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TRANSPARENCY AND COMMUNITY PARTICIPATION IN FOREST RESOURCE GOVERNANCE IN MT. ELGON REGION, KENYA

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ABSTRACT

The practice of good forest governance has been associated with reductions in poverty and community empowerment. This study assessed how the implementation of transparency and participation promote forestry practices under the plantation establishment for livelihood improvement scheme (PELIS) in the Mt. Elgon region. A sample size of 288 members of the Community Forest Associations (CFAs) and forest station managers drawn from three forest stations namely Saboti, Kimothon and Kaberwa were selected for the study. Focused group discussions and interviews administered through respondent assisted questionnaires were carried out to assess how the implementation of transparency and participation affect participants in PELIS. Local indicator variables were developed to assess transparency and participation. Chi-square tests of independence ($\alpha = 0.05$) were performed to examine the relationship between the local indicator variables among sites based on the hypotheses that there were no significant differences in the implementation of transparency and participation among the sites. The study found statistical significance in accessibility to necessary information and decisions ($p = 0.001$) and involvement in decision-making processes ($p = 0.002$). Electoral related vices, conflicts and minimal women representation in executive committees undermines CFAs governance. The findings of this study indicates that CFAs governance systems directly affect forest conditions. The study generates information to support the formulation of policies and laws that can strengthen governance systems to minimize developmental deficits among CFAs and enhance socio-economic stability. Improved governance of CFAs will contribute in implementing agroforestry programmes that promote sustainable forest management in Kenya.

Contribution/Originality: This study is one of the few studies that have investigated the contribution of governance system under the PELIS agroforestry system on forest resource management as a model that can be used to enhance sustainable forest management and contribute in increasing forest cover in Kenya.

1. INTRODUCTION

Participatory forest management (PFM) refers to mechanisms and processes that allow forest adjacent communities (FACs) who have a direct stake on the forests and the state agency in charge of forests to enter into jointly enforceable agreements that stipulate their respective roles, responsibilities, benefits and authority in the

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management of defined natural resources [1]. Participatory forest management has been institutionalized in forest management globally taking different forms such as joint forest management (JFM) in India and Ethiopia and community based forest management (CBFM) in Tanzania. Most recent studies have indicated that the forest area under the participatory forestry is more than 25% of the total global forests area with more countries developing PFM policies [2]. The greatest contributions of PFM have been combating persistent problems of deforestation, yielding better social and economic benefits and inclusivity in forest management that has reduced conflicts between state agencies in charge of forests and the local communities who initially felt excluded in forest management [3].

Participatory forest management was initiated in Kenya with attention directed to capacity building and initiation of income-generating activities targeting wealth creation for the livelihood improvement among the landless and the rural peasants [1]. The PFM model in Kenya is implemented by community forest associations (CFAs) and is better known as plantation establishment for livelihood improvement scheme (PELIS) [4, 5]. The PELIS system has contributed in poverty alleviation and conflict reductions [6, 7] and increased forest establishment at a lower cost [8]. This system is thus described as a necessary incentive in promotion of the payment for ecosystem services (PES) for the CFAs in their contribution to forest protection and conservation [9]. The PELIS program is anchored on the forest conservation and management act of 2016 and the forest act of 2005. Under this system the local communities are allocated portions of forest land after the harvesting of forest plantations upon which they plant tree seedlings, take care of them till the area form a closed canopy while they grow other food crops [10, 11]. In order to participate in PELIS system, the forest act of 2005 requires forest adjacent communities to register community forest associations (CFAs) and develop management plans for identified forest area before they enter into partnerships with the Kenya Forest Service (KFS). The associations are also granted user rights to the forest resources on the condition that these rights do not interfere with forest conservation [12]. These partnerships are applicable for both state forests and forests under local authorities.

The registered community forest associations are identified as key implementers of the PELIS program [13]. Section 50 of the forest conservation and management act of 2016 obligates CFAs to be responsible of the acts of the agent that contravenes the terms of the agreement between CFAs and the forest department. This gives potency to CFAs` central roles in the general administration of the program through member admission, plot allocations, provision of labour, communication and implementation of the general guidelines of the program [10]. In the face of the implementation of the PELIS program most of the CFAs in Kenya have been reported to experience wrangles associated with installation of office holders, plot allocations, non-involvement in decision-making processes and failure to adhere to rules governing PELIS implementation [14]. In addition, the lack of adequate formal education among the rural peasants hinders the implementation of forestry technical operations and the entrenchment of the principles of good governance [15]. The challenges associated with leadership may create conflicts, reduce member participation and consequently delay the realization of stable forest ecosystems in Kenya. Strengthening the governance of CFAs in the processes of decision-making and implementation of the PFM guidelines is a crucial pathway that assures corruption is abated and the views of the vulnerable are factored in the decision making processes. Additionally, good governance systems hastens the achievement of the millennium development goals (MDGs) for environmental sustainability and the eradication of poverty and hunger among communities undertaking PFM programs [16].

Transparency and participation are important pillars of governance affecting the operation of most social institutions [17]. Transparency involves access to key information which makes individuals and groups to make informed contributions to the decision making processes whereas participation involves the direct or indirect involvement of the stakeholders in the decision making processes in all the plans and programs in which they have interests [18]. Studies have indicated that transparency coupled with the empowerment of groups in decision-making processes is likely to result to high accountability and responsiveness in plans and policies [17].

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Kenya`s forestry sector contributes significantly to its economy by generating about 3.6% of the gross domestic product (GDP) in addition to employing more than one million people in both the formal and informal sectors [19]. Therefore, greater benefits of the Mt. Elgon montane forest, which is one among the five water towers contributing in regulating more than 75% of Kenya`s water resources, can be realized through effective management of the PELIS system targeting expansion of the forest puffer zones around the natural forest [20]. Inadequacy of empirical data on the influence of governance system on CFA members` role in increasing forest cover may delay entrenchment of necessary policies for forestry growth in Kenya. This study investigated the implementation of the two pillars of governance specifically transparency and participation and their related impacts on plantation forest cover under the PELIS system among CFAs in three forest stations namely Saboti, Kimothon and Kaberwa in the Mt. Elgon region, Kenya. The findings of this study are expected to contribute in addressing both developmental and institutional failures of CFAs as necessary initiatives of realizing stable forest ecosystems and increasing plantation forest cover.

2. MATERIALS AND METHODS

2.1. Study Area and Study Sites

This study was carried out in Mt. Elgon ecosystem, a trans-border mountain of importance in conservation for both Kenya and Uganda. The Mount Elgon ecosystem is located north of Lake Victoria along longitude 01° 07′ 06″ N and latitude 34° 31′ 30″ E [21]. The montane forest vegetation is spread between 2000 and 3500 meters above the sea level. The ecosystem provides a habitat that supports diverse flora and fauna. It also serves as the source of Nzoia and Malakisi rivers that support more than 3 million people around the catchment [22]. The study sites were CFAs operating in three forest stations namely, Saboti, Kimothon and Kaberwa. Both Saboti and Kimothon fall within Tran Nzoia County while Kaberwa lies in Bungoma County. The study sites in the Mt. Elgon ecosystem are as shown in the Figure 1.

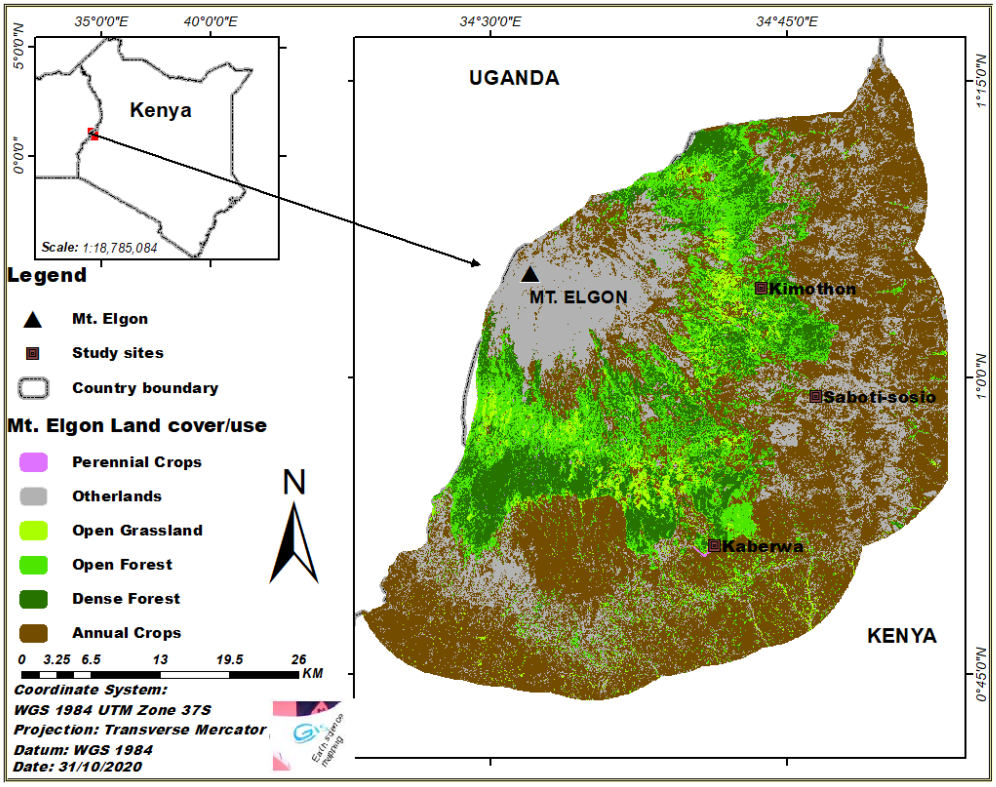

Figure 1. Study sites in Mt. Elgon region.

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2.2. Sampling and Data Collection Procedures

This study employed social survey technique to assess the characteristics and operations of the CFAs in Mt. Elgon region. Simple random sampling technique was used to identify the respondents. A sample size of 288 participants in PELIS Table 1 was selected for study based on the Singh and Masuku [23] sample estimation methods. The respondents were randomly selected from the list of registered members in their respective associations. The participants in the study were plot owners who were actively involved in the affairs of their associations. They were also expected to be resident at least 5 kms from the edge of the forest. The size of the respondents Equation 1 was calculated at a confidence interval of 95% and a standard deviation of 0.05. Equation 1presents sample size estimation method used.

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

Where;

e- the level of statistically significant set (0.05).

N- the population size of the study segment.

n- the sample size of registered members.

The distribution of the sample size across sites, Table 1 is as shown:

Table 1. Proportion of size selected in different stations.

Station	Study population	Sample contacted
Saboti	233	111
Kimothon	208	98
Kaberwa	134	79
Total	575	288

The study employed structured questionnaires that were administered through respondent assisted interviews, field plot visits and 20 focus group discussions of 5-12 participants to collects data on the implementation of the PELIS system. The respondents were asked whether they were informed of all the activities carried out by executives. The key informants composed of the CFA leaders who were asked to state the various channels used in the passage of information to the ordinary members and impacts associated with the passage of information. The involvement of members in running of their associations was investigated to determine the level of participation. Adoption of members` views, means used to install representatives, the willingness to accommodate women in key positions of CFA leadership, issues limiting women participation in leadership and conflicts within the association were also investigated as possible factors affecting forest components under the PELIS system.

To enhance the reliability of the research instruments, the research questionnaire was pre-tested in a pilot study. A high reliability of 0.7 was obtained by estimating consistency in the responses when questionnaires were administered repeatedly to the few selected participants in PELIS from each forest association. Ethical considerations were also considered when seeking the consent of the respondent to participate in research.

2.3. Analytical Procedure

The demographic information which is an important factor influencing respondents` participation in PFM was assessed based on the gender, age, educational status and the proportion of representation in elective positions. The data on demographic characteristics was analyzed using descriptive statistics and presented in tables.

In the assessment of transparency and participation, a model of local indicators describing the study variables Table 2 was developed to help investigate transparency and participation among the associations [24]. The data was later analysed by descriptive statistics to summarize the results. Chi-square tests of independence were performed to test the null hypotheses that there were no significant differences in the implementation of the local indicator variables of transparency and participation among sites. These involved determining the relationships

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between accessibility to decisions made and satisfaction with information sharing among sites and the relationships between meeting attendance, involvement in decision-making, participations in elections, readiness to accommodate female leadership and cases of conflicts among study sites.

Table 2. Study indicator variable for the pillars of governance.

Aspect of governance	Indicator variables
Transparency	i. Access to information on all decisions made ii. Satisfaction with information sharing iii. Effects of dissatisfaction on CFA members iv. Activities where members were not involved v. Approaches used in passage of information
Participation	i. Attendance in meetings ii. Participation common/joint activities iii. Participation in elections iv. Factors undermining elections v. Adoption of views in decision making vi. Effect of non-adoption of views on members vii. Readiness to elect women in key executive positions viii. Factors limiting the election of women in key positions. ix. Occurrence of conflicts and forms of conflicts

3. RESULTS AND DISCUSSIONS

3.1. Demographic Characteristics of Participants in PELIS

The proportion of participants in PELIS were found to be male (57%) and female (43%) Table 3. This distribution could be associated with the cultural norms that place men as heads of the families and de facto spokespersons [25]. A growing literature on the gender roles on forest conservation indicate that women are more concerned in supporting their capacities in relation to climate change and mitigation adaptation, REDD+ and agroforestry. Men are interested in forest-based enterprises and markets mechanisms of non-timber products [26, 27].

Table 3. Summary of demographic information in stations.

Variable	Description	Station			Average (%)
		Kaberwa	Saboti	Kimothon	
Gender	Male	56.5	52.4	64.3	57
	Female	43.5	47.6	35.7	43
Age	Below 25	4.3	9.5	7.1	7.0
	25-45 years	56.5	59.5	75.0	63.7
	Above 45	39.2	31	17.9	29.3
Education	Primary	65.2	62.0	82.1	69.8
	Secondary	21.7	38.0	17.9	25.9
	Tertiary and above	13.1	0.0	0.0	4.3
Elected officials	Male	57.1	66.7	71.4	65.1
	Female	42.9	33.3	28.6	34.0

Participants aged below 25 years were comparatively fewer to other age classes Table 3. The members of this age category could be in urban areas pursuing `white collar` jobs while others are still be in learning institutions completing their studies [15]. CFA members aged between 26- 45 years were dominant in all the forest stations since they have more dependencies in their families driving them to participate in PELIS to meet their increasing needs [25]. Participants aged above 45 years were fewer than those between 26-45 years. An increase in age to certain level will naturally result to a decline in capability, interests and availability for one to engage in forest-based practices [28]. Participants aged above 45 years could thus be having alternative sources of income and incentives making them to allocate more of their time on non-agroforestry activities [10].

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Majority of the members (69.8%) participating in PELIS in Mt. Elgon attained primary education only. With this level of education, most of them lack the requisite training to help them acquire alternative jobs in urban areas thus end up being dependents of the PELIS program. Nonetheless, education level may negatively influence participation in forest-based programs by increasing the chances of the educated people in engaging in alternative forms of income generation. Additionally, educated people are reported to perpetuate `elite capture` of local forest programs by influencing decision making and benefit sharing at the expense of the less educated people [28, 29]. On the contrary, educated people may be more effective in the understanding and execution of technical forest operations such as thinning and pruning. They are also likely to participate more since they understand the forest benefits better [30].

The average composition of men in various offices were 65.1% while their female counterparts were 34.9%. The population of female representatives in the executive positions is still low due to the local structures that allow men to dominate key executive positions. Limited participation of women affects institutional efficiency [31]. Greater participation of women contributes in improving forest conditions, conflict resolutions and the implementation of collective actions aimed at enhanced forest and natural resource conservations [26, 31].

3.2. Transparency and Participation on Forest Conservation

The state of the implementation of transparency and participation, Table 4, as assessed through the local indicators was found to be as follows;

Table 4. Status of transparency and participation.

Aspect of governance	Indicator	Study site			'x²' Score
	Variables	Saboti (%)	Kimothon (%)	Kaberwa (%)	
Transparency	Access to decisions made	90.0	60.7	60.9	0.001
	Satisfaction with information sharing	95.0	65.3	58.4	0.001
Participation	Meeting attendance	83.9	93.0	61.7	0.002
	Involvement in decision making	85.7	92.9	60.9	0.002
	Participation in election	81.0	71.4	74.0	p>α
	Readiness for female leadership	65.0	50.0	65.2	p>α
	Cases of conflicts	28.6	50.0	74.0	0.002

3.2.1. Analysis of Transparency

Transparency refers to the degree to which information is made available to outsiders and ordinary CFA members, thereby enabling them to have a voice about decisions made by their executive committees [32]. Based on the state of the implementation of transparency Table 4, the participants in PELIS are satisfactorily (72.9%) informed of the all the decisions made by their executives. Pearson`s chi-square test independence on the approval level of information sharing among the stations was found to be significant $x^2(2, N=93)$ 15.139, $p = 0.001$. This could be attributed to the residents` proximity to the forest stations that were central for hosting most of the CFA activities and the functional structures of calling members to attend meetings across the stations. The leadership of associations used posters, village and compartment representatives, short message service (SMS) via mobile handsets and public meetings to pass messages of invitation to attend meetings. High approval levels in information sharing shows existence of transparency among the associations and could contribute in reducing abuse of power and intra association conflicts [33]. Transparency promises free flow of information accessible to those who are concerned, it creates a sense of accountability as members can access information, they need to assess its validity, legality and correctness before making any decision [34]. CFAs founded on strong transparency pillars will actualize better decision making with regard to community conservation programs, utilization of membership fees and plot allocations. Such associations record fewer cases of corruption, inequality and register effectiveness on how they handle sensitive information concerning members within the PELIS program. It is therefore expected that in

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the absence of conflicts, members will develop trust in their officials and commit their strength in the pursuit of conservation activities [33]. All the CFAs reported cited near similar factors in which they found not to have been adequately informed about, Figure 2.

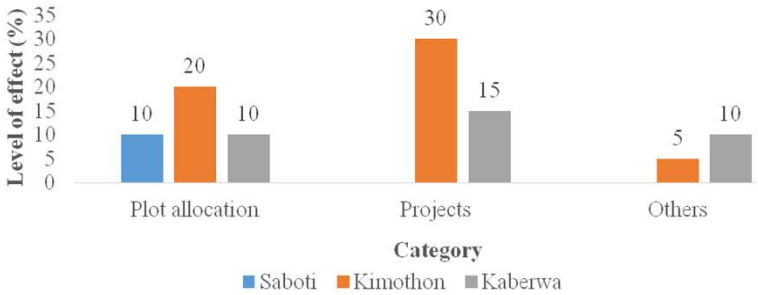

Figure 2. Factors associated with minimal information disclosure.

On average, the causal factors for disapproval of information sharing were; plot allocation (40%), implementation of new projects (45%) and others such as trainings and presence of visitors (15%). The results demonstrate that allowing openness in flow of information in relation to the implementation of the new projects and the allocation of plots may contribute in promotion of equity and poverty reductions, strengthen the practice of transparency among associations and inspire optimistic participation towards forest conservation [35].

3.2.2. The State of Participation

Participation refers to the involvement of beneficiaries in the planning, design, implementation and maintenance of projects [36]. Stakeholder participation in decision making helps increase legitimacy of decisions made, improves access to information and enhance the quality of decisions made, it makes the implementation process of forestry policies effective and efficient [37]. The application of stakeholder participation in decision-making brings about substantive, procedural and contextual effects among participants in forest conservation [37].

On average 79.8% of all the participants in PELIS in Mt. Elgon believed that their views were considered during important meetings such as the annual general meetings (AGMs) in which important decisions concerning the associations were made. A Chi-square test of association on involvement in decision making among the stations was found to be significant, $x^2(4, N=93) = 16.582$, $p = 0.002$. The results indicate wider involvement in decision making on affairs of running the association across the sites. Based on these results it is expected that common challenges affecting PELIS program such non-adherence to laid down guidelines resulting to seedling mortalities can be reversed to through wider stakeholder participation in enforcement of the agreed guidelines [13, 21]. Figure 3 illustrates the effects of non-involvement in decision-making processes. Participants in the program who felt their views were not considered in decision-making process reported to have gone through short-lived emotional reactions, attitude change, had limited participation in subsequent meetings and others described it as being a morale killer.

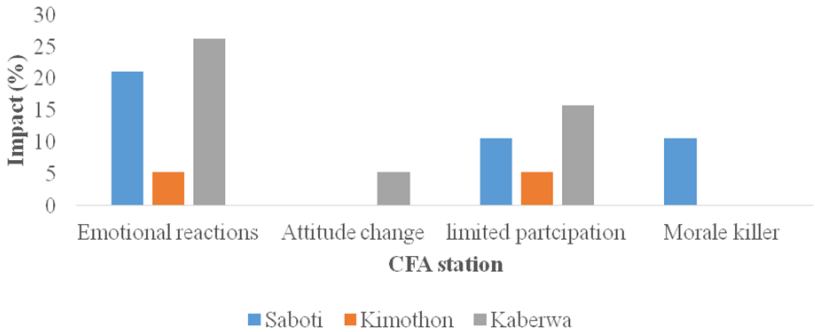

Figure 3. Effects of non-involvement in decision-making.

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The majority of the members who went through short-lived emotional reactions (52.6%) may find ways of expressing their frustrations; they may fail to follow set forestry guidelines of operations especially those involved in the management of young and tender seedlings [19].

All CFAs had office terms and mechanisms of installing office holders. Elections were held after 5 years in Saboti Station and after every 3 years in both Kimothon and Kaberwa stations. A chi-square test of independence to examine the level of participation in elections among sites were found not to be significant ($p > \alpha$). Saboti Station employed the queue voting system preferably known as *mlolongo* system while Kimothon Station used the secret ballot system. Kaberwa conducted elections through the delegates elected to represent each forest beat. On average, 75.3% of the respondents indicated to be satisfied with various electoral related systems in the study area further demonstrating application of democracy as a way of installing leaders to serve in particular offices. Figure 4 illustrates some of the electoral related vices witnessed in the study sites.

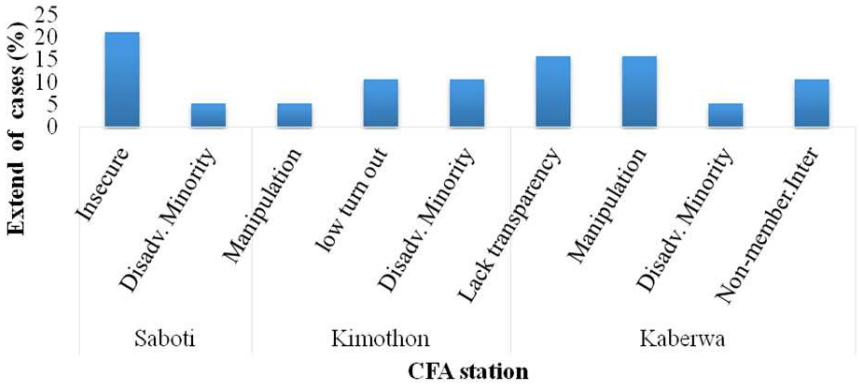

Figure 4. Election related vices.

The results showing that the use of queuing system in Saboti Station was more prone to insecurity (21.1%) since it exposes the choices made by having supporters line along preferred candidates than disadvantaging the minority communities (5.3%). While the use of secret ballot of secret ballots in Kimothon was found to disadvantage the minority communities more than other vices; low turnout for voting and use of voter manipulations. The use of delegates in Kaberwa was found to lack transparency and was equally prone to manipulation as opposed to other vices; disadvantaging the minority communities and interference by non-registered members. Electoral related vices result in conflicts among societies creating both social and economic disruptions. The low voter turnout for instance altar the translation of the local community preferences into required policies that aid their operations in favour of conservation [38].

The influence of gender on participation in PELIS was assessed to find out members' perception on intrinsic relationship between women in key positions of decision-making and related effect on members' participation in PELIS. Figure 5 illustrates the readiness to accommodate women in positions of leadership across the sites.

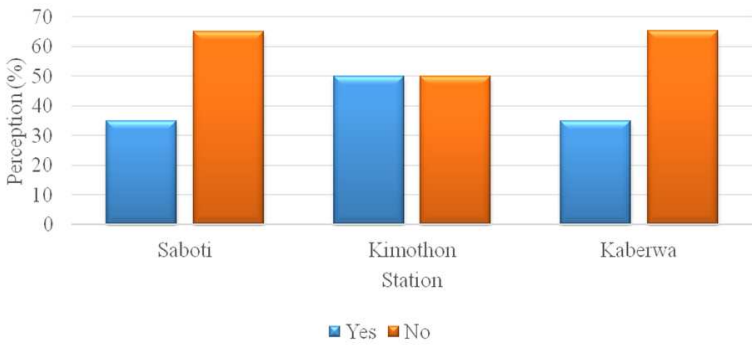

Figure 5. Effect of gender roles on participation in PELIS.

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On average, 60% of the respondents indicated that the gender of the office holder did not affect their participation in PELIS. A chi- square test of independence to examine the effect of gender on participation among the stations was found not to be significant ($p > \alpha$). The results indicating change of attitude on women roles and leadership demonstrating readiness to accommodate women in key positions of decision making in the associations. This is because women are the primary beneficiaries of the forest, and are directly affected by its degradation and unavailability [39]. A higher proportion of women in decision making bodies was reported to have improved forest conditions this was attributed to the fact that women who take responsibilities have incentive to follow rules [39]. Those who did not support women in key positions of decision making noted that women were weak and prone to manipulation, forest area being insecure to them, minimal accessibility to the forest compartments and lack of time to balance between family and forest work demands.

All stations reported conflicts. However, the proportion of cases of conflicts reported were highest in Kaberwa Station followed by Kimothon Station and least in Saboti Station. The Pearson's chi-square test of association on cases of conflicts among the stations were found to be significant, $x^2(2, N=93) = 12.95$, $p = 0.002$.

This result can be associated with the nature of conflicts across the stations Figure 6.

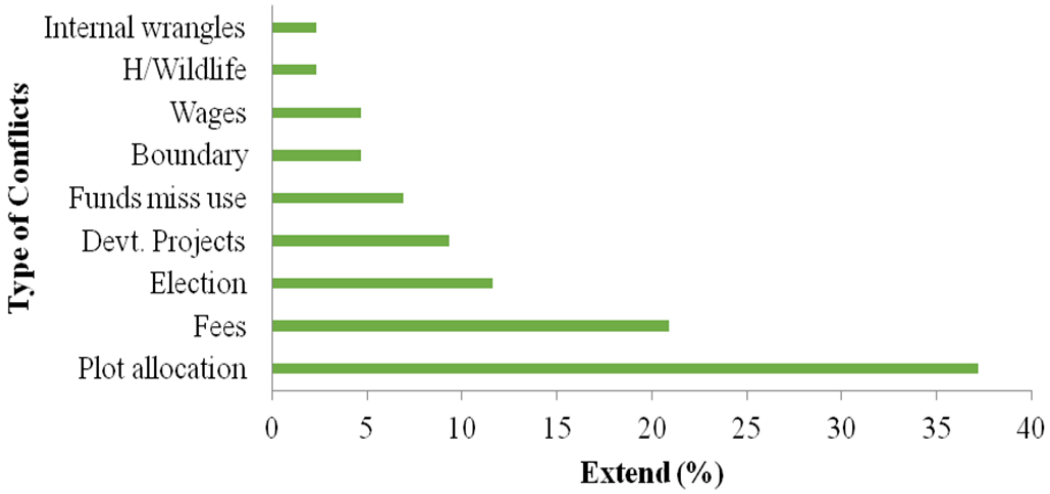

Figure 6. Cases of conflicts in associations.

The results indicate that most of the conflicts in Mt. Elgon are related to allocation of plots. Members complained not being informed on new allocations in some blocks and lack of fairness in the allocations. The officials however indicated that there were many requests for allocations against the available PELIS, in addition, some members acquired plots to lease resulting to non-compliance with the proposed guidelines. It was also established that the subscriptions fees charged, averaged at USD 20 annually were very high for most rural peasants to pay. Conflicts normally bring negative effects however, some conflicts may produce positive results, if well managed; developing remedial measures to address the root causes of conflicts can be an avenue of improving governance in communities and fostering peace. The negative effects of conflicts include; psychological responses where people lose interest in work and are dissatisfied with work, behavioural responses that could result in aggression towards others or work sabotage and physiological responses resulting to respiratory problems, headaches [40]. Occurrence of conflicts within communities involved in PELIS may result in delayed implementation of conservation programs and contribute to withdrawal of members in the association hence impair progression of forest regeneration program [40].

4. CONCLUSIONS AND RECOMMENDATIONS

The state of information disclosure from the CFA committees to ordinary members was found to be satisfactory. This is attributed with the various channels used in the passage of information and the close proximity of the members to the forest stations that served as centres for holding meetings. Lack of timely and adequate

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disclosure of information regarding the allocation of PELIS plots and implementation of new projects were found to undermine transparency with the likelihood of creating conflicts. The members involvement in decision making process and civic duties were found to be sufficient. However, non-involvement in decision-making affected implementation of PELIS guidelines as it was observed to result in emotional reactions, tilting the attitude of participants towards PELIS system and limiting participation in joint forest programs. All CFAs demonstrated understanding of democracy as exemplified in the mechanisms of installing leadership for specific terms. Nevertheless, electoral related vices and other forms of conflicts in associations were observed as a threat to socio-economic wellbeing. The readiness to accommodate women in key positions of decision-making was observed as a desirable change in attitude towards firming up the role of women in leadership. Strengthening participation by increasing women in executive positions and facilitating adequate and timely disclosure of information is expected to contribute in supporting conservation initiatives.

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Authors' Contributions: All authors contributed equally to the conception and design of the study.

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