the value of NTFPs and the communities that depend on them. In this context, understanding local perspectives and practices related to NTFPs becomes increasingly crucial, particularly as forest policies shift toward more inclusive models such as community-based forest management (*Pengelolaan Hutan Berbasis Masyarakat*) and social forestry initiatives.

Sumberejo Village is one of the villages in Wonogiri Regency that has a community forest covering an area of 547.16 hectares (Kurnianto, 2013). Most of the people in this village are

farmers. In the context of the Sumberejo community, located in a rich forest ecosystem, NTFPs serve as an essential source of income, food, medicine, and materials for daily life. The forest in the village has been certified by the Indonesian Ecolabel Institute (LEI) as a sustainable forest. The awarding of this certificate indicates that the results of forest management activities by the community continue to comply with environmental, economic, and social norms (Kurnianto, 2013). As the global community grapples with issues of deforestation, biodiversity loss, and climate change, the Sumberejo community offers a valuable example of how traditional practices can support sustainable environmental management. This study seeks to explore the community's perspectives on NTFPs, their role in conservation, and the integration of these resources into a framework for sustainable development.

MATERIALS AND METHODS

The study aimed to understand both the practical and cultural significance of NTFPs to the Sumberejo people. Additionally, it sought to identify the community's strategies for ensuring the sustainable use of these resources, such as the application of traditional ecological knowledge, regulated harvesting practices, and efforts to safeguard biodiversity.

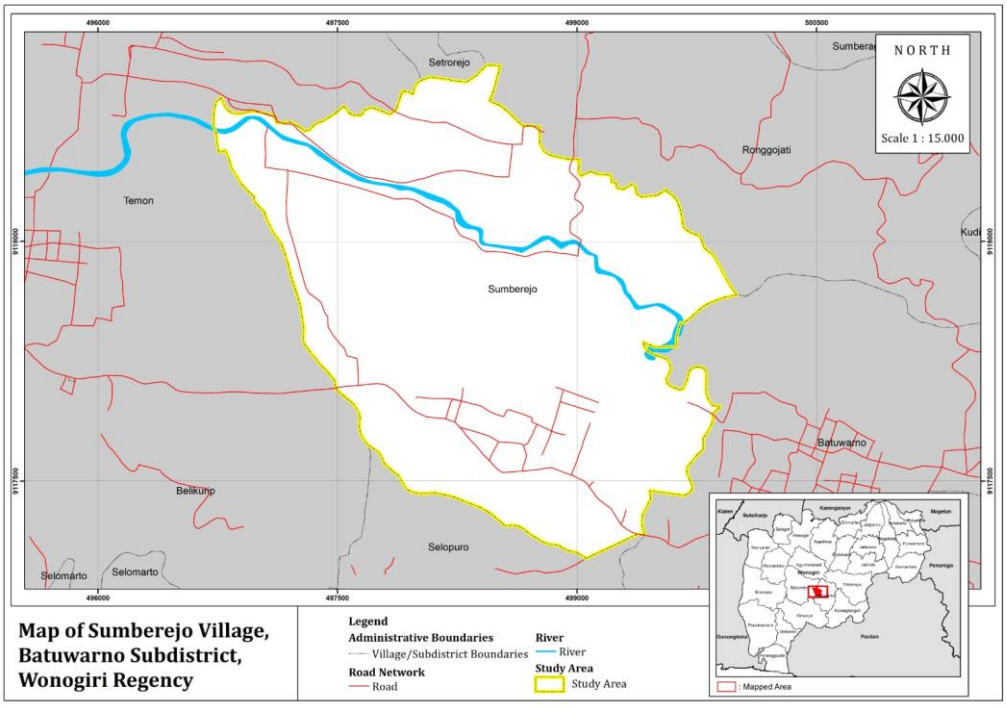

Figure 1. Map of study area

Sumberejo Village is a village located in Batuwarno Subdistrict, Wonogiri Regency. Batuwarno Subdistrict has several agricultural products that are also supported by the existence of Sumberejo Village. In 2024, the most dominant production in this region is seasonal vegetables and fruits in the form of oyster mushrooms and cayenne pepper (BPS, 2024). Sumberejo Village has an area of approximately 5.47 km2 and is located on the western side of Batuwarno District. In terms of administration, Sumberejo Village consists of 12 neighborhood associations (RW) and 24 community associations (RT) with a population of 1,941 in 2024.

1. Data Collection

This research utilized a qualitative approach combining ethnobotanical surveys, in depth interviews, and participant observation. The number of respondents consisted of 50 respondents which were divided into two categories, namely residents and village officials. Respondent categories based on age, type of occupation, education and income. Selected respondents were interviewed to gather insights into the community's relationship with NTFPs and their views on sustainability. The purpose of these interviews and questionnaires was to understand their role in relation to NTFPs. Data were also collected through focus group discussions and field visits to areas where NTFPs are harvested. The questionnaire contained questions covering general information about the respondents and questions about NTFPs.

2. Data Analysis

The collected data were meticulously organized in Excel for further analysis. The analysis used in this study was Participatory Rapid Appraisal (PRA). PRA is a technique often used to gather various information about the potential and problems of a village directly from the source (Selvia et al, 2024). Score analysis for each question category in order to increase community participation at the village level, this method was used to encourage the village community to participate in monitoring and evaluation activities related to a phenomenon in the village, with the object of this study being the community's perspective on NTPFs.

RESULT AND DISCUSSION

The village of Sumberejo, located near a protected forest area in Central Java, provides a unique case for exploring how rural communities engage with NTFPs. The people of Sumberejo have long relied on forest products such as bamboo, medicinal plants, and wild honey for both economic sustenance and traditional practices. However, changes in land use, generational shifts, and limited institutional support pose growing challenges to the continuity of these practices.

While there is a growing body of research on the ecological and economic potential of NTFPs, few studies have specifically examined the perceptions, traditional knowledge, and challenges faced by forest-adjacent communities in Indonesia. Exploring community narratives offers insights into how local ecological knowledge, values, and socio-economic conditions shape forest resource use and contribute to environmental sustainability.

The Sumberejo community has a profound reliance on Non-Timber Forest Products (NTFPs), which form a central part of their livelihoods. NTFPs, including medicinal plants, fruits, fibers, rattan, and resins, are integral to both subsistence and income generation. These resources are collected from surrounding forests, which are considered both a source of sustenance and cultural heritage.

The economic value of NTFPs is significant for the community, with many households relying on these products to meet basic needs, particularly during the off-season of agricultural activities. For example, the collection of wild fruits such as durian, rambutan, and mangosteen provides a vital nutritional supplement, while medicinal plants are often used to treat a variety of common ailments, reducing the community's reliance on expensive healthcare options. Additionally, the sale of forest-based products in local markets provides an important source of income, contributing to the community's economic resilience.

Beyond their economic value, NTFPs are culturally significant, with certain species of plants being tied to traditional rituals, healing practices, and local knowledge. Elders in the community serve as custodians of this knowledge, passing it down through generations, ensuring the continued

relevance of NTFPs in the community's way of life. This intergenerational knowledge transfer also contributes to a sense of belonging and identity within the community.

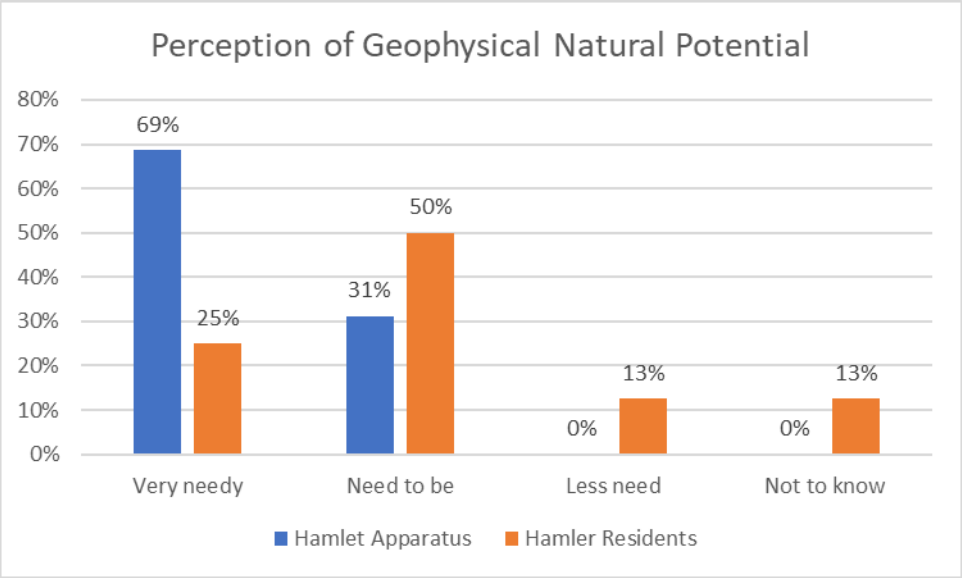

Figure 2. Perception of Geophysic Structure Related to NFTPs

Sustainable Harvesting Practices and Ecological Conservation One of the key findings of this study is the community's emphasis on sustainable harvesting practices to ensure the continued availability of NTFPs. The Sumberejo community demonstrates a strong understanding of the importance of forest health, and this awareness shapes their harvesting techniques. For example, certain plant species are harvested during specific seasons to allow for regeneration, while other species are only collected in moderation to avoid overexploitation.

The community also adheres to informal agreements regarding the rotation of harvesting areas, ensuring that specific regions are given time to recover between harvests. This system helps prevent the depletion of resources and maintains ecological balance. Local knowledge about plant growth cycles, soil conditions, and weather patterns plays a critical role in managing this sustainable harvest. Additionally, the Sumberejo people employ a community-based monitoring system, where members collectively assess the condition of the forest and the status of key NTFP species. If an area shows signs of overharvesting or degradation, the community will take action, such as restricting access to certain areas or implementing temporary bans on harvesting.

A particularly notable practice is the use of selective harvesting techniques, where only mature plants or those that are not critical for the ecosystem's survival are collected. This helps ensure that the overall biodiversity of the forest is maintained, as younger plants and trees are left to grow and mature, maintaining the forest's long-term ecological stability.

Ecological Benefits of NTFPs The Sumberejo community's sustainable management of NTFPs offers significant ecological benefits. The forest products they harvest contribute to the maintenance of local biodiversity, soil fertility, and ecosystem health. Many NTFPs serve a variety of ecological functions: some species of plants are important for maintaining soil structure, preventing erosion, and supporting pollinators that benefit other plant species. For example, certain species of groundcover plants used for medicinal purposes also play a vital role in stabilizing the soil during the rainy season.

Moreover, the harvesting of NTFPs can indirectly contribute to climate change mitigation. By maintaining healthy forest ecosystems, the community plays a role in carbon sequestration, helping to reduce atmospheric carbon levels. Forests in Sumberejo act as carbon sinks, storing significant amounts of carbon that would otherwise contribute to climate change.
By preserving these forests through sustainable NTFP management, the community helps mitigate some of the effects of deforestation and forest degradation, which are major drivers of global climate change.

The close relationship between NTFPs and biodiversity in Sumberejo also enhances the resilience of the forest to environmental stresses. A diverse range of plant and animal species ensures ecosystem stability, as different species contribute to various ecosystem functions, from nutrient cycling to maintaining food webs.

Despite the community's strong commitment to sustainable practices, several challenges threaten the continued viability of NTFP-based livelihoods and forest health. One major challenge is the increasing pressure from external actors, such as illegal logging, land conversion for agriculture, and encroachment from urban development. These external pressures often result in habitat loss and fragmentation, reducing the availability of NTFPs and diminishing the capacity of the forest to regenerate.

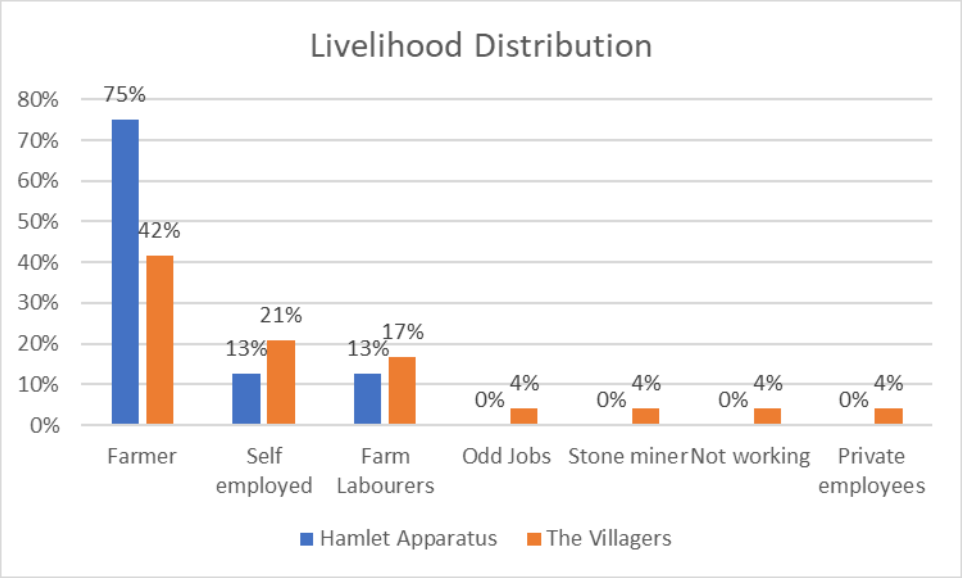

Figure 3. Various Job of Sumberejo's People

Based on the questionnaire results, it is known that the occupations of the people of Sumberejo Village vary. These occupations include farmers, entrepreneurs, domestic workers, odd job workers, stone miners, private employees, and even unemployed people. The graph shows the socio-economic diversity of the community, particularly in terms of livelihoods. This characteristic provides insight into the economic behavior and livelihood dynamics of communities that depend on NTFPs (Azuela et al, 2025). This is in line with the findings of Kilonzo et al (2018), which explain that variables such as income level, education, age, gender, marital status, family size, occupation, and distance to the market significantly influence participation in NTFP-related activities and family income. Based on the livelihoods of village officials, 75% of village officials work as farmers, 12.5% as entrepreneurs, and 12.5% as farm workers. As for the community, 41.67% work as farmers, 20.83% as entrepreneurs, 16.67% as farm laborers, and 4.17% each as

odd-job workers, stone miners, and even unemployed. This diversification reflects a combination of subsistence and entrepreneurial activities that are characteristic of a mixed forestry economy (Ndapewa et al, 2023).

Climate change also poses a significant threat, with altered rainfall patterns and higher temperatures affecting plant growth and species distribution. As the climate changes, certain species of NTFPs may become less abundant or even disappear from the region, potentially undermining the community's ability to rely on these resources.

Another challenge is the generational shift in attitudes toward NTFPs. Younger community members are increasingly moving away from traditional forest-based livelihoods, seeking employment in non-agricultural sectors or migrating to urban areas. This shift poses a risk to the transmission of traditional knowledge and practices regarding NTFP management, as younger generations may not fully appreciate the value of these resources or may lack the skills to harvest them sustainably.

Opportunities for Strengthening Sustainable Practices. While these challenges are significant, there are also opportunities to strengthen the community's capacity for sustainable NTFP management. One such opportunity lies in increasing awareness and education among younger generations about the importance of NTFPs and their role in both local livelihoods and ecosystem health. Schools and local institutions can play a role in bridging the gap between traditional knowledge and modern conservation practices, offering programs that combine the best of both worlds.

Additionally, collaboration with external stakeholders—such as government agencies, non-governmental organizations (NGOs), and academic institutions can provide the community with technical support, financial resources, and access to markets for sustainably harvested NTFPs. Promoting certification schemes for sustainably sourced NTFPs could open up new market opportunities, ensuring that the economic benefits of NTFPs are maximized while promoting conservation [2].

Incorporating scientific research into community-based management practices can also help adapt traditional knowledge to contemporary environmental challenges, such as climate change. By combining local ecological knowledge with modern scientific understanding, the community can develop adaptive management strategies that improve the resilience of both the forest and the people who depend on it.

A significant body of literature emphasizes the essential role of NTFPs in rural livelihoods. According to Shackleton et al. (2015), NTFPs contribute directly to the food security, income, and well-being of rural communities, especially in developing countries. For instance, communities like those in Sumberejo depend on NTFPs not only for daily subsistence but also for income generation through the sale of forest products. These findings align with Angelsen & Wunder (2003), who argue that sustainable use of NTFPs can complement agricultural systems and reduce poverty in rural areas by diversifying household income streams.

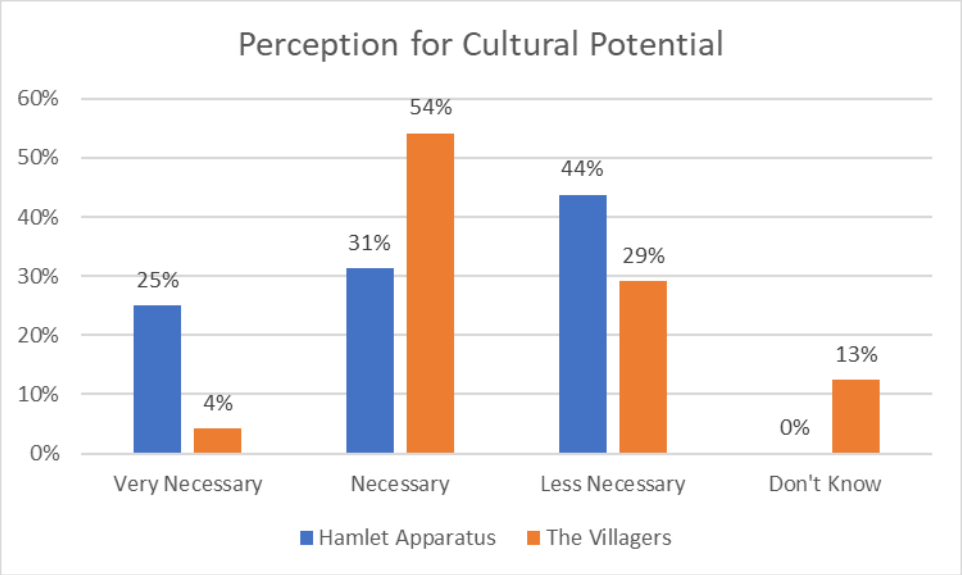

Figure 4. Perception of Cultural Potential to Developed NFTPs

NTFPSs have a significant impact on communities, including helping to reduce poverty by preserving and conserving resources (Jinyu et al., 2022). In addition, non-timber forest products (NTFPs) help reduce poverty by preserving and conserving resources (Jinyu-Shenab et al., 2022). Furthermore, they play an important role in addressing food security, poverty reduction, and the livelihood needs of rural communities around the world (Akomaning et al., 2023), sustaining livelihoods, and serving as a safety net during times of hardship (Ndapewa et al., 2023). They also fulfill several livelihood needs such as income and cultural requirements, serve as a safety net during disasters, and as a means of diversifying income sources. As a result, 1.5 billion people worldwide use or trade in non-timber forest products (NTFPs). Given the many benefits of NTFPs to a community, there is an awareness of the importance of preserving these resources through cultural intervention.

NTFPs in the Sumberejo community, as in many other indigenous and rural settings, are used for various purposes, including food, medicine, construction materials, and crafts. This multifunctionality supports the economic resilience of forest-dependent communities, providing a buffer against economic shocks like crop failure or fluctuating market prices. The sale of NTFPs in local markets helps stimulate local economies and provides an alternative to environmentally damaging practices such as illegal logging or land conversion for agriculture.

Ecological Functions and Biodiversity Conservation Beyond economic benefits, NTFPs also play a crucial role in biodiversity conservation and ecosystem stability. stress that sustainable use of NTFPs can promote the conservation of forest biodiversity by incentivizing local communities to protect ecosystems that provide these products. The Sumberejo community's sustainable harvest practices such as seasonal collection, selective harvesting, and rotation systems help maintain ecological balance and reduce pressure on forest resources.

Moreover, NTFPs are essential for ecosystem services such as soil fertility, pollination, water regulation, and carbon sequestration. Cunningham (2001) highlights how the sustainable use of NTFPs helps maintain forest structure and function, as many NTFPs, such as fruit-bearing plants, play key roles in seed dispersal and supporting local wildlife. These ecological benefits align with the findings in Wiersum (2006), where forest management practices that include NTFPs are

shown to promote the resilience of ecosystems, even in the face of environmental stressors such as climate change or habitat fragmentation.

Community Based Forest Management and Governance The governance of forest resources is a critical aspect of the sustainable management of NTFPs. Effective community-based natural resource management (CBNRM) systems, which incorporate local knowledge and participatory decision-making, are essential for ensuring long-term sustainability. In the case of Sumberejo, the community's informal governance structures, based on collective responsibility and traditional ecological knowledge, are integral to managing NTFP harvesting and ensuring that resources are not overexploited.

The Sumberejo community's approach reflects that indigenous knowledge systems and local practices offer valuable insights for managing common-pool resources in a sustainable way. The involvement of community members in forest monitoring and resource management, as well as their collective action in protecting the forest, fosters a sense of ownership and accountability, ensuring the sustainability of the forest ecosystem and its resources.

Challenges in Sustainable NTFPs Management Despite the community's efforts, several challenges threaten the long-term sustainability of NTFPs-based livelihoods in Sumberejo. External pressures, such as land-use change, illegal logging, and commercial exploitation, often undermine local sustainable practices. The Sumberejo community faces similar pressures, including encroachment by agricultural activities and climate change, which affect the availability and quality of forest resources.

In addition, there is a growing trend among younger generations to abandon traditional livelihoods in favor of urban employment or modern agricultural practices, as noted by Gomes et al. (2015). This shift in values and lifestyle threatens the transmission of traditional knowledge about sustainable NTFP harvesting and forest stewardship. Therefore, strengthening the link between younger generations and sustainable forest management practices is crucial for the future of NTFP-based systems.

Integrating Traditional Knowledge with Modern Conservation Practices One of the central arguments in the literature on sustainable NTFP management is the need to integrate traditional ecological knowledge with modern conservation approaches. Berkes (2008) advocates for a blended approach that combines the wisdom of indigenous practices with scientific knowledge to address contemporary environmental challenges. In Sumberejo, the community's traditional knowledge of forest ecosystems is a valuable resource for informing modern conservation strategies, particularly in the face of challenges such as climate change and biodiversity loss.

This integration can be seen in the growing body of work that highlights the importance of participatory conservation models, where communities are actively involved in decision-making processes. incorporating local knowledge, conservation initiatives are more likely to succeed and resonate with the needs of local populations, fostering greater community involvement and ownership.

Opportunities for Enhancing the Role of NTFPs in Sustainable Development Finally, the potential of NTFPs to contribute to sustainable development in tropical forests, such as those in Sumberejo, is significant. Lykke (2000) notes that sustainable NTFP management can help address both local and global environmental goals, including poverty reduction, biodiversity conservation, and climate change mitigation. NTFPs offer a promising alternative to environmentally damaging activities such as illegal logging, with the added benefit of fostering community based development and conservation efforts.

Moreover creating value-added products from NTFPs such as eco-labeling, certification schemes, or fair trade initiatives can open new markets for sustainably harvested products, providing economic incentives for communities to protect their forest resources.

Local Understanding of NTFPs as Sustainable Livelihood Resources from the interviews conducted with residents of Sumberejo revealed a rich understanding of Non-Timber Forest Products (NTFPs) as not only sources of livelihood but also integral components of ecological and cultural systems [5]. The community recognizes forest products such as wild honey, bamboo, medicinal plants (e.g., *Curcuma longa*, *Andrographis paniculata*), forest fruits (e.g., *Syzygium cumini*, *Pangium edule*), and mushrooms as essential for daily life, particularly during agricultural lean periods.

This localized knowledge aligns with existing literature on the role of NTFPs in livelihood diversification and. Many respondents indicated that NTFPs act as "life buffers," particularly when rice yields are low or farming inputs are unaffordable. One respondent stated:"When crops fail, we go to the forest. There is always something we can gather honey, herbs, or fruits and that's how we survive. This reflects a subsistence strategy consistent with the "safety net" function of NTFPs observed in rural tropical regions globally

What is particularly notable in Sumberejo is the application of *traditional ecological knowledge* (TEK) in harvesting practices. For example, honey collectors deliberately leave part of the hive intact to allow bee colonies to regenerate. Similarly, only mature bamboo is harvested, while young shoots are left untouched. These selective techniques represent embedded conservation ethics, echoing observations, which emphasized that sustainable harvesting is often guided by indigenous norms and tacit environmental understanding.

Economic potential and structural constraints NTFPs provide essential support to household economies, their economic potential remains largely underdeveloped. Most community members sell raw products directly to middlemen at low prices due to limited access to broader markets, absence of cooperatives, and lack of product processing knowledge. For example, raw honey is sold without filtration or packaging, reducing its shelf life and market value.

This situation is consistent with broader findings in the literature that communities often remain locked in low-value segments of NTFP value chains. The absence of enabling infrastructure such as training in post-harvest handling, access to digital marketplaces, or support for certification limits the economic leverage that NTFPs can provide.

This indicates a gap between local willingness and systemic support. Bridging this gap requires targeted interventions, such as establishing community forest enterprises (CFEs), promoting public-private partnerships, and integrating NTFPs into local economic development plans.Beyond their economic value, NTFPs hold ecological and cultural significance. Many respondents expressed concern about forest degradation due to illegal logging and shifting cultivation practices, noting that such activities threaten both biodiversity and the availability of NTFPs.

For the people of Sumberejo, the forest is seen as a communal legacy a place of spiritual, cultural, and ecological importance. Certain forest zones are considered sacred and are protected by unwritten customary laws (*adat*). These conservation values, rooted in cultural norms, provide a form of informal governance that helps regulate the use of natural resources, consistent with findings on common pool resource management.The community's environmental values support the case for participatory forest management (PFM), wherein local knowledge and practices are integrated into formal conservation frameworks. This approach has proven effective in countries

like Nepal and India, where forest user groups have successfully contributed to forest restoration while benefiting from resource access.

However, legal recognition of customary practices in Sumberejo remains weak. Although the community plays a de facto role in managing forest resources, they lack secure tenure or formal management rights. This limits their capacity to negotiate with external actors and undermines long-term stewardship.

Tabel 1. Percentage of Respondents' Perspectives on NTFTPs Area

Environmental Potention for NFTPs Area				
respondent	Very need	Need to be	Less need	Not to know
Hamlet apparatus	56.25%	43.75%	0.00%	0.00%
Hamlet residents	41.67%	45.83%	12.50%	0.00%
Natural geophysic potential for NFTPs area				
respondent	Very need	Need to be	Less need	Not to know
Hamlet apparatus	68.75%	31.25%	0.00%	0.00%
Hamlet residents	25.00%	50.00%	12.50%	12.50%
Natural Biophysic area for NFTPs area				
respondent	Very need	Need to be	Less need	Not to know
Hamlet apparatus	56.25%	43.75%	0.00%	0.00%
Hamlet residents	16.67%	50.00%	20.83%	12.50%

Based on the data table, it can be seen that the community has the highest perception of the geophysical condition of the Sumberejo area as NFTPs land of 68.75%. Sumberejo Village has a rugged and hilly topography, with most areas having a high land slope, which is more than 40%. Its geological structure is dominated by layered and folded limestone, which often gives the impression that the area is a "soiled rock area". The condition of the rocks and the high slope, the soil solum (soil layer) in this village is very thin, only appearing slightly between the rocks, making this area vulnerable to erosion.

Prior to the forest and land rehabilitation program, the Sumberejo area was a less productive area. To rehabilitate abandoned land, the government has taken a policy of choosing a combined civil, technical, and vegetative land rehabilitation technique, namely by planting fast growing plants. This village has a dry climate with an average annual rainfall of 2,108 mm and 160 rainy days, but the distribution is uneven and droughts often occur.

CONCLUSION

The literature on NTFPs provides a robust framework for understanding their role in supporting both local livelihoods and sustainable environmental management, particularly in communities like Sumberejo.

From contributing to the local economy and preserving biodiversity to promoting community-based governance, the sustainable use of NTFPs holds great promise for achieving broader goals of environmental sustainability. However, challenges related to external pressures, generational knowledge loss, and climate change must be addressed to ensure the continued

viability of NTFPs as a cornerstone of sustainable forest management. Integrating traditional knowledge with modern conservation practices and expanding market opportunities for NTFPs could help ensure the long-term success of these systems.

Toward a Holistic Approach to Forest Management. The results of this study underscore the importance of a holistic approach to forest management that incorporates both traditional ecological knowledge and modern conservation practices. The Sumberejo community's sustainable use of NTFPs offers

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