

INSTITUTIONALIZATION OF FOREST CONSERVATION PROGRAM FOR ENHANCEMENT OF PARTICIPATORY FOREST MANAGEMENT, BOMET COUNTY, KENYA

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ABSTRACT

Forest performs a wide range of critical environmental and climatic functions and are of tremendous importance to the sustainable development of every society. There is need to undertake review of policies and legislation on forestry to incorporate aspects of Participatory Forest Management to conserve and manage resources in a sustainable way. The objective of the study was to determine the extent to which institutional framework influences Mau forest conservation programme. This study was grounded on Forest Transition Theory and guided by descriptive survey design and correlational research design. A sample size of 364 respondents was drawn from a target population of 4100 people using Yamane (1967) Formula. Quantitative data was collected through a self-administered structured questionnaire while qualitative data was collected through an interview guide. Findings reveal that there was a weak negative linear correlation between institutional framework and Mau Forest conservation programme. The null hypothesis was not accepted and concluded that there is a significant relationship between institutional framework and Mau Forest conservation programme. This study recommends that creation of local institutions are essential for conservation of forests. These institutions need resources and capacity development for sustenance of forest conservation programs.

Keywords: Conservation, Forests, Institutionalization, Framework, Participatory Forest Management.

I. INTRODUCTION

The world's total forest area amounts to just over 4 billion hectares, equivalent to 31% of the total land area, and on average of 0.6 ha per capita (FAO, 2010). In Sub-Saharan Africa and parts of Asia such as Nepal and Bangladesh, rural populations depend, directly or indirectly, on forests for their daily subsistence and income needs (Kaimowitz, 2003; Phiri, Chirwa, Watt and Syampungani, 2012). Participatory Forest Management (PFM) is the local involvement of communities in the management of forests done through a process of inclusion, equity, and democratization of governance of the forest resources (Agrawal and Gupta, 2005). The emphasis on the participation of local stakeholders in natural-resource management has led to

an examination of how such an approach has been implemented and its successes and limitations which calls for institutionalization of forest conservation programs.

Based on their study in Asian forest management, Lee and Park (2001) believe that the participation of local people in forest resource management can maintain the integrity of local ecology, that forest co-management can facilitate forest protection and development, help to reduce poverty, and to meet their survival needs. In Bangladesh, the program was launched in the 1980s with the objective of involving local communities in managing forest resources. Protection of national forest degradation and rural poverty alleviation were the main motivation behind leasehold forestry in Nepal and joint forest management in India (Pokharel, 2008). In some other countries, such as Honduras, PFM has been associated with government decentralization programme.

In Ethiopia, PFM was recommended by NGOs to solve the problem of forest degradation (Mustalahti, 2006). In recent years, substantial rights and powers over forest resources have been transferred to local democratically elected bodies in Tanzania through participatory forest management (PFM) initiatives. PFMs main objectives include: improvement of forest quality, livelihoods, and local governance of natural resource management institutions (Wily, 2001, URT, 2003).

A study carried out by UNEP (2002) on deforestation in African countries revealed that weak ineffective policies, laws and regulations are seen as the main cause of deforestation. However, it is not only lack of proper government policies and laws that fail the environmental conservation, but the major challenge is in lack of proper functioning institutions that fail to stop over-exploitation of forests. This is also a view taken by Neumann (2005) who argues that states promote environmental degradation through its failure to implement its laws and policies on environmental conservation. This failure, in his view, originates from the historical events and decisions of the state. He notes that, the political economy of the state that emphasizes on more land accumulation and a development that favours forest destruction is the undoing of environmental conservation.

The total forest area is less than 3 per cent of the total land area of Kenya. The decrease in forest cover is primarily due to encroachment, expansion of human settlements into previously forested areas, illegal logging, forest fires; agriculture and government excisions (NEMA, 2009). In total, the forest excision and widespread human encroachments led to a total loss of about 25% of the more than 107, 000 ha in the Mau Forest between 1989 and 2009 (GOK, 2009). Unfortunately the Forest Act has remained largely unimplemented as the institutional structures for the Kenya Forest Service has not been completed and devolution of forest management powers is not yet to take place (Matiku, Ogol and Mireri, 2011). This study therefore was conducted determine how institutionalization of forest conservation programme enhances Participatory Forest Management in Mau Forest.

II. Institutionalization of Forest conservation Program

The success of PFM projects in some countries like Nepal and India has resulted into sustainable use of forest resources thereby witnessing the contribution of the sector to Millennium Development Goals (Fisher, Prabhu and McDougall, 2007). The initial focus on involving community in government programmes for reforestation and forest protection has also gradually evolved towards more devolution of decision-making power and more active use of forest resource by the local communities.

Governments have a key facilitative role in building technical capacity and empowerment of forest users (Agrawal and Gupta, 2005, Andersson, 2006). Gibson, McKean and Ostrom, (2000) argue that local institutions can help mitigate the some factors responsible for deforestation. These institution include Community Forest User Groups (CFUGs) and Community Forest Association (CFAs). The institutions developed, devise rules and regulations that ensure sustainable livelihoods through access to resources and markets (Ballabh,Balooni and Dave, 2002). However, there have been mixed outcomes on effectiveness of local institutions. For example, in Tanzania, degraded and overused woodlands were regenerated with enforcement of rules, while in Malawi regulation of use and users has been associated with both success and failure (Campbell,Shackleton and Wollenberg, 2003).

But, collapse of local institutions has been attributed to lack of enabling environment; unsustainable exploitation of the resource; heterogeneity among households; lack of legitimate local institutions and resource characteristics (Campbell et al., 2003). Therefore, the success of participatory forest management (PFM) relies on the collaboration of local people for long-term resource management using local groups as alternative to strict regulation and enclosure (Pretty, 2003). Consequently, creation of formal user groups has been reported to be a key mechanism in enhancing participation of community members in forest management and therefore, generate more functional communities and PFM incentives (Agrawal and Gupta 2005, Zulu, 2012).In Mau Forest for instance, these formal user groups are Community Forest Association (CFA) members who play significant role in implementing afforestation programs.

It is good to note that special services for participatory forestry have been introduced in a growing number of countries (Wily, 2002). Although this is merely identified as a special service, bureau or desk, within the forest department, more and more countries, such as Gambia, Ghana, Guinea Bissau, Kenya, Lesotho, Mali, Morocco, South Africa, Cameroon and Uganda, have units that are explicitly aimed at promoting participatory forestry. Also, the delays in implementation of PFM are caused by inadequate political support, unclear attitudes and commitment among foresters, inadequate empowerment of CFAs, weak local institutions, and failure to devolve accompanying funds and other resources to community institutions.

In order for the local communities to enter into such co-management arrangements, they are legally expected to form and register Community Forest Associations (CFAs) within different forests distributed across the country (MENR, 2007). Lately, the Kenya Forest Service has also been spearheading the formation of CFAs as a step towards meeting the requirements of the Forest Act (2005). These Community based organizations have assumed great importance since the new Forest Act vests management responsibility and benefits with already organized local actors. For example, the government has provided funds to CFAs for a variety of projects such as Plantation Establishment and Livelihood Improvement Schemes. Many CFAs have also benefited from other forest stakeholders such as National Museum of Kenya (NMK), Kenya Wildlife Service (KWS), NGOs and Kenya Forestry Research Institute (KEFRI) that have committed funds for various types of house hold income enhancement schemes.

Mau Forest Complex is the largest closed-canopy montane ecosystem in Eastern Africa. However, in the past three decades or so, the Mau Forest Complex (MFC) has undergone significant land use changes due to increased human population demanding land for settlement and subsistence agriculture. The encroachment has led to drastic and considerable land fragmentation, deforestation of the headwater catchments and destruction of wetlands previously existing within the fertile upstream parts. Today, the effects of the anthropogenic

activities are slowly taking toll as is evident from the diminishing river discharges during periods of low flows, and deterioration of river water qualities through pollution from point and non-point sources (Kenya Forests Working Group [KFWG], 2001; Baldyga, Miller, Driesse and Gichaba, 2007).

This research study was guided by Forest Transition theory (Angelsen and Rudel, 2013). Countries go through an initial period of industrialization and economic and population growth, causing increases in deforestation. At a later stage of development, deforestation leads to a perceived decrease in the ability of forests to provide environmental services and goods forcing the government and private sector to provide incentives for policies and activities geared towards tree planting, sustainable forest management, general reforestation and regeneration of forests and conservation of remnant forest areas (Rudel, Coomes, Moran, Achard, Angelsen, Xu and Lambin, 2005; Angelsen and Rudel, 2013). The study was guided by a conceptual framework where institutional framework was the independent variables which influenced forest conservation program; the dependent variable. Thus, existence of clear forest policy, law enforcement on forest protection and dependence among forest user groups, training and sensitization of people on forest conservation issues would significantly influence forest conservation. The extent of forest conservation is witnessed through the number of trees planted, access to Non-Timber Forest Products (NTFPs) and even protection of wild-life in the forest.

III. METHODOLOGY

The paradigm that guided this study was pragmatism. Concerning mixed methods research as the research approach, Johnson and Anthony (2004) indicate that pragmatism paradigm is the best suited for mixed methods research approach. For this study, both quantitative and qualitative aspects of PFM were investigated which called for the need of pragmatism. Also, descriptive survey design and correlational research design was used in this study because descriptive and inferential data analysis were required.

The study targeted 4100 people comprised of 50 Kenya Forest Service officers (KFS), 100 chairpersons of Community Forest Association (CFAs) committees and 3950 households living adjacent to South West Mau Forest in Bomet County. These households surrounded four administrative units (Kenya Forest Service) departments of Bomet forest stations- Itare, Mara-Mara and Ndoinet (KNBS, 2013). These people were the Community Forest User groups living within a distant of one to five Kilometres from the edge of the forest. For every household, one representative who is the household head, alternate head or an adult who had been in the household for a period not less than six months was targeted.

The sample size was determined using Yamane (1967). The formula was used to calculate the sample size (n) given the population size (N) and a margin of error (e). It is a random sampling technique formula to estimate sampling size. The study used a 95% confidence level, which leads to a significance level of 0.05.

$$n = \frac{N}{1 + NE^2}$$

where:

n = no. of samples

N = total population

e = error margin / margin of error (0.05)

$$n = \frac{4100}{1 + (4100 \times 0.05^2)}$$

n=364

Using this formula, a sample size of 364 respondents were obtained from a target population of 4100 people.

Sampling procedure

Multi-stage sampling technique helped the researcher to select respondents through three sampling stages giving respondents more reliable equal chances of being selected starting with selection of sub-locations at the first stage, followed by selection of homesteads at the second stage and finally selection of Households. Oso and Onen (2009) observe that a multi-stage sampling procedure progressively selects smaller areas until the individual members of the sample have been selected through a random procedure. 50% of the eight sub-locations were arranged alphabetically and every even number was selected. The four selected sub-locations formed the research sub-populations. Then households (research categories) were randomly selected the four sub-locations. The households were selected in the field using a systematic random sampling where Kenya Forest Stations were used as the central point. Every 4th homestead to the east and west and 3rd to the north and south was sampled and in each homestead, one household head was randomly selected until 284 households were realized. Also, Purposive sampling technique was used to select a respondent from every household who was a household head, alternate head or an adult household member who had lived in the household for more than six months (Le, Brick, Diop, and Alemadi, 2013). In addition, purposive sampling technique was also used to select the respondents from Kenya Forest Service officers and Community Forest Association (CFA) executive committees. According to Gay (1981) a correlation research requires thirty (30) cases or more. Therefore, 30 Kenya Forest Service officers were selected and 50 chairpersons of CFA committees.

Quantitative data was collected using questionnaires administered to household members (CFUGs) and chairpersons of CFA committees. Also, an interview guide was used to collect the qualitative data administered from KFS officers in Mau forest. The use of an open-interview strategy enables better exposure of the interviewees' personal perspectives, their deeper thoughts, emotions and ambitions (Paton, 1990). Research instruments were pilot tested in Chepalungu Forest in Bomet County. According to Cooper and Schilder (2007), the pilot test should constitute 10% of the sample, therefore; the pilot test was conducted in line with his recommendation.

Out of the 36 respondents selected, 28 households were selected and 5 Community Forest Association committees responded to the questionnaires. In addition, 3 KFS officers were purposively selected to respond to interview guide.

There are three types of validity that are of interest to researchers: content related, criterion related and construct validity (Donald and Delno, 2006). Content validity was checked to assess the accuracy with which research instruments captured the variables under investigation through the guidance of research experts from the University of Nairobi, Kenya Forest Service officers and Community Forest Association committees. Construct validity was also ascertained by examining whether a consistent significant proportion of high scores in items investigating independent variables would correlate positively or negatively with scores in items investigating the dependent variable. This was done by comparing several scores from different subjects.

Also, reliability was done using split half technique since it required only one test administration (Allen and Yen, 2002). External reliability was addressed by making the

questions straightforward and understandable as possible, and this would decrease misunderstandings and guide direct responses to the questions. Internal reliability analysis was done using the Alpha coefficient (Cronbach's alpha, 1951). A coefficient of zero implies the tool has no internal consistency while that of one implies complete internal consistency, therefore, this implied that the research instruments were reliable. According to Nunnally (1978), a score of 0.7 is acceptable reliability coefficient. Hence, in the pilot test conducted, the composite Cronbach Alpha Reliability Coefficient for the research instrument was 0.7186. Then the test instrument used in this study satisfied this criteria and was considered highly reliable and appropriate for data collection.

Mixed methods data analysis techniques were employed in this study by incorporating both descriptive and inferential data analysis. Quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 25.0) and analyzed using descriptive and inferential statistics. Qualitative data was analyzed using "discourse analysis and content analysis" while parametric data was analyzed using Pearson's Product Moment Correlation Coefficient (r) and Stepwise Regression (R²) analysis. Also, Hypothesis testing was done using p – value approach.

IV. DISCUSSION OF FINDINGS

The study sought to establish the extent to which institutional framework influence Mau forest conservation programme.

Table 4.1: Institutional framework and Mau Forest conservation Programme

Statement	SD f %	D f %	N f %	A f %	SA f %	Mean	SD
G1. Partnership with external institutions exist for effective conservation of Mau Forest	25 (8.4)	12 (4.0)	28 (9.4)	119 (40.1)	113 (38.0)	3.95	1.182
G2. There are a good number of trained staff aiding in implementation of forest conservation activities	94 (31.6)	113 (38.0)	23 (7.7)	49 (16.5)	18 (6.1)	2.27	1.237
G3. Adequate budget and staff are allocated for conservation activities in Mau Forest	82 (27.6)	134 (45.1)	22 (7.4)	52 (17.5)	7 (2.4)	2.22	1.104
G4. There is a ready market for forest products obtained from Mau Forest	20 (6.7)	31 (10.4)	26 (8.8)	121 (40.7)	99 (33.3)	3.84	1.192
G5. Equity is ensured while sharing forest benefits	27 (9.1)	30 (10.1)	30 (10.1)	127 (42.8)	83 (27.9)	3.70	1.233
G6. Forest products undergo value addition before marketing	93 (31.3)	129 (43.4)	23 (7.7)	45 (15.2)	7 (2.4)	2.14	1.093
G7. Effective mechanisms are in place for transparent engagement and conflict resolution	19 (6.4)	21 (7.1)	27 (9.1)	119 (40.1)	111 (37.4)	3.95	1.151
G8. There is a well-defined and assigned clear property rights over forest resources to users	25 (8.4)	31 (10.4)	21 (7.1)	116 (39.1)	104 (35.0)	3.82	1.252
G9. Stakeholders clearly understand what activities are allowed and not allowed within Mau Forest area	27 (9.1)	37 (12.5)	26 (8.8)	106 (35.7)	101 (34.0)	3.73	1.295
G10. Regular training is done to promote effective conservation activities in Mau Forest	96 (32.3)	122 (41.1)	31 (10.4)	33 (11.1)	15 (5.1)	2.15	1.143
Composite Mean and Standard deviation						3.177	1.188

From the findings, 119(40.1%) of the respondents agreed and 113(38.0%) strongly agreed with a mean of 3.95 and SD of 1.182 that partnership with external institutions existed for effective conservation of Mau Forest. Stakeholders like James Finlay, Kenya Tea Development Authority and Greenbelt Movement have been facilitating forest conservation activities in Mau Forest. They had offered tree seedlings and also conducted seminars among CFAs members. This was supported by qualitative data obtained from an interview with KFS officer who said that:

“There exists a clear institutional framework aiding Mau Forest conservation programme since there are laws and regulation governing the operations of the CFAs. In addition, technical support is provided by the Kenya Forest Service in conjunction with other partners like KTDA and James Finlay who normally supply CFA members with tree seedlings.” KFS officer

The success of participatory forest management (PFM) relies on the collaboration of local people for long-term resource management using local groups as alternative to strict regulation and enclosure (Pretty, 2003).

113(38.0%) of the respondents disagreed and 94(31.6%) strongly disagreed with a mean of 2.27 and SD of 1.237 that there was a good number of trained staff aiding in implementation of forest conservation activities in Mau Forest. Inadequate number of extension officers negatively influenced forest conservation programme as CFA members would not be empowered on best practices for successful implementation of PFM programs. The findings were not in line with those of Faham, Rezvanfar, Shamekhi, (2008) in their study in Iran as they discovered strong positive and significant correlation between extension education course and participation.

Also, 134(45.1%) of the respondents disagreed and 82(27.6%) strongly disagreed with a mean of 2.22 and SD of 1.104 that adequate budget and staff were allocated for conservation activities in Mau Forest. Hence, CFA members lack financial resources needed to set up tree nurseries or buy equipment like wheelbarrows needed to run activities successfully. Consequently, 121(40.7%) of the respondents agreed and 99(33.3%) strongly agreed with a mean of 3.84 and SD of 1.192 that there was a ready market for forest products obtained from Mau Forest. Availability of markets enabled CFA members to sell Non-Timber Forest Products (NTFPs) and obtain funds which is channeled back to conserve the forest. Also, this made them improve their livelihoods and it motivating members to participate further in conservation activities. Despite this, governments have a key facilitative role in building technical capacity and empowerment of forest users (Agrawal and Gupta 2005).

In addition, 119(40.1%) of the respondents agreed and 111(37.4%) strongly agreed with a mean of 3.95 and SD of 1.151 that effective mechanisms were in place for transparent engagement and conflict resolution. Existence of cohesion among CFA members was seen to promote group dynamics which led to a reduction in conflicts thus positively influencing enhancement of PFM practices.

Furthermore, 116(39.1%) of the respondents agreed and 104(35.0%) strongly agreed with a mean of 3.82 and SD of 1.252 that there was a well-defined and clear property rights over forest resources to users. Clear property rights was seen to streamline the role of forest users on extraction of forest resources which positively lead to the success of PFM programs. Communities should have powers to access, utilize and benefit from the resource equitably (Cronkleton, Pulhin and Saigal, 2012).

The study sought to establish the correlations between institutional framework and Mau Forest conservation programme and the results are presented on Table 4.2.

Table 4.2: Correlation results for institutional framework and Mau Forest conservation programme

Variables		Mau Forest conservation programme	Institutional framework
Mau Forest Conservation programme	Pearson Correlation	1	-.157**
	Sig. (2-tailed)		0.007
	n	297	297
Institutional Framework	Pearson Correlation	-.157**	1
	Sig. (2-tailed)	0.007	
	n	297	297

** . Correlation is significant at the 0.01 level (2-tailed).

From the findings, Pearson correlation between institutional framework and Mau Forest conservation programme was $r = -0.1577$. Since $r > 0.1$, there was a weak negative correlation between the two variables under investigation. The p-value of 0.007 was found to be less than 0.05 level of significance which implies that existence of a good institutional framework guiding forest conservation activities leads to the success of PFM programs. Clear policies and legal framework creates an enabling environment for CFA members to implement forest conservation programs.

R squared was used to show variation in Mau Forest conservation programme which can be explained by institutional framework. The results are presented on Table 4.3.

Table 4.3: Model summary for Institutional Framework and Mau Forest Conservation Programme

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.157 ^a	.025	.021	4.45372

a. Predictors: (Constant), Institutional framework

$R^2 = 0.025$ shows how much institutional framework predicts Mau Forest Conservation programme. This implies that 2.5% of institutional framework brings changes in Forest conservation program which enhances successful implementation of PFM in Mau Forest. But the Standard error is 4.454 which is lower than 5%, therefore, institutionalization of Forest conservation program had a significant positive influence on promoting the aims of PFM projects in Mau Forest.

Testing of Hypothesis

H₀: There is no significant relationship between institutional framework and Mau forest conservation program. The p-value was 0.007 which is less than 0.05, therefore, null hypothesis was not accepted and it was concluded that institutionalization of forest conservation provide a supportive working environment to CFAs to carry out activities geared towards enhancement of Participatory Forest Management in Mau Forest.

V. CONCLUSION

Effective conservation of Mau Forest is supported by a clear institutional framework which goes a long way in empowering forest institution such as CFAs to engage in participatory processes geared towards realization of PFM goals for sustainability of forest.

VI. RECOMMENDATION

Recommendation made for policy action is that creating local institutions alone is not enough but these institutions need to be built up. They need to be equipped with resources, training and rights that make them downwardly accountable. Also, effective leadership needs to be provided where it is missing or strengthened where it is present. The government, Non-governmental Organizations (NGOs) and donor support will continue to be important in providing the required technical and monetary support to CFAs for effective implementation of Participatory Forest Management programmes.

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