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Inclusivity in decentralized forest management and its effects on economic resilience and nature sustainability in East Central Tanzania

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Abstract. *Ngowi NJ. 2024. Inclusivity in decentralized forest management and its effects on economic resilience and nature sustainability in East Central Tanzania. Asian J For 8: 165-173.* Inclusivity plays a crucial role in engaging all members of society in efforts to reduce risks to their welfare while maximizing the environmental sustainability of natural resources. However, decentralized forest management systems often fail to demonstrate well the connection between inclusivity and balanced decision-making, especially when it comes to evaluating the state of environmental sustainability and the well-being of local communities. This study sought to bridge this gap by examining the effects of inclusivity on economic resilience and nature sustainability in decentralized Ihombwe forest in east-central Tanzania (ECT) over the period from 2021 to 2022. A combination of qualitative and quantitative approaches was employed, including a household survey of 56 carefully chosen families, focus group discussions, and document analysis, to gain a deeper understanding of inclusivity, economic welfare, and sustainability within the Ihombwe forest in ECT, as well as the key driving factors. The results showed a steady decline in the benefits of increased access to forest resources; this did not translate into improved outcomes for the community's welfare or the forest's environmental sustainability. These findings reveal a complex relationship where inclusivity and access alone might not be enough to encourage sustainable development. However, they offer theoretical insights and policy recommendations aimed at fostering greater inclusivity in decentralized forest management frameworks to improve both forest conservation and the welfare of local populations in the ECT.

Keywords: Community forests, gender, inclusivity, sustainability, UNSDGs

INTRODUCTION

Inclusivity enhances engagement and participation among all community members, including marginalized groups, in decision-making processes (Agrawal and Gibson 1999; Katani and Babili 2012; Datta 2021; Gonzalez and Botero 2021), providing benefits for management practices. Linking inclusivity to local institutions, including village governments and traditional leaders, is critical in addressing gender disparity by ensuring women's equitable participation in accessing resources and decision-making (Agarwal 2001) for effective forest resource management (Ostrom 1990; Gibson et al. 2000). On the other hand, a decentralized framework is instrumental in facilitating the integration of community knowledge and priorities into forest management plans, enhancing the legitimacy and effectiveness of conservation efforts through various stakeholder mobilization (Kauffman et al. 2016), community inclusivity (Mogoi et al. 2022), and translating global goals into local actions (Stoker 2011; Sujarwoto 2017; Ansell et al. 2022).

Sustainable Development Goals (SDGs) emphasize community participation, particularly in Tanzania, where decentralized forest management sustains well-being and ecological health (UN 2015). Inclusivity advances SDGs (Hajjar and Holley 2017) in terms of poverty reduction (SDG 1), improved ecosystems and biodiversity through agroforestry (SDG 2), and gender equality in decision-making (SDG 5) (Blomley et al. 2008; Agarwal 2009). Additionally, inclusive forest management fosters sustainable livelihoods and employment, enhancing economic resilience (SDG 8) (Sunderlin et al. 2005). Tanzania's community-managed forests have significantly contributed to SDG 15 (life on land) by conserving and restoring ecosystems (Meshack et al. 2006). Forest management also intersects with other SDGs, such as water and sanitation (SDG 6), climate action (SDG 13) (Mamuya and Kalpers 2023), and life below water (SDG 14) (Poudel et al. 2014). Transparency and participation are essential for achieving SDG 16 (peace, justice, and strong institutions) and SDG 17 (partnerships) (Ribot et al. 2010). Furthermore, inclusivity promotes social justice and reduces gender disparities, aligning forest management with local community needs (FAO 2020).

Forests play a crucial role in the three pillars of sustainability—ecological, economic, and social—and require diverse management strategies tailored to different landscapes, cultures, and institutions. In this respect, Community-Based Natural Resources Management (CBNRM) initiatives were introduced in selected regions—Africa, Asia, and South America—between the 1980s and 1990s following the failure of central approaches in managing natural resources (Murphree 2009; Zulu 2012). These initiatives emphasize community participation in managing local environments, aiming to enhance human well-being while maintaining nature sustainability

(Schmidt and Vellend 2020; Ngowi 2022).

To combat rising deforestation costs and boost revenues in the forest sector, Tanzanian government has embarked on reforms aimed at developing a coordinated strategy for natural resources management under the Forest and Beekeeping Division and the Tanzania Forest Services Agency (TFS). Building on CBNRM's success, Tanzania adopted Community-Based Forest Management (CBFM) in 2001 (Lund 2015; Bredin et al. 2020;). This decentralized forest management approach has reduced deforestation rates by approximately 0.1% annually, covering over 3.6 million hectares of forests under Village Land Forest Reserves (VLFRs) (Von Hippel et al. 2011; MNRT 2015; Nzali and Kaswamila 2019). CBFM has improved local well-being, given communities control over forest resources, aligned conservation efforts with local needs, promoted sustainable use, and ensured equitable benefit distribution (Mbeyale et al. 2021; Mogoi et al. 2022). Despite challenges posed by centralized management (Mung'ong'o et al. 2003; Dressler et al. 2010; Capitani et al. 2016), decentralization remains key to inclusivity, community well-being, and sustainability (Kaufmann et al. 2010; Busse and Gröning 2013).

One such decentralized forest management area is Ihombwe Village Land Forest Reserve (VLFR) in East Central Tanzania. Although CBFM has increased village revenue from forest resources, the role of grassroots governance in promoting local economic development remains underexplored. Therefore, this study aims to identify the drivers and determinants of inclusivity within decentralized forest governance in East-Central Tanzania using Ihombwe VLFR as a case study. This study aligns with global SDGs, Tanzania's Development Vision 2025, and the National Environmental Policy (URT 2021), emphasizing inclusivity for sustainability and economic well-being.

The adaptive governance and social capital approach, which holds that power sharing and decentralization in management improve participation, provides the framework for the study. Additionally, the method demonstrates that adaptive management is not always the result of decentralizing rights and authority to management (Folke et al. 2005). It highlights how community-based projects are adaptive resource management tailored to specific situations and supported by various levels and institutions. As a result, this method is particularly relevant for examining how inclusivity operates in decentralization and forest management contexts.

MATERIALS AND METHODS

Description of the study area

The study was conducted in Ihombwe Village, Kilosa District, Morogoro Region, East Central Tanzation (Figure 1). The village consists of a population of about 2,210 residents (Ngowi and Ngalawa 2023). In 2013, Ihombwe Village placed its forest under decentralized conservation management. The forest reserve, covering 9,597 hectares, is divided into six patches, demonstrating a structured approach to forest management (Ruvuga et al. 2020). This initiative highlights the importance of community-led conservation efforts in achieving sustainability targets. The village's forest reserve, managed by the Village Natural Resources Committee (VNRC), exemplifies local stewardship over natural resources. The VNRC's role involves daily forest management activities, aligning with SDG 15 (life on land), which promotes sustainable use of terrestrial ecosystems. These efforts contribute to biodiversity conservation and climate resilience, addressing both local and global environmental goals.

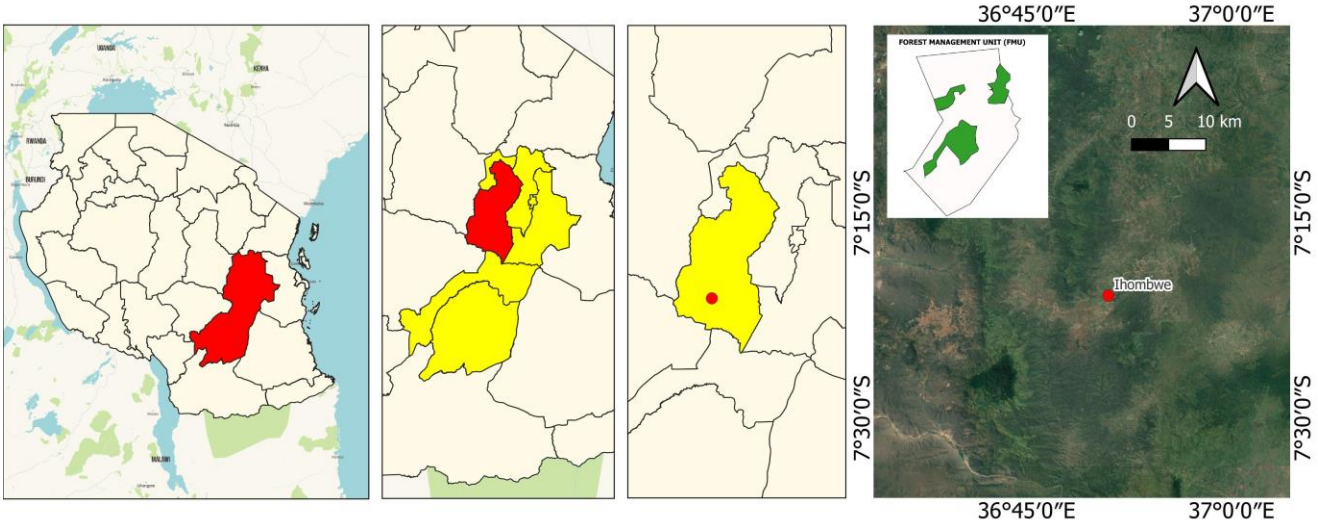

Figure 1. Map of the study area in Ihombwe Village, Kilosa District, Morogoro Region, East Central Tanzania

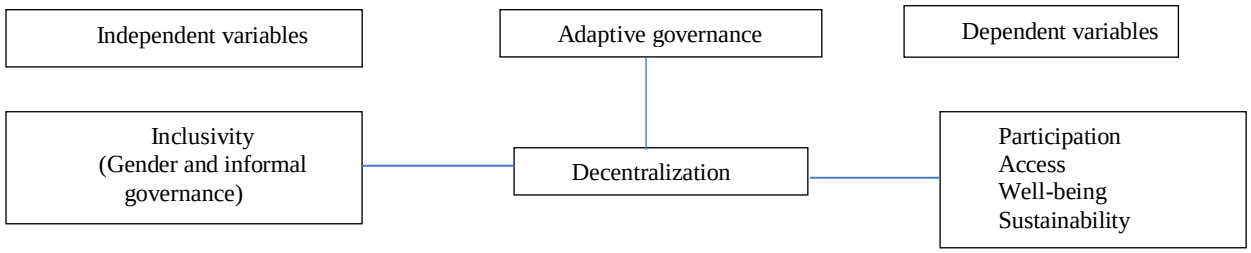

Figure 2. A research framework to explore the role of inclusivity in decentralized forest management

Despite the significant contributions of local governance, challenges remain. Implementing SDGs at the grassroots level requires overcoming obstacles such as limited financial resources, insufficient technical expertise, and the need for stronger institutional support (IISD 2024). However, the potential for local action to drive sustainable development is immense. The VNRC's success in managing the Ihombwe forest demonstrates the potential for scaling similar models across other regions in Tanzania. The integration of local governance with global SDG frameworks ensures that local actions align with broader sustainability objectives. This alignment enhances the effectiveness of both local and global efforts, creating a synergistic impact on sustainable development (Kauffman 2024). Local governance structures, through initiatives like community policing and innovative urban planning, can mobilize resources and foster holistic problem-solving, contributing to the attainment of multiple SDG targets at the same time.

Research framework

The study explored the role of inclusivity in term of gender and informal governance in decentralized forest management for economic and environmental resilience in Ihombwe Village using the research framework as shown in Figure 2.

The gender is used in the context of inclusivity as a component of social capital within the framework of adaptive governance for decentralized forest management. This aspect is critical in examining whether individuals of different genders are equitably represented, included, and empowered within a network or system. Analyzing gender or sex is particularly significant when assessing inclusivity in decision-making processes, access to resources, and participation in social, economic, or political activities. It is expected to influence key dependent variables, including community participation, improved well-being, and the sustainability of forest resources.

Another key element in the inclusivity is informal governance, which significantly influences decision-making and policy outcomes. These factors, often operating outside official decentralized institutions or legal frameworks, can shape how decisions are made, how stakeholders interact, and how forest resources are allocated. Informal governance plays a vital role in ensuring that diverse groups, particularly those without formal authority or recognition, still have a voice in the decision-making process. However, it's important to acknowledge that these unofficial structures can sometimes limit participation, favor certain groups, or create barriers for others.

Data collection

Research design and sample size

The study used documentary reviews for secondary data and surveys for primary data, along with supplemental tools to capture data not obtained through surveys. A purposive sampling method was applied to choose one study village based on its highest forest royalty revenue and the participation of village councils in management. This approach ensures the village is representative of successful forest management practices and substantial community involvement. The total number of households (N) was 430, determined using Israel's (1992) equation. In this equation, *n* represents the sample size, *N* is the total number of households from which the sample was drawn, and *e* denotes the sampling error, set at 5%.

$$\mathbf{n = \frac{N}{1 + N \cdot (e)^2}}$$

A simple random sampling method was used to select 56 respondents from the 430 households in the village. Every eighth household was chosen to create a random and representative sample. This approach minimizes selection bias and enhances data reliability. The sampling interval of 8 was calculated using the formula N/n = 430/56 ≈ 8N/n = 430/56 \approx 8N/n = 430/56≈8. Therefore, every eighth household is selected to achieve a sample size of 56. This systematic approach ensures that the sample is both manageable and representative of the population in the area.

Community survey

In examining the practice of the local community regarding inclusivity and the changes in well-being, accountability, and sustainability of forest resources that have occurred since the establishment of the decentralized forest management framework, a questionnaire with a five-point Likert scale, based on Ajzen (2002), was developed and administered to heads of households. The five-point include: 5: 'strongly agree', 4: 'agree', 3: 'neutral', 2: 'disagree', and 1: 'strongly disagree'. The eight statements were designed to collect data on: (i) changes in forest

guidelines; (ii) gender equality; (iii) culture; (iv) inclusivity; (v) forest management institutions; (vi) access to forest resources; (vii) the role of village government; and (viii) sustainability of nature. Each household respondent's response was used to indicate their level of agreement with the statements.

Supplementary data collection

The following tools were used to supplement data not collected through the survey method. Focus Group Discussions (FGDs) were conducted with members of village natural resources committees in Kilombero, Kisiwani, and Minazini hamlets. FGDs involved adults aged 18 years and older who were involved in forestry management. Information on forest management processes and inclusivity was collected, as well as its effect on forest resource use, household incomes, and sustainability of nature (Kumar 1989).

Key informant interviews were conducted with village leaders, district government officials, and representatives from non-governmental organizations (NGOs) working in the area. These interviews provided insights into broader community perspectives, policy implementation, and potential challenges (Bernard 2018).

A gender analysis was conducted to understand access to forest resources between men and women. This analysis focused on the inclusion of women in forest management decision-making processes and their access to benefits from forest resources. This aligns with SDG 5 (Gender Equality), which promotes inclusivity (Agarwal 2001).

Transect walks were conducted to observe changes in the forest environment and land use practices in and around it over time. This method allowed researchers to gather data on forest cover, agricultural activities, and other environmental drivers (Chambers 1994a).

Participatory Rural Appraisal (PRA) techniques were used to collect qualitative data from community members regarding community access to forest resources. PRA resource mapping promoted community engagement and provided insights into the management practices of community forest, as explained by Chambers (1994b).

Data analysis

The data was analyzed using descriptive statistics in IBM SPSS. Descriptive statistics have been presented in percentages, tables, and graphs. Data on the strength of inclusivity on [income and economy] of selected groups was analyzed by summing scores on questions against three levels (weak, average, or strong). The latter indicated the strongest strengths. The information gathered through focus group discussions was compiled and analyzed to identify details and supplement the data from the other methods.

RESULTS AND DISCUSSION

The demographics of the respondents

Table 1 presents the demographic characteristics of the participants in the study. The male-led households comprised a significant proportion with 35 (62.5%) respondents across all age groups (18-35; 35-50; and over 50), while female-led households comprised 21 (37.5%) respondents. The findings indicate that 28 (50%) the majority were ordinary villagers with no official roles. They were followed by 12 respondents (21.4%) in various positions and 9 respondents (16.1%) who were members of the committee for natural resources and/or forests. Only one village chief (1.8%) and respected elder made up the remaining six respondents (10.7%). The results suggest that half of the respondents were ordinary villagers who could easily provide relevant information without fear of retaliation from the village leaders.

The impact of inclusivity on forest governance

The results presented in Figure 3.A show that over 60% of the respondents agree or strongly agree that inclusivity has increased the number of female members in the village forest and natural resources committee (VNRC). On the other hand, the results presented in Figure 3.B show that nearly half (48%) of the respondents agreed or strongly agreed that committees with more women members are more transparent in decision-making than male-dominated ones.

The findings suggest that the inclusive approach has increased the number of female members in the village forest committee. These findings were also supported by Henriksen et al. (2023) and the villagers interviewed during the FGD, who reported that:

> *There was a fourfold increase in the number of female members on the forest committee. They noted that there were only three active members.*

Table 1. The demographics of the respondent

			Role of respondents					Total
			Village leader	Respected elder	Member of VNRC	Ordinary villager	Other	
Sex	Female	Count	2	0	2	13	4	21
		% of Total	3.6%	0.0%	3.6%	23.2%	7.1%	37.5%
	Male	Count	4	1	7	15	8	35
		% of Total	7.1%	1.8%	12.5%	26.8%	14.3%	62.5%
Total		Count	6	1	9	28	12	56
		% of Total	10.7%	1.8%	16.1%	50.0%	21.4%	100.0%

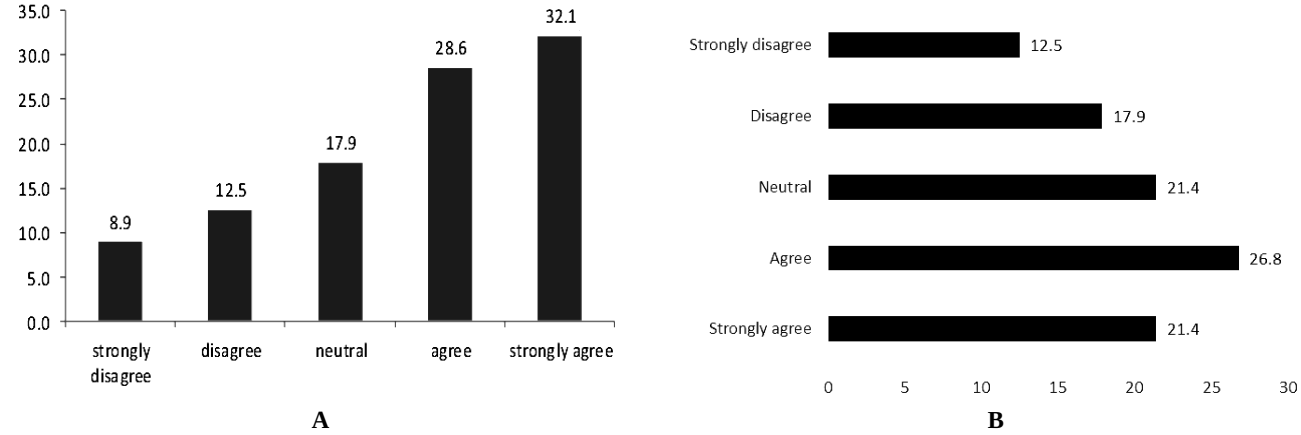

Figure 3. Villagers' perception on: A. Inclusivity in village forest governance; B. Effect of gender on accountability in decision making

However, the number of female members does not meet the national guideline, which requires at least a 50% female-to-male ratio. This study found that the current gender inclusive committee had fewer female members (4) and 12 male members in a committee of at least 16 members. When asked why there were fewer female members in the committee, despite the call for greater female representation under decentralized management, they explained that women are often engaged with other household responsibilities and are less interested in such committees.

Despite the few female members in the forest committee, their participation in the decentralized framework of forest management plays a crucial role in improving committee transparency, decision-making, and accountability. These findings were also supported by Nyaki and Ngorora (2023) and the villagers interviewed during the focus group discussion (FGD), who reported similar views:

> *Women's inclusion in the village forest management committee increases transparency, and committees with more female members tend to be more transparent in decision-making. The new committee, consisting of young people, is not functioning as expected in the area. The changes in forest management, including the addition of new committee members overseeing forest resource utilization, are viewed as a disadvantageous because the current committee does not report on income and expenditures. However, encouraging greater women's participation is crucial, as only 4 out of the 16 members are women.*

UNDP (2020), FAO (2018), and Duguma et al. (2022) report that notable advancements in female inclusivity within the local institutions responsible for managing forest resources have promoted leadership, environmental resilience, nature conservation, information sharing, and decision-making (Duguma et al. 2022). This study shows that women's inclusivity plays a crucial role in achieving Sustainable Development Goal 5 (gender equality), as well as Sustainable Development Goal 15 (life on land) and Sustainable Development Goal 16 (inclusive governance). As reported in East Africa by Kramer et al. (2017), Meshack et al. (2006) found that implementing decentralized community-managed forests in Tanzania has improved inclusivity and helped achieve other Sustainable Development Goals (SDGs).

The impact of inclusivity on the economic resilience of the local community

Only over 38% (agree to strongly agree) of the interviewees stated that inclusion had an impact on the local community's economic prosperity (SDG 1 - poverty reduction) regarding how it affected its economic operations, according to the results shown in Figure 4.A. Regarding the inclusion of women and their economic well-being, the results of Figure 4.B demonstrate that 78.6% of respondents (who agreed or strongly agreed) indicated that women experienced significant economic gains from joining the village's forest management committee.

Regarding the economic well-being of the various groups of the local communities of the area, findings suggest that of all the people interviewed, 78.6% indicate that women' have significantly improved their economic gains after being integrated to the village's forest management committee. Women's inclusion in forest management provides opportunities to enhance household livelihoods. These results are supported by a study by Grove et al. (2019) who show economic resilience and Silvano (2024), which shows that women's involvement in forest management activities through VNRC had increased income from the sale of non-timber forest products and participation in eco-tourism initiatives.

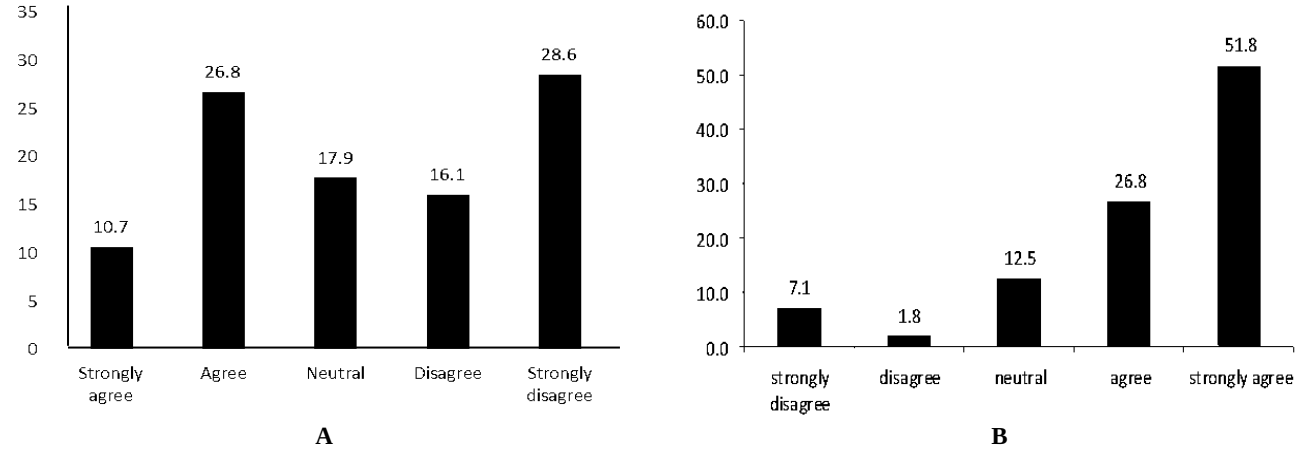

Figure 4. Villagers' perception on the impact of inclusivity on: A. Local economic prosperity; and B. Women's economic well-being

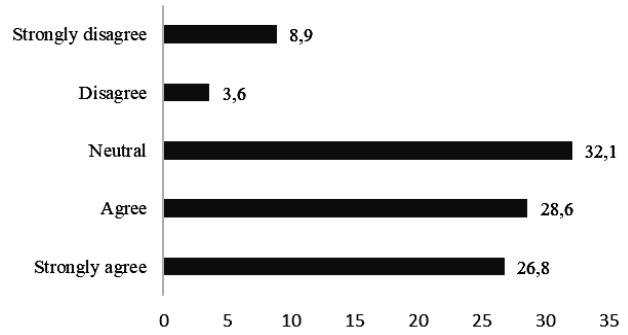

Figure 5. Villagers' perception on the impact of inclusivity on forest sustainability

Impact of inclusivity on the sustainability of natural forests

The results presented in Figure 5 show that 37.5% of respondents agreed or strongly agreed that the sustainability of forests was slightly enhanced after implementing inclusivity, compared to 30.4% of respondents who disagreed or strongly disagreed. The findings indicate that inclusivity in the decentralized forest management institutions did not have a significant effect on increasing natural forest sustainability in the area which has been affected with deforestation (Grogan et al. 2013). The results from those who reported an impact and those who reported no impact differ by only seven percent. These findings contradict the desires of the majority of the committee members.

In this context, the paper examined focus group participants' reactions regarding the condition of the forest and the extent to which sustainability was not achieved. All three discussion groups provided the following answers:

Several factors are contributing to the decline of forest resources, including decreasing rainfall, an increasing human population driving agricultural growth, and activities related to raising free-range animals. Additionally, people are encroaching on and harvesting resources for charcoal production without notice. As a result, new farms and settlements are being established in certain areas of the forests leading to empty spaces.

In addition, the local community in the area shows that several factors, including inadequate feedback on income and expenses, sometimes discouraged people from attending meetings.

The impact of inclusivity on forest access and monitoring

According to the results shown in Figure 6.A, the inclusion reforms have not increased the number of people gaining access to forest resources, as indicated by 59% of respondents who disagreed or strongly disagreed. The results presented in Figure 6.B show that over 85% of respondents (agree to strongly agree) felt that the decentralized framework reforms, which involve community monitoring of forest conditions, have not had a noticeable effect on the ground. This lack of effect impacts the sustainability of forests.

When asked about the ease of harvesting forest resources without informing the village or the committee, they observed a lack of initiative among the village council and a deficiency of civic duty. The changes were complex, and the community was resistant to the guiding principles. Furthermore, the activities of charcoal and wood production have increased, with most operations requiring approval from higher authorities, which makes it difficult for the village committee to manage them effectively.

In light of the decentralized framework in place, this article examined focus group participants' attitudes toward the trend of committee members monitoring the forest resources for sustainability. Participants expressed the following opinions:

Much less forest monitoring has been conducted. They also raised the possibility that the deterioration of the Ihombwe forest may accelerate and worsen at an alarming rate in the not-too-distant future. This is partly due to the fact that the committee's regular functions have been impeded by district-level issues, as the committee's oversight of forests has no sanctioning authority within the existing framework. The district level has not taken action, and immigrants are encroaching upon the forests without proper oversight. For instance, the district authority requested 2,000 pieces of timber for the construction of a community secondary school. The village reports to the central government but no action is taken.

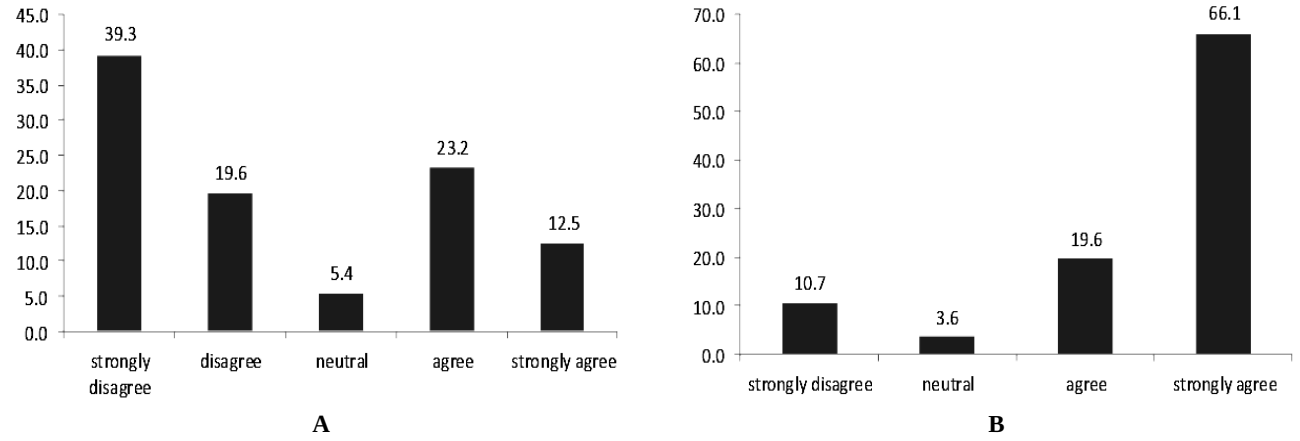

Figure 6. Villagers' perception on the impact of inclusivity on A. People access to forest resources; B. Community forest monitoring

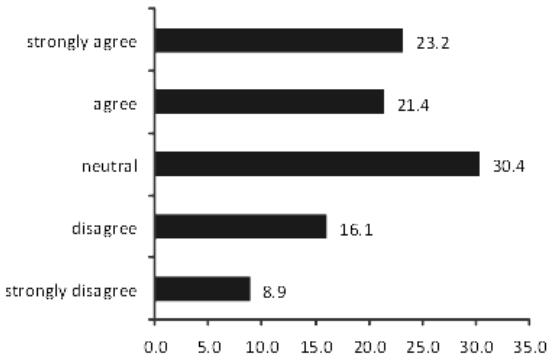

Figure 7. Villagers' perception on non-formal forces hampering inclusivity

Non-formal factors hampering inclusivity

The findings presented in Figure 7 show that over 44% of respondents (agree to strongly agree) believe that non-formal factors, including directives from higher authorities outside the village domain, have hampered inclusivity. This issue arose due to lack of coordination among local area-based committees, district councils, and national authorities. As a result, each party acted according to their own judgment, leading to poor governance.

The focus group discussions revealed a significant reduction in technical measurements and the confiscation of forest resources due to weaknesses in proper forest management and links between committees and other administrators. For example, a district requested permission to harvest timber but harvested 2,000 pieces without any further request or justification. The area chairperson and executive officer are problematic, advocating for their actions instead of taking responsibility for them. For instance, in multi-level governance systems, the impact of these non-formal governance variables, such as social norms and trust networks, is important in determining sustainability and inclusivity as they support policies and decision-making across the levels of governments. These variables often fill in the gaps left by formal organizations, encouraging cooperation and flexibility. For example, Ostrom (1990) in the Institutional Analysis and Development Theory shows how non-formal institutions facilitate formal regulations to improve governance results. These non-formal channels can also promote fair resource distribution and improve actor engagement. Achieving inclusivity and sustainable governance practices requires addressing these interactions with formal systems. However, options of combining these variables for positive results need further investigation (Meadowcroft 2007).

In conclusion, the study found that inclusivity has improved women's economic well-being and transparency in decision-making but did not enhance community access to forest resources or ecological sustainability. Factors beyond the decentralized institutions in place also impacted forest governance. Repackaging public education messages to emphasize the importance of good governance and community participation is necessary to achieve ecological sustainability. Village governments and marginalized groups influence local government decision-making. The decline in forest resources was attributed to encroachment, weak rule enforcement, and external forces, not just the reform framework. The study expressed concern for the gender imbalance in the committee and recommended actions to raise awareness and increase female membership, thereby improving their participation in committee meetings and allowing them to voice their opinions in the village.

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