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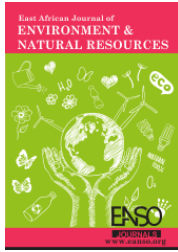


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Gendered Sharing of Decision-making Powers, Responsibilities and Rights over Non-Timber Forest Resources in Cherangany Hills Forest, Kenya

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Keywords:

Feminist Political Ecology, Forest Resources, Gendered Responsibilities, Gendered Rights, Intra-Household Decision-making, Cherangany Hills Forest

Building on the Theory of Feminist Political Ecology (FPE), this paper examines the gendered sharing of intra-household decision-making powers, responsibilities, and rights over the exploitation of non-timber forest resources within Cherangany Hills Forest, Kenya. A cross-sectional survey research design was adopted, semi-structured questionnaires were administered to 280 Community Forest Association (CFA) members (140 male and 140 female) that were randomly sampled, and in-depth interviews were conducted among 35 key respondents (20 CFA members, 7 CFA leaders, 2 village elders, 2 assistant chiefs, 2 forest guards, and 2 forest officers) that were purposively sampled. Quantitative data was analysed in the form of mean and standard deviation and presented in the form of percentages and graphs. This paper highlights that husbands and wives shared the decision-making powers over the use of forest land for crop farming to a 'Great Extent'. There was substantial gendered sharing of intra-household decision-making over the use of forest land for livestock feeding. However, there was minimal gendered sharing of intra-household decision-making with regard to the collection of firewood, herbal plants, indigenous vegetables, and fruits from the forest as well as beekeeping within the forest. The husbands and wives shared the responsibilities and rights over crop farming to a 'Great Extent'. There was substantial gendered sharing of responsibilities and rights over the collection of fodder and grazing of livestock and collection of herbal plants from the forest. But there was minimal gendered sharing of responsibilities and rights over the collection of firewood, beekeeping and honey harvesting, collection of wild vegetables and picking of indigenous fruits from the forest. There is a need to enlighten, encourage and support both men and women living adjacent to forested areas to understand forest rights, embrace on-farm forestry, and use forest resources sustainably.

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INTRODUCTION

Proponents of the theory of Feminist Political Ecology argue that gendered division of power as well as control over the behaviour of other people, is a key component of management, conservation, and use of natural resources (Rocheleau, 1995; Rocheleau *et al.*, 1996). In addition, feminist political ecologists recognise the significance of gendered rights over the control and access to productive resources such as trees, land, and animals as well as gendered responsibilities to acquire and manage these natural resources (Rocheleau, 1995; Rocheleau *et al.*, 1996). While advancing the ideas of the theory of Feminist Political Ecology, documented evidence from developing regions demonstrates that both men and women engage in crop farming, grazing of livestock, fetching pasture, collection of fuel wood, collection of indigenous fruits and vegetables, collection of herbal plants, and bee-keeping within the forested areas (Manginsela, 2016).

Men and women play complementary roles such as weeding and harvesting of crops, but with some gendered variations (Manginsela, 2016). With regard to decision-making over the crops to be

grown, women dominate the decision-making over the type of crops to be cultivated due to the gender-ascribed roles of women: to prepare food for members of their households (Kalanzi *et al.*, 2020). Moreover, men and women engage not only in the grazing of livestock within forested lands but also in the collection of livestock fodder from forests (Manginsela, 2016; Sithole *et al.*, 2021). In terms of gender differentiations, men engaged more than women in grazing livestock within the forests in Africa (Mbuvi, 2018; Sithole *et al.*, 2021). This is evidenced by men not only having access rights to grass but also wielding more decision-making powers over the use of communal grazing lands (Sithole *et al.*, 2021). Men are more likely than women to graze livestock in the forest because women are considered 'home keepers' (Mbuvi, 2018). However, some women have access rights to fodder and even dominate the collection of pasture from the grasslands (Rocheleau & Edmunds, 1997).

Both men and women have rights over wild fruits and vegetables located within forested areas (Gurung *et al.*, 2013; Kalanzi *et al.*, 2020; Manginsela, 2016; Matiku *et al.*, 2013; Rotich, 2019). In relation to collection spaces of fruits and vegetables, men have access to wild fruits and

vegetables growing in the deeper parts of the forest, while women collect fruits and vegetables growing at the edge of the forest (Manginsela, 2016). Moreover, both men and women engaged in the collection of wild fruits from the forested lands for domestic consumption (Kalanzi *et al.*, 2020; Rotich, 2019).

With regard to gendered aspects in the exploitation of firewood, both men and women engage in the collection of fuel wood from state-protected forests (Manginsela, 2016). Although men and women made decisions over the collection and use of fuel wood, women had more rights and dominated the collection of fuel wood because this activity was regarded as 'feminine' (Matiku *et al.*, 2013; Rocheleau & Edmunds, 1997; Sithole *et al.*, 2021). In relation to the quantity of firewood collected, some men managed the collection and transportation of a large amount of firewood while women coordinated the collection of little amount of firewood (Abate, 2020).

Men and women have equal access rights to extract herbal medicine from the forest land (Kalanzi *et al.*, 2020; Manginsela, 2016; Rotich, 2019). Although both men and women had access to and control over medicinal plants growing in the forest, women had more access and control over the extraction of herbal medicine to cater for health needs (Manginsela, 2016). In terms of the gender dimension in the extraction and preparation of herbal medicine from state-protected forest reserves in Kenya, both male and female herbalists collected herbal plants for the preparation of herbal medicine from forested landscapes (Rotich, 2019).

In Kenya honey is harvested from the bee hives hung in state-owned forests (Matiku *et al.*, 2013; Mutune & Lund, 2016; Rotich, 2019). With regard to the gendered aspect of bee-keeping and honey harvesting, men dominated the practice of beekeeping within state-owned forests in Kenya (Mutune & Lund, 2016). This male dominance in bee-keeping and honey harvesting is attributed to

socio-cultural norms as well as men's possession of sufficient indigenous knowledge about bee-hive making, hanging bee hives, and harvesting of honey (Kiprop *et al.*, 2017).

However, despite the existing body of knowledge on gendered decision-making, responsibilities, and rights over the exploitation of forest resources within forests from developing nations (Manginsela, 2016; Sithole *et al.*, 2021), there is scanty information about whether spouses made joint household decisions regarding the exploitation of forest resources as well as whether spouses shared the responsibilities and rights over the exploitation of forest resources in Kenya. Thus, the question that remains unaddressed is: 'Do husbands and wives make joint decisions over the exploitation of forest resources in Kenya? If yes, do husbands and wives share the responsibilities and rights over the exploitation of forest resources in Kenya? This paper proceeds as follows: materials and methods, results and discussions, and conclusions and recommendations.

MATERIALS AND METHODS

Study Area

This paper is based on a study that was conducted within the Cherangany Hills Forest in Kenya. The Cherangany Hills Forest Ecosystem can be described as an old fault-block formation of non-volcanic origin with an undulating upland plateau on the western edge of the Rift Valley (Kagombe *et al.*, 2015). The ecosystem ranges in altitude from 2,000 m reaching 3,365 m above sea level at Cheptoket Peak in the north-central section (Kagombe *et al.*, 2015; Kenrick, 2014). The main rainy season is from April to August and the dry season is from December to February (Kagombe *et al.*, 2015). The Cherangany hills forested area is covered by moderately deep soils of good structure and high organic matter content, and variable acidity (Kagombe *et al.*, 2015). The Cherangany Hills Forest is an important water catchment area

and sits astride the watershed between Lake Victoria and Lake Turkana depressions (Kagombe *et al.*, 2015).

The study was conducted among forest-adjacent communities surrounding the Kiptaberr forest block within the Cherangany Hills Forest in Kenya. The two study sites were Kapterit and Kapcherop locations found within the Sengwer Ward in Marakwet West sub-County that are located adjacent to the Kiptaberr Forest Reserves. The selection of the Kapterit and Kapcherop locations was based on the idea that there was a forest guard camp within the Kapterit location and a forest station within the Kapcherop location. The main communities living in the ecosystem include the Kalenjin tribe which consists of the Keiyo, Marakwet, Pokot, Tugen, and Nandi, as well as the indigenous communities which include the Sengwer and Ndorobo (Kiprop *et al.* 2017).

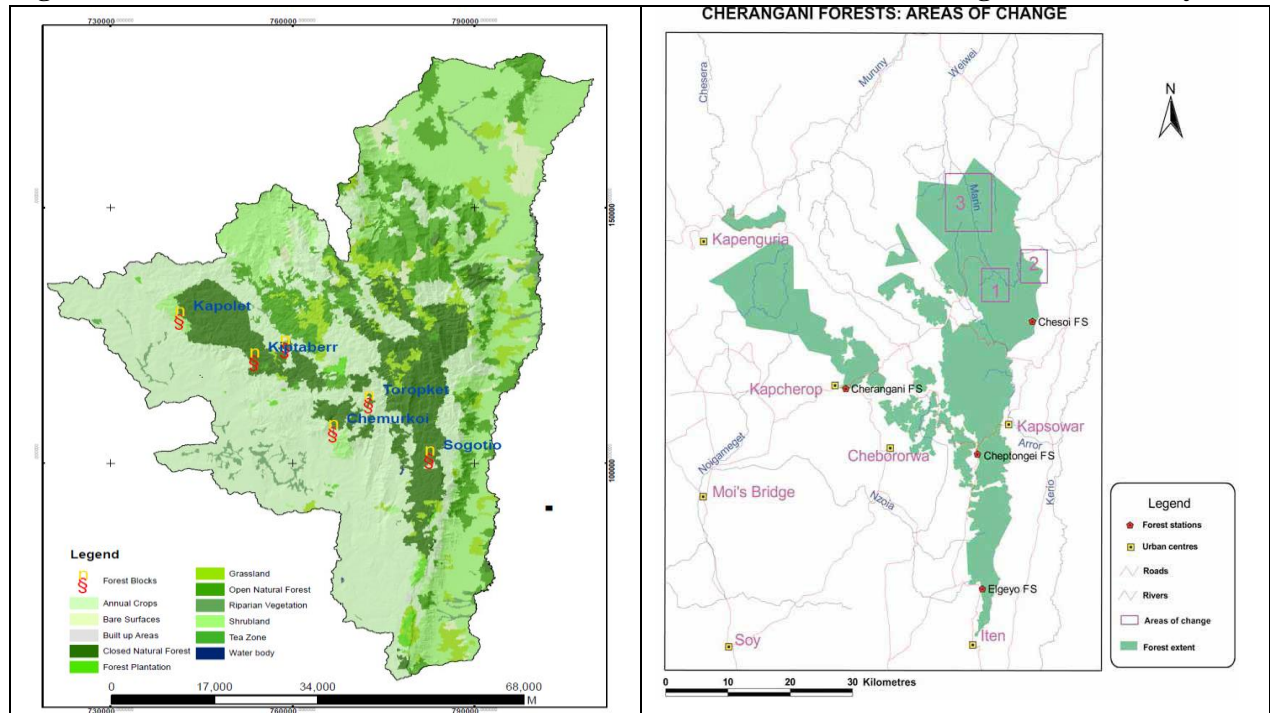
Research Methods

A cross-sectional survey research design was adopted in this study since it facilitated the collection of a wide range of data (Kothari, 2004). The data was obtained from sampled households residing within a radius of five (5) kilometres from the boundaries of Kiptaberr Forest Block of Cherangany Hills forest, CFA leaders, village elders, forest guards, and Kenya Forest Service officers between March and May 2021. A sample size of 280 CFA members (140 male and 140 female) located along either side of the main paths was systematically sampled. The first household

was randomly selected from a range of ten households, the 6th household was selected first and hence every 6th subsequent household was selected. The data was collected from a total of 315 respondents. Semi-structured questionnaires were administered to 280 respondents and in-depth interviews were conducted among 20 Community Forest Association (CFA) members, 7 CFA leaders, 2 village elders, 2 assistant chiefs 2 forest guards, and 2 Kenya Forest Service officers to obtain qualitative data.

The literate respondents were able to fill out the structured questionnaires on their own, while the illiterate respondents (about 13 male respondents and 15 female respondents) were assisted in filling the questionnaires by the researcher or research assistants. The Statistical Package for Social Sciences (SPSS) version 20.0 was used to analyse quantitative data in the form of mean, standard deviation, and percentages, while Microsoft Excel (2013) was used to generate the bar graphs. The extent of involvement was analysed on a Likert scale of 1-4 where: 1 = Not at all, 2 = Less Extent, 3 = Some Extent and 4 = Great Extent. The mean score range for the statements was indicated as follows: 1.01-2.00 = Minimal Extent, 2.01–3.00 = Substantial Extent and 3.01 - 4.00 = Great Extent. The qualitative data from interviews were analysed thematically. The analysed data was presented in the form of tables, percentages, bar graphs and text. The permission to collect data was obtained from the National Commission for Science, Technology, and Innovation (NACOSTI).

Figure 1: Constellation of forest blocks and forest stations within the Cherangani Forest Ecosystem



Source: Kagombe *et al.* (2015)

RESULTS AND DISCUSSIONS

Socio-Economic Profile of Respondents

A simple majority of the male respondents (n = 56, 20.0 %) and female respondents (n = 54, 19.3 %) were aged between 40 and 49 years and the overall mean age of the respondents was 40.9 ± 3.4 years. One hundred two of the respondents (36.4 %) noted that their households had four members. A majority of the male respondents (n = 81, 28.9 %) and female respondents (n = 93, 33.2 %) were from the

Sengwer tribe. More female respondents (n = 98, 35.0 %) than male respondents (n = 86, 30.7 %) had primary education. All the female respondents (n = 140, 50.0 %) and 134 male respondents engaged in farming activities. More female respondents (n = 84, 30.0 %) than male respondents (n = 68, 24.3 %) earned less than Ksh 10,000 and the overall mean monthly income was Ksh $12,840 \pm 490$. A majority of the respondents (n = 124, 44.3 %) reported that their homesteads were located between 0.1 and 1.0 kilometres from the forest boundary.

Table 1: Socio-demographic characteristics of household respondents

| Item | Male | | Female | | Total | | |
|-------------------|----------------|----|----------------|----|----------------|-----|------|
| | n | % | n | % | n | % | |
| Age group (years) | 20 - 29 | 15 | 5.4 | 17 | 6.1 | 32 | 11.5 |
| | 30 - 39 | 42 | 15.0 | 51 | 18.2 | 93 | 33.2 |
| | 40 - 49 | 56 | 20.0 | 54 | 19.3 | 110 | 39.3 |
| | 50 - 59 | 27 | 9.6 | 18 | 6.4 | 45 | 16.0 |
| Mean of age | 43.4 ± 3.9 | | 38.6 ± 3.2 | | 40.9 ± 3.4 | | |
| Household size | 2 | 16 | 5.7 | 16 | 5.7 | 32 | 11.4 |
| | 3 | 38 | 13.6 | 38 | 13.6 | 76 | 27.2 |
| | 4 | 51 | 18.2 | 51 | 18.2 | 102 | 36.4 |
| | More than 4 | 35 | 12.5 | 35 | 12.5 | 70 | 25.0 |

| Item | | Male | | Female | | Total | |
|-----------------------------------|-------------------------|-------------|------|-------------|------|-------------|------|
| | | n | % | n | % | n | % |
| Ethnic Background | Sengwer | 81 | 28.9 | 93 | 33.2 | 174 | 62.1 |
| | Marakwet | 37 | 13.2 | 29 | 10.4 | 66 | 23.6 |
| | Others | 22 | 7.9 | 18 | 6.4 | 40 | 14.3 |
| Highest educational level | Primary | 86 | 30.7 | 98 | 35.0 | 184 | 65.7 |
| | Secondary | 33 | 11.8 | 20 | 7.1 | 53 | 18.9 |
| | Tertiary | 5 | 1.8 | 3 | 1.1 | 8 | 2.9 |
| | Non-Formal Education | 16 | 5.7 | 19 | 6.8 | 35 | 12.5 |
| Source of livelihood | Farming | 134 | 47.9 | 140 | 50.0 | 274 | 97.9 |
| | Selling forest products | 72 | 25.7 | 66 | 23.6 | 138 | 49.3 |
| | Wage labour | 29 | 10.4 | 42 | 15.0 | 71 | 25.4 |
| | Transport services | 31 | 11.1 | 0 | 0.0 | 31 | 11.1 |
| | Shop business | 7 | 2.5 | 2 | 0.7 | 9 | 3.2 |
| Income per month (Ksh) | < 10000 | 68 | 24.3 | 84 | 30.0 | 152 | 54.3 |
| | 10001-20000 | 46 | 16.4 | 41 | 14.6 | 87 | 31.1 |
| | 20001-30000 | 17 | 6.1 | 15 | 5.4 | 32 | 11.5 |
| | >30000 | 9 | 3.2 | 0 | 0.0 | 9 | 3.2 |
| Mean income per month (Ksh) | | 13860 ± 530 | | 11910 ± 470 | | 12840 ± 490 | |
| Homestead distance to forest (Km) | 0.1 - 1.0 | 62 | 22.1 | 62 | 22.1 | 124 | 44.3 |
| | 1.1 - 2.0 | 38 | 13.6 | 38 | 13.6 | 76 | 27.2 |
| | 2.1 - 3.0 | 26 | 9.3 | 26 | 9.3 | 52 | 18.6 |
| | 3.1 - 4.0 | 11 | 3.9 | 11 | 3.9 | 22 | 7.8 |
| | 4.1 - 5.0 | 3 | 1.1 | 3 | 1.1 | 6 | 2.2 |
| Mean distance to forest (Km) | | 1.48 ± 0.23 | | | | | |

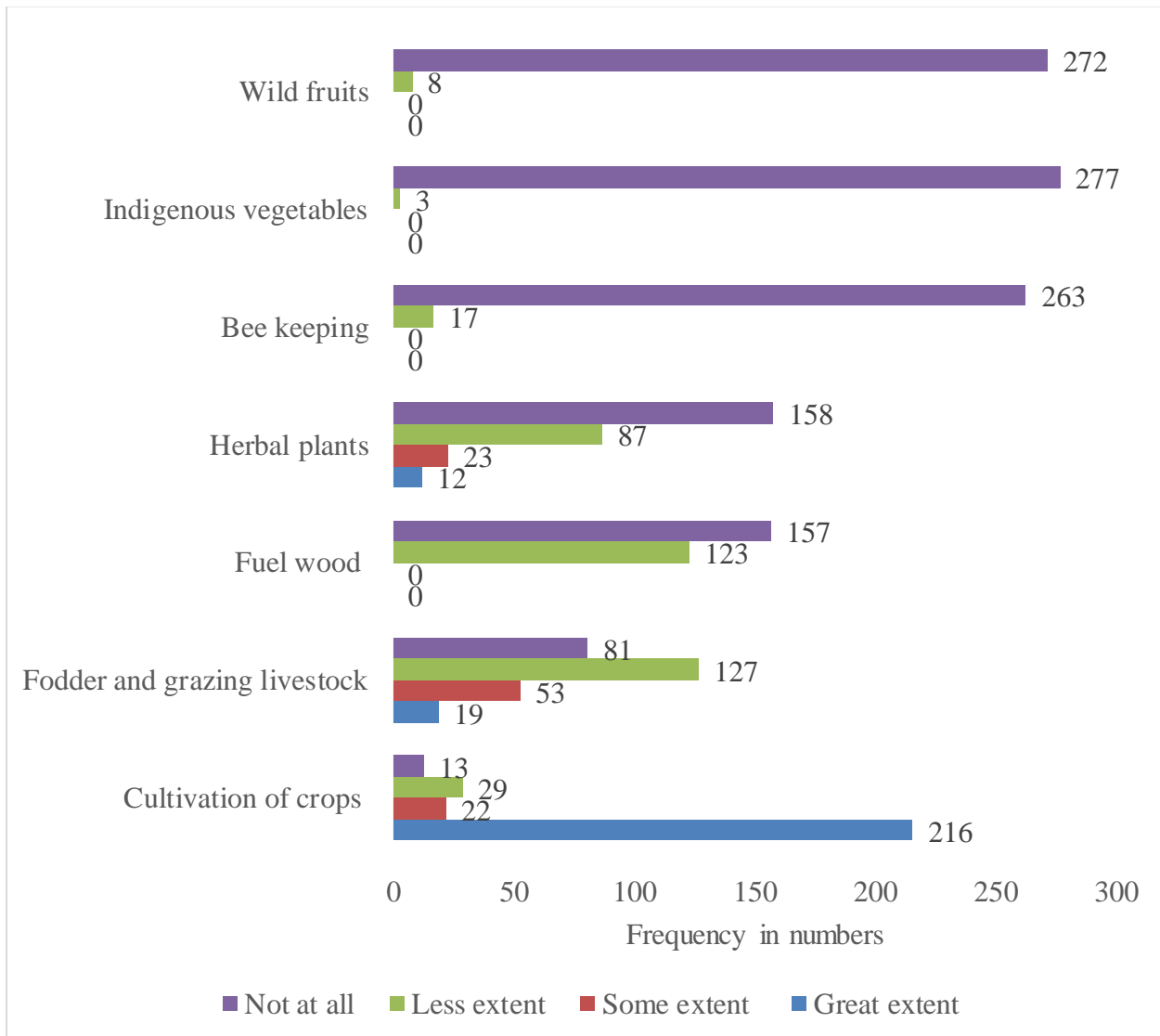
Source: Field survey data (2021)

Gendered Sharing of Intra-Household Decision-Making Powers

This sub-section examines the extent to which men and women shared the intra-household decision-making powers over the exploitation of forest

resources in Cherangany Hills Forest, Kenya. The respondents were asked to respond to the question: *'To what extent do you and your spouse jointly engage in decision-making over the exploitation of the following forest resources?'* The results were analysed and presented as shown in *Figure 2*.

Figure 2: Extent to which spouses engaged jointly in household decision-making over-exploitation of forest resources



Source: Field Survey (2021)

Figure 2 illustrates that 216 (77.1 %) of the respondents posited to a ‘Great extent’, 22 (7.9 %) of the respondents observed to ‘Some extent’, 29 (10.4 %) of the respondents argued to a ‘Less extent’, and the remaining 13 (4.6 %) of the respondents noted ‘Not at all’. The mean score value for the statement was 3.58 which demonstrates that there was ‘Great’ intra-household gendered sharing of decision-making powers over the use of forest land for crop farming. During interviews, it was reported that some husbands and wives had collaborative intra-household gender

relations during the cultivation of food crops within the forest.

Figure 2 reveals that 19 (6.8 %) of the respondents affirmed that the husbands and wives made the joint decision over the collection of animal fodder and grazing of livestock within the forest to a ‘Great extent’, 53 (18.9 %) of the respondents contended to ‘Some extent’, 127 (45.4 %) of the respondents argued to a ‘Less extent’, and the remaining 81 (28.9 %) of the respondents emphasised ‘Not at all’. The mean score value for the statement was 2.04,

which revealed that there was a ‘Substantial’ sharing of decision-making powers over the collection of livestock fodder and grazing of animals within the forest. Thus, according to the Theory of Feminist Political Ecology, there was a collaborative relationship between husbands and wives (Rocheleau *et al.*, 1996). It was revealed during interviews that men dominated the decision over when the livestock was taken to the forest for grazing as well as when the feeding of the livestock was carried out at home. This supports the arguments of the Theory of Feminist Political Ecology which reiterates the existence of unbalanced power relations between men and women during the exploitation of forest resources (Rocheleau *et al.*, 1996).

As shown in *Figure 2*, 123 (43.9 %) of the respondents posited that the husbands and wives engaged in joint decision-making over the collection of firewood to a ‘Less extent’ while 157 (56.1 %) of the respondents advanced that within their households there was no joint intra-household decision-making over the collection of firewood from the forest. The mean score value for the statement was 1.44, which underscores that there was ‘Minimal’ sharing of decision-making powers over the collection of firewood from the forest. This result advances that there was an unequal gender relation during decision-making over collection of firewood from the forest which is in line with the Theory of Feminist Political Ecology (Rocheleau *et al.*, 1996). Through interviews, it was noted that the female spouses had more intra-household decision-making power over the time when the fuel wood was collected, the amount of fuel wood to be collected for home use and the amount of firewood sold because of the gender household responsibility of food preparation for the family. Studies from Kenya corroborates that woman had more decision-making powers over the collection and use of fuel wood (Matiku *et al.*, 2013; Rocheleau & Edmunds, 1997).

As presented in *Figure 2*, 12 (4.3 %) of the respondents observed that husbands and wives made joint intra-household decisions over the collection of herbal plants to a ‘Great extent’, 23 (8.2 %) of the respondents observed to ‘Some extent’, 87 (31.1 %) of the respondents argued to a ‘Less extent’ and the remaining 158 (56.4 %) of the respondents noted ‘Not at all’. The mean score value for the statement was 1.60, which implies that there was ‘Minimal’ gender sharing of decision-making powers over the collection of herbal plants from the forest. This revelation indicates that there were unbalanced gender relations during decision-making over the collection of herbal plants from the forest which resembles the premise of the Theory of Feminist Political Ecology (Rocheleau *et al.*, 1996).

The results shown in *Figure 2* highlights that 17 (6.1 %) of the respondents argued that the husbands and wives made joint decisions over the hanging of bee hives and harvesting of honey to a ‘Less extent’ while the remaining 263 (93.9 %) of the respondents reiterated ‘Not at all’. The mean score value for the statement was 1.06 which suggests that there was ‘Minimal’ gender sharing of intra-household decision-making powers over the hanging of bee hives and harvesting of honey. This observation implies that there was an unequal intra-household gender relation during decision-making over the hanging of bee hives and harvesting of honey. Through interviews, it was noted that only men from the indigenous community (Sengwer) dominated the decisions over bee-keeping since they had the indigenous knowledge of making traditional bee hives, hanging the bee hives, and harvesting the honey (Kiprop *et al.*, 2017; Rotich, 2019; Rotich *et al.*, 2020). This revelation is in line with other studies conducted in Cameroon and Uganda that underscore that men dominated the installation of bee hives because men were believed to be physically capable of carrying and climbing the trees while women are culturally prohibited from climbing trees (Ingram, 2014; Kalanzi *et al.*, 2020).

As indicated in *Figure 2*, 3 (1.1 %) of the respondents opined that the husbands and wives engaged to a 'Less extent' in making decisions over the collection of indigenous vegetables, while 277 (98.9 %) of the respondents observed that the husbands and wives did not make joint decisions over the collection of indigenous vegetables from the forest. The mean score value for the statement was 1.01 which underlines that there was 'Minimal' intra-household gender sharing of decision-making powers over the collection of indigenous vegetables from the forest. According to the interview that was carried out, it was confirmed that female spouses had more decision-making powers over the collection of indigenous vegetables mainly because socio-cultural norms ascribed women the responsibility of food preparation for their households. This is in line with the propositions of the Theory of Feminist Political Ecology whereby Rocheleau *et al.* (1996) contend that culture contributes greatly to the variation in gender spaces and powers over access to natural resources. Moreover, this finding is similar to revelations of previous studies from Uganda which argues that women were more engaged in making decisions over the management of vegetables growing not only in their farmlands but also inside the forest (Nabanoga, 2005).

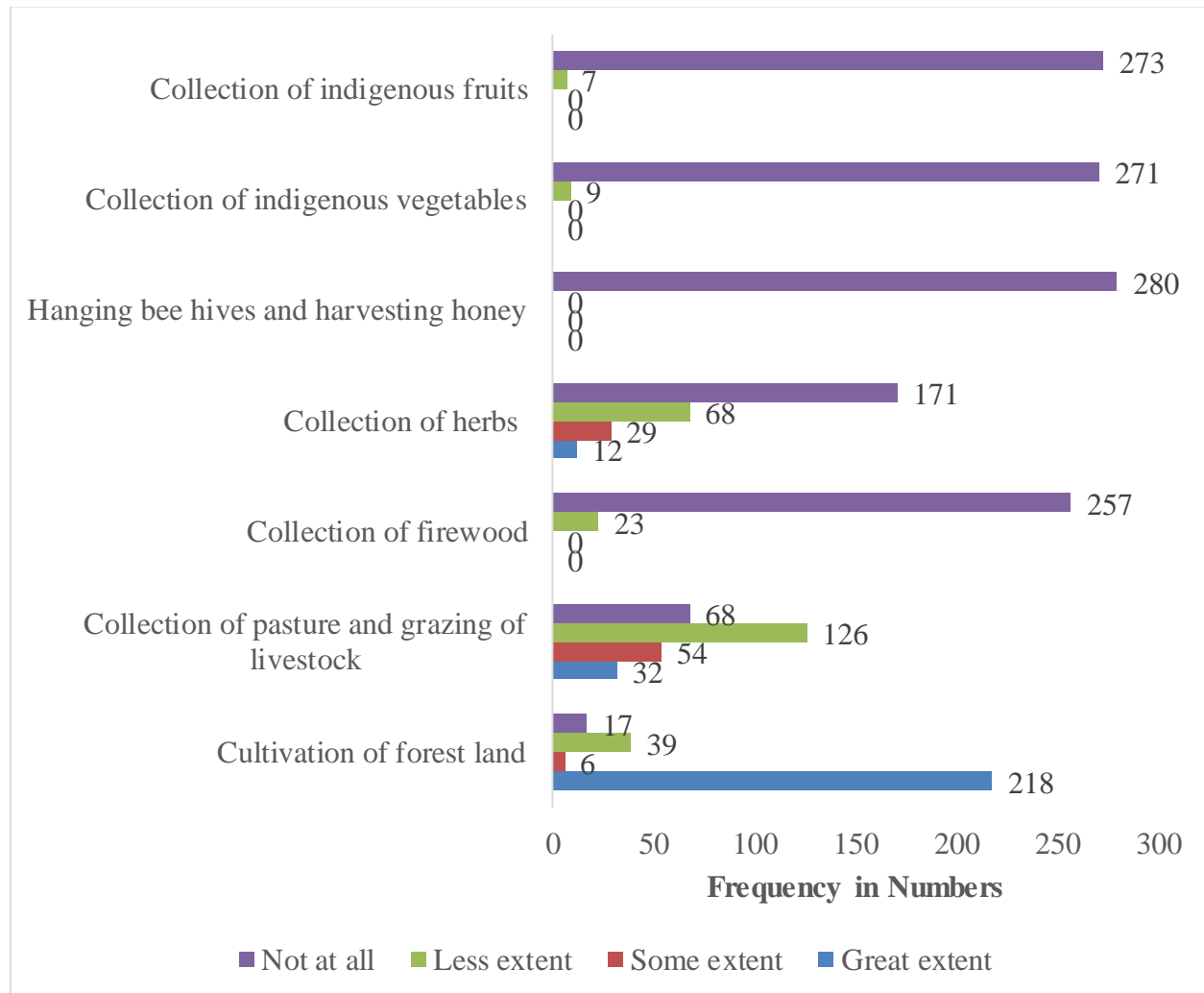
Figure 2 demonstrates that out of the 280 respondents, 8 (2.9 %) of the respondents observed that husbands and wives engaged in making joint intra-household decisions over the collection of

wild fruits to a 'Less extent' while 272 (97.1 %) of the respondents noted that in their households the husbands and wives did not engage in joint decision-making. The mean score value for the statement was 1.03 which emphasises that there was 'Minimal' intra-household gendered sharing of decision-making powers over the collection of wild fruits from the forest. This revelation supports the propositions of the Theory of Feminist Political Ecology that there is unequal intra-household gender relation during decision-making over the collection of wild fruits from the forest (Rocheleau *et al.*, 1996). Recent studies from Kenya argue that both men and women harvested wild fruits from the Embobut forest reserve in Elgeyo Marakwet County (Rotich, 2019). Moreover, Nabanoga (2005) assert that men predominantly made decisions over the use of wild fruits such as wild guavas growing in the forest in Uganda.

Gendered Sharing of Intra-Household Responsibilities and Rights

Drawing upon the Theory of Feminist Political Ecology, this section of the study examines the gender sharing of responsibilities and rights over the exploitation of forest resources from the Cherangany Hills Forest. The respondents were asked: '*To what extent do you and your spouse share the responsibilities and rights over the exploitation of the following forest resources?*' The results were analysed and indicated as shown in *Figure 3*.

Figure 3: Extent to which spouses shared responsibilities and rights over-exploitation of forest resources



Source: Field Survey (2021)

As presented in *Figure 3*, 218 (77.9 %) of the respondents reported that husbands and wives shared the responsibilities and rights over the cultivation of crops within the forest land to a ‘Great extent’, 6 (2.1 %) of the respondents observed to ‘Some Extent’, 39 (13.9 %) of the respondents advanced to a ‘Less Extent’ and the remaining 17 (6.1 %) of the respondents posited ‘Not at all’. The mean score value for the statement was 3.52 which indicate that the husbands and wives shared the responsibilities and rights over the cultivation of crop within the forest to a ‘Great extent’. Through interviews, it was confirmed that there were substantial collaborative gender relations during the

cultivation of crops under the PELIS system. It was established that men and women shared the responsibilities over the cultivation of food crops under the PELIS programme. When the Kenya Forest Service law enforcement officer was asked how men and women gained the rights to cultivate food crops within the protected forest under the PELIS, he reiterated that the rights to practice crop farming within the forest land were gained through payment of royalty fees while the ability to continue using the PELIS plot depended on the stipulated time (3-5 years) and ability to monitor and protect the planted trees from destruction.

As shown in *Figure 3*, 32 (11.4 %) of the respondents argued that husbands and wives shared the responsibilities and rights over the collection of livestock fodder and grazing of livestock within the forests to a ‘Great extent’, 54 (19.3 %) of the respondents advanced to ‘Some Extent’, 126 of the respondents (45.0%) quipped to a ‘Less extent’, and 68 (24.3 %) of the respondents revealed ‘Not at all’. The mean score value for the statement was 2.18 which underscores that there was ‘Substantial’ gendered sharing of intra-household responsibilities over the collection of livestock fodder and grazing of livestock within the forest. The result of the present study corroborates with the findings of Mbuvi (2018) and Westervelt (2017) who reported that men engaged more than women in grazing of livestock within the Loita forest in Kenya due to the idea that the Maasai women were regarded as ‘home keepers’ while some women believed that herding livestock in the forest was dangerous due to wild animals. It was confirmed that the right to access grazing spaces within the forest was determined by one being a member of the CFA and Forest User Group (FUG), having the ability to pay a monthly royalty fee, and abiding by the stipulated regulations such as to graze only allowed animals in the zoned areas under the supervision of the cattle owners. While stating the amount of the royalty fees paid for grazing animals in the forest, Mbeche *et al.* (2021) add that forest-adjacent communities within Mt Elgon Forest were permitted to graze their livestock within the forest upon payment of 100 Kenya Shillings per month per each head of the animal to the Kenya Forest Service.

The results presented in *Figure 3* demonstrate that 23 (8.2 %) of the respondents argued that the husbands and wives shared the responsibilities and rights over the collection of firewood from the forest to a ‘Less extent’ while 257 (91.8 %) of the respondents revealed that the husbands and wives did not share ‘Not at all’. The mean score value for the statement was 1.08, which suggests that spouses shared the responsibilities over the collection of

firewood from the forest to a ‘Minimal extent’. The interviews carried out indicated that women collected firewood found at the margins of the forest, along the footpaths within the forest, and in deeper parts of the forest. It was established through interviews that the gender roles ascribed to women such as food preparation, accounted for the dominance of women in the collection of firewood from the forested lands. In her doctoral study conducted among communities living adjacent to Loita Forest, Westervelt (2017) affirms that firewood collection was mainly the role of women and the firewood collection was mainly done during the dry season because there was more cooking taking place during this time. The revelations of the KFS forest rules enforcement officer imply that the right to access the firewood from the forest for small-scale household use was contingent upon being a member of the CFA, having the ability to pay the royalty fee, and ability to abide by the forest laws and regulations. This revelation is in line with the research finding of Rotich (2019) and Mbeche *et al.* (2021) who observed that the forest adjacent communities within the Embobut forest and Mt Elgon forest in Kenya obtained the firewood harvesting permit by paying some royalty fees to the Kenya Forest Service.

It is clear from *Figure 3* that out of the 280 respondents, 12 (4.3 %) of respondents reported that the husbands and wives shared the responsibilities and rights over the collection of herbs for medicinal purposes from the forest to a ‘Great extent’, 29 (10.4 %) of the respondents confirmed to ‘Some extent’, 68 (24.3 %) of the respondents opined to a ‘Less extent’ and 171 (61.1 %) of the respondents revealed ‘Not at all’. The mean score value for the statement was 1.58, which indicates that there was an unequal intra-household gender relation and gender division of labour regarding the collection of herbal plants from the forest for medicinal reasons. The findings of the present study substantially contradict the academic revelation of several studies which observed that both elderly female and male

herbalists harvested herbal plants from state-managed forests in Kenya (Rotich, 2019; Rotich *et al.*, 2020; Westervelt, 2017). The verbal expressions of the KFS law enforcement officials indicate that men and women gained rights to access herbal plants growing in the forest through being members of CFA and herbalist FUG and payment of the royalty fee to the KFS.

As demonstrated in *Figure 3*, all 280 respondents (100%) affirmed that within their households, the husbands and wives did not share the responsibilities and rights over the hanging of bee hives and harvesting of honey from the forested spaces. The mean score value for the statement was 1.00 which implies that there was 'Minimal' gender sharing of intra-household responsibilities over the harvesting of honey within the forested landscapes. This revelation is in line with the scholarly documentation of Mutune & Lund (2016) who argue that men dominated the practice of beekeeping within state-owned forests in Kenya. However, it was highlighted during interviews that some women from the indigenous forest community (Sengwer) played a role in the processing of the honey and encouraged their husbands to join and practice bee-keeping with the forested landscape. However, beekeeping is a culturally male-dominated activity in Cameroon; Ingram (2014) noted that women are increasingly engaging in beekeeping through processing and sale. From the views of the KFS law enforcement officer, it was revealed that the right to access forest resources was gained through being members of the bee-keeping FUG and payment of the royalty fee.

As indicated in *Figure 3*, 9 (3.2 %) of the respondents indicated that the husbands and wives shared the responsibilities and rights over the collection of indigenous vegetables from the forest to a 'Less extent' while 271 (96.8 %) of the respondents advanced that the husbands and wives did not share at all. The mean score value for the statement was 1.03, which emphasises that there was 'Minimal' intra-household gender sharing of

responsibilities and rights over the collection of wild vegetables. During interviews, it was revealed that women collected indigenous vegetables such as *Chepkerta* (*Amaranthus* species), *Kisocho* (African nightshade/ *Solanum nigrum*) and *Nderem* (*Basella Alba*) as well as mushrooms from the forest. It was also reported that the women had more rights over how much the indigenous vegetables such as *Amaranthus Spp*, African Night Shade, and mushrooms, among others, that were collected from the forest were retained for household consumption and how much was sold to their neighbours.

As shown in *Figure 3*, 7 (2.5 %) of the respondents reported that husbands and wives shared the responsibilities and rights over the collection of wild fruits to a 'Less extent' and 273 (97.5%) of the respondents indicated that husbands and wives did not share at all. The mean score value for the statement was 1.03, which indicates that there was a 'Minimal' sharing of responsibilities and rights between husbands and wives during the collection of wild fruits from the forest. Through interviews, it was reported that the responsibility of the collection of wild fruits was shared between some husbands and wives because it depended on who had gone to the forest at that time and the availability of the wild fruits in the forest. This finding is in line with the arguments of some scholars who pointed out that both men and women had access rights to wild fruits found in forested areas in Indonesia and Kenya (Manginsela, 2016; Rotich, 2019). Although both men and women had access to fruits growing in the forest, numerous studies from Africa argue that women had more access to and use rights to wild fruits in Kenya and Uganda (Kalanzi *et al.*, 2020; Rocheleau & Edmunds, 1997). As observed by Kalanzi *et al.* (2020) women were involved in the collection of fruits for domestic consumption in Uganda.

CONCLUSIONS

From the above revelations, it can be inferred that there was gendered sharing of intra-household

decision-making powers over the use of forest land for crop farming to a 'Great Extent' and grazing of livestock or collection of livestock pasture to a 'Substantial Extent'. However, there was 'Minimal' gendered sharing of intra-household decision-making powers with regard to the collection of firewood, herbal plants, indigenous vegetables, and wild fruits from the forest as well as bee-keeping and honey harvesting within the forest. While confirming the Theory of Feminist Political Ecology, the male spouses dominated the decisions over the collection of fodder and grazing of livestock as well as bee-keeping and harvesting of honey within the forest. Some of the women gained decision-making powers over the collection of animal pasture and grazing of livestock in the forest when their husbands were absent. Only the wives had more decision-making powers over the collection of firewood and indigenous vegetables due to the argument that socio-cultural norms ascribed women to the responsibility of food preparation which confirms the assertions of the theory of Feminist Political Ecology which emphasises the significance of culture in accounting for the gendered differences in spaces and powers in access to natural resources.

There is supporting evidence indicating that husbands and wives played varied but complementary roles during land preparation, planting, weeding, and harvesting of crops grown in the forest. The gendered rights to engage in crop farming within the forest was influenced by the ability to pay the royalty fee, the time when trees are planted and the ability to protect trees from destruction. The extent to which male and female spouses engaged in the collection of fodder and grazing of livestock within the grasslands (glades) in the forest depended on; membership in CFA/FUG, ability to pay a monthly royalty fee to the KFS, socio-cultural norms, rainfall seasonality, ability to abide by the stipulated regulations, presence of male children within the household,

economic statuses, education background and the employment status of the spouses.

Further, the female spouses dominated the collection of firewood from the forest since food preparation was one of the gendered roles ascribed to women. With regard to the right to firewood, women gained access to firewood through membership in CFA, the ability to pay the royalty fee and the ability to abide by the forest laws and regulations. Some men from the indigenous Sengwer community participated in bee-keeping and harvesting of honey since they had indigenous knowledge of bee-hive making, were members of the bee-keeping FUG, had the ability to pay the royalty fees and abide by the community's informal traditional rules. Women dominated the responsibility of collecting wild vegetables and mushrooms, while the responsibility to collect indigenous fruits depended on the person that had gone to the forest and the availability of the fruits within the forest.

Recommendations

First, we suggest that the leaders of CFAs and FUGs should enlighten the CFA/ FUG members about the requirements for access to forest resources so that there is a gendered balance in access to forest resources. This could be done through public awareness during the CFA and FUG meetings as well as the use of mobile phone technologies to communicate forest-related information to CFA/FUG members. Second, the KFS officers and forest guards should coordinate with the adjacent forest communities in the protection and conservation of forest resources to promote sustainable use and management of Non-Timber Forest Resources for intra-generational and inter-generational gendered access to forest resources. This could be achieved by motivating the forest scouts and implementing the existing forest laws with impartiality. Third, the Kenya Forest Service, Non-Governmental Organizations and other key forest stakeholders should encourage on-farm

forestry to ensure that both men and women have access to Non-Timber Forest Resources within their homesteads. Fourth, the forest-adjacent communities should consider domestication of herbal plants, indigenous fruits, and wild vegetables; embrace modern bee-keeping methods; and adoption of modern-energy saving technologies to reduce the demand for Non-Timber Forest Products from the state-protected forests in Kenya. Fifth, we propose that political ecology researchers should examine the gendered sharing of decision-making powers, responsibilities, and rights over the exploitation of timber products within state-owned forests in Kenya and other developing countries.

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