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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

Do Husbands and Wives Engaging in Forest Governance Encounter the Same Constraints and Opportunities Within Cherangany Hills Forest, Kenya?

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Article's History
Submitted: 26th March 2025
Revised: 7th April 2025
Published: 12th April 2025

Abstract

Aim: Building on the 'Gender Box' theoretical framework, men and women engaging in forest governance encounter constraints at micro, meso and macro-scale levels. This paper investigates and compares the constraints and opportunities faced by husbands and wives participating in forest governance within Cherangany Hills Forest, Kenya.

Methods: A concurrent triangulation research design was adopted, and semi-structured questionnaires were administered to 280 Community Forest Association (CFA) members who were randomly sampled while 35 key informants who were purposively sampled were interviewed. The quantitative data collected was analyzed using mean and standard deviations and presented in the form of tables, counts and percentages while the qualitative data was analyzed using themes and presented in the form of narrations and synthesized text.

Results: It was confirmed that wives were discouraged by their husbands from attending CFA meetings, speaking during CFA meetings, and taking CFA leadership roles. Time constrained both husbands and wives from attending CFA meetings, and seeking CFA leadership positions. Husbands were more likely than their wives not to engage in forest patrol due to low remuneration. Long distance to the venue of meetings was a hindrance for wives rather than husbands from attending CFA meetings. Both husbands and wives were less affected by inadequate knowledge and training from engaging in CFA activities. Wifes did not engage in tree planting and forest patrol because it was against the cultural norms and were perceived as fearful and weak respectively. To surmount some of the challenges, opportunities available included: gender affirmative action, modernization, formal education, financial support, training, proximity to the forest, assistance from relatives, presence of forest guards, and intra-household gender bargaining strategies.

Conclusion: Intra-household gender relations, inadequate time, long distance and gender norms of behaviour hindered wives more than husbands from attending, speaking and leading during CFA meetings while time constraints hindered husbands from engaging in forest patrols.

Recommendations: Community-Based Forest Organizations and Kenya Forest Service (KFS) should use mobile phones, WhatsApp app and Google meetings to organize and enhance the dissemination of information. Non-Governmental Organizations and Kenya Forest Services should increase the financial support, capacity building and awareness creation, training and remuneration to forest scouts as well as support livelihood activities.

Keywords: *Gender Box framework, distance constraints, financial constraints, gender norms of behaviour, intra-household gender relations, time constraints, Cherangany Hills forest.*

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

BACKGROUND

In their Gender Box theoretical framework, Colfer and Minarchek (2013) proposed that the factors that hinder or promote gender involvement in forest governance operate at three inter-connected scales, namely: micro-scale, meso-scale and macro-scale. At the micro-scale level, Colfer *et al.* (2013) advanced that the engagement of men and women in forest management institutions could be hindered by intra-household power dynamics and domestic chores. In this theoretical framework, intra-household power dynamics is conceptualized in terms of how spouses express the power they wield during decision-making within the household. On the other hand, the Gender Box framework argues that domestic chores are a hindrance to engagement in livelihood activities or community-based activities. Scholars contend that men discouraged their spouses not only from attending and speaking in forest-based meetings but also from participating in decision-making within community forest organizations (Egunyu & Reed, 2015; Evans *et al*., 2020; Killian & Hyle, 2020; Mashapa *et al*., 2020; Onzere *et al*., 2020). Due to the involvement of women in the performance of household chores and men in other livelihood activities, men and women encountered time and labour constraints that subsequently restricted their involvement in forest management activities (Mashapa *et al*., 2020; Musyoki *et al*., 2013; Onzere *et al*., 2020).

At the meso-scale level, Colfer *et al.* (2013) contend that access to information, educational opportunities, and financial resources may hinder the involvement of men and women in forest management organizations. Inadequate information about forest use rules and roles of forest management institutions hindered the involvement of men and women in forest management and conservation in developing nations (Banana *et al*., 2012; Killian & Hyle, 2020; Kimutai & Watanabe, 2016; Mogoi *et al*., 2012; Mutune *et al.*, 2015; Uprety *et al*., 2012). Financial constraints and mismanagement of organizations' finances discouraged men and women from joining and paying the subscription fees to Community Based Forest Organizations (Banana *et al.*, 2012; Kimutai *et al.*, 2016; Mutune *et al.*, 2015; Okumu, 2017; Samndong & Kjosavik, 2017; Uprety *et al*., 2012). Existing literature advanced that distance from the forest boundary hinders the involvement of forest-adjacent communities in forest management within developing nations (Banana *et al*., 2012; Musyoki *et al.*, 2013; Ndungo *et al.*, 2013; Okumu, 2017).

At the macro-scale level, Colfer *et al.* (2013) proposed that socio-cultural norms and gender norms of behaviour may hinder the involvement of men and women in forest management institutions. While accounting for the low involvement of women in tree planting, studies confirm that cultural norms contributed to the low participation of women in tree planting activities in Eastern Africa (Banana *et al*., 2012; Rocheleau & Edmunds, 1997). Moreover, the 'Gender Box' framework argues that the themes of hierarchy and hegemonic masculinity have strong implications for the involvement of women in forest management. About the theme of hierarchy, this theoretical framework affirms that women are usually assigned lower value and therefore there is low women engagement in forest management in more conservative societies. While explaining how hegemonic masculinity influences the involvement of women in forest management, Colfer *et al.* (2013) observed that men are ascribed roles in society as providers, protectors and dominators within their households.

Interaction between and among various forest actors is critical in the management and conservation of forest resources (Davis *et al.*, 2013). Studies argued that government ministries and departments are central in the management of forest resources in developing countries (Banana *et al*., 2012;

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

Derkyi *et al.*, 2013). There is consensus within the forest governance literature that local-based public administrators such as customary chiefs and village elders play a critical role in the management of forest resources (Derkyi *et al*., 2013; Komorah, 2020). In addition, village-based forest institutions such as Rural District councils, Community Forest Development Committees and Village National Resource Councils engaged in forest management through conservation and rehabilitation projects in Africa (Killian *et al.*, 2020; Onzere *et al*., 2020; Sithole *et al.*, 2021). Also, civil societies and organizations enhanced the involvement of forest fringe communities in forest management through financial support, capacity building, dissemination of forest information, forest rehabilitation projects, forest reforms, and forest policy formulations (Banana *et al*., 2012; Derkyi, 2012; Kahsay *et al*., 2021).

But a growing body of knowledge demonstrates that forest-adjacent communities are restricted from engaging effectively in forest governance activities in Kenya by time constraints, financial challenges, distance factors, inadequate knowledge and training, and gender norms of behaviour (Kimutai *et al.*, 2016; Okumu, 2017). Further, it has been demonstrated that these challenges were likely to hinder women more than men in their engagement in forest governance activities (Obonyo & Mogoi, 2009). Although both men and women engage in forest governance within Cherangany Hills Forest (Ongugo *et al.*, 2017), minimal studies have insufficiently assessed the extent to which these challenges hindered the involvement of husbands and wives from engaging in forest management and use of non-timber forest resources within Cherangany Hills Forest in Kenya. Therefore, the research question remains unaddressed: To what extent do the constraints at micro, meso, and macro-scales differently affect the participation of husbands and wives in forest governance?

METHODOLOGY

Study Area

The Cherangany Hills forest was a suitable study area because it's one of the five major water towers in Kenya (others are Mt Elgon Forest, Mt Kenya Forest, Aberdare Forest and Mau Forest) that is facing a high rate of deforestation (Rotich & Ojwang, 2021). According to Rotich and Ojwang (2021) about 13,782 hectares of the forest cover within the Cherangany Hills Ecosystem was lost between 1985 and 2020 mainly due to human encroachment. Cherangany Hills Ecosystem transcends the counties of Trans Nzoia, Elgeyo Marakwet and West Pokot within the Rift Valley Region (Kenya Water Towers Agency, 2019). It is located within latitude $1^{0}16^{1}$ North of the equator and longitude 35^{0} 26^{1} East of Greenwich meridian.

The altitude of the ecosystem ranges from 2000 metres to 3500 metres above sea level (Government of Kenya, 1980; Kagombe *et al*., 2015; Kenya Water Towers Agency, 2019). Kiprop *et al* (2017) reveal that the Indigenous communities consist of mainly the Sengwer while the migrant communities include the Keiyo, Marakwet, Pokot, Tugen, and Luhya among others. According to Kenrick (2014), the Cherangany Hills Forest is a significant source of livelihood for these forest-adjacent communities who usually obtain herbal medicine, firewood, wild fruits and vegetables, and livestock fodder as well as engaged in crop farming (beans, peas, vegetables, potatoes and green grams) and beekeeping within the forest ecosystem (County Government of Elgeyo Marakwet Integrated Plan, 2013; Kenrick, 2014; Kenya Water Towers Agency, 2019; Rotich, 2019).

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ISSN 2958 - 4116 (Online)
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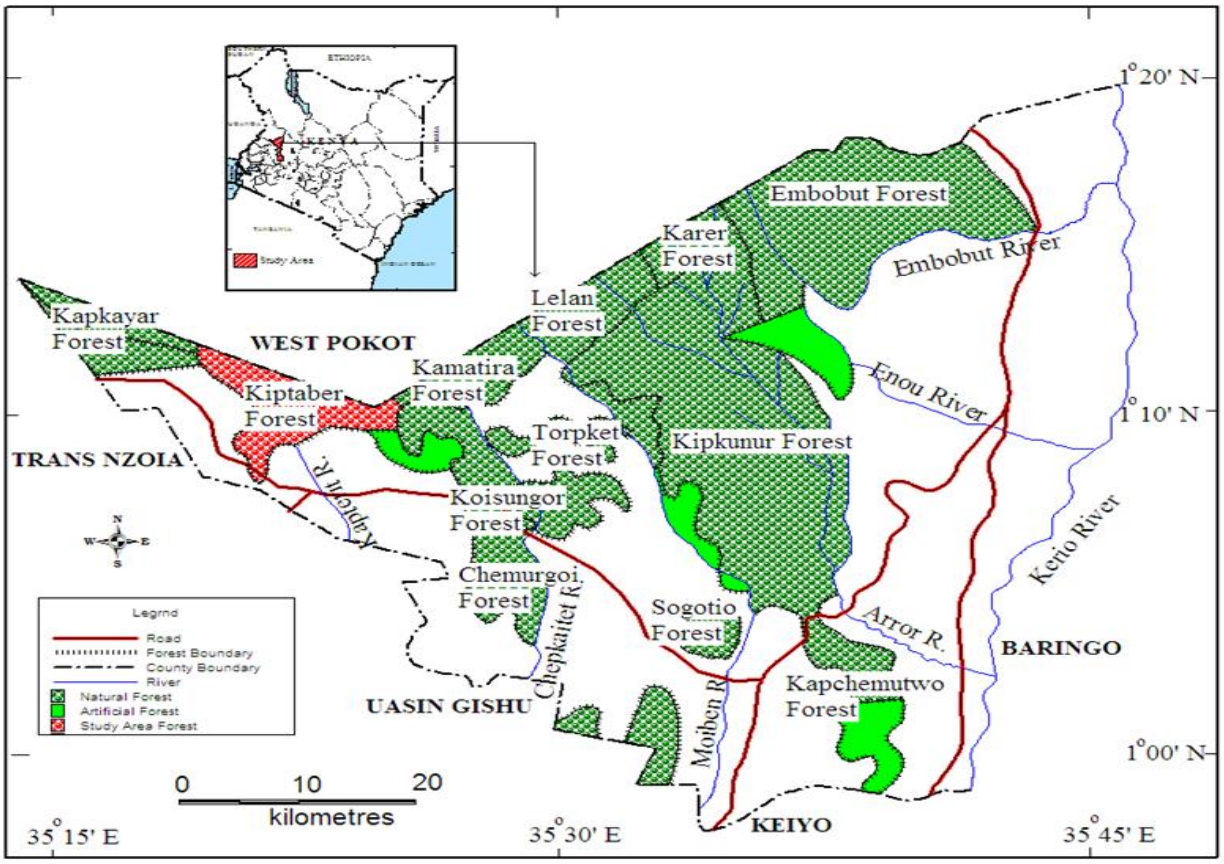

Figure 1: Map Showing the Location of Kiptaber Forest Block

***Source**: Moi University Department of Geography and Environmental Studies GIS Lab*

Methods

A concurrent triangulation research design was adopted in this study. The choice of this research design was informed by the virtue it facilitates the validation of the findings produced by the qualitative and quantitative data collection methods through the arguments produced by the other (Kroll & Neri, 2009). The target population included both male and female CFA members while the unit of analysis was the household. The CFA members were included in this study because according to the Forest Act of Kenya (2005) the CFA is a community-based forest organization that is legally mandated to collaborate with the Kenya Forest Service and other stakeholders in the protection, management, and conservation of forest resources. For purposes of data validation, the key informants such as the CFA leaders, village elders, assistant chiefs, forest guards, and forest officers also formed part of the target population.

According to the Kenya census report of 2019, the two locations had a total population of 13,516 persons residing within 1,402 households (GoK, 2019). Therefore, 1,402 households formed the sampling frame of this study. A household sample size of 140 was determined by the use of the formulae proposed by Yamane (1967) with a level of precision of (8.0 % = 0.08). Both spouses (husband and wife) were selected from each of the 140 households which led to a total of 280 household respondents. Moreover, 35 key informants that included: twenty (20) CFA members,

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ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

seven (7) CFA leaders, two (2) village elders, two (2) assistant chiefs, two (2) forest guards, and two (2) Kenya Forest Service (KFS) officers were selected purposively. The twenty (20) CFA members included ten (10) men and ten (10) women which accounted for about seven percent (7 %) of the total household respondents (280).

The households that were located in the range of between 0 and 5 kilometres along the transect walk were systematically sampled on either side of the paths were systematically sampled whereby every 6th household was selected. Semi-structured questionnaires were administered to the household sampled to collect data because it enhanced the generation of both quantitative and qualitative data which was imperative in understanding the research problem (Migiro & Magangi, 2011; Nkengla, 2014; Westervelt, 2017). Interviews were conducted among the thirty-five (35) key respondents who were selected purposively. The data variables measured on an ordinal scale were analyzed using frequency counts, percentages, mean and standard deviation. The statements on level of agreement were determined on a 5-point Likert scale as follows: 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A) and 5 = Strongly Agree (SA). Also, the Likert scale analyses for the statements on level of agreement were based on the recommendations of Carifio & Rocco (2007) as follows: mean score ranges of 1.0 - 1.8 indicates 'Strongly Disagree', 1.8 - 2.6 implies 'Disagree', 2.6 - 3.4 demonstrates 'Neutral', 3.4 - 4.2 infers 'Agree' and mean score of 4.2 - 5.0 reveal 'Strongly Agree'. The qualitative data from key informants about the challenges and opportunities available to the involvement of husbands and wives in forest governance and use of forest resources were transcribed and analyzed thematically (Cohen *et al*., 2007).

RESULTS AND DISCUSSIONS

Intra-household Gender Relations

To establish the extent to which intra-household gender relations hindered the involvement of men and women in forest governance, the respondents were asked to state their level of agreement with the statements and presented as shown in Table 1.

Table 1: Level of Agreement to the View That Intra-household Gender Relations Hinder the Involvement of Men and Women in Forest Governance

Statement	Gender	Level of Agreement					
		SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean score
1. You do not attend CFA meetings because your spouse has discouraged you	M	71 (25.4)	42 (15.0)	27 (9.6)	0 (0.0)	0 (0.0)	1.70
	F	38 (13.6)	53 (18.9)	36 (12.9)	9 (3.2)	4 (1.4)	2.20
2. You do not speak during forest meetings because your spouse will rebuke you	M	79 (28.2)	37 (13.2)	24 (8.6)	0 (0.0)	0 (0.0)	1.61
	F	43 (15.4)	36 (12.9)	32 (11.4)	17 (6.1)	12 (4.3)	2.42

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

3. You do not seek leadership roles within the forest organizations because your spouse has discouraged you	M	31 (11.1)	52 (18.6)	38 (13.6)	14 (5.0)	5 (1.8)	2.36
	F	27 (9.6)	33 (11.8)	36 (12.9)	31 (11.1)	13 (4.6)	2.79
4. You do not engage in forest patrol because your spouse has discouraged you	M	32 (11.4)	48 (17.1)	37 (13.2)	14 (5.0)	9 (3.2)	2.43
	F	62 (22.1)	35 (12.5)	21 (7.5)	18 (6.4)	4 (1.4)	2.05
5. You do not participate in tree maintenance within the forest because your spouse has discouraged you	M	56 (20.0)	42 (15.0)	38 (13.6)	4 (1.4)	0 (0.0)	1.93
	F	53 (18.9)	49 (17.5)	36 (12.9)	2 (0.7)	0 (0.0)	1.91

Source: Field Survey (2021)

About statement 1, the mean score for men was 1.70 which indicates 'Strongly Disagree' while the mean score value for women was 2.20 which indicates 'Disagree'. This implies that women were more likely than men not to attend forest-related meetings due to discouragement from their spouses. Through interviews, some of the reasons as to why a few male CFA members discouraged their spouses from attending forest-related meetings were established. For instance, Kemboi a member of CFA observed that:

'I sometimes discourage my wife from attending forest meetings that are held very far from our home since it requires more time and financial resources to travel. Also, I discourage her from attending the forest meetings if they are held in the morning during weekdays because there are numerous domestic tasks to be performed such as taking care of the children and feeding the livestock.' [Male Key Informant, 2021]

The sentiments above indicate that some of the male CFA members discouraged their wives from attending the CFA meetings due to; the long distance to the venue of meetings, the time when the forest meetings were held and the need to perform household tasks. The finding of this study closely resembles the revelation of Samndong and Kjosavik (2017) and Onzere *et al.* (2020) who contended that some women were denied permission by their husbands to attend forest user group meetings and forest-related meetings in the DRC and Liberia. Through interviews, it was noted that some of the female CFA members dealt with this challenge by adopting intra-household bargaining strategies as well as employing domestic workers so that they could attend the CFA meetings as advanced by Colfer & Minarchek (2013) in their Gender Box theoretical framework.

About statement 2, the mean score value for men was 2.42 which implies 'Strongly Disagree' while the mean score value for women was 1.61 which indicates 'Disagree'. The mean score difference confirms that women were more likely than men not to speak during the CFA meetings because they would be rebuked by their spouses if they spoke. Through interviews, the reasons for the discouragement of spouses from speaking during the CFA meetings were established. Some of the women noted that their husbands discouraged them from speaking during meetings because the

Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

opinion of women was largely ignored. Although women were accorded the necessary opportunities to speak during forest meetings in Nepal and Zimbabwe, Lewark *et al* (2011) and Mashapa *et al.* (2020) confirm that there is low engagement of women in community forest management in Nepal and Zimbabwe since the opinion of the women were either disregarded or given less priority. Through interviews, it was revealed that some of the female CFA members minimized the challenge of discouragement from their spouses by sharing their opinions with the female CFA leaders so that they could raise their concerns on their behalf.

About statement 3, the mean score value for men was 2.36 which demonstrates 'Disagree' while the mean score value for women was 2.79 implies 'Neutral'. The mean score difference reiterates that women were more likely than men not to seek leadership roles within the CFA due to discouragement from their spouses. Through interviews, it was established that some men discouraged their wives from taking up CFA leadership positions because the responsibilities of leaders in the CFA were considered to be demanding and required a lot of traveling. This revelation resembles the academic work of Evans *et al.* (2020) who reported that women leaders of community forest organizations were discouraged by their spouses from engaging in forest management in Nicaragua. To resolve the issue of discouragement from the husbands, some of the female CFA leaders confirmed that they had to bargain with their spouses. Specifically, the women requested their male spouses to allow them to occupy the CFA leadership positions but they would only attend the forest-related meetings that were held within the locality.

About statement 4, the mean score value for men was 2.43 which reveals 'Disagree' while the mean score value for women was 2.05 which indicates 'Disagree'. The mean score values underscore that both men and women were likely not to participate in forest patrol due to discouragement from their spouses. While examining the reasons why some of the female spouses discouraged their male counterparts from participating in forest patrol, Chemutai one of the female CFA members revealed that:

'The forest patrols that are done at night are very risky. Some of the illegal forest users are usually armed and can harm the forest scouts. I am usually worried when my husband tells me he is going on forest patrol at night without the company of forest guards. During the rainy seasons, it is very uncomfortable to walk in the forest at night because you can slide and fall in the mud.' [Female Key Informant 7, 2021]

The revelation above implies that the main reasons for women discouraging their spouses from engaging in forest patrol were attributed to the argument that some of the illegal forest users were armed, the forest guards were absent during some night forest patrols and heavy rainfall hampers movement within the forest at night. This finding concurs with the observation of Okumu (2017) who reiterates that the illegal loggers took advantage of high rainfall to cut trees since there were minimal forest patrols during that time within the Mau Forest Ecosystem in Kenya. It was established during the interviews that the men who were discouraged from engaging in forest patrol by their wives noted that they solved the challenge by mainly participating in forest patrols during the day and sometimes in the evening during the dry seasons in the company of other forest scouts and forest guards.

In terms of statement 5, the mean score value for men was 1.93 indicates 'Disagree' while the mean score value for women was 1.91 which reveals 'Disagree'. The mean score value underlines that

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ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

both men and women were likely not to engage in monitoring and taking care of trees within the forest due to discouragement from their spouses. Interviews revealed that some women discouraged their spouses from taking care of trees growing under the PELIS programme due to indiscriminate felling of the trees in the forest by illegal forest users and powerful individuals. This revelation support other scholars who noted that political patronage and corruption within forest departments discouraged some forest-adjacent communities from engaging in forest management programmes (Chomba *et al*., 2015; Mashapa *et al*., 2020; Mohammed & Inoue, 2012; Thygesen *et al*., 2016). However, some of the male CFA members noted that they engaged in the monitoring of trees to protect the forest because the forest is part of their cultural heritage.

Time Constraints

The engagement of men and women in livelihood activities and domestic chores greatly reduces the time available to engage in forest management (Manginsela, 2016; Rocheleau, 1995). The respondents were requested to state their level of agreement to the statement that time was a constraint to their involvement in forest governance. The collected data was analyzed and presented as shown in Table 2.

Table 2: Level of Agreement to the View That Time Constraints Hinder the Involvement of Men and Women in Forest Governance

Statement	Gender	Level of Agreement					
		SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean score
6. You sometimes fail to attend CFA meetings because you are very busy	M	0 (0.0)	0 (0.0)	51 (18.2)	47 (16.8)	42 (15.0)	3.94
	F	0 (0.0)	0 (0.0)	23 (8.2)	79 (28.2)	38 (13.6)	4.11
7. You do not seek CFA leadership positions due to time limitations	M	5 (1.8)	12 (4.3)	48 (17.1)	41 (14.6)	34 (12.1)	3.62
	F	7 (2.5)	19 (6.8)	35 (12.5)	32 (11.4)	47 (16.8)	3.66
8. You do not participate in forest patrol due to insufficient time	M	2 (0.7)	17 (6.1)	52 (18.6)	38 (13.6)	31 (11.1)	3.56
	F	14 (5.0)	32 (11.4)	29 (10.4)	44 (15.7)	21 (7.5)	3.19
9. You sometimes fail to monitor the planted trees due to inadequate time	M	16 (5.7)	28 (10.0)	41 (14.6)	43 (15.4)	12 (4.3)	3.05
	F	21 (7.5)	24 (8.6)	31 (11.1)	16 (5.7)	48 (17.1)	3.33

Source: Field Survey (2021)

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

Concerning statement 6, the mean score value for women was 4.11 which indicates 'Agree' while the mean score value for men was 3.94 which implies 'Agree'. The mean score values emphasize that both men and women were likely not to attend forest-related meetings since they were busy performing livelihood activities and household tasks respectively. While establishing how the engagement in livelihood activities contributed to occasional attendance of CFA meetings among the female CFA members, Nafula one of the female CFA members observed that: *'I rarely attend the CFA meetings since I am always held up running my small scale business at Kamoi Market Centre.'* [Female Key Informant, 2021]. The opinion above underscores that some of the female CFA members did not attend the CFA meetings due to involvement in non-forest livelihood activities. Studies conducted in the DRC and Nepal corroborate that women rarely attended forest meetings due to time constraints associated with engagement in household tasks and livelihood activities (Baral, 2014; Samndong & Kjosavik, 2017). Through interviews, some of the women argue that they minimized the challenge of time constraints by getting assistance from their daughters and relatives. Some women in Indonesia delegated the duties of child care and domestic tasks (such as collecting firewood, fetching water, cleaning and cooking) to their older daughters and relatives (Manginsela, 2016).

About statement 7, the mean score value for men was 3.62 which implies 'Agree' while the mean score value for women was 3.66 which demonstrates 'Agree'. The mean score values underscore that both men and women were likely not to seek leadership positions due to time constraints. Through interviews, it was noted that women engaged in domestic tasks such as fetching water, cultivation of the land, feeding the livestock, cleaning and washing as well as taking care of children while the men participated in feeding animals, cultivation of farms and building and construction activities. Studies from Kenya, Zimbabwe and Liberia corroborate that women indicated a low level of engagement in forest management programmes due to gender-ascribed tasks such as child care, cooking, fetching water and firewood, and farming (Mashapa *et al*., 2020; Musyoki *et al*., 2013; Onzere *et al.*, 2020).

In statement 8, the mean score value for men was 3.56 which reveals 'Agree' while the mean score value for women was 3.19 which indicates 'Neutral'. The mean score values infer that men were more likely than women not to participate in forest patrols due to limited time. While accounting for the gender differences in how limited time was a constraint to the involvement of men and women in forest patrol, Kiprop one of the male forest scouts opined that:

'Sometimes I do not have time to go for forest patrol especially when I have to attend to other social activities such as funerals and socializing with friends in the evening. When I visit relatives residing in far places and come home very late, I usually do not engage in forest patrol.' [Male Key informant 9, 2021]. The narrative above reiterates that some of the men encountered time constraints when participating in forest patrols due to attendance of social functions.

Concerning statement 9, the mean score value for men was 3.05 which implies 'Neutral' while the mean score value for women was 3.33 which indicates 'Neutral'. The mean score difference demonstrates that both men and women were 'unsure' about the view that they did not engage in the monitoring of planted trees within the forest due to inadequate time. Through interviews, it was noted that the involvement in household chores contributed greatly to the time constraints for the involvement of women in monitoring of the trees within the PELIS plots in the forest. While

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

confirming the above results, Banana *et al* (2012) reiterate that heavy household chores accounted for the lack of women's involvement in tree-planting programmes in Uganda.

Financial Constraints

Documented evidence demonstrates that limited financial resources and mismanagement of CFA financial resources discourage the involvement of men and women in forest governance (Mutune *et al.*, 2015; Okumu, 2017). Guided by this literature, the respondents were asked to state their level of agreement with the opinion that financial challenge is a hindrance to your involvement in forest governance. The collected data was analyzed and presented as shown in Table 3 below.

Table 3: Level of Agreement with the View That Financial Challenge is a Constraint to the Involvement of Men and Women in Forest Governance

Statement	Gender	Level of Agreement					
		SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean score
10. You fail to pay for the CFA subscription fees due to limited finances	M	38 (13.6)	24 (8.6)	36 (12.9)	33 (11.8)	9 (3.2)	2.65
	F	42 (15.0)	27 (9.6)	31 (11.1)	18 (6.4)	22 (7.9)	2.65
11. You do not pay the CFA membership subscription fees due to mismanagement of CFA finances	M	25 (8.9)	21 (7.5)	34 (12.1)	37 (13.2)	23 (8.2)	3.09
	F	29 (10.4)	24 (8.6)	18 (6.4)	33 (11.8)	36 (12.9)	3.16
12. You do not engage in the maintenance of tree seedlings due to poor remuneration by the CFA	M	18 (6.4)	35 (12.5)	31 (11.1)	37 (13.2)	19 (6.8)	3.03
	F	16 (5.7)	29 (10.4)	36 (12.9)	35 (12.5)	24 (8.6)	3.16
13. You do not engage in forest patrol due to poor remuneration by the CFA	M	13 (4.6)	18 (6.4)	22 (7.9)	41 (14.6)	46 (16.4)	3.64
	F	21 (7.5)	24 (8.6)	27 (9.6)	43 (15.4)	25 (8.9)	3.19

Source: Field Survey (2021)

About statement 10, the mean score value for both men and women was equal to 2.65 and this indicates 'Neutral'. This equality in mean score values reiterates that both men and women were 'unsure' as to whether they failed to pay the CFA membership subscription fees of limited finances. The results of the current study resemble the academic documentation of other studies which pointed out that inadequate funds hindered some of the forest-adjacent communities especially women from joining and paying for the membership and subscription fees of forest organizations in Kenya and the DRC (Kimutai *et al.*, 2016; Mutune *et al.*, 2015; Samndong & Kjosavik, 2017).

GPR Journals
www.gprjournals.org
Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

While establishing how the women resolved the financial challenge, during the interviews some of the female CFA members posited that their husbands paid the CFA subscription fee for them. It was also revealed that siblings were more likely to pay the CFA membership subscription fees for female CFA members than the male CFA members.

About statement 11, the mean score value for men was 3.09 which indicates 'Neutral' while the mean score value for women was 3.16 which implies 'Neutral'. The mean score indices reveal that both men and women were 'unsure' to the view that they did not pay the CFA membership subscription fees due to mismanagement of CFA finances by the CFA leaders. During the interviews, Rotich one of the male CFA leaders observed that:

'When we established the CFA in 2012 most members used to pay the subscription fees on time. However, after some time we realized that some of the CFA leaders were embezzling the CFA finances. Due to this embezzlement of the CFA finances, I stopped paying the CFA fees two years ago.' [Male Key Informant 7, 2021]

The narrative above implies that some CFA members stopped paying the CFA fees due to mismanagement of CFA financial resources by the CFA leaders. This result is in line with the documentation of Okumu (2017) and Anaka (2018) who reported that some members of the forest organizations stopped paying their membership fees due to lack of transparency in the management of financial resources. To resolve this problem, it was established through interviews that some of the CFA members stopped attending CFA meetings, other CFA members demanded the financial records to be tabled by the CFA leaders as well as advocated for the removal of all the CFA leaders who were believed to have embezzled the CFA finances.

With statement 12, the mean score value for men was 3.03 which reveals 'Neutral' while the mean score value for women was 3.16 which indicates 'Neutral'. The mean score values indicate that both men and women were 'unsure' with the view that they did not engage in the maintenance of tree nurseries due to inadequate CFA financial resources. While establishing the factors that contributed to the inadequate CFA finances, some of the interviewed respondents revealed the following: (i) The Kenya Forest Service has failed to finance the CFA activities (ii) The Kenya Forest Service has failed to implement the PFM agreements (iii) There is a disagreement between the Kenya Forest Service and the CFA which has led to lack of money.

Further, it was revealed that inadequate CFA finances discouraged both CFA members and leaders from engaging in forest governance since according to some respondents insufficient CFA finances contributed to: (i) An unstable source of finances to motivate the CFA leaders to go to the office to address the CFA matters (ii) Forest scouts are also affected because they rely on the motivations from the CFA funds and therefore the scouts fail to give information about illegal forest activities such as charcoal burning and illegal loggers (iii) When the CFA leaders have no money for transport and lunch because the finances from the subscription were believed to be very little. This finding concurs with the observations of Kimutai & Watanabe (2016) who emphasized that unreliable sources of CFA funds hampered the payment of workers who engaged in the preparation, maintenance and management of tree nurseries.

However, when Langat one of the CFA leaders was asked how the problem of inadequate CFA funds could be solved he proposed that:

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

'..(i) There is a need to implement the PFM Agreement (whereby the permit fee paid to KFS to gain access to forest resources a certain percentage should be channeled to the CFA) (ii) There is a need to bring donors from various forest organizations to finance the CFA activities such as establishment of tree nurseries, payment of the forest scouts, to cater for transport during the forest patrols, and purchase computers. (iii) There is a need for the CFA leaders to do capacity building by educating the members and requesting livelihood projects where there is encroachment of the forest.' [Male Key Informant 5, 2021]

Some of these proposals are in line with the revelation of Kimutai & Watanabe (2016) who observed that the CFAs within the Lembus forest in Nakuru County (Kenya) encountered unreliable sources of finances and were forced to depend on donations from world forest organizations since the subscription fee was inadequate.

On statement 13, the mean score value for men was 3.64 which depicts 'Agree' while the mean score value for women was 3.19 which demonstrates 'Neutral'. These mean score indices affirm that men were more likely than women not to participate in forest patrol due to poor remuneration by the CFA. However, it was established through interviews that men were likely to be discouraged compared to women by poor remuneration because most of the forest scouts were mainly men. Due to poor remuneration, some of the forest scouts may be tempted to receive bribes and allow illegal forest activities to go on unabated. This is supported by the argument of Rotich (2019) who advanced that corruption contributed greatly to illegal forest activities such as logging of timber and posts as well as the production of charcoal within Embobut forest (part of the Cherangany Hills Forest Ecosystem in Kenya).

Through interviews, it was noted some of the forest scouts have been motivated by various Non-Governmental Organizations operating within the Cherangany Hills Forest as illustrated below. Nature Kenya (between 2013 and 2018) motivated the forest scouts by: paying them, providing them with uniforms and boots and training the forest scouts. Vi-agroforestry (between 2012 and 2017) motivated the forest scouts by paying them Ksh 1500 per month and giving the forest scouts uniform and boots. Sirya self-help group used the County Development Trust Fund to motivate the forest scouts by buying motorcycles that were to be used by the CFA leaders and forest scouts during forest patrols. Cherangany Community Based Organization Consortium used the Global Environment Funds they received to motivate forest scouts and support livelihood activities.

Distance Constraints

Previous studies indicate that homestead–forest distance hamper the involvement of men and women in forest management and conservation (Ekanayake *et al.,* 2021**)**. Borrowing from this scholarly documentation, the extent to which distance limits the involvement of men and women in forest governance was established. The analyzed results are presented in Table 4.

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

Table 4: Level of Agreement to the View That Distance is a Hindrance to Involvement in Forest Governance

Statement	Gender	Level of Agreement					
		SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean score
14. You do not attend some CFA meetings because they are held very far	M	18 (6.4)	23 (8.2)	31 (11.1)	46 (16.4)	22 (7.9)	3.22
	F	12 (4.3)	16 (5.7)	29 (10.4)	35 (12.5)	48 (17.1)	3.65
15. You do not engage in forest patrol because the forest is located very far	M	24 (8.6)	28 (10.0)	26 (9.3)	39 (13.9)	23 (8.2)	3.06
	F	19 (6.8)	31 (11.1)	20 (7.1)	44 (15.7)	26 (9.3)	3.19
16. You rarely report illegal forest cases because the forest station and forest guard post is very far	M	25 (8.9)	33 (11.8)	31 (11.1)	29 (10.4)	22 (7.9)	2.93
	F	21 (7.5)	37 (13.2)	23 (8.2)	39 (13.9)	20 (7.1)	3.00

Source: Field survey (2021)

On statement 14, the mean score for men was 3.22 which implies 'Neutral' while the mean for women was 3.65 which reveals 'Agree'. The mean score difference suggests that women were more likely than men not to attend some of the forest meetings due long distance to the venue of these meetings. This revelation supports the documentation of Banana *et al* (2012) who revealed that long distances from home hindered the involvement of women in community forest management in Uganda. Moreover, it was pointed out through interviews that although some of the men received invitation messages to the forest-related meetings they rarely attended the forest-related meetings mainly because they were working far away from the village.

Concerning statement 15, the mean score for women was 3.06 which implies 'Neutral' and the mean score for men was 3.19 indicates 'Neutral'. The mean score indices highlight that both men and women were 'Unsure' to the view that they were likely not to engage in forest patrol due to the long distance from the forest. While accounting for the gender variations, it was revealed during interviews that women's mobility was restricted by the gender-ascribed household tasks. It was further noted that some men and women residing between three and five kilometers away from the forest boundary were likely not to participate in forest patrol. This finding resembles the academic revelations of a study conducted by Okumu (2017) who observed that the households that were located far from the forests were likely to participate less in forest monitoring due to high opportunity costs. It was revealed through interviews that most of the men who engaged in forest patrol were residing within a radius of one kilometer from the forest. In most cases, these men were composed of the indigenous community (Sengwer) because they were believed to have

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

adequate knowledge about the tracks in the forest and had adapted to the terrain of the forested area.

On statement 16, the mean score for women was 2.93 which indicates 'Neutral' while the mean score for men was 3.00 which implies 'Neutral'. This mean score value reiterates that both men and women were likely to be 'Unsure' to the view that they failed to report illegal forest cases due to the long distance from their homesteads to the forest guard posts or stations. It was noted during interviews that some of the male scouts residing near the forest guard posts were able to report illegal forest users to the forest guards. On the other hand, the male scouts living far away from the forest guard posts failed to report the illegal forest users to the forest guards. To minimize the problem of distance to the forest guard posts, some of the forest scouts informed the CFA leaders who in turn communicated the illegal forest use to the forest guards. This indicates that there was evidence of vertical interactions between CFA members and CFA leaders about reporting illegal forest activities.

Inadequate Forest Knowledge and Training

This sub-section aimed to establish how insufficient forest knowledge and training hinders the involvement of men and women in forest governance. The respondents were asked to state their level of agreement with the opinion that insufficient forest information and training is a constraint to their involvement in forest governance. The responses were analyzed and presented as shown in Table 5.

Table 5: Level of Agreement to the View That Inadequate Forest Information and Training is a Constraint to Engagement in Forest Governance

Statement	Gender	Level of Agreement					
		SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean score
17. You rarely attend CFA meetings due to insufficient information about the venue and time of meetings	M	36 (12.9)	32 (11.4)	23 (8.2)	31 (11.1)	18 (6.4)	2.74
	F	22 (7.9)	34 (12.1)	26 (9.3)	35 (12.5	23 (8.2)	3.02
18. You rarely engage in the articulation of forest laws and policies due to inadequate knowledge about forest policies and laws	M	32 (11.4)	39 (13.9)	33 (11.8)	19 (6.8)	17 (6.1)	2.64
	F	28 (10.0)	30 (10.7)	27 (9.6)	21 (7.5)	34 (12.1)	3.02
19. You rarely participate in forest patrol due to inadequate training about forest scouting	M	23 (8.2)	26 (9.3)	29 (10.4)	37 (13.2)	25 (8.9)	3.11
	F	24 (8.6)	28 (10.0)	35 (12.5	33 (11.8)	20 (7.1)	2.98

Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

20. You rarely engage in planting trees due to inadequate information about the source of tree seedlings	M	26 (9.3)	45 (16.1)	32 (11.4)	19 (6.8)	18 (6.4)	2.70
	F	30 (10.7)	37 (13.2)	38 (13.6)	22 (7.9)	13 (4.6)	2.65

Source: Field Survey (2021)

On statement 17, the mean score value for men was 2.74 which indicates 'Neutral' while the mean score value for women was 3.02 which implies 'Neutral'. The mean scores suggest that both men and women were 'Unsure' to the statement that they did not attend forest meetings due to insufficient information about the venue and time of CFA meetings. The findings of the current study contradict the academic work of Samndong & Kjosavik (2017) who argue that men had the advantage to access information about the time and venue of meetings but most of the women were unable to receive the information.

Through interviews, some of the men and women opined that they rarely attended CFA meetings because they did not receive the message about the venues and time due to a lack of mobile phones. Regarding gender discrimination during sharing of forest information in Nepal, Uprety *et al* (2012) assert that women and other members of lower castes were not informed about the Community Forest User Group gatherings during which forest use rules were formulated. It was noted during interviews that to reduce the constraint of insufficient information about the time and venue of CFA meetings, some of the men and women received information from other CFA members who had obtained information. This reveals that horizontal interactions between CFA members enhanced the flow of forest information about the venue and time of CFA meetings.

In terms of statement 18, the mean score value for men was 2.64 which demonstrates 'Neutral' while the mean score value for women was 3.02 which indicates 'Neutral'. The mean scores affirm that both men and women were 'Unsure' of the opinion that they did not participate in the articulation of forest laws and policies due to insufficient information about forest laws and policies. This revelation differs from the academic arguments of Baral (2014) and Killian & Hyle (2020) who pointed out that women unlike men had insufficient knowledge about the decisions on forest management and rules guiding the use of forest resources in Nepal and Tanzania. However, through interviews, it was reported that some men and women had information about the forest laws and policies because there was adequate sensitization about forest laws and policies from the forest officers, public administrators, CFA leaders, friends, spouses, neighbours and media. This implies horizontal and vertical interactions between and among forest actors enhanced the creation of awareness about forest laws and policies in the study area.

About statement 19, the mean score value for men was 3.11 which implies 'Neutral' while the mean score value for women was 2.98 which reveals 'Neutral'. The mean scores suggest that both men and women were 'Unsure' to the view that they did not engage in forest patrol since they had inadequate training in forest scouting. This could be attributed to the argument that forest scouts had acquired forest information through the intergenerational transfer of indigenous forest knowledge. This revelation concurs with the scholarly writing of some researchers who advance that indigenous ecological knowledge was transmitted from one generation to the next through stories, observations or actual performance of forest activity in developing countries (Fortnam *et*

Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

al., 2019; Kiprop *et al*., 2017; Manginsela, 2016; Nabanoga, 2005). However, through interviews, it was noted that apart from financially motivating the forest scouts, Vi-agroforestry (a non-government organization that was active in the area between 2013 and 2017) was active in the training of forest scouts to reduce role conflicts between the scouts and the forest guards.

On statement 20, the mean score value for male respondents was 2.70 which indicates 'Neutral' while the mean score value for female respondents was 2.65 which depicts 'Neutral'. The mean scores confirm that both male and female spouses were 'Unsure' of the opinion that they did not engage in the planting of trees within the forest due to inadequate information about the source of tree seedlings. Through interviews, it was established that the problems of information about the source of tree seedlings were minimized through the initiatives of other key stakeholders. Public administrators (chiefs and Assistant Chief) mobilized public gatherings of the CFA activities, they provided the venue for the CFA meetings, liaised with other stakeholders like the County Government of Elgeyo Marakwet, Nyayo Tea Zones, and participated in public awareness on tree planting. Kenya Tea Development Agency supported the establishment of community tree nurseries, participated in planting the trees, and maintained the trees, trees and disease control within the forest. Ministry of Environment and Natural Resources and Kenya Forest Service: donated the funds through the Kenya Forest Service which supported the CFA with tree seedlings, trained the CFA group members on the establishment of tree nurseries, provided financial support to the CFA and helped in controlling tree pests and diseases.

Furthermore, it was noted through interviews that the County Government of Elgeyo Marakwet supported tree planting through the County Ministry of Environment which has a financial kitty. Nature Kenya (between 2013 and 2018) supported both Kenya Forest Service and CFA to create awareness of forest conservation, organized educational tours to other parts of the country (Kabujoi Forest in Nandi County, Aberdare Forest in Nyandarua County, Mount Kenya Forest in Meru County, Mau Forest in Nakuru County and Kakamega Forest in Kakamega County), supported the CFA's mega indigenous tree nurseries with the Kapcherop Forest Station and exotic tree nurseries, transportation of tree seedlings, supported training in nursery establishment, management and pests and disease control. Some of the organizations and departments of the national government that have supported community participation in forest management in the study area have also supported other forest-dependent communities in Uganda. For instance, Banana *et al* (2012) confirm that Vi-agroforestry provided tree seeds and seedlings, as well as supported seed collection, tree nursery establishment and tree planting in Uganda while Nature Uganda played a key role in not only tree planting but also in promoting livelihood projects like pig farming and poultry rearing.

Gender Norms of Behaviour

Colfer & Minarchek (2013) theorized in their 'Gender Box' theoretical framework that gender norm of behaviour influences women's interactions with men not only within the community but also within forest user groups. Borrowing from this concept, the respondents were asked to state their level of agreement *on whether gender norms of behaviour are a hindrance to the involvement of women in forest governance.* The results were analyzed and presented in Table 6.

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

Table 6: Level of agreement to the view that gender norms of behaviour are a hindrance to the involvement of women in forest governance

Statement	Gender	Level of Agreement					
		SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean score
21. Women do not attend forest meetings because the culture dictates that they must attend with their husbands	M	47 (16.8)	59 (21.1)	34 (12.1)	0 (0.0)	0 (0.0)	1.91
	F	48 (17.1)	54 (19.3)	35 (12.5)	3 (1.1)	0 (0.0)	1.95
22. Women do not speak during forest meetings because they are not permitted to speak	M	63 (22.5)	39 (13.9)	33 (11.8)	5 (1.8)	0 (0.0)	1.86
	F	54 (19.3)	42 (15.0)	26 (9.3)	18 (6.4)	0 (0.0)	2.06
23. Women do not seek leadership positions in the CFA because they are inferior to men	M	0 (0.0)	18 (6.4)	29 (10.4)	37 (13.2)	56 (20.0)	3.94
	F	34 (12.1)	31 (11.1)	27 (9.6)	22 (7.9)	26 (9.3)	2.82
24. Women do not engage in tree planting within the forest because it is against the traditions	M	12 (4.3)	34 (12.1)	25 (8.9)	31 (11.1)	38 (13.6)	3.35
	F	0 (0.0)	18 (6.4)	30 (10.7)	49 (17.5)	43 (15.4)	3.84
25. Women do not participate in forest patrol because they are believed to be weak and fearful	M	5 (1.8)	27 (9.6)	23 (8.2)	41 (14.6)	44 (15.7)	3.66
	F	0 (0.0)	0 (0.0)	35 (12.5)	48 (17.1)	57 (20.4)	4.16

Source: Field Survey (2021)

About statement 21, the mean score value for men was 1.91 which implies 'Disagree' while the mean score value for women was 1.95 which indicates 'Disagree'. The mean score values emphasize that both men and women opposed the view that '*women did not attend forest meetings because they were not permitted to attend in the absence of their husbands*'. This finding contrasts with the prior study conducted by Onzere *et al* (2020) who found that some men denied their spouses permission to attend forest meetings in Liberia. While accounting for this disparity, it was established through interviews that both men and women were given equal opportunities to attend the forest-related meetings mainly gender affirmative action, modernization, and formal education that have reduced the implications of restrictive culturally defined gender norms.

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

On statement 22, the mean score value for men was 1.86 which depicts 'Disagree' while the mean score value for women was 2.06 which indicates 'Disagree'. The mean score difference underscores that both men and women disagreed with the view that '*women did not speak during forest meetings because they were not permitted to speak*'. However, this revelation differs from previous scholarly work which indicates that due to the discriminatory gender norms of behaviour, some of the women who attended forest-related meetings in Africa and Asia did not speak or engage in decision-making due to low self-confidence and fear of male members in Asia and Africa (Agarwal, 2001; Baral, 2014; Killian & Hyle, 2020; Mashapa *et al*., 2020). It was noted through interviews that both men and women were incorporated in forest management through a third gender rule in CFA whereby women are not only members but also speak during the meetings.

On statement 23, the mean score value for men was 3.94 which implies 'Agree' and the mean score value for women was 2.82 which depicts 'Neutral'. The mean score values suggest that the husbands were more likely than wives to 'Agree' with the assertion that '*women did not seek leadership positions in the forest organizations because women were believed to be subordinate to men*'. This finding is similar to the existing studies conducted in Africa. For instance, Egunyu & Reed (2015) and Samndong & Kjosavik (2017) corroborate that the fear of men by women influenced the spaces and opportunities available for women to occupy executive positions and engage in decision making within community-based forest organizations in the DRC and Uganda.

On statement 24, the mean score value for men was 3.35 which indicates 'Agree' while the mean score value for women was 3.84 which implies 'Agree'. This result underlines that both husbands and wives were likely to concur with the opinion that the female spouses did not engage in tree planting within the forest because it was against their culture. Through interviews, it was established that tree planting is man's job. But, due to some affirmative action, some women noted that they engaged in the planting of trees within the PELIS plots in the forest. This finding is in line with the scholarly work of other researchers who demonstrated that both men and women engaged in not only tree planting but also in silvicultural activities in Africa (Bourne *et al.,* 2015; Egunyu & Reed, 2015; Elias, 2015; Gautier & van Santen, 2014; Kalanzi *et al.,* 2020; Nkengla, 2014; Rukundo, 2018)**.**

On statement 25, the mean score value for men was 3.66 which means 'Agree' while the mean score value for women was 4.16 which indicates 'Agree'. This revelation indicates that both men and women were likely to agree with the opinion that '*women did not participate in forest patrol because women were considered to be weak and fearful*'. This finding confirms the growing body of knowledge on the perception that women did not engage in forest patrol because women are considered to be weak and fearful. While explaining why women failed to participate in forest patrol in Africa, some scholars reiterated that women were likely to encounter resistance during apprehension of forest offenders while some women regarded forest patrol as a 'men's activity' because of the 'fear of danger' in the forest (Banana *et al*., 2012; Bitange *et al.*, 2021; Mashapa *et al*., 2020).

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Journal of Environmental and Geographical Studies
ISSN 2958 - 4116 (Online)
Vol.4, Issue 1, pp 36 – 60, 2025

CONCLUSION AND RECOMMENDATIONS

Conclusion

Wives of the CFA members were likely not to attend forest meetings, speak during the forest meetings and seek leadership roles due to discouragement from their male spouses. On the other hand, the male spouses of the CFA members were likely not to participate in forest patrol due to discouragement from their wives. Both male and female spouses of CFA members were likely not to attend forest-related meetings, seek leadership positions in the CFA and engage in forest patrols due to time constraints. Financial constraints were not a major hindrance to the engagement of husbands and wives in forest governance. Distance was a limiting factor for husbands and wives during attendance of meetings, forest patrols and reporting of illegal forest cases. Gender norms of behaviour were a constraint for wives during seeking leadership posts, planting trees within the forest, and forest patrols.

Recommendations

It is recommended that the CFA leaders and KFS should enhance the use of digital platforms—such as mobile phone alerts, WhatsApp groups, and SMS services—to ensure timely communication of forest meetings and policies to both male and female members. Also, the forest-based non-governmental organizations should increase the financial support, capacity building and awareness creation among the CFA members to ensure effective participation of both men and women in forest governance. Moreover, Non-governmental Organizations such as Nature Kenya and Vi-agroforestry should continue supporting the CFA members in the study area by offering training and remuneration to forest scouts as well as supporting livelihood activities such as tree nursery establishment.

Acknowledgments

I would like to acknowledge all the 280 CFA members and the 35 key informants who were willing to provide information about the constraints and opportunities available for husbands and wives engaging in forest governance within Cherangany Hills Forest.

Conflict of Interests

The author declares that he has no conflict of interest.

Ethical Approval

The research permit was obtained from the National Council of Science, Technology and Innovation (NACOSTI). Also, oral consent was sought from the respondents, the respondents remained anonymous, and their responses remained confidential.

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