



East African Journal of Forestry & Agroforestry

ejfa.eanso.org

Volume 9, Issue 1, 2026

Print ISSN: 2707-4315 | Online ISSN: 2707-4323

Title DOI: <https://doi.org/10.37284/2707-4323>



EAST AFRICAN
NATURE &
SCIENCE
ORGANIZATION

Original Article

Governance Dynamics of Community Forest Associations in Kenya: A Case Study from Meru and Hombe Forests in Mt. Kenya Forest

Esther Wang'ombe^{1*}, Prof. Jayne Mugwe, PhD², Prof. Daniel Mugendi, PhD³ & Dr. Salome Muriuki²

¹ Ministry of Energy and Petroleum, P. O. Box 30582-00100, Nairobi, Kenya.

² Kenyatta University, P. O. Box 43844 00100, Nairobi, Kenya.

³ Embu University College, P. O. Box 6-60100, Embu, Kenya

* Author for Correspondence ORCID ID; <https://orcid.org/0009-0002-5251-5244>; Email: estherwangombekenya@gmail.com

Article DOI: <https://doi.org/10.37284/eajfa.9.1.4717>

Date Published: ABSTRACT

27 March 2026

Keywords:

Deforestation,
Participatory
Forest
management,
Community Forest
Association,
governance,
Participation,
Accountability.

Participatory forest management (PFM) involves empowering local communities to manage forest resources sustainably. However, the forest cover in Kenya has been decreasing, despite the presence of PFM. This paper examines the integrated governance of forest resources by Community Forest Associations (CFAs) under participatory forest management in the Mt. Kenya Forest area, using the case study approach. The study used a mixed-methods approach, collecting both quantitative and qualitative data. The target population consisted of households within a 5 km radius of the forest. The sample sizes were 114 and 149 from the Hombe and Meru sites, respectively. Data collection included CFA recruitment processes, governance structures, challenges, and mechanisms of strengthening CFAs. Quantitative data were analysed using descriptive statistical techniques in the Statistical Package for the Social Sciences. Quantitative and qualitative data were analysed using a thematic approach to identify themes and patterns. Findings indicate that while financial contributions and adherence to rules are essential for CFA membership, social attributes and community engagement also play a role. The recruitment process for community members into the CFA was structured. One of the greatest impacts of PFM was the empowerment of communities through the establishment of Community Forest Associations to manage and conserve forest resources. However, the governance structures faced some challenges due to a lack of decentralised power from the government. To make effective participation of the people on a sustained basis, the motivation of CFAs is required. Outside intervention may be necessary to resolve problems within the CFAs and assist in strengthening the CFA governance structure, making it more effective.

APA CITATION

Wang'ombe, E. S, Mugwe, J, Mugendi, D. & Muriuki, S. (2026). Governance Dynamics of Community Forest Associations in Kenya: A Case Study from Meru and Hombe Forests in Mt. Kenya Forest. *East African Journal of Forestry and Agroforestry*, 9(1), 33-51. <https://doi.org/10.37284/eajfa.9.1.4717>

CHICAGO CITATION

Wang'ombe, Esther Sami, Jayne Mugwe, Daniel Mugendi and Salome Muriuki 2026. "Governance Dynamics of Community Forest Associations in Kenya: A Case Study from Meru and Hombe Forests in Mt. Kenya Forest" *East African Journal of Forestry and Agroforestry* 9 (1), 33-51. <https://doi.org/10.37284/eajfa.9.1.4717>.

HARVARD CITATION

Wang'ombe, E. S, Mugwe, J, Mugendi, D. & Muriuki, S. (2025), "Governance Dynamics of Community Forest Associations in Kenya: A Case Study from Meru and Homba Forests in Mt. Kenya Forest", *East African Journal of Forestry and Agroforestry*, 9(1), pp. 33-51. doi: 10.37284/eajfa.9.1.4717.

IEEE CITATION

E. S., Wang'ombe, J., Mugwe, D., Mugendi & S., Muriuki "Governance Dynamics of Community Forest Associations in Kenya: A Case Study from Meru and Homba Forests in Mt. Kenya Forest", *EAJFA*, vol. 9, no. 1, pp. 33-51, Mar. 2026.

MLA CITATION

Wang'ombe, Esther Sami, Jayne Mugwe, Daniel Mugendi, & Salome Muriuki. "Governance Dynamics of Community Forest Associations in Kenya: A Case Study from Meru and Homba Forests in Mt. Kenya Forest". *East African Journal of Forestry and Agroforestry*, Vol. 9, No. 1, Mar. 2025, pp. 33-51, doi:10.37284/eajfa.9.1.4717

INTRODUCTION

Forests play a crucial ecological role and serve as a lifeline for millions of people, especially in developing countries. It is estimated that 90 percent of the world's poor rely on forests for at least a portion of their income and livelihoods (FAO, 2018). In Africa, around 600 million people depend on forests and woodlands for their livelihoods (FAO, 2020; Waruingi et al., 2021). In India, approximately 50 million people rely on forests for subsistence. The management of forests and natural resources aims to satisfy societal demands for a variety of ecosystem goods and services (Acharya, 2002; Ellis and Porter, 2008; Mkandiriwe and Soludo, 1999; Mugo, 2007; Musyoki et al., 2024).

Deforestation in tropical forests is a major issue in less developed countries. Poor forest management has led to significant degradation and loss of resources. Although these forests are officially state-owned, they function as open-access areas, which results in conflicts and further deforestation (Thenya et al., 2008). Weak enforcement of regulations, limited community participation, and unclear land tenure exacerbate the problem (Nagendra and Southworth, 2010). As population pressures and agricultural demands increase, forested areas are encroached upon, threatening both ecological integrity and the livelihoods of local communities (Mbuvi et al., 2007; Wangombe, 2008; WRI, 2005).

Despite the government's ban on tree harvesting from public forests, Kenya has seen a 3.6% decrease in forest cover between 2001 and 2023, primarily due to deforestation (Global Forest Watch, 2024). Participatory Forest Management

(PFM) has been introduced to combat this issue, but human activities still threaten both public and community forests. Forest-adjacent communities heavily rely on these resources, worsening the problem (Isbell et al., 2023; MoFE, 2018).

Participatory Forest Management (PFM) is a strategic approach aimed at promoting sustainable forest management by involving local communities in the management or co-management of forest resources (Meo et al., 2024). It involves transferring ownership, user rights, and decision-making authority to these communities (Ayine, 2008; Ombogoh et al., 2022). In Kenya, PFM development began with the Forest Act of 2005 and continued with the Forest Act of 2016, which legally recognised community involvement in state forest management (MoEF, 2018). The approach was also shaped by global pressures, notably after the Rio Declaration in 1992 (German et al., 2021; Pagdee et al., 2006). Under the PFM framework, local communities within five kilometres of forest reserves form community forest associations (CFAs) to manage parts of the forests. To engage in Participatory Forest Management (PFM), local residents must create registered Community Forest Associations (CFAs) under the Societies Act of Kenya (MoEF, 2018). These associations unite various forest user groups—such as fuel wood gatherers, grazers, and cultivators—each with differing expectations. To ensure sustainability, trade-offs between forest protection and competing uses are necessary (Koech et al., 2009; Mkandiriwe and Soludo, 1999; Musyoki et al., 2024; Persha et al., 2011). Achieving this balance requires strong governance.

Effective governance under PFM is crucial for environmental sustainability (Carmenta et al., 2023; Isbell et al., 2023; Lamb et al., 2021). Governance in a CFA includes decision-making structures, communication, and representation, linking to broader processes within the Kenya Forest Service and society.

Research on local community governance of forest resources is limited, making it hard to assess the role of Participatory Forest Management (PFM) in sustainable forest management. Understanding the dynamics among community forest associations involved in PFM is vital for future policy development. Most studies on community forest management have focused on Asia and South America, leaving a gap in relevant evidence for Africa. Strengthening research in this area is essential to create effective, context-specific PFM approaches in African settings.

This paper examines the integrated governance of forest resources by CFAs under participatory forest management around Mt. Kenya Forest as a case study from Kenya. The goal of this assessment is to improve PFM practice, justify enabling policy and legal frameworks, and

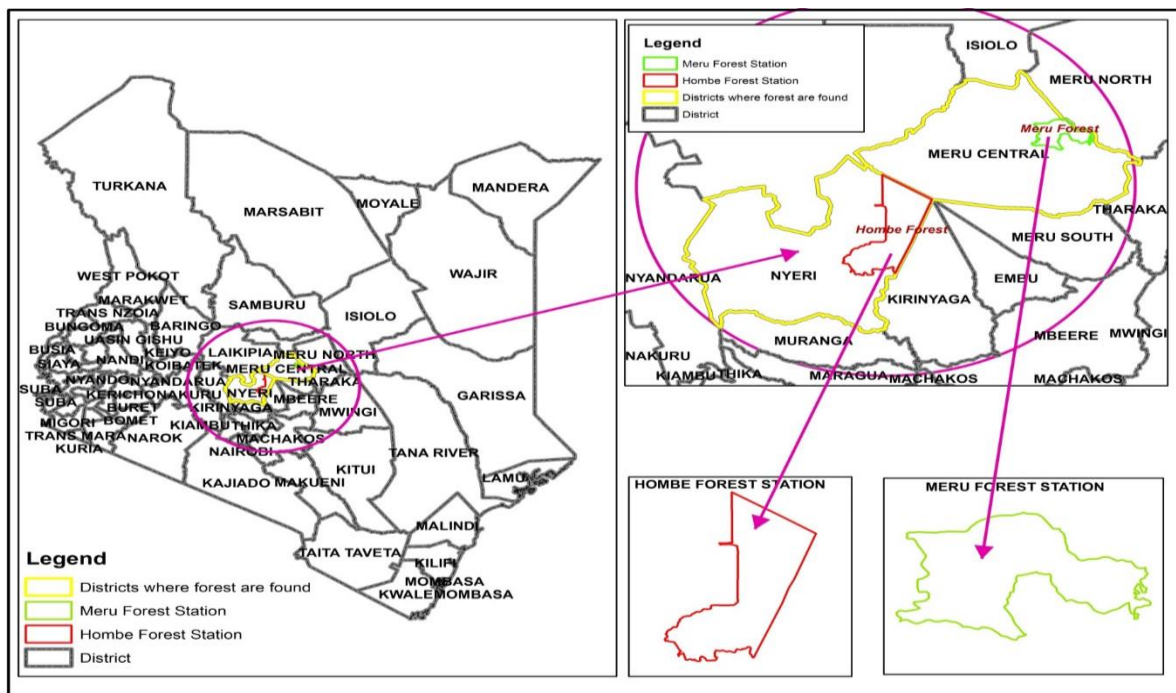
identify areas for future Natural Resource Management (NRM) interventions through PFM approaches. To understand the governance system within the PFM arrangement, the study focused on key elements such as the recruitment processes, governance structures, challenges, and strengthening mechanisms of Community Forest Associations (CFAs).

RESEARCH METHODOLOGY

Description of the Study Area

The study was conducted in the Hombe and Meru forest blocks in Mount Kenya Forest. Hombe, located in Mathira East sub-county, Nyeri County, is 200 km north of Nairobi, while Meru is 300 km northeast in Meru Central sub-county, Meru County. Both areas are at altitudes of 1100 m and 1500 m, with a bimodal rainfall pattern of 1000-1300 mm annually, characterised by long rains from March to May and short rains from October to November. These forests were among the first in the Mount Kenya region to implement Participatory Forest Management (PFM) (Figure 1).

Figure 1: Study Site



Research Design

The study involved a mixed methods approach, collecting both quantitative and qualitative data to enhance the depth and breadth of understanding. The quantitative component involved collecting data using a household cross-sectional survey. The qualitative data component involved collecting data through focus group discussions and key informant interviews. Both Primary and secondary data were collected. The primary data collected directly from the field included details about the Community Forest Association's (CFA) roles in managing and conserving forests, recruitment processes, governance structures, challenges, and mechanisms for strengthening the CFA. The secondary data were compiled from existing publications, past studies and databases, reports and records from various government sectors and departments, CFA offices, the Internet, and libraries. The combination of both data types enhanced triangulation and thus strengthened the validity of the research findings.

Sampling Techniques

A combination of probability for the quantitative data and non-probability sampling techniques for qualitative data was used.

For the quantitative data, a simple random sampling was applied. The study population for data collection consisted of all the households within a radius of 5 km from the margin of the Hombe and Meru Forest blocks that had farms, and the household heads were members of the Community Forest Association by the time the research was being conducted. A list of all the CFA members at each site was obtained from local Kenya Forest Service offices. In Hombe forest, the total number of CFA members was 828, while in Meru, it was 1015.

The sample size for the survey was determined using statistical methods to ensure representativeness of the sample. The formula recommended by Mugenda and Mugenda (2003) was used to determine the sample size at each site, as follows.

$$n = \frac{z^2 \delta^2}{e^2}$$

Where Z is the value of the standard variate at a given confidence level

n = sample size

δ = standard deviation of the population (estimated from a trial sample)

e = acceptable error (the precision)

Simple random sampling was used to get the sample size using a random number table, as outlined by Kothari (2012). This procedure was preferred because the population size was already known. In each of the sites, each name of the CFA members, as the list was provided, was assigned a probability of being selected, from 1 to N. The sample size from Hombe was 114 CFA members, while that from Meru was 149 CFA members.

For the qualitative data, purposive sampling was used to identify key informants from among the local community surrounding the forests. These people had different backgrounds and were from different groups, were knowledgeable and closely linked to the CFA. They had firsthand knowledge about PFM, CFA members, and the issues and problems that this research was trying to investigate. The key informants were a wide range of people, including the area chief, officers from the Kenya Forest Service, church leaders and officials from the CFAs. In total, ten key informants were interviewed. This diversity provided a broad range of perspectives.

Additional data were also collected from a wider group of stakeholders, including ten opinion leaders, five CFA officials per site, the forester in charge of each forest station, and four rangers (per site) responsible for the forest beats where the CFA activities were taking place. The officers responsible for forest activities in each District (Meru and Nyeri) were also interviewed.

Data Collection

Household Survey

Before the cross-sectional survey, questionnaires were pre-tested at the two study sites, with revisions made as needed. Six youth enumerators from the area were trained on the survey's objectives, field research methods, and questionnaire use to ensure reliable data collection. The training included research ethics, observation, probing, and triangulation skills. Files for each study site were created in MS Excel during data collection.

Data collection included CFA recruitment processes, governance structures, challenges, and mechanisms of strengthening Community Forest Associations, the number of man-days spent by CFA members in forest conservation and management, forest activities that the CFA was involved in, labor availability, labor requirements, and use, tree planting in the forest, the area planted since the CFA was started, and the length of time the CFA member had been involved in forest-related activities. Forest areas planted, protected, rehabilitated, or harvested under PFM were also captured.

Focus Group Discussion

The Focus Group Discussion (FGD) collected qualitative data by bringing together specific user groups from among the community forest association members to discuss specific activities undertaken by CFA under the PFM arrangement. The questions posed during these discussions were open-ended, aiming to stimulate informal dialogue and gain deeper insights into the views of the Community Forest Associations (CFA) than what could have been achieved through surveys. The FGDs with CFA groups also focused on the current status of PFM. Data collected included the successes and challenges faced by CFA members in protecting, managing, and conserving forests since PFM's inception. The discussions also addressed the challenges faced by CFA leaders and explored potential solutions as perceived by the group members. Lessons learned from these discussions were documented, and a

conversation was held about the sustainability of PFM in the respective areas.

Key Informants' Interviews

Key informant interviews consisted of detailed discussions with individuals who had direct experience with the CFA. They provided insights into the challenges of managing and conserving the forest, as well as the difficulties faced by CFA leaders. Additionally, they offered recommendations to address these issues. Leaders from KFS shared advancements made since the start of PFM, and the informants helped verify the information from KFS and focus group discussions, filling any gaps. Data was collected through face-to-face interviews and probing questions to encourage more thoughtful responses.

Data Analysis

Quantitative data collected from the household survey were first coded, entered and analysed using Statistical Package for Social Science (SPSS). Descriptive statistics, including percentages, frequencies, means and standard deviations, were used to summarise the data. The likelihood ratio test was used to test how often CFA members in one site were more likely to undertake forest patrols than those in the other site. The F-test was used to test for differences in the estimated number of CFA and arrests made on different frequencies and forest types, as indicated by the calculated standard deviation values.

Quantitative data collected from the focus group discussions and key informants were analysed using thematic approach. Responses were categorised thematically based on key areas of inquiry, including CFA governance, community participation, conservation activities, and challenges faced. These findings were used to triangulate the quantitative results and enrich the interpretation of the data.

RESULTS AND DISCUSSION

Process Involved in Recruiting Community Members to Community Forest Associations

At both sites, community members joined the CFAs through various pathways. Some community members joined after being attracted to the work undertaken by existing CFA members, while others joined through pre-existing groups.

Additionally, respondents reported hearing announcements that encouraged local participation. A number were personally invited by the current CFA members. The results indicated that respondents primarily joined the CFA through existing community groups (38%). This pathway was particularly prevalent in Meru, where 66 of 149 respondents (44%) joined through such groups, compared with 35 of 114 respondents (31%) in Hombe (Table 1).

Table 1: How Respondents Became Members of CFAs at Meru (n=149) and Hombe (n=114) Forest Sites

Site	Number of respondents attracted by CFA work	Number of respondents from existing groups	Number of respondents who heard the announcement about CFA	Number of respondents invited by other CFA members	Others	Total (n)	
Meru	25	66	29	20	9	149	MWU, Z-test = 1.227; p = 0.220
Hombe	22	35	24	16	17	114	
Total (n)	47	101	53	36	26	263	
Total %	18	38	20	14	10	100	

Source: Survey data

Although slight variations existed between sites, these differences were not statistically significant ($Z=-1.227$, $p=0.220$), indicating that the pathways to CFA membership were broadly similar in both Meru and Hombe sites. This reinforces the importance of local social networks and communication in promoting community participation in participatory forest management. This agrees with other studies conducted by Meo et al. (2024), which revealed that individuals from various sectors, such as agriculture, rangeland, irrigation, and drinking water management, joined community forest associations due to the influence of activities undertaken by members of CFAs. The results of this

study also align with those of Sunderland and Rowland (2019), who found that local community members became involved in community forest associations through sustained government efforts to engage a diverse range of community forestry stakeholders in policy dialogue.

To participate in PFM in Kenya, local communities must form a Community Forest Association (CFA), driven by a unifying issue or catalyst. Research from the two study sites shows that disseminating information to local communities is crucial for encouraging CFA membership.

Awareness creation through community groups, public announcements, and peer influence is essential for inclusive forest governance. Similar findings from studies in Kenya and abroad, like Paudel et al. (2021) on the Brazilian Atlantic forests, emphasise the importance of visibility, communication, and active engagement in promoting community participation in forest governance frameworks like PFM.

Criteria for Recruiting Community Members to CFA at Meru and Hombe Study Sites

In their present CFA, 98% of the respondents indicated the existence of specific criteria for recruiting new local community members, in contrast to 2% who attested to the absence of such criteria at the designated sites (Table 2).

Table 2: Criteria Set and Reported by CFA Members for Recruiting New Community Members into the CFA at Meru (n=149) and Hombe (n=114) Study Sites

Criteria set by CFA members	No of respondents		Total (n=263) (100%)
	Meru n=149	Hombe n=114	
18 yrs old or more and not in school	47	36	32%
Must abide by group by-laws	103	80	70%
One should be willing to work with other members	18	30	18%
Must be able to pay a registration fee	125	95	84%
Must be an active member	13	1	5%
Be a team player	12	3	6%
The person's home must be near the forest	89	60	57%
One must have an interest in forest work	62	70	50%

Source: Survey data

Among CFA members interviewed in Meru and Hombe, 98% and 97%, respectively, reported that their associations had established requirements for recruiting new members to the CFA. The most common criteria included the ability to pay a registration fee of KES 220 (2USD), mentioned by the majority of the respondents. The second most frequently cited requirement was the ability to abide by the CFA's by-laws, reported by 183 respondents (70%), highlighting the importance placed on rule-following and organisational discipline. This was followed by the requirement that a potential member's residence be located near the forest, cited by 149 respondents (57%), reflecting the intent to involve forest-adjacent households who are most likely to interact with and depend on forest resources. The least mentioned criteria were being a team player (15 respondents), active participation in CFA activities (14 respondents), and being at least 18 years old and not in school (83 respondents). Although these were less frequently cited, they still represent underlying expectations around

collaboration, commitment, and maturity. Overall, the findings suggest that while financial contribution and rule adherence are central to CFA membership, social attributes and community engagement are also considered.

The results show that the recruitment process for community members into the CFA was clearly structured. Prospective members could obtain comprehensive information about joining the CFA, ensuring transparency and openness. This approach is critical in PFM, which entails a contractual relationship between government institutions and the CFA. Under this arrangement, members residing near a forest with an interest in forest activities were considered an asset to PFM activities. Depending on the management model, a CFA could either serve as the sole manager with extensive authority over a specific area within a government forest reserve or act as a co-manager of part of the reserve alongside the statutory authority. As a result, it was crucial for potential CFA members to thoroughly understand the criteria for joining and be prepared to adhere to

the CFA's by-laws to enable successful participation in PFM activities.

Another critical observation in this study was the requirement to pay registration fees. Poorer households were less likely to afford the fees, causing their underrepresentation in the CFA due to financial constraints. Rural communities are often divided based on their assets and patterns of social inclusion or exclusion, which include access to forests. Consequently, not all community members could afford to pay the membership fee required to join the CFA and participate in activities related to PFM. The findings were consistent with a study conducted by Schreckenber and Luttrell (2009) on participatory forest management in Tanzania and Nepal. These authors reported that impoverished households were less likely to be involved in community-based natural resource management due to their inability to afford membership fees.

The intention behind recruiting CFA members who were well informed about the rules was to establish effective community participation, which in turn could lead to social and personal empowerment, economic development, and the effective management and conservation of forest resources under the PFM arrangement. CFA members' participation in decision-making on who was recruited was likely to contribute to effective participation in forest-related activities.

Despite the value of the structured system, the CFA members reported experiencing several problems as a result of using the set criteria. Results indicated that the main problems experienced were not adhering to the by-laws and failing to contribute annual registration fees, reported by 21% and 17%, respectively. A few members reported a lack of interest (7%) and inactivity (7%) (Table 3).

Table 3: General Problems Facing the CFA as a Result of Recruiting Members Using the CFA's Own Selection Criteria at Meru (n=39) and Hombe (n=51) Sites

Problems experienced	Frequency	% frequency
By-laws not followed	42	21
Failure to contribute the annual registration fee	33	17
Disagreements among members	24	12
Corruption	21	11
Absenteeism	20	10
Poor communication	16	8
Lateness	15	8
Lack of interest	14	7
Non-active members join the group	14	7
Total	199	100

Source: Survey data

These findings highlight the need for ongoing community sensitisation, enforcement of member responsibilities, and possibly a review of recruitment and retention strategies to strengthen CFA functioning.

A possible explanation for this observation is that the current CFA members may have inadequately neglected to properly explain the by-laws to the newly recruited members. As a result, the new recruits only realised later that the by-laws were more extensive than they had initially anticipated.

This presents a gap in the orientation of new members.

Some members may have known that admitting their inability to follow the by-laws would prevent them from joining the CFA and losing benefits from PFM. The failure to pay the annual registration fee might stem from financial difficulties faced by some members. Disagreements were likely due to the group's diverse opinions and personalities. Storming is common during group formation but typically decreases as members learn to accept each other.

Absenteeism might have resulted from other commitments or a lack of interest in CFA activities. Some inactive members may have joined with high expectations that weren't met, while others may have preferred to rely on others' efforts.

CFA members may lack experience in developing selection criteria, as local community members were historically excluded from forest management. Consequently, their criteria might not align with the job requirements, potentially overlooking essential skills needed for CFA responsibilities. This oversight could contribute to the issues listed in Table 3.

Research shows that CFAs globally struggle to recruit committed members. A study in Kenya's Mau Forest ecosystem highlighted issues such as a lack of transparency among officials, insufficient funding contributions, disagreements over benefit allocation, and authoritarian

leadership (Chomba et al., 2020). Similar challenges in Nepal included equitable distribution of benefits and transparent fund management (Chhetri, 2006; Kanel and Kandel, 2004; World Bank, 2004). In Guatemala's Maya Biosphere Reserve, governance issues arose due to new activities and interests in forest management (Dhungana et al., 2024; Masha et al., 2024; Peluso et al., 2008). These cases illustrate the complexities that impact participatory forest management within CFAs.

In the current study, participants from the two study locations offered various recommendations for addressing the challenges associated with using specific criteria for recruiting CFA members. The findings indicated that the majority (72%) proposed that meetings should be conducted to address and resolve the issues within CFAs and that by-laws should be followed (Table 4).

Table 4: Suggestions from Respondents on How to Solve Problems within CFAs in Meru (n=39) and Hombe (n=51)

Suggested solutions	Frequency	% frequency
Assign tasks to each member	7	7
By-laws should be followed	16	15
Hold meetings to resolve issues	60	57
Working as a team	3	3
Register devoted members	3	3
Openness advocated	2	2
Expel members involved in illegal activities	8	8
Members are set free to start projects of their own choice	3	3
Try to retain old members	3	3
Total	105	100

Source: Survey data

It was noted that the CFA typically conducted regular meetings, but the issues affecting the members may not have been addressed during these meetings. Thus, it was crucial for the CFAs to hold meetings specifically to discuss member grievances. Outside intervention, such as mediators, may be necessary in such meetings. The recommendation to strictly adhere to existing by-laws indicated a possible lack of consistent enforcement despite their existence. These results correspond with research conducted in South

Korea, which revealed that while mechanisms were put in place for the collective involvement of Community Forest User Groups, they were not being effectively utilised and had devolved into mere rituals (Lorenz et al., 2024).

The proposed solutions for addressing issues within the CFAs at the study sites focus on effective member collaboration to prevent free rider problems. This requires monitoring and enforcing sanctions, prompting CFAs to establish

strong institutional mechanisms to manage internal challenges. These approaches align with Dalle et al. (2006) and Ostrom's 1990 principles for collective action, which help communities manage forest resources by regulating benefits, costs, participation, monitoring, sanctions, conflict resolution, and recognising governance rights. These principles can be effectively applied to the CFAs in Meru and Hombe.

Governance of CFA

Governance involves decision-making, communication, and representation at the local level, linked to broader societal structures. Good governance focuses on principles like transparency, participation, and accountability. The CFA governance framework at Meru and

Hombe sites was a key community-level institution, made up of elected office bearers, including chairpersons, secretaries, and committee members.

At the Hombe site, the CFA ensured gender and age diversity in its leadership, incorporating men, women, and youth. However, this inclusivity was not replicated at the Meru site. Nevertheless, the established committees primarily facilitated consultation rather than shared decision-making with the Kenya Forest Service (KFS). The study revealed that the majority of CFA members (59% at the Meru site and 74% at the Hombe site) regarded this governance structure as beneficial. In comparison, 41% at Meru and 26% at Hombe did not approve of it (Table 5).

Table 5: Usefulness of the Governance Structure as Stated by Respondents in Meru (n=149) and Hombe (n=114) sites

Site	Useful (%)	Not useful (%)	Total (n)
Meru	59	41	149
Hombe	74	26	114

Source: Survey data

The findings presented in Table 5 demonstrate that the perceived effectiveness of the governance structure, as reported by the CFA members in Hombe and Meru, significantly differed between the two locations (Likelihood ratio = 5.484; d.f = 1; $p = 0.019$). The perceived effectiveness of the governance structure varied between Meru and Hombe sites. In Hombe, most of the respondents considered the governance structure helpful in coordinating and managing the CFA and consequently contributing to the success of PFM. However, in Meru, many respondents questioned the effectiveness of the governance structure and believed it did not contribute to PFM success.

The governance structure at both study sites was established by CFA members, which helped legitimise the leaders and shape trust levels. Trust

appeared to have declined at the Meru site, while the Hombe site improved gender and youth representation in leadership roles. This aligns with findings from other studies. In Namibia, Forest Management Committee members are elected during annual meetings for three-year terms (Kabajani, 2021). Similarly, research by Paudel et al. (2021) in Nepal noted women's underrepresentation in executive committees, a trend also observed by Pandey and Pokhrel (2021) in India, where male-dominated committees managed forest resources.

Respondents who felt that their current governance structure was not useful cited several problems, which differed between the Meru and Hombe sites (Table 6).

Table 6: Problems Reported by Respondents about Governance Structure at Meru (n=61) and Hombe (n=30) Sites

Problems	Meru (%)	Hombe (%)
CFA not paid/delayed payments	13	9
Game damage	5	8
Disorganised members/disobedient/disunity	39	15
Meetings/elections not held as scheduled in the by-laws	11	62
Lack of seedlings	2	-
Corruption	5	-
Lack of funds	11	-
Mismanagement	14	6
Total	100	100

Source: Survey data

The respondents reported encountering various problems related to the governance of the CFAs (Table 6). In Meru, the problem of disorganisation and disunity among the members may have meant that PFM activities were not being effectively implemented. Other problems included delayed payments and mismanagement. Delayed payments could have led some CFA members to engage in corruption and other illegal activities in the forest to compensate themselves, and may have contributed to the mismanagement of forest resources.

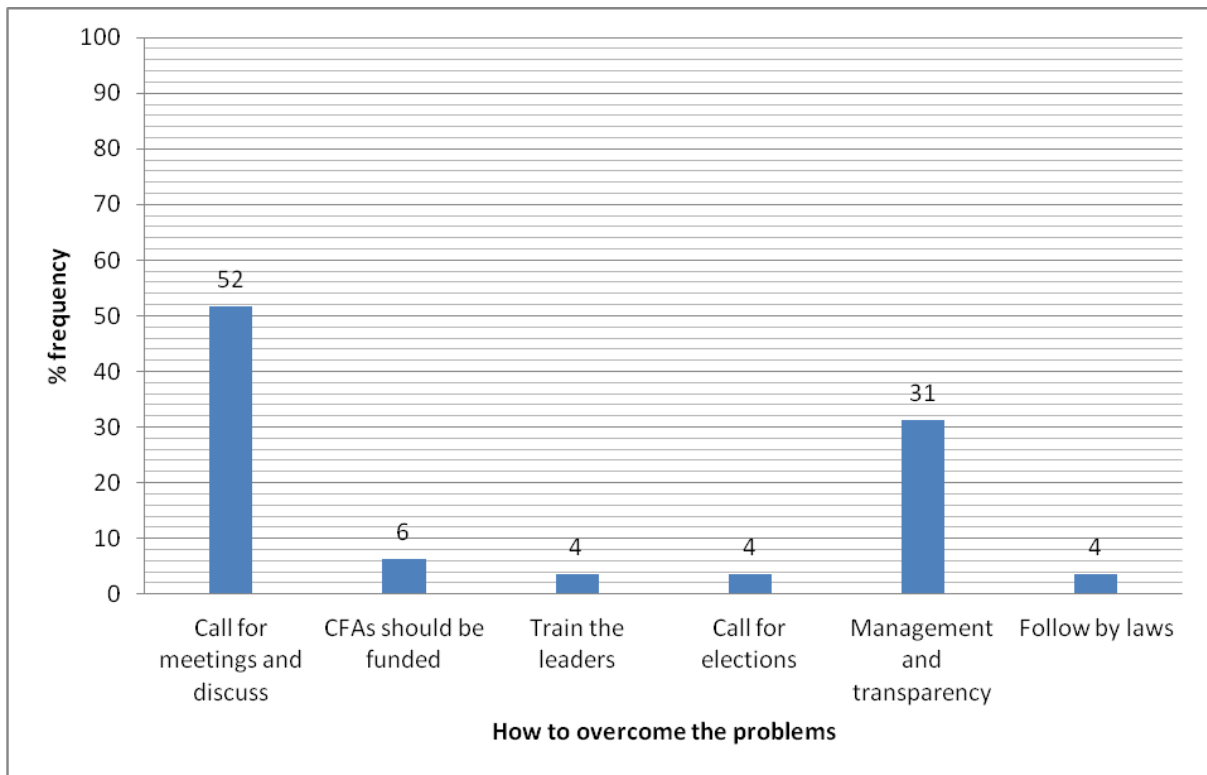
The results indicated that respondents at both the Meru and Hombe sites believed CFA resources were mismanaged, particularly in Meru, leading to distrust among CFA members. Notably, 62% of Hombe respondents and 11% of Meru respondents reported that the annual elections specified in the CFA constitution were not being held on schedule. This lack of change in leadership may have caused dissatisfaction among potential leaders, negatively impacting CFA sustainability and PFM. Disputes over leadership and election timing highlight the significant influence of incumbent leaders, which limits other members' participation in decision-making.

Research by Adhikari and Lovett (2006) in Nepal found similar adverse effects from unchanged leadership in community forest user groups. It is crucial for the Kenya Forest Service and CFAs to address these issues to prevent a decline in CFA effectiveness and forest management under PFM.

The CFA governance institution is a fundamental cornerstone of forest management at the community level. The efficacy of participatory forest management hinges on the functional proficiency of this institution. Despite being donor-driven and operating as a parallel structure to the formal national forest management system under the Kenya Forest Service, the study found that the CFA had not been adequately empowered. Its autonomy from direct government support and its positioning outside the mainstream government forest management had rendered the institution in the study site rudimentary and ineffectual. Further research in this domain is imperative to comprehensively evaluate this situation.

Suggestions were provided for solving these problems and maintaining the smooth operation of the CFAs at the two study sites (Figure 2).

Figure 2: Suggestions on How to Overcome Problems Associated with the Governance Structure at Meru and Hombe Sites



A majority (52%) of the respondents (Figure 2) suggested that calling meetings to address group problems would be beneficial. If such meetings are convened, it may be important to consider inviting mediators to help facilitate the resolution of conflicts within the CFAs. Another notable suggestion was the emphasis on good management and transparency. It was also proposed that CFA leaders should consider undergoing leadership courses to enhance their leadership skills and promote the adoption of best forest management practices within the group. This, in turn, could result in improved forest management and conservation practices, ultimately contributing to more effective Participatory Forest Management. It is essential to

acknowledge that governance is a dynamic and adaptive social process. In 2009, TNRF carried out an assessment of local governance in the Rukwa region of Tanzania, revealing numerous cases of criminal behaviour, insufficient transparency, and high tax rates without equivalent levels of investment. Transparent local governance institutions are unlikely to emerge overnight, especially in newly created institutions that take time to evolve.

In addition, the respondents suggested several ways to strengthen the CFAs' ability to manage and conserve forests under PFM for sustainable use (Table 7).

Table 7: Suggested Ways on How to Strengthen CFAs in Meru (n=149) and Hombe (n=114) to Manage and Conserve Forests

How to strengthen CFAs	Frequency	%
Adhere to rules	5	2
Assist CFA in starting income-generating activities	220	84
Capacity build CFA members	88	33
Financial assistance needed	129	49
Provide facilities-tools/transport/communication	168	64
CFA members to be favoured in buying forest products /grazing	164	62
Employ/ Pay members for work done	108	41
Good leaders/management	18	7

Source: *Survey data*

Most respondents (84%) emphasised the importance of supporting CFA members in starting income-generating activities. Additionally, 64% pointed out the need for better transportation and communication infrastructure. Almost half (49%) indicated that financial assistance was necessary for these activities, which could reduce pressure on forest resources. CFA members also needed airtime for effective communication with their leaders and the Kenya Forest Service staff. Currently, they face challenges reaching distant forest sites due to a lack of transportation, often having to cover long distances on foot. To improve forest patrols, providing CFAs with a vehicle could be essential, with stakeholders able to assist while CFAs cover maintenance costs.

A significant portion of respondents (33%) highlighted the need for capacity building among CFA members in areas such as forest and financial management, record-keeping, and leadership to enhance their resource management and PFM activities. Additionally, 62% suggested that CFA members should receive preferential treatment in purchasing forest products and services, like firewood and livestock grazing, advocating for lower charges for CFA members due to their voluntary contributions to forest management. They stressed that biodiversity conservation must account for the needs of local communities.

Concerns were raised about Community Forest Associations as a tool for conserving forest

resources under Participatory Forest Management. While CFAs have facilitated tree planting, a clear reporting system is necessary for accountability and by-law enforcement. CFAs can make decisions on forest operations but need external support to enhance governance and effectiveness. Changes in forest governance have caused conflicts, highlighting the need for strong leadership and community empowerment. In Kenya, community participation in decision-making and access to forest revenue are limited, with CFAs mainly focused on protection and monitoring. Initially, the Kenya Forest Service (KFS) and Kenya Wildlife Service (KWS) were hesitant to engage local communities in conservation, although they did offer income-generating opportunities like beekeeping.

Roles that Community Forest Associations Play in the Conservation and Management of the Forest and the Perceived Sustainability of Forest Resource Use

Roles Played by CFA in the Conservation and Management of Forest Resources

CFA members were engaged in a variety of forest-related activities, such as tree planting, weeding, thinning, and pruning in forest plantations; clearing for electric fences; maintenance of forest roads and fire breaks; and establishment and maintenance of tree nurseries (Table 8).

Table 8: List of Forest-Related Activities Undertaken by CFA Members in Meru (n=149) and Hombe (n=114) Sites

Activities undertaken by CFA members	Frequency of forestry activity	Mean number of CFA members involved	Std. Deviation	N
Clearing for an electric fence	Monthly	75	33	4
	Annually	54	19	10
Establishment and maintenance of the tree nursery	daily/ one day	9	6	93
	Weekly	64	37	41
Maintenance of roads	Monthly	83	29	3
	Annually	81	62	8
Fire break maintenance	Twice /year	55	21	2
Planting trees	Twice /year	139	122	11
	Monthly	213	193	4
Pruning/thinning/weeding	Annually	46	23	69

Source: Survey data

Tree planting was an activity undertaken by most CFA members during the two rainy seasons each year. Further analysis revealed a significant interaction between various activities and frequency (daily, weekly, and monthly) ($F(17,639) = 12.405; p=0.000$ (Table 8). These activities were conducted frequently, requiring significant commitment from CFA members. This demonstrates CFA members' active involvement in forest management and conservation. Tree planting is an effective and sustainable approach to alleviating the adverse impacts of climate change and lessening environmental degradation. By absorbing carbon dioxide, tree planting helps mitigate climate change. Furthermore, it provides a range of ecological, social, and economic benefits to local communities, regardless of their proximity to forests. Trees are essential for maintaining biodiversity, as they offer habitats for countless plant and animal species. The initiatives of CFAs through the PFM arrangement to restore and enhance forest coverage can safeguard and revitalise vulnerable ecosystems, protecting endangered species and preserving biological diversity.

KFS should develop tailored capacity-building programs for CFAs to build skills in forest management and conservation, with a focus on forestry activities within PFM initiatives. A continued investment in local capacity is essential

for the long-term success of community-based natural resource management practices.

The study's findings align with those of Mogoi et al. (2012) in Kakamega Forest, where 72% of Community Forest Association members were involved in planting seeds and seedlings, and 56% participated in maintenance tasks like pruning. Additionally, 61% oversaw harvesting of forest products. However, few were involved in deciding on harvesting rights and revenue collection. In both Kakamega and Meru/Hombe sites, CFAs engaged in activities like thinning and pruning but lacked the authority to sell forest products, focusing more on labour than decision-making. Similar trends were observed in Nepal and Ethiopia, where CFAs undertook various tasks, including thinning and maintaining firebreaks (Mollick et al., 2018; Poudyal et al., 2020; Wily, 2000).

The CFAs in Meru and Hombe played a major role in forest conservation and management by providing labour for various forest-related activities such as tree planting, weeding, thinning and pruning of trees in forest plantations, clearing for electric fences, forest road maintenance, fire break maintenance, undertaking forest patrols, and tree nursery establishment and maintenance. This aligns with Mogoi et al.'s (2012) findings, indicating that in Kenya, community forest associations primarily focused on protection and

monitoring, with limited decision-making authority.

Empowerment Impacts

One of the greatest impacts of PFM may have been community empowerment through the start of governance structures (CFAs) for managing and conserving forest resources in Hombe and Meru sites. The empowerment of local communities involved the reinforcement of their legal rights to access forest resources. The establishment of CFAs in Hombe and Meru areas encompassed the conduct of elections, initiation of CFA bank accounts, and active involvement of the local communities in decision-making processes. According to Holmes (2007), development involves not only economic well-being but also the empowerment of individuals to seize control of their own lives and destinies. Mutune and Lund (2016) indicated that despite the establishment of a regulatory framework for PFM in Kenya in 2005, research has revealed minimal engagement of local communities in forest governance processes. Some argue that devolving forest management to local governance may pose problems due to fragile community institutions needing ongoing external support (Balint and Mashinya, 2006; Carrere, 2007; Lokina et al., 2008).

KFS had not effectively decentralised power to the CFAs in Hombe and Meru. Although these CFAs were given the appearance of authority, they were expected to endorse KFS decisions regarding the forests. While they were responsible for protecting the forests, they lacked the power to penalise encroachers or access revenue from forest activities. Their access rights to the forests were also uncertain. In contrast, communities in Nepal had more secure rights to their forests and could use funds from forest endeavours with less state intervention (Roe, 2008; McLean and Straede, 2003).

The study in the Hombe and Meru sites revealed issues in the governance structures of CFAs, highlighting variability in local governance performance. However, through forest

management and protection, the CFAs became co-managers with KFS, fostering a sense of ownership and developing leadership and management skills beneficial to the broader community.

Local communities formed CFAs in both study sites, acquiring governance skills and organising into structures with office bearers. They initiated their own projects and, through training, became better forest managers and conservationists.

CONCLUSIONS AND RECOMMENDATIONS

The study found that forest management is primarily a governance issue, with technical activities supporting resource management. The PFM arrangement, while donor-driven and operating alongside the national system, lacked sufficient empowerment. Without government support and integration, the institution appeared weak. External support is needed to enhance the potential of PFM in empowering community forest associations.

Local community members have traditionally not engaged in forest management, which may have left CFA members inexperienced in formulating appropriate selection criteria. A thorough review is necessary to ensure these criteria focus on essential skills for CFA duties and are not influenced by arbitrary factors.

Effective participation in Community Forest Associations requires motivation and may necessitate outside intervention to resolve internal issues and strengthen governance. The lack of local skills among CFA members poses challenges, highlighting the need for capacity building to enhance technical and organisational skills. Leadership courses for CFA leaders could promote better forest management practices. The Kenya Forest Service should develop targeted training programs to equip CFAs for effective management and conservation under PFM. Long-term investment is essential to enhance local capacities for community-based natural resource management.

CFAs play a key role in forest governance under PFM frameworks, but their decision-making power is limited. Their main contributions involve forest protection and monitoring. To strengthen CFA governance and enhance effectiveness in PFM, external intervention is needed. Policy guidance should ensure CFAs are involved in planning and decision-making for forest management and conservation.

Acknowledgement

The authors acknowledge the expertise and support provided by the enumerators John Mwangi, James Wahome, Benedictor Mukogitonga, Doris Karimi, and Antony Mungiiria. The cooperation accorded to the team by the local community and government officials during data collection is also sincerely acknowledged.

REFERENCES

- Acharya, K. P. (2002). Twenty-four years of community forestry in Nepal. *International Forestry Review* 4: 149–156
- Adhikari, B and Lovett, J.C. (2006). “Transaction costs and community-based natural resource management in Nepal.” *Journal of Environmental Management* 78: 5-15.
- Andersson, K and Agrawal, A. (2011). “Inequalities, institutions, and forest commons.” In *Global Environmental Change*, published online 16 April 2011, doi:10.1016/j.gloenvcha.2011.03.004.
- Ayine D. (2008). *Social responsibility agreements in Ghana’s forestry sector*, IIED.
- Balint, S., and Mashinya, N. K. (2009). “Pro-poor institutions: creating exclusive rights to the poor groups in community forest management.” *Journal of Forests and Livelihoods* 8: 1-15.
- Beck, T. and Fajber, L. (2006). “Exclusive, moi? Natural resource management, poverty, Inequality and gender in Asia.” *Communities, Livelihoods and Natural Resources: action research and policy change in Asia*. Ed. S.R. Tyler. ITDG Publishing and IDRC, Ottawa: 297-320.
- Carrere, F. (2007). Participatory approaches to development.” *Journal of International Development* 11: 597-612.
- Carmenta, R., Barlow, J., Lima, M.G., Berenguer, B.E., Choiruzzad, S., Estrada, N., and Hicks, C. (2023). Connected conservation: rethinking conservation for a telecoupled world. *Biol. Conserv.*
- Chhetri, R. B. (2006). From protection to poverty reduction: A review of forestry policies and practices in Nepal. *Journal of Forest and Livelihood* 5: 66–77.
- Chomba, S., Sinclair, F., Savadogo, P., Bourne, M., and Lohbeck, M. (2020). Opportunities and Constraints for Using Farmer-Managed Natural Regeneration for Land Restoration in Sub-Saharan Africa. *Frontiers in Forests and Global Change* 3 (122): p. 15.
- Dalle, S. P., De Blois, S., Caballero, J., and Johns, T. (2006). Integrating analyses of local land-use regulations, cultural perceptions, and land-use/land cover data for assessing the success of community-based conservation. *Forest Ecology and Management* 222: 370-83.
- Dev, O. P., Yadav, N. P., Springate-Baginski, O., and Soussan, J. (2003). Impacts of community Forestry on livelihoods in the middle hills of Nepal. *Journal of Forest and Livelihood* 3: 64–77.
- Dhungana, N., Lee, C. H., Khadka, C., Adhikari, S., Pudasaini, N., & Ghimire, P. (2024). Evaluating Community Forest User Groups (CFUGs) Performance in Managing Community Forests: A Case Study in Central Nepal. *Sustainability (Switzerland)*, 16(11). <https://doi.org/10.3390/su16114471>.
- Ellis, E. A., and Porter, L. B. (2008). Is community-based forest management more effective than protected areas? A comparison of land use/land cover change in two neighboring study areas of the central Yucatan

- Peninsula, Mexico. *Forest Ecology and Management* 256: 1971-83.
- FAO. (2006) *Gender and forestry website*. <http://www.fao.org/gender/en/fore-e.htm>.
- FAO.(2018) State of the World's Forests report. <https://openknowledge.fao.org>
- FAO. (2020) Global Forest Resources Assessment. Key findings.
- German L., Colfer C J. P., Barrow E., K uchli C., Blaser J., and Wardojo W. (2021). Forest Governance and Decentralization in Africa: Linking Local, Regional and Global Dialogues
- Global Forest Watch, (2024). Forest Monitoring Designed for Action. <https://www.globalforestwatch.org>
- Holmes, M. (2007). What is Gender? Sociological Approaches. SAGE Publications Inc. 2455 Teller Road Thousand Oaks, California 91320.
- Isbell, F., Balvanera, P., Akira, S., He, J., Bullock, J.M., Regmi, G.R., and Seabloom, E. W. (2023). Expert perspectives on global biodiversity loss and its drivers and impacts on people. *Ecol. Environ.*, 21 (2), pp. 94-103.
- Kabajani, M. (2021). Management of a Community Forest, Think Namibia: Sustainable Forest Management. <https://www.thinknamibia.org.na/images/projects/forest/DRFN>.
- Kanel, K. R. and Kandel, B. R. (2004). Community forestry in Nepal: Achievements and challenges. *Journal of Forest and Livelihood* 4: 55–63
- Koech, C.K., Ongugo, P.O., Mbuvi, M.T.E. and Maua, J.O. (2009). Community Forest Associations in Kenya: challenges and opportunities, Kenya Forestry Research Institute, Nairobi, Kenya
- Kothari, C.R. (2012) *Research Methodology; Methods and Techniques*. Second revised edition. New Age International Publishers. New Delhi
- Lamb, W.F., Wiedmann, T., Pongratz, J., Andrew, R., Crippa, M., Olivier, J.G. and Minx, J. (2021). A review of trends and drivers of greenhouse gas emissions by sector from 1990 to 2018. *Environment Resources*.
- Lokina, R. B., Elizabeth, J., and Robinson, Z. (2008). Determinants of the effectiveness of participatory forest management in Tanzania. Department of Economics. University of Dar es Salaam, Tanzania.
- Lorenz, R., Schimetta, P., Ruggiero, G. C., Raquel, L., Carvalho, J.B., Nascimento, N., Pedro H. S., Rodrigues, R.R and Pedro, M. K. (2024). Costs and benefits of restoration are still poorly quantified: evidence from a systematic literature review on the Brazilian Atlantic Forest.
- Masha, M., Bojago, E., Tadila, G and Belayneh, M. (2024). Effects of participatory forest management programs on Land use/land cover change and its Determinants in Alle District, southwest Ethiopia. *Heliyon*.
- Mbuvi, M.T.E., Ongugo, P.O., Maua, J.O. and Koech, C.K. (2007). Emerging Values of Forests: The case of Kenya. Proceedings of the International Conference, 19th to 21st March 2007.
- McLean, J and Straede, S. (2003). Conservation, Relocation, and the Paradigms of Park and People Management: A Case Study of Padampur Villages and the Royal Chitwan National Park, Nepal. *Society and Natural Resources* 16(6): 509-526
- Meo, I., Palettto, A. and Baldessari, S. (2024). Rethinking Public Participation in forest policies: A literature review of Participatory Techniques.
- Mkandiriwe, T and Soludo, C. (1999). Our Continent, Our Future. *World Development* Vol. 30, No. 5, pp. 725–739, 2002.  2002 Elsevier Science Ltd.

- MoFE. (2018) A report on forest resources management and logging activities in Kenya. Ministry of Forestry and Environment, Nairobi
- Mogoi, J., Obonyo, E., Ongugo, P., Oeba, V., Mwangi, E. (2012). Communities, property rights and forest decentralisation in Kenya: Early lessons from participatory forestry management. *Conservat Soc* 2012;10:182-94.
- Mollick, A. S., Rahman, K., Khan, N. I. and Sadath, N. (2018). Evaluation of good governance in a participatory forestry program: A case study in Madhupur Sal forests of Bangladesh. *Forest Policy and Economics* Volume 95.
- Mugenda, O.M. and Mugenda, A.G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. African Centre for Technology Studies (ACTS), Nairobi, Kenya
- Mugo, E.N. (2007). Participatory Forest Management Experiences. A paper presented during a meeting held on 15th May 2007 at the Kenya Forest Service headquarters, Nairobi, Kenya.
- Musyoki, J. K., Ming'ate, L. F. M., Muriithi, J., Musingo, M. T. E., and Kagombe, J. (2024). Factors Impacting the Benefits of Participatory Forest Management in Upper Imenti Forest, Meru County, Kenya. *Open Journal of Forestry*, 14, 183-196.
- Mutune, J. and Lund, J.F. (2016). Unpacking the impacts of 'participatory' forestry policies: evidence from Kenya. *Forest Policy Econ.* 69, 45–52.
- Nagendra, H and Southworth, J. (2010). *Reforestation landscapes: Pattern and process*. Springer landscape series, Dordrecht, The Netherlands.
- Nepal, S.K. (2002). Involving Indigenous Peoples in Protected Area Management: Comparative Perspectives from Nepal, Thailand, and China. *Environmental Management* 30(6):748-763
- Ombogoh, D. B., Mwangi, E., and Larson, A. M. (2022). Community participation in forest and water management planning in Kenya: challenges and opportunities, *Forests, Trees and Livelihoods*, DOI: 10.1080/14728028.2022.2059790.
- Ostrom, E. (1990). *Governing the Commons. The Evolution of Institutions for Collective Action*. Cambridge University Press: London, UK
- Pagdee, A., Kim, Y. and Daugherty, P.J. (2006). "What Makes Community Forest Management Successful? A Meta-Study From Community Forests Throughout the World. *Society and Natural Resources* 19(1): 33-52.
- Pandey, H.P. and Pokhrel, N.P. (2021). *Formation trend analysis and gender inclusion in community forests of Nepal*. *Trees, Forests and People* Volume 5. Elsevier
- Poudyal, B. H., Maraseni, T. and Cockfield, G. (2020). An assessment of the policies and practices of selective logging and timber utilisation: a case study from natural forests of Tarai, Nepal, and Queensland, Australia. *Land Use Policy*.
- Paudel G., Bhusal, P. and Kimengsi, J.N. (2021). Determining the costs and benefits of Scientific Forest Management in Nepal. *Forest Policy and Economics*.
- Peluso, N.L., Afiff, S. and Rehman, N.F. (2008). Claiming the Ground for Reform: Agrarian and Environmental Movements in Indonesia. 377–407.
- Persha, L., Agrawal, A and Chhatre, A. (2011). Social and ecological synergy: local rulemaking, forest livelihoods, and biodiversity conservation. *Science* (New York, N.Y.) 331:1606–8.
- Roe, D. (2008). The origins and evolution of the conservation-poverty debate: a review of key literature, events and policy processes. *Oryx* 42: 491-503.
- Schreckenberg, K and Luttrell, C. (2009). Participatory forest management: a route to poverty reduction? *International Forestry Review* 11: 221-238.

- Sunderland and Rowland. (2019). Forests, Landuse, and challenges to Climate stability and food security. In Sustainable food and agriculture: An Integrated Approach. Elsevier and FAO
- Thenya, T., Wandago, B.O., Nahama, E.T. and Gachanja, M. (2008). Participatory Forest Management Experiences in Kenya (1996-2007). Kenya Forests Working Group, Nairobi, Kenya
- TNRF. (2009b). *URT Policies*. Tanzania Natural Resources Forum. (<http://www.tnrf.org/taxonomy/term/66>).
- Wangombe, E.M. (2008). Impact of participatory forest management on communities in Mwingi and Arabuko Sokoke forests of Kenya. A paper. KFS, Kenya.
- Waruingi, E., Mbeche, R and Ateka, J. (2021). Determinants of forest dependent household's participation in payment for ecosystem services schemes in Kenya. *Global Ecol. Conserv.* 26
- Wily, L. (2000). Reconstructing the African commons in Africa today. Issue No. 48(1). Indiana University Press, USA.
- World Bank. (2004). Sustaining forests: a development strategy. The World Bank, Washington, DC, USA.
- WRI. (2005). *The Wealth of the Poor – Managing Ecosystems to Fight Poverty*. World Resources Institute, United Nations Development Programme; WRI, Washington D.C.