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Original Article

The Role of Forest Certification in Enhancing Livelihoods of Local Communities: Evidence from Certified Village Land Forest Reserves at Nanjirinji and Likawage Villages, Southern Part of Tanzania

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ABSTRACT

Community-based Forest Management (CBFM) has emerged as a vital tool for promoting sustainable forest management and improving the livelihoods of local communities dependent on forest resources. This paper examines the role of forest certification within CBFM, mainly Village Land Forest Reserves (VLFR), in enhancing the livelihoods of communities and forest governance in the southern part of Tanzania. The villages were selected purposively using five criteria, such as the existence of an up-to-date management plan, good record keeping, an active and functional forest committee, good experience in implementing Forest Stewardship Council (FSC) group certification and forest size. Mixed-methods approach, including household surveys, key informant interviews and field observations, were used to collect information. During the household surveys, random sampling was used to select households. The sample size of 85 households were surveyed, where 39 were from Likawage and 46 from Nanjirinji village. Content analysis was used for qualitative data, where the data were compiled and responses coded, identifying the range of responses to each question, creating matrices in SPSS that cross-listed each response variable by village. These were done through descriptive statistics, where measures of central tendency, such as means, median, percentage and counts, were computed. The results indicate that certified forests improve communities' livelihood through increased employment opportunities, access to markets for forest products and better forest governance. Additionally, certification has contributed to capacity-building and the empowerment of local communities in forest management. Challenges such as limited financial resources, inadequate knowledge, and logistical constraints hindered the full realisation of certification benefits. The study concludes that forest certification offers significant potential for improving livelihoods. It reveals significant social, environmental and economic benefits, where 92 and 98 percent of Likawage and Nanjirinji A households, respectively, responded that there are some improvements in education, healthcare and food security. To maximise the benefits of forest certification, efforts should focus on strengthening market access, capacity building, and policy support. Improving trade linkages, infrastructure, and value-added processing can enhance economic returns for certified communities. Expanding training programs on sustainable forestry,

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business skills, and cooperative management will empower locals to better utilise certification benefits.

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INTRODUCTION

Forest certification can be defined as a method by which an independent, third party performs a valuation to determine whether forest management satisfies pre-established ecological, economic, and social standards and verifies it through a written document (Zubizarreta *et al.,* 2021). Forests constitute one of the most crucial terrestrial biomes on the planet, harbouring 80% of terrestrial biodiversity across approximately 4.06 billion hectares (Nghonda *et al.,* 2024). An estimated 1.6 billion people, or 25% of the global population, rely on forests for their subsistence needs, livelihoods, employment, and income (UN, 2021). Forests play a very important role in the national economy, society, lives of people and the environment, but pressure of population growth and the impact of economic development have led to a decline in forest area and forest resources (Tuan, 2015). In Tanzania, the forest sector contributes 3.5% to GDP, 10% to foreign earnings and 3% to employment in the formal sector. Moreover, the forestry sector provides 75% of the materials used in the construction sector and up to 90% of the energy sources in remote areas (Killian & Hyle, 2020). Community participation in forest management has existed in the United Republic of Tanzania for a long time (Lokina, 2014) because the local community has a symbiotic relationship with the forests and can participate in forest development (Haji *et al.,* 2020). Also, rural communities depend on forests for their survival, from the air to breathe to the wood they use (Pokhrel & Gautam, 2024).

FSC certification was the first international forest certification scheme, and it was very much designed with communities in mind (Elliott & Oesten, 2015). Participatory Forest Management (PFM) was introduced to devolve management and improve livelihoods, forest condition and governance (Magessa *et al.,* 2020). Forest certification has been introduced as a market-driven tool that, on the one hand, ensures sustainable management of forests and, on the other hand, provides a premium price for forest products (Frey *et al.,* 2022). Community forests employ a variety of approaches in which local community members are involved in governance and management of local forests, and their rights to access and receive benefits from those forests

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are recognized (Frey *et al.,* 2022), but the forest certification is generally considered the most effective forest management scheme because it is completely performance based rather than system based and it operates on a global scale (Marx & Cuypers, 2010). Forest certification is the process of inspecting particular forests or woodlands to see if they are being managed according to an agreed set of standards (Teketay et al., 2016). Improved market access is a critical outcome of certification, associated with improving corporate image and credibility in international markets (Zubizarreta *et al.,* 2022). Community forest certification has raised a significant amount of interest around the world because it is used in many projects as a mechanism to improve community forest management and to contribute to poverty alleviation (Elliott & Oesten, 2015). The PFM+FSC model was proposed in south-eastern Tanzania as an additional means to bring benefits to poor and natural resource-dependent rural communities managing local forests (MCDI, 2015).

In Tanzania, the adoption of forest certification has gained traction in recent years, particularly in the southern part of the country where forests hold significant socio-economic and environmental importance, where the government has committed to increase certified forest reserve through the National Forest Policy Implementation Strategy of Tanzania of 2021 which has ensured a sustainable supply of forest products and services by strengthening management of forest resources through certification. Forest certification has been promoted as a means to contribute to individual and community livelihood conditions (Kalonga *et al.,* 2014) because many households are highly dependent on forest resources (John *et al.,* 2021). Despite the growing interest in certification, little empirical research has been conducted to assess its impact on local livelihoods in the region. As certification becomes more widespread, it is critical to understand how it influences the socio-economic conditions of communities and whether it delivers tangible benefits in terms of poverty alleviation, employment, and capacity-building. The study is ultimately aimed to answer the question of how deep the certification will give a socio-economic impact on the livelihood (Dharmawan *et al.,* 2012).

This paper aims to fill this gap by exploring the role of forest certification in enhancing the livelihoods of local communities in the southern part of Tanzania. Specifically, the study examines how certification initiatives have contributed to economic opportunities, social development, and improved governance structures within forest-dependent communities. By drawing on field-based evidence and the experiences of certified forest operations, this research provides insights into the opportunities and challenges associated with forest certification in the Tanzanian context. The findings of this study will contribute to the broader discourse on sustainable forest management and rural development, offering policy recommendations that can help maximise the positive impacts of forest certification on local livelihoods. Moreover, understanding the localised benefits and limitations of certification in Tanzania can provide valuable lessons for other regions facing similar challenges in forest management and community development.

METHODOLOGY

Study Area

The study was conducted in Kilwa District, Lindi Region, which is located between 8°15'–10°00'S and 38°40'– 39°40'E with an area of 13,347.50 km2. Two villages with certified forests were chosen for this study (**Figure 1**). The study area is characterised by miombo woodlands with some patches of coastal forests, north Zambezian undifferentiated woodlands, and wooded grassland dominated by woody plants, primarily trees, with high diversity and degree of endemism (Kalonga *et al.,* 2016). Long'ou Village Land Forest Reserve (VLFR) and Bumbila B VLFR, found in Likawage and Nanjirinji village, were selected respectively by considering the given criteria such as the existence of an up-to-date management plan, good record keeping, an active and functional forest committee, good experience in implementing FSC group certification and forest size.

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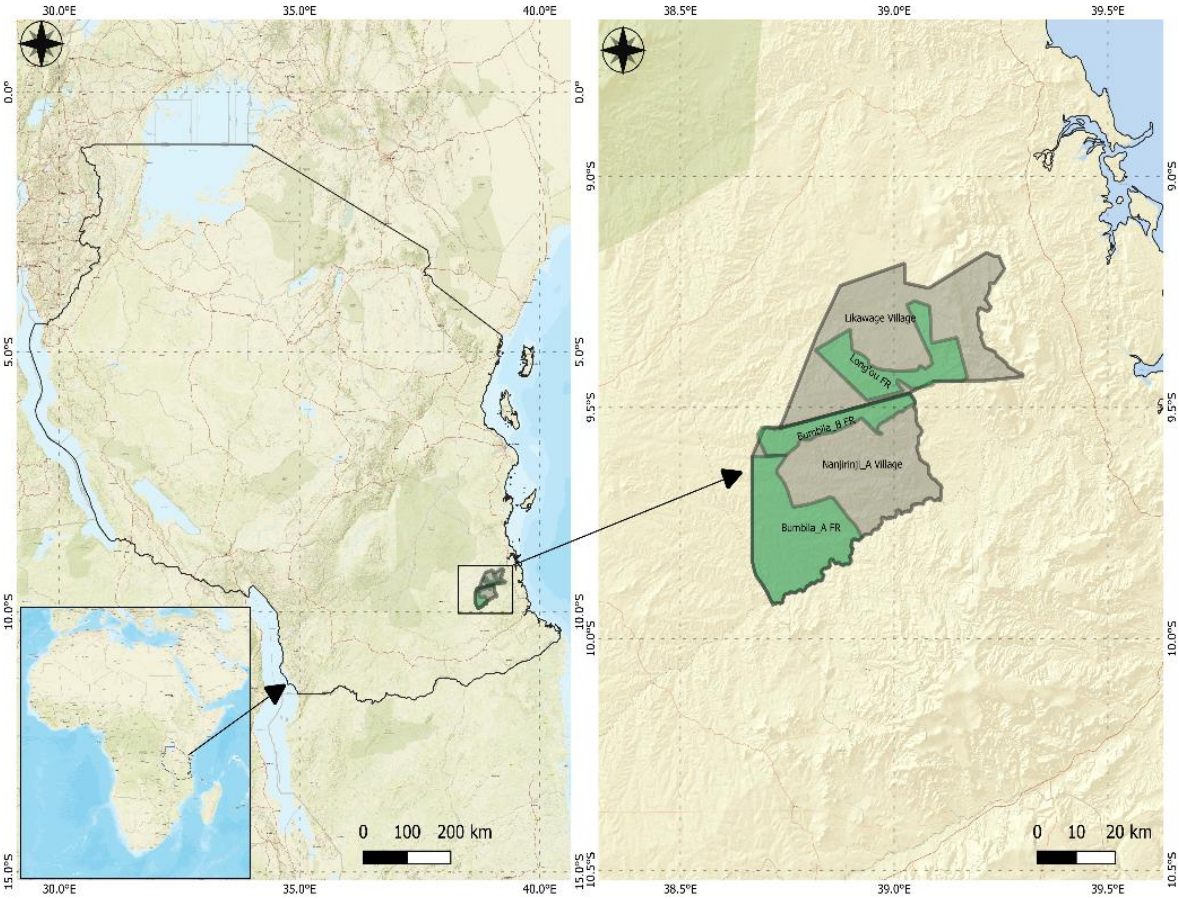
Figure 1: A Map of the Study Area - Likawage and Nanjirinji A Village



Sampling and Sample Size Determination for Villages and Households

The study used a mixed research design approach comprising both qualitative and quantitative data and a cross-sectional design where adopted. Systematic sampling was employed to select the villages with Certified VLFR, where a sample size of two (2) villages out of 14 villages sample frame that were implementing CBFM and are under the FSC group certification, with the sampling intensity of 14% from the total sampling frame of the villages. These villages were selected purposively using the criteria explained in the sampling design. The criteria used to select the villages were the existence of an up-to-date management plan, good record keeping, an active and functional forest committee, good experience in implementing FSC group certification and forest size.

In the selected villages, a household survey was used to gather the information. The households were selected using random sampling (Bartlett II et al., 2001) argue that inappropriate, inadequate or excessive sample sizes continue to influence the quality and accuracy of the research. Also, according to, sample size can influence the detection of a significant difference, relationships or interaction. Therefore, the household sample size where determined based on (Delice, 2001), who confirmed that in relational survey design, the sample size should not be less than 30 units from one observation, which is adequate to be subjected to statistical analysis. This implies that thirty households were randomly selected from each sampled village.

The determination of the sample size was based on Yamane's formulas for the study (Shaikh *et al.,* 2021). n = (N / 1+Ne^2)/ Average household population ……. Eq (1)

Where,

n = Sampling size; N = Total population in two villages; e = sampling error (±5%)

Average household population.

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According to (URT, 2022), the total population of the two villages, both Likawage and Nanjirinji A, is 7,965, with 4.8 average household population.

n = ((7,965/ 1+ (7,965*0.05^2))/4.8; Sample size (n) = **79 Households**.

Data Collections

Household Surveys

According to the criteria enacted from the design, the selected villages were Likawage and Nanjirinji. A household survey was conducted in sampled villages to know the livelihood status of communities that rely on forest resources. In each village, the selection of the list of households for the household survey was obtained from the updated village register. A total of 85 households were surveyed, where 39 were from Likawage and 46 from Nanjirinji village were involved during the households' survey (**Table 1**). Random sampling was employed to select households, while the distance from the forest was proportionally considered by hamlets found in a village. The aim was to have a study sample which is sufficient and representative of the target population.

Table 1: Sampled Villages in Kilwa District

No.	Village Name	VLFR Name	Forest Area (HA)	Forest Status	Sampled Households
1.	Likawage	Lung'ou	31,055	Certified	39
2.	Nanjirinji A	Bumbila B	18,963	Certified	46

The main research instruments for the present study include a questionnaire for household surveys. The tool specifically aimed to collect information on the community's livelihood status. The standard protocol for questionnaire construction was followed, whereby the domain of information was defined first in order to obtain the required information. The questionnaire was made: brief (keeping questions short, and asking one question at a time), objective (paying attention to neutrality of the words), simple (using language which is simple in words and phrases), specific (asking precise questions) and informative (covering all necessary information needed). All three types of question formats were used: multiple choice (closed-ended) questions, numeric open-ended questions, and text open-ended questions. Attention was also given to issues such as opening questions, question flow and location of sensitive questions.

Focus Group Discussion

Focus Group Discussion (FGD) is an exploratory research tool described as a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment. Two focus groups where one in each village, were conducted. The focus group is typically comprised of eight people who are purposively selected because they have certain characteristics in common that were drawn from the community with varying age, gender, location and experience with respect to forest certification. This study therefore used FGD to elicit perceptions, opinions and attitudes of the beneficiaries' community on the value of the CBFM to their livelihood and particular attention was paid to the FSC Group Certification Scheme. The checklist was used to conduct the FGD.

Key Informants Interview

Participatory rural appraisal (PRA), such as key informants, was used. The interview was guided by a checklist of questions. We supplemented the village and community forest attribute data by interviewing eight individuals in May 2024, such as the FSC project officer from MCDI, the District Forest Officer (DFO), two village chairpersons, two leaders of the Village Natural Resources Committees (VNRC), a retired district forest officer and District Forest Conservators (DFC). Interviewees were purposively chosen for their knowledge of certification and their involvement with MCDI and community forestry in the project area. Using a structured interview guide.

Data Analysis

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Quantitative data were compiled and responses coded, identifying the range of responses to each question, creating matrices in Excel and SPSS that cross-listed each response variable by village. The results were then summarised and interpreted through tables, graphs and charts. All this was done through descriptive statistics, where measures of central tendency such as means, medians, percentages, and counts were computed.

RESULTS

The data obtained in both villages, Nanjirinji A, 46 respondents and Likawage, 39 respondents, were combined to obtain a total of 85 respondents. The results expressed in percentage of respondents were 87 percent revealed that forest certification improved household income. Also, 72 percent noted some positive changes obtained after certifying the village forests. The data obtained were descriptively analysed using SPSS with several statistical checks such as standard error, mode and standard deviation (**Table 2).**

Table 2: Household Responses

No.	Questions for household survey	Responses	Respondents		Statistics			
		Options	**Frequency**	**Percent**	**Std. Error of Mean**	**Mode**	**Std. Deviation**	**Variance**
1	Does forest certification improve household income?	Yes	74	87%	0.037	Yes	0.338	0.114
		No	11	13%				
2	How would you rate the overall well-being of your household in the past year?	Good	6	7%	0.091	Poor	0.836	0.7
		Fair	30	35%				
		Poor	35	41%				
		Very poor	14	17%				
3	Have you noticed any changes in your household's well-being since the FSC certification was introduced in the area?	Improved	61	72%	0.056	Improved	0.512	0.262
		No change	22	26%				
		Declined	2	2%				
4	Income changes since the village's involvement with FSC Group certification	Improved	60	71%	0.053	Improved	0.489	0.239
		Stay the same	24	28%				
		Declined	1	1%				

On understanding the trend of social well-being in the community previous status before certification was identified by the respondents, compared with their current status, where 41% responded that the previous well-being was “Poor” while 35% indicated that it was “Fair”. After certification 72% showed that the well-being has “improved” while 26% of the respondents in the study area showed that there was no change in well-being of the households (**Figure 2**).

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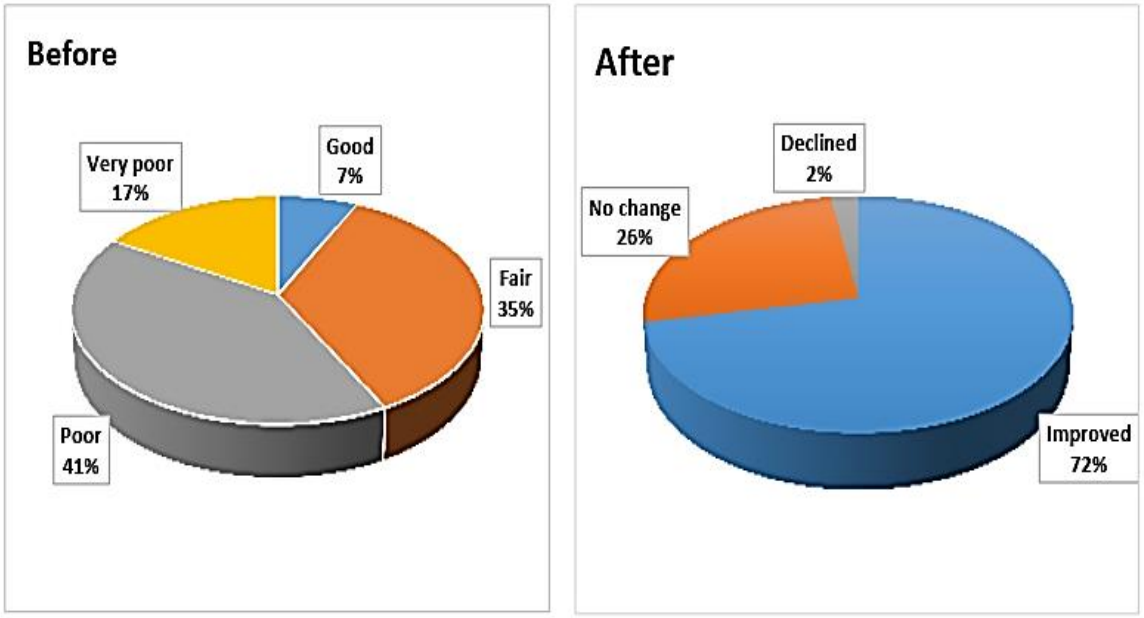
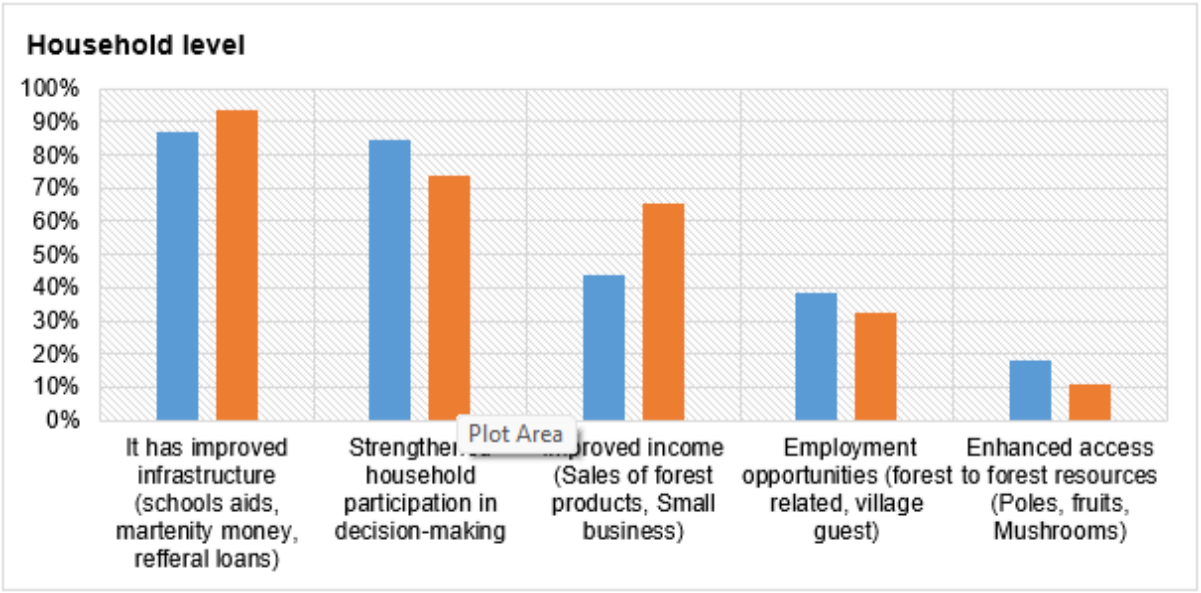
Figure 2: Overall Household's Livelihood before and after the FSC Certification Scheme



The results highlight that forest certification has multiple livelihood benefits beyond economic gains in the sampled villages, particularly in social benefits, conservation awareness, social cohesion and improved market accessibility. The results show a relatively lower percentage for market accessibility improvement in both villages. This may indicate that while certification helps market accessibility, some challenges still exist. The main outcomes of forest certification are social benefits, enhancement of forest conservation and community cohesion as reported by surveyed village members, where the percentage responses indicate the proportion of respondents who identified each benefit (**Figure 3**).

Figure 3: Benefits Brought by the FSC Forest Certification Scheme



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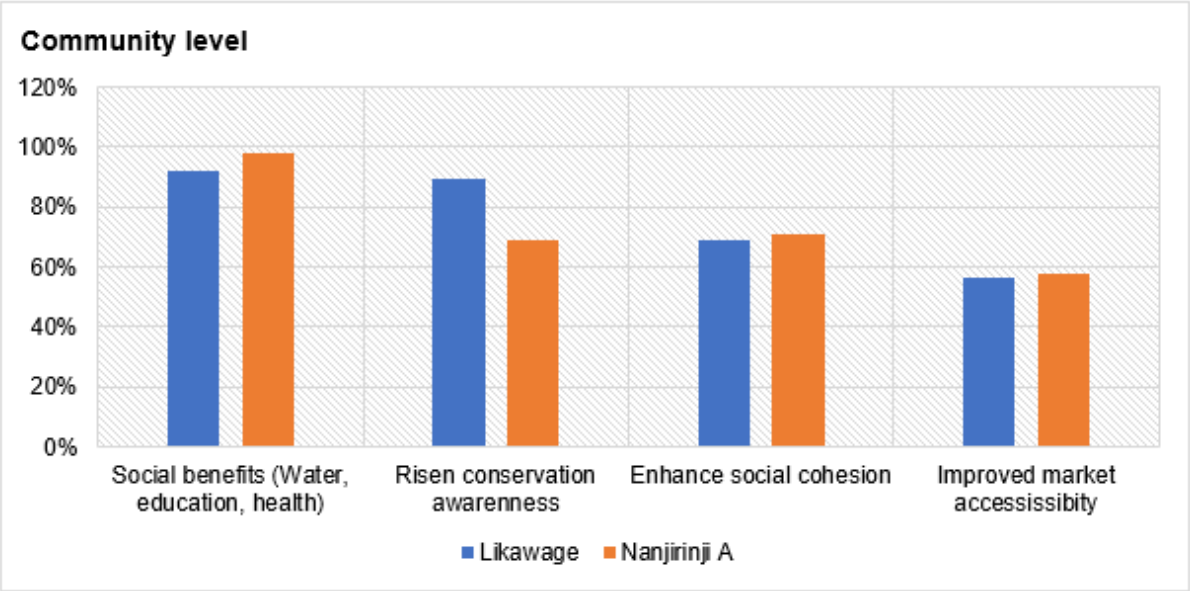
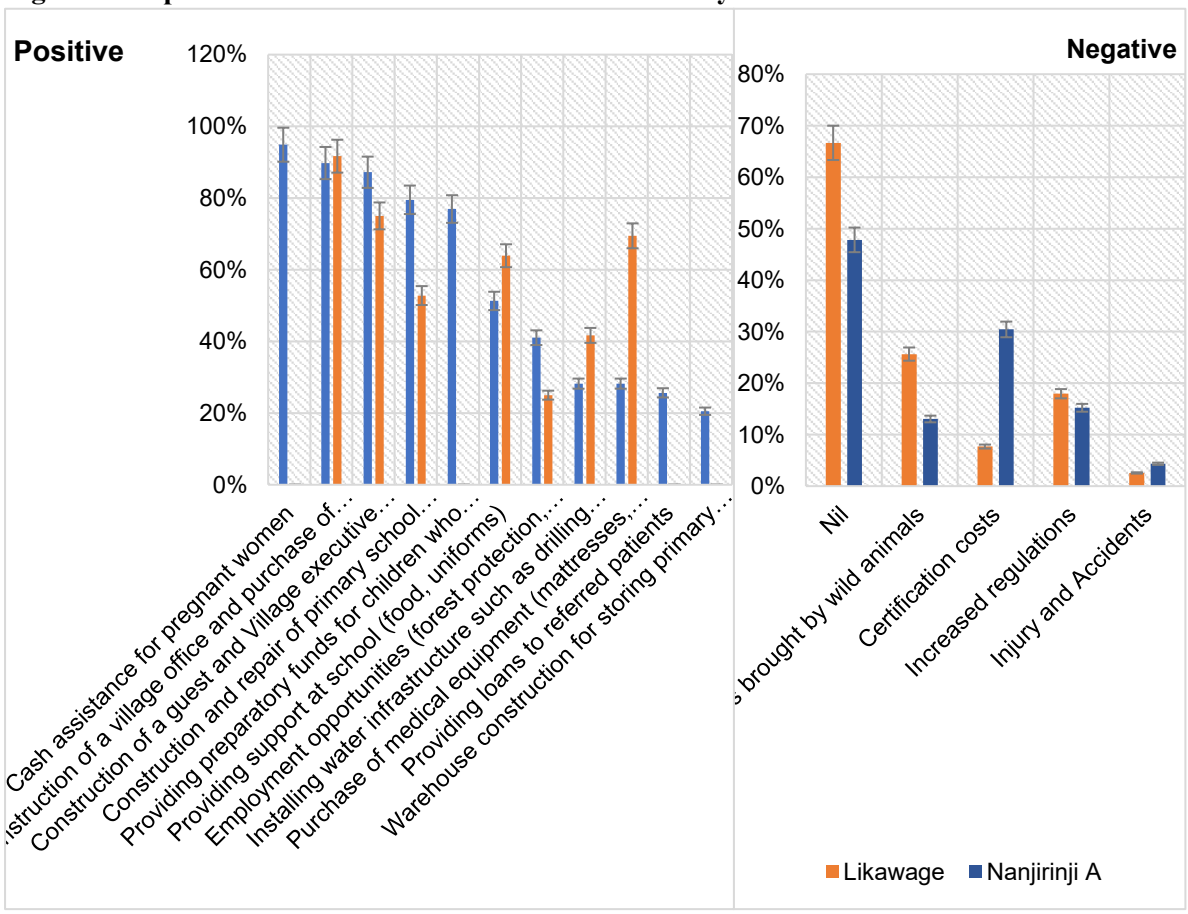


The income collected after selling forest products from certified community forest reserves was used in different village activities such as improving water, education and health facilities. Although more villagers, 67 percent (Likawage) and 48 percent (Nanjirinji A), responded that there are no significant negative impacts brought by certification, some mentioned a few, such as an increase of wild/vicious animals, occurrence of accidents and forest entry barriers, as among the impacts brought by the schemes (**Figure 4**).

Figure 4: Impacts of FSC Certification on the Community



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DISCUSSION

The study indicates that the quality of life had improved since certification was granted, especially in essential services, namely water supply, medical facilities, housing, and electricity, which contributed to improved living conditions, which is supported by (Blackman *et al.,* 2014) who concluded that FSC certification had significant ecological, economic, and social benefits. Also, FSC-certified community forests earned higher net revenue than non-FSC villages (Wolff & Schweinle, 2022). The current average rate of villages with functioning VNRC (71% as perceived by respondents in both of the villages), although it is significantly higher, indicates that efforts are still needed to enhance the effectiveness in the part of the VNRC and the Village general assembly with certified forests so that it can spread to other villages. Active institutions through which the local populations, the Village Natural Resources Committees (VNRC) and the village general assembly can regularly discuss forest management and conservation issues are arguably the most distinctive feature of certified forests (Cerutti *et al.,* 2017).

A high percent of the households revealed that forest certification improved household income, which is confirmed by (Acharya & Gyanendra, 2021) who explained that certification is a vehicle for local value addition, income and employment generation, raising a significant interest with an aptitude to contribute to poverty alleviation. Besides that, the results highlight that certification has multiple livelihood benefits beyond economic gains, particularly in social development and education/training. This is consistent with Elliott and Oesten (2015). Certification improves the welfare of people who depend on forests, also provision of aesthetic, scientific, and educational values improve working conditions, health and safety to the Indigenous peoples (Molnar *et al*., 2004; Malek & Abdul Rahim, 2022), improved market accessibility associated with improving corporate image and credibility in international markets (Zubizarreta *et al.,* 2022), implement environmental and social changes consistent and improve the livelihoods of the local communities (Islands *et al.,* 2012). Certification increased household income in Tanzania, accounting for 12% per household (Wolff & Schweinle, 2022).

The findings indicate that community cohesion and participation in decision-making after certification were improved. This was supported by (Molnar *et al.,* 2004; Acharya & Gyanendra, 2021), that forest certification improves decision-making and participation through emphasising transparent and equitable participation in forest management. It improved community engagement processes in forest reserves (Degnet *et al.,* 2022), strengthens local communities' organisational efforts by enhancing transparency and accountability and advances social justice in forestry (Elliott & Oesten, 2015). It addresses social and labour issues effectively, such as improved labour conditions, employment, worker rights, occupational safety and the health of workers (Molnar et al., 2004). Moreover, FC schemes have more positive socio-economic outcomes for the society (Zwerts *et al.,* 2024). FC has a positive impact on sustainable resource management by creating awareness for the improvement of the collection of forest products, maintenance of records, and maintaining transparency of all processes and methods (Acharya & Gyanendra, 2021). Also, it acknowledged that a better market supported by Zubizarreta et al. (2022), confirmed that improved market access is a critical outcome of certification.

CONCLUSION

Forest certification has proven to be a transformative tool for improving the livelihoods of local communities in southern Tanzania's certified forests. The study reveals significant social, environmental, and economic benefits, with more respondents reporting improvements in education, healthcare, and food security, demonstrating how certification strengthens social infrastructure. Additionally, the respondents recognised enhanced environmental conservation, indicating that sustainable forest management practices have contributed to

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reduced deforestation and ecosystem resilience. Furthermore, both village respondents cited capacity building and training as a major benefit, equipping communities with the necessary skills for sustainable resource management.

Overall, these findings confirm that forest certification not only promotes sustainable forestry but also fosters community development and well-being. To maximise its long-term impact, policymakers and stakeholders must focus on improving market access, expanding training programs, and strengthening institutional support. By addressing these areas, certification can become an even more powerful catalyst for rural economic growth, environmental conservation, and poverty alleviation in forest-dependent communities.

Recommendation

To maximise the benefits of forest certification, efforts should focus on strengthening market access, capacity building, and policy support. Improving trade linkages, infrastructure, and value-added processing can enhance economic returns for certified communities. Expanding training programs on sustainable forestry, business skills, and cooperative management will empower locals to better utilise certification benefits. Additionally, government and NGO partnerships should provide financial incentives, streamline certification processes and establish monitoring systems to ensure equitable benefit distribution.

Environmental sustainability and social well-being must also be prioritised. Encouraging community-based conservation initiatives, reforestation projects, and stricter law enforcement will protect forest ecosystems while maintaining certification standards. Social benefits can be further enhanced by investing in education, healthcare and inclusive decision-making to ensure marginalised groups also benefit. By addressing these key areas, certification can evolve into a more effective tool for sustainable livelihoods, conservation, and rural development in Tanzania.

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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