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UNRELENTING COMMUNITY ENCROACHMENT AND DEFORESTATION: THE CASE OF MAASAI MAU FOREST IN NAROK COUNTY, KENYA

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ABSTRACT
Globally and more specifically in developing countries, forest covers are dwindling as a result of human encroachments and deforestation. This is regardless of the numerous forest conservation zlaws and policies in force. The overall study objective was to ascertain the forest conservation status of Maasai Mau Forest in Narok County, Kenya. The specific objectives were to establish the extent to which the relevant state agencies have succeeded in warding off encroachment and deforestation; in effecting reforestation and enlisting Community Forest Associations (CFASs) participation in their forest conservation activities. However, the study findings showed minimal success in the twin objectives since forest encroachments and deforestation continue unabated as evidenced by the rising number of forest-related crimes, illegal forest settlements and reported cases of deforestation. Evidently, existing legal enforcement mechanisms are ineffective. Available forest protection programmes and policies were found to be weak, inadequate and/or poorly coordinated. The practical conservation role of CFAs was equally found to be rather minimal. It is therefore, concluded that the objective of safeguarding the Maasai Mau Forest from human encroachment and deforestation remains a long shot. Hence, there is the need to strengthen the relevant legal framework, institutions, stakeholders, policies and programmes.

Keywords: Crimes, Conservation, Deforestation, Non-Gazetted forest, Forest law enforcement, Forest degradation, Joint Enforcement Agencies, CFAs.
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INTRODUCTION

In the past, the obligation to protect the previously vast forest cover was not a felt need. However, with the rising demand for tree uses, population increase, expanding industrial and agricultural activities, the need to protect the valuable but diminishing natural resource has become paramount (Mathu, 2007). As observed by Van (2013), the global reduction of forest cover in natural, gazetted, non-gazetted and man-made forests is mainly a result of forest-related crimes. According to the author, these crimes range from illegal logging, charcoal burning, fuel wood harvesting, human encroachment, corruption, arson and clearing of forest vegetation among others (Van, 2013). Unfortunately, loss of forest cover is associated with several socio-economic and political challenges. These include poverty, drought, famine, diminished land productivity, ethnic strive among others.

Available empirical data from Africa and the developed world among others (Boekhout, 2008; Reboredo, 2013; Van, 2013) suggest weak enforcement of environmental laws and forest conservation policies; thus, resulting in massive degradation and destruction of forest cover. Additionally, the relevant forest and environmental agencies either lack the capacity to execute the respective mandate or are outright corrupt and devoid of integrity. This is evidenced by the many cases of documented bribery and/or condoning of illegal logging and harvesting of wood fuel by the neighbouring communities (Reboredo, 2013).

Recognizing the dangers caused by the massive forest destruction globally, the World Bank (2006) organized three regional ministerial conferences across three continents namely, Europe, Africa and Asia. The key objective of the conferences was to sensitize the political class to champion forest management programmes and issues across the continents. Indeed, and further to the 2003 World Bank inter-ministerial conferences, the declaration on African Forest Law Enforcement and Governance (AFLEG) by African countries and European Commission was to show commitment by African countries in implementing reforms aimed at protecting forests.

Several previous studies (Mondiale, 2006; Mathu, 2007; Blaser, 2010) among others tend to attribute loss of forest cover and biodiversity in gazetted forests to inadequate staffing and implementation of forest conservation policies, weak oversight institutions and absence of robust conservation programmes. Additionally, there is a common tendency by the state agencies to treat deforestation as more of an environmental rather than a socio-economic and/or political problem. As a result, there is a shortage of available empirical studies on the problem of human encroachment, forest-related crimes and deforestation. The identified information lacuna therefore, prompted the authors of this paper to explore factors associated with the rampant encroachment by illegal forest settlers, the attendant forest-related crimes and deforestation of the Maasai Mau non-gazetted forest in Narok County, Kenya.

LITERATURE REVIEW

Sustainable Re-afforestation Activities

Sustainable re-afforestation involves the process of planting and establishing a desired forest community in specific areas (EGSSAA, 2015). The most important aspect of the sustainable re-afforestation is not by the selection of suitable tree species for plantation but also ensuring the forest comprises robust re-afforestation policy and management (EGSSAA, 2015). Then again, MacDicken et al. (2016) observed that sustainability of forest cover also includes re-afforestation of depleted natural forests, woodlands and other tree covered areas. On the other hand, the Sustainable Development Goals (SDGs) by United Nations (2012) underlined the need to balance objectives and potential trade-offs between poverty reduction, growth and sustainability. According to Goal 15, sustainably managed forests help to combat desertification, halt and reverse land degradation and guard against loss of biodiversity. On its part, Goal 13 advocates for urgent actions to combat climate change and its impacts. The anticipated actions place forest management and sustainability within the international development framework and underscore the importance of these objectives in both developing and developed countries. However, Downs (2013) observes that sustainable conservation is facing a lot of challenges globally. For instance, in identifying and verifying the legality of timber and other wood-based raw materials used by the forest products industry. Blaser (2010) noted that corruption, poor governance and political sabotage hinder effective forest management and conservation. Mondiale (2006) further asserts that weak capacity and compromised institutions prevent law enforcement agencies from successfully managing, conserving and rehabilitating forests. Other challenges include weak communication gadgets, inadequate surveillance equipment and uncertainty surrounding land use and land use changes (Blaser, 2010).

Ongugo et al. (2008) assessed the role of community forest associations in Kenya. According to these authors, in Africa, the idea of controlled cultivation of forests and sanctioned harvesting of forest resources like firewood, honey and medicinal plants is in line with sustainable forest management and re-afforestation (Ongugo et al., 2008). However, other scholars such as Soi (2015), Chebii (2015) and Kamau (2014) maintained that sustainable re-afforestation can only succeed if and when political patronage and incitement are relinked from the process, stakeholders are involved through civic education, illegal settlers are evicted, dependence on forest resources by neighbouring communities is eliminated and all forms of illegal activities such as harvesting of wood fuel, logging, farming and grazing are routed.

The Kenya Government enacted the Forest Act of 2005 which among others proposed the Plantation Establishment and Livelihood Improvement Scheme (PELIS) as a framework for instituting principles, legislations and strategic forest management and conservation goals and objectives. Additionally, the Act established the semi-autonomous Kenya Forest Service (KFS) to manage resources and enforce the relevant laws and regulations. It also promoted the creation of a professional forestry society and commercial tree growing activities (Mathu, 2007).

ROLE OF COMMUNITY FOREST ASSOCIATION OFFICIALS

Wabusya (2014) observed that donors and well-wishers prefer working with Community Forest Associations (CFAs) in formulating policies and strategies aimed at conserving tree-cover and biodiversity. In particular, the involvement of CFAs in forest conservation and management activities ensures the viability of the forests since it empowers neighbouring communities to use the forests sustainably to generate incomes and improve their livelihoods. In fact, Chebii (2015) and Koech et al (2009) maintained that by enabling CFAs to have a voice in the conservation of local forests encourages participatory forest management and implementation of its principles. This arrangement has yielded significant socio-economic and cultural benefits to the neighbouring communities.

METHODS

Site Description

The Mau Forest is one of the most extensive natural forests in existence in Kenya and East Africa as a whole. The forest is subdivided into five main reserves namely Eastern which covers an area of 66,000 ha, Western 22,700 ha and South-western Mau 84,000 ha, Trans-Mara 34,400 ha and OlPusimoru which is the smallest at 17,200 ha. A sixth large block which has not yet been gazetted is the Maasai Mau with an area of 46,000 ha. The Mau Forest which sits on a trust land has the highest number of trees and animal species in the country. The high cover of forest grass and the bamboo thickets gives the forest its naturalist characteristic. However, the forest has lately experienced several challenges such as encroachment by illegal settlers, deforestation, logging, charcoal burning, arson, grazing, farming and loss of biodiversity (BirdLife International, 2017; Mondiale, 2006; Soi, 2015). The most recent challenge is the including politicization of the reserve (the resettlement of the communities in the forest). There has also been massive and destructive logging especially in areas of the forest that are rich in biodiversity (BirdLife International, 2017).

Research Design

The study employed a descriptive and cross-sectional design. This is the most predominant design employed in the social sciences. The design is mainly identified with the survey research method of data collection whereby a researcher asks a random sample of individuals to respond to a set of questions about a particular phenomenon. Such researches are carried out in a natural setting thus permitting the researcher to adopt a random probability sample. The researcher is therefore, able to make inferences to broader populations and to generalise the findings to real-life situations, thus maximizing the external validity of the study.

Sampling Procedure

The study participants comprised of KWS, KFS and County Rangers. From a target population of 294 cases, 143 respondents were proportionately selected comprising of 24 KWS, 46 KFS, 15 County Rangers, 50 CFA representatives and 8 Chiefs. The study adopted stratified random sampling, a non-probability sampling procedure which is suited to the qualitative research design adopted by the study. The design enabled the researchers to stratify the study population into the five categories. The choice of these categories of respondents was informed by the assumption that the respective cases had first-hand knowledge of the study topic and were therefore better placed to provide the relevant data and information. Fisher et al (1998) principle of sample stratification was employed to develop an appropriate sample size thus, owing to the heterogeneity of the target population, a design effect of 1.5 was used. The identified Fisher et al (1998) formula is illustrated below as follows:

$n=Z^2pqD/d^2$

Where:

n= the desired sample size;

Z= the standard normal deviation, (1.95) which corresponds to the 95% confidence interval

P= the proportion of the target population estimated to have a particular characteristic (p=estimated, 0.25 was used);

Q=1-P =0.5; D=the design effect, usually 1.5

d=the degree of accuracy, which is 0.05;

$$Thus, n = \frac{1.95^2 * 0.25 * 1.5 * 0.25}{0.05^2} = 143\ Respondents$$

The above identified method helped to randomize the five categories of respondents. However, the selection of the respondent categories was purposive since it targeted persons deemed to be knowledgeable about the study subject. The randomly selected respondents were asked to fill the survey questionnaire.

RESULTS AND DISCUSSION

Respondents Demographic Characteristics

In relation to the age of the respondents, result shows that the views and opinion of most of the people in the population were captured in the study. Majority of the respondents were aged 45-55 years (36%), 34% were 31-44 years, 16% were aged 18-30 years while those above 55 years were 14% as shown in Figure 1.

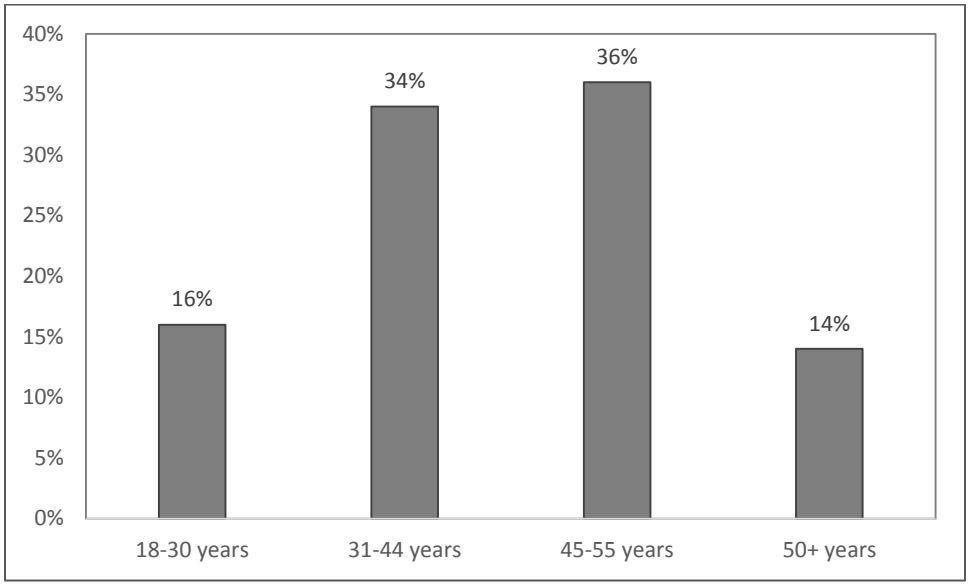

Figure 1: Respondents Age Distribution

Education levels of the respondents were also crucial since it has an implication on the level of understanding of the effect of deforestation in the area. It also has an influence on the type of occupation, in the sense that a population that has a higher formal education tend to have other occupation options to undertake other than stay in the community and engage in manual work that leads to forest degradation by the residents. The results on literacy levels were considered since it influences the knowledge and understanding of the respondents. The results are shown in Figure 2.

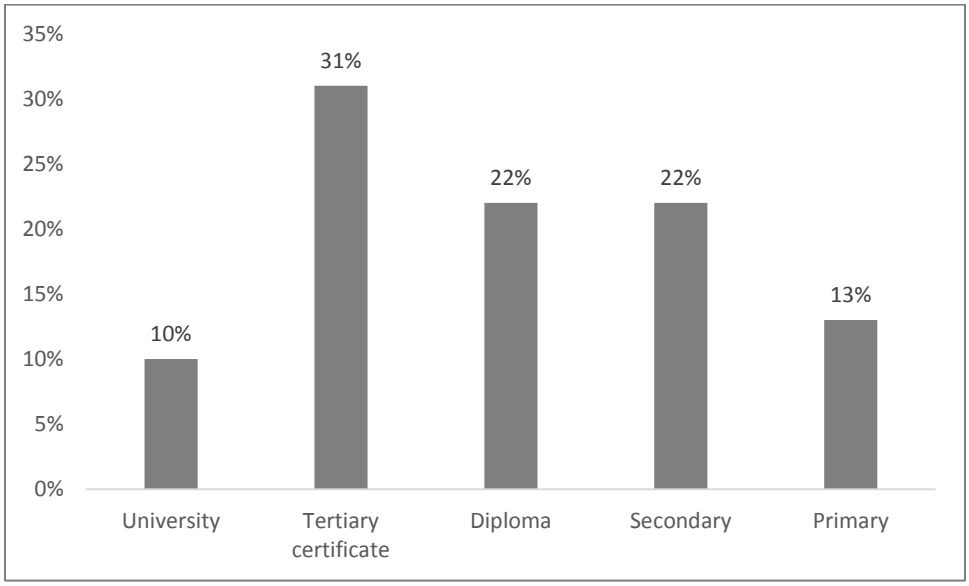

Figure 2: Respondents Highest Education

High literacy levels were recorded from the respondents showing a good understanding of the subject matter. Specifically, 31% had certificate qualifications, 24% had Diploma qualifications

and 22% had secondary education. Only 13% had attained a primary level of education while only 10% of the participants had attained University Education.

In relation to years lived near the forest, a very significant proportion of the respondents (43%) lived around the forest for more than 20 years, thus implying that they were informed and qualified to give views on forest activities and the level of deforestation. It shows that 27% of the respondents had lived around the forest for between 11-20 years. The remaining 21% and 9% had lived around the forest for 6-10 years and 0-5 years respectively. This shows that those respondents who participated in the study had adequate knowledge of forest management activities.

Perceived Level of Re-Afforestation

One of the key activities in forest conservation is the process of re-afforestation. This study considered various re-afforestation activities including the planting of trees, training programmes, assisting the community in understanding effective methods of using the forest to enhance their livelihood. On whether the community is involved in the process of planting trees as a way of managing the forests, the opinion of respondents was sought using a Likert satisfaction scale as presented in Table 1 below:

Table 1: Community Involvement in Tree Planting

Enforcement Agencies	Very Dissatisfied (%)	Least Satisfied (%)	Total
KWS & KFS officials	16.4	83.6	100
County Rangers	27.3	72.7	100
CFA officials	17.6	82.4	100
Chiefs	14.3	85.7	100

The results indicate 83.6% of the interviewed respondents from KWS and KFS were satisfied to a small extent and 16.4% were not satisfied at all in their involvement of forest conservation process. Also, 72.7% of respondents of county rangers were least satisfied with the community involvement in the forest conservation measures. Similarly, 82.4% of respondents from CFAs and 85.7% of the chiefs were least satisfied with the community involvement in conservation exercise. This implies that the agencies were not satisfied with how the re-afforestation was being done through the initiative of tree-planting. Sessional Paper No. 1 of 1968 aimed at generating guidelines on how the government can source funds for policy implementation and the need to categorize forests in to public, county and private forests. When these provisions are reviewed by the law enforcement agencies, it provides a scenario of a high level of dissatisfaction as many of these provisions have not been implemented leading to degradation of the forests by the very communities that are to conserve them. The study also sought to establish respondents' views on whether communities neighbouring the forests are

equipped with appropriate forest conservation methods. Their responses were as shown in Table 2 below*:*

Table 2: Level of Satisfaction with Programmes Equipping Neighbouring Communities with Appropriate Forest Conservation Methods

Enforcement Agencies	Very Dissatisfied (%)	Least Satisfied (%)	Total
KWS & KFS Officials	63.6	36.4	100
County Rangers	100.0	0.0	100
CFA officials	79.4	20.6	100
Chiefs	85.7	14.3	100

Table 2 indicates that 63.6% of respondents from KWS and KFS were not satisfied at all and 36.4% were least satisfied with the programmes that were used to equip the smallholder farmers with appropriate conservation methods. They cited the Mau Forest Land Policy system as a failed conservation method because not everybody who was licensed for the system had goodwill for the project. Similarly, 100% of the respondents from county rangers were not satisfied at all with the programmes in the sense that the programmes had no impact on the conservation of the forest and hence did not see the need of those programmes. Similarly, 79.4% and 85.7% of the respondents from CFAs and Chiefs felt that the local communities were not committed in the conservation efforts making the entire process not to be effective. This implies that the respondents from all the four agencies were not satisfied with the programmes being offered to enhance participation of the communities and smallholder farmer's appropriate use of the forests by the communities. Regardless of the sessional paper effort to protect the forest, it brought into the forest a group of people who were not keen on either preserving the forest or leaving the forest. In most developing countries, the literature indicates the need to involve the local community in the forest.

On whether the community has access to use of forest resources to meet their basic need such as food, firewood and building material, it was noted as follows from the respondents where five = Very Satisfied (**VS**), 4 = Satisfied (**S**), 3 = Neutral (**N**), 2 = Not Satisfied (**NS**) and 1 = Very dissatisfied (VD) and LS = Less satisfied as presented in Table 3.

Table 3: Community Access to Forest Resources

Respondents	VD	LS	UN	S	VS	Total
KWS & KFS Officials	29.1	29.1	5.5	21.8	14.5	100
County rangers	45.5	9.1	18.2	18.2	9.1	100
CFA officials	29.4	14.7	8.8	32.4	14.7	100
Chiefs	14.3	57.1	14.3	0.0	14.3	100

Out of the 143 respondents, 58.2% from KWS and KFS were dissatisfied with the level of community access to forest resource. Also, 54.6% of the County Rangers were dissatisfied with the community access to forest resources. On the other hand, 47.1% of CFA representatives were satisfied with community access to forest resources. Similarly, 71.41% of Chiefs were not satisfied with the process (Table 3). This shows that there are mixed reactions on the extent to which forest resource access leads to forest conservation. Dissatisfaction by the respondents may be attributed to the Forest Act Cap 385 of 1942 which was supposed to define the level of involvement by the communities in the forest conservation process. However, the political class manipulated the directive to benefit themselves and their kinsmen thus, leaving the neighbouring communities with a minimal role to play in forest management and usage. Hence, most plans employed to conserve the forest by the government through the various agencies have not borne fruits since the communities around the forests have minimal participation and therefore lack a sense of ownership of the forest resource.

On whether making tree seedlings available to the community members were considered as a strategy for enhancing forest conservation and management, responses were as follows.

Table 4: Availability of Tree Seedlings to Community Members

Respondents	VD	LS	UN	S	VS	Total
KWS & KFS Officials	21.8	36.4	5.5	14.5	21.8	100
County rangers	9.1	36.4	18.2	18.2	18.2	100
CFA officials	20.6	35.3	8.8	2.9	32.4	100
Chiefs	14.3	57.1	14.3	14.3	0	100

Out of the 46 KWS and KFS respondents, 58.2% were dissatisfied with how tree seedlings were distributed to them. Also, 45.5% of the County Rangers were dissatisfied with the process since community members were rarely issued with tree seedlings so as to participate in the forest conservation process by way of employment and tree planting. Similarly, 55.9% and 71.4% of the CFAs and Chiefs were not satisfied with forest conservation process for the same reasons. The findings therefore, suggest that this programme is unlikely to succeed given the unavailability of seedlings to community members makes it difficult for them to participate in the re-afforestation process and develop a sense of forest resource ownership.

Table 5: Community Sensitization on the Benefits of Re-afforestation

Respondents	VD	LS	UN	S	VS	Total
KWS & KFS Officials	23.6	32.7	18.2	18.2	7.3	100
County rangers	27.3	18.2	18.2	27.3	9.1	100
CFA officials	20.6	32.4	11.8	26.5	8.8	100
Chiefs	14.3	28.6	28.6	14.3	14.3	100

From the findings in Table 5, majority of the respondents 56.3% from the KWS and KFS were not satisfied with the community training on the benefits of re-afforestation. The reason behind this was that there were no community training programmes to sensitise the community members on the benefits of conserving the forests despite the provision of the Forest Act for this sensitisation to be done. A similar view obtained more or less from the other respondents since 45.5% , 50.0% and 42.9% of the County Rangers, CFAs and Chiefs respectively were not satisfied with the sensitization activities and programmes in place. This indicates that community training on the benefits of the forest is not satisfactory. The finding is consistent with reports from several other developing counties where few benefits accrue to forest neighbouring communities due to the poor structure of the community training programmes (Alhassan, 2011).

Table 6 below presents responses on whether the degree of dependency on the forest resources by neighbouring communities affects the conservation process.

Table 6: Degree of Dependency on Forest Resources by Neighbouring Communities

Respondents	VD	LS	UN	S	HS	Total
KWS & KFS Officials	36.4	20.0	16.4	10.9	16.4	100
County Rangers	54.5	18.2	9.1	9.1	9.1	100
CFA officials	52.9	17.6	5.9	14.7	8.8	100
Chiefs	28.6	28.6	28.6	14.3	0.0	100

Of the 46 KWS and KFS respondents, 56.4% of them were not sure if the observed dependency by the neighbouring communities on the forest was beneficial to conservation in any way. Reason being that community members with access to the forest tend to misuse the resource by vandalizing it through illegal cultivation, logging, charcoal burning, firewood harvesting among other illegal activities. Similarly, majority of the County Rangers (72.7%), CFAs (70.5%) and Chiefs (57.26%) were also not dissatisfied with the mutual benefits accruing from the usage of the forest resource by the neighbouring communities.

According to the Forest Act of 1968, neighbouring communities were permitted to utilise forest resources for subsistence purposes such as collection of wood fuel, grazing, collecting of medicinal plants and honey harvesting among other activities. These activities were to be carried out subject to the individual being issued with a permit by the local Forester upon payment of a minimal fee. The issuance process was to be transparent and only limited to locals. However, majority of the respondents (75.1%) opine that the reality on the ground is that issuance of the permits is neither transparent nor limited to locals and/or approved uses. Hence Forest Officials are partly to blame for the depletion of the Maasai Mau Forest Resource.

It was also observed that local communities take advantage of the access to the forests to carry out illegal activities such as illegal cultivation, logging, charcoal burning, firewood harvesting and, in the process, sabotaging the efforts of the conservation Agencies. In fact, Ribot (2004) who is in agreement with the finding concluded that there is minimal benefit that accrues

to forest conservation by allowing local communities to use the forest for their subsistence needs. This is because the communities lack the skills, knowledge and motivation to conserve the environment. If any, their real motivation is to plunder, displace and settle permanently on forest land.

Asked whether politics interferes with the re-afforestation efforts, the responses are presented in Table 7 as follows:

Table 7: Political Interference with Reforestation Activities

Respondents	VD	LS	S	HS	Total
KWS & KFS Officials	10.9	14.5	16.4	58.2	100
County Rangers	9.1	0.0	9.1	81.8	100
CFA officials	14.7	2.9	11.8	70.6	100
Chiefs	14.3	14.3	14.3	57.1	100

Findings show 58.2% of KWS and KFS respondents are in agreed that politics interference is to blame for the slow and/or non-existent re-afforestation activities since the political class lacks political willpower and resolve to enact and implement laws and policies to foster the conservation process. It was noted that politics affects the way laws and regulations on forest conservation are enacted. Politicians often use forest land to obtain political mileage. For instance, by agitating constantly for the excision of the Maasai Mau Forest land in order to settle the 'landless squatters', thus interfering with the re-afforestation and forest conservation process. In fact, a majority of the County Rangers (81.8%), CFAs (70.6%) and Chiefs (57.1%) are in agreement that politicians contribute to the destruction of forests by sabotaging the forest conservation programmes for their own political interests.

Additionally, majority of political leaders are opposed to the eviction of families who have settled illegally in the Mau Forest without a compensation and/or resettlement elsewhere by the government. Though they generally acknowledged the importance of Mau Forest, neighbouring politicians rarely devote their efforts to forest conservation since it does not serve either their financial or political gains. Although the enactment of the Kenya Forest Act of 2005 was aimed at encouraging unity of purpose and involvement of the local community through CFAs, its implementation is not quite evident on the ground. There is therefore, need to engage locals at policy formulation and implementation levels and by so doing create a truly community/government partnership in the forest conservation strategy. Echoing this sentiment, Blaser (2010) observes that the war on deforestation cannot be won by government agencies alone without involving the communities adjacent to the forests. The support from these communities geared towards proper establishment and implementation of forest management activities. It is sad to note that most of the land that was excised from Mau forest in the name of resettling the landless ended up benefiting those people who were politically connected. The

situation suggests that politics is interfering with the conservation efforts of most forest resources.

CONCLUSION

Globally and particularly in developing countries, forest covers are dwindling as a result of human encroachments and deforestation. This is regardless of the numerous laws and policies in force in relation to forest management conservation. The overall study objective was to ascertain the forest conservation status of Maasai Mau Forest in Narok County, Kenya. The study found that forest agencies that are charged with the responsibility of ensuring that forest conversation laws and regulation are enforced do not only take care of the gazetted forests but they are also actively involved in the enforcement of these laws in the non-gazetted forests. It is also concluded that in Maasai Mau forest, the law enforcement agencies have succeeded though with a lot of challenges to ensure that the forests are effectively taken care of. It is also indicated that the forest law enforcement agencies play a critical role in enhancing the efforts of the CFAs in the management of the non-gazetted mat forests in Mau division. It is noted that though the agencies management of these forests through enforcement of the various laws have much succeeded, ensuring that the re-afforestation process is undertaken and promoting the role of CFAs in effectively participating in the conservation process of the Maasai Mau forest.

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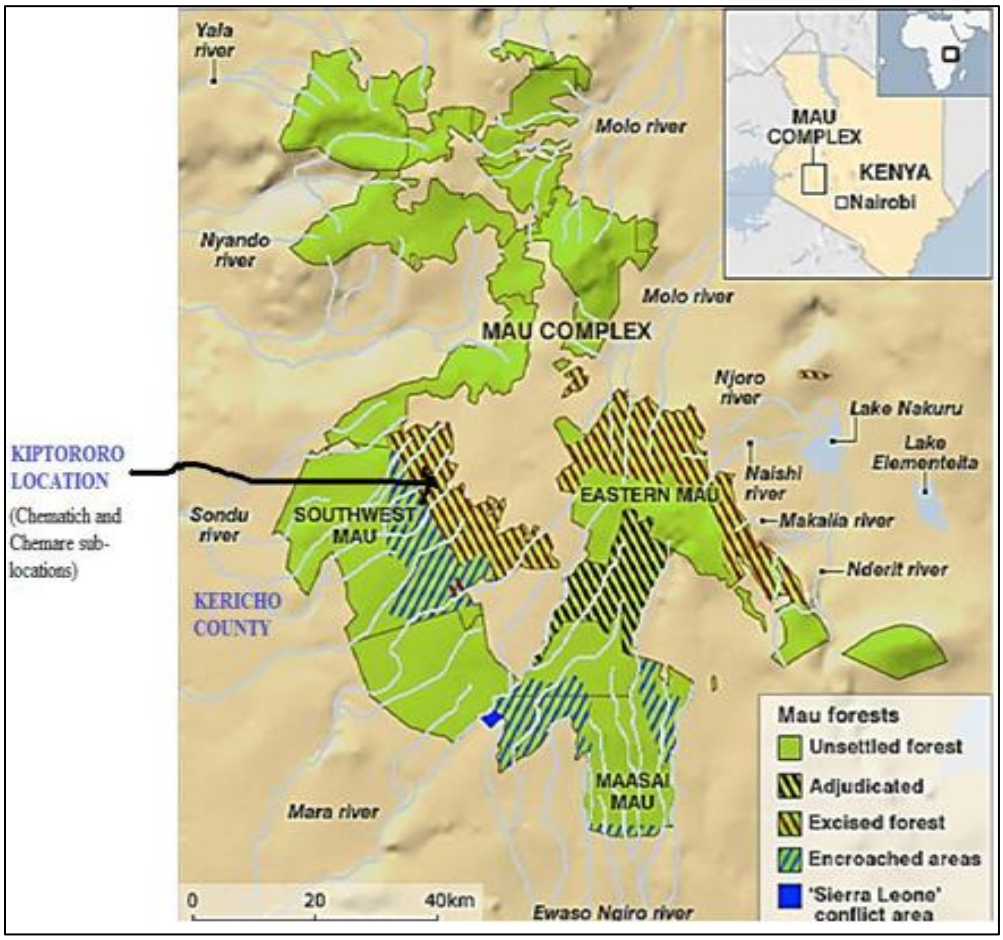
Appendices

Appendix 1: Kenya's Mau Forest Complex



Source: The Kenya Forest Service