FACTORS INFLUENCING FOREST CONSERVATION PROJECTS IN TRANS MARA SUB-COUNTY,NAROK COUNTY, KENYA.

BY

NYAGERO OMWENGA DAVID

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DECLARATION

This research project report is my original work and has not been presented for degree in any other University or for any other award elsewhere. Works from other sources have been duly acknowledged.

Signature ……..Date……..
NYAGERO OMWENGA DAVID
L50/83268/2015

APPROVAL
This research project report has been submitted for examination with my approval as the university supervisor.

Signature……Date……..
DR. Otieno Moses
Lecturer
University of Nairobi

DEDICATION

I dedicate this research project report to my lovely wife Emily Atieno Odewa and my son Arcadius Omwenga for their prayers and moral support during the entire period of my master's education.

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LIST OF ABBREVIATIONS AND ACRONYMS

UNCED - United Nations Conference on environment and development

CSD - Commission on sustainable development

KWS - Kenya wildlife services

DRSRS - Department of Resource Surveys and Remote Sensing

KFWG - Kenya Forests Working Group

KFD - Kenya Forest Department

KFS - Kenya Forest Service

CFAs - Community Forest Associations

NTFPs - Non Timber Forest Products

HJCN - International Union of Conservation of Nature and Natural resources

FAO - Food and Agriculture Organization

PES - Payment of Ecosystem Services

PATF - Protected Area Taskforce

MENR - Ministry of Environment and Natural Resources

ABSTRACT

The study was to investigate factors influencing forest conservation on improving environment in Trans Mara sub-county, Narok County, Kenya. Residents of Trans Mara sub-county are concerned with climate change, prolonged draught and changing rain patterns due to forest destruction which has manifested itself in the form of deforestation, the shamba system, human settlements, cultivation, charcoal production and grazing. The purpose of the study was to investigate factors influencing forest conservation on improving environment in Trans Mara Sub-county, Narok County. This study was out to achieve the following specific objectives; the effect of the sources of income among the rural population living next to forests, level of awareness of these population on the importance of forest as well as level of education, social cultural factors and government policies on forest conservation in Trans Mara sub-county. The study's findings are expected to be beneficial to the people of Trans Mara sub-county and the general public on understanding the importance of conserving forest resources. On literature review, Forest and woodlands are declining primarily as result of increase in wood fuel collection, conflicts, increasing urbanization and industrialization, FAO, (2000). These opportunities are diminishing. Between 1990 and 2000, Africa's forest and woodlands receded faster than the global average; deforestation in Africa to place at an average of 0.8 percent, as compared to the world average of 0.2 percent, FAO,(2005). Relative participation of men and women in various capacities of decision making has been the key items in forest conservation. Despite the above scholars' contributions in forest conservation, there is more to be studied. Influence of high school students in forest conservation and community around the forest to get 30% of the revenue to be fully involved in forest conservation. The study was based on the tragedy of commons theory. Conceptual framework was used to show the relationship between dependent and independent variables. The study adopted a descriptive survey design. The targeted population was all the adult people in Trans Mara sub-county. The sample consisted of 400 adults around Nyakweri forest and Masaai Mara game reserve. Structured questionnaire, interview schedules, documentaries, photography and observation were used to collect information from respondents. Content validity was ascertained through expert judgment while reliability was established through test retest. Questionnaires were hand delivery and picked by the researcher who also conduct interviews to forest officers. Data analysis was done by both qualitative and quantitative techniques. Quantitative data was analyzed by use of simple descriptive statistics that is, frequencies, percentages and averages. The qualitative data was analyzed and reported in narrative form. Data was analyzed, presented and interpreted by use of tables and a summary. Conclusion and recommendation of the study done. The findings showed that poverty and level of education were the major cause of poor implementation of forest conservation measures. Others were inadequate financing, policies as well as social-cultural factors. In conclusion, it was found that source of income and education remains the major challenges to implementation of forest conservation measures. The study recommended that poverty eradication strategies and youth empowerment programs should be enhanced.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The world has witnessed massive environmental degradation with forest destruction topping the list. Kenya is not exceptional where it has witnessed various environmental hazards that are traced to forest degradation. This calls for global environmental conservation and creation of awareness of the issue which has increased the willingness of the states and governments to intervene. In order to mitigate this, Kenya along with other states and governments, has had in their national agenda environmental conservation policies and legislations.

The environment has a broad meaning. According to Dobson (1995), it includes the physical factors of land, water, atmosphere, sound, and biological factors of animals and plants. Forest covers around 30% of world's land area. They provide food, wood, medicinal plants and multiple other goods and services for hundreds of millions of people. They harbor a significant position of the globes' biodiversity, and they perform a range of environmental services. Nunez, (2003). Forests are particularly important for the poor. Some 1.2 billion people rely to a significant extent on forests for their lively-hoods, world Resource Institute (2005).

The extent of shrub land and young forest in the Northeast, USA, has declined rapidly since the mid-1900. Accordingly, the abundance of wildlife that depends on young forest has also declined. For example, American woodcock (*Scolopax minor*), an upland shorebird species, require an appropriate spectrum and spatial configuration of young forest to thrive and their populations have declined significantly since at least 1968. Active forest management is required to conserve populations of American woodcock and

other young forest wildlife, but the importance of young forest management to some aspects of the ecology of key wildlife are not fully understood.

Historically, natural disturbance regimes such as wind, fire, and ice storms, and biological agents including insects, pathogens, beavers (*Castor canadensis*), and Native Americans sustained patchworks of young forest (Askins, 2001; Day, 1953; Foster and Aber, 2004; Lorimer, 2001). Prior to European settlement, young forest may have occupied up to 13% of the land area in some regions of eastern North America (Lorimer, 2001), but following European settlement, intensive logging and conversion of land from forest to agriculture formed a largely non-forested landscape which eventually produced an influx of young forest across the Northeast. Indeed, in central New England, USA, more than 75% of remaining forests were 30 years old during the late-1800's (Foster et al., 1998). However, since the 1960's, the amount of young forest in the region declined from about 30 – 35% to 3% (Buffum et al., 2011; Trani et al., 2001). Consequently, active forest management is now required to conserve populations of young forest wildlife (DeGraaf and Yamasaki, 2003; Schlossberg and King, 2007), and habitat selection by target species should be investigated using quantitative methods to promote more informed and efficient forest management decision-making.

Britain forestry underwent the transition from a "hunter gatherer" phase of the forestry to a husbandry stewardship phase. For agriculture' this transition began 10,000 years ago when our ancestors discovered einkom wheat growing wild in the Fertile crescent, Diamond, (1997); Huen , (1997). In Britain, commissioners are the competent authority for the protection of forests, trees and timber from attack by pests and diseases, and give them the power to make the necessary regulation (the plant health Act 1967). There is control of tree felling and prosecution of individuals doing illegal felling (forest act 1967).

China is home to over 30,000 types of vascular plants and 6,347 vertebrates, accounting for 10% and 14% of the world's totals, respectively. China also has a wide variety of unique terrestrial habitat types. According to United Nations Convention on Biological Diversity article. 2, June 5,1992, Throughout China, river and lake sedimentation are increasing; lake and groundwater levels are decreasing; oasis and vegetation loss in arid areas is more common; natural forests are being cut; reclamation and destruction of grasslands continue; red tide is damaging the marine ecosystem; beach erosion and seawater encroachment are worsening; wildlife populations are decreasing; and many rare plant and animal species are in danger of extinction. The decline of biodiversity in china is due to china's rapid economic development, which has already impacted environmental quality. Many environmental law articles about China focus on pollution control, yet few deal with natural resources law and conservation.

The existing legislation focuses more on economic values rather than on biodiversity, and the public has only played a limited role in the country's natural resources conservation regime. Chinese biodiversity and natural resources conservation legislation suffers from a lack of liability and enforcement provisions, as well as a death of administrative coordination. Despite the importance of public involvement in, and awareness of, the conservation movement in China, the scope of public participation in environmental protection is limited. Given the fast pace of economic development in China, greater public participation in natural resources conservation law is a much needed counterweight to the negative effects of industrialization and limited government resources.

The history of forests management in Ghana dates back to 1906 when legislations were enacted to control the felling of tree species and the adoption of first forest policy in 1948. The forest protection amendment act 2002 sought to amend the forest protection decree 1774. Forest policies have consistently been dictated by the economic priorities of the successive governments for exploitation of timber resources for

revenue generation, Asante.(2005) Ayine, (2008). Ayine, (2008) notes that the increase in global demand for Ghanaian log species coupled with enhanced utilization of installed capacity of timber firms, have resulted in the increased of exports of logs from the country. BafToe, (2007) notes that, a major concern to conservation of forests resources is the gap between intentions of national policies and the realities on the ground as well as the highly skilled power structure in favor of governments and the industries on one hand and the marginalized local community on the other.

In Tanzania, the preservation of forests for protective and commercial purposes was started under the German colonial administration although the main interest of the Germans in the Usambara was on the commercial agricultural estates, Hamilton and Bensted- Smith, (1989). Scientific ideas and the colonial imperative of progress started to play an important role in shaping the natural environments, Conte, (2004). The German activities are said to have heavily reduced the original natural forests area in Usambara, Schabel, (1990). Along the same lines, Kenya is a signatory to the Kyoto Protocol and member to UNEP which obligates her to link development programs to the declarations of the Rio Earth Summit of 1998. Despite all these and even though the government of Kenya had policies and legislations on environmental conservation since 1943, nothing much was seen as efforts on environmental conservation until 1999, when The Environmental Management Coordinating Act 1999 was passed. The act created the National Environment Management Authority (NEMA). The year 2005 also saw the passage of another act, the Forests Act of 2005, which saw the creation of another body, The Kenya Forest Service 2 (KFS). The major mandate of KFS, amongst others, is to enforce the Forests Act 2005 in conservation of forests in Kenya. The two bodies, NEMA and KFS, supplement the works of their parent Ministry of Water, Forestry and Environment (formerly known as, the Ministry of Water, the Ministry of Environment and Natural Resources and the Ministry of Forestry and Wildlife) and the Ministry of Agriculture. These

bodies are in charge of policy formulation, implementation and enforcement in their respective areas. In enforcement of these policies, one other key government institution is the Ministry of Interior and Coordination of National Government.

Forest degradation in Kenya did not start after independence. Since the colonial period to date, Kenya has continuously lost its forest cover. According to Ndungu (2010), at the onset of colonialism, the forest cover was 30% of total land area but at independence it had reduced to 3% of land area. Consequently, in a report from the Ministry of Forestry and Wildlife (2009), it shows that by 2007 the forest cover in Kenya had drastically reduced to 1.7% of total land area. This has therefore, prompted the government to put in place measures to stop and reverse the trend. In order to achieve this, the government put in place policies, legislations and institutions that are meant to ensure conservation and regeneration of the forest to the internationally recommended cover of 10% of the total land area.

Narok County has the Mau Complex which has been impacted by extensive illegal, irregular and ill-planned settlements, as well as illegal forest resources extraction. Degazettement of forest reserves (excisions) and continuous widespread encroachments have led to the destruction of some 104,000 hectares representing over 24% of the Mau Complex area over the last 10 years. In 2001, 61,023 hectares of forest in the Mau Complex were excised. In addition, some 43,700 hectares have been encroached in the remaining protected forests of the Mau Complex. In the forests of Marmanet, some 11,000 to 12,000 hectares have been lost to illegal and irregular settlements. Such an extensive and on-going destruction of key natural assets for the country is a matter of national interest. It presents significant environmental and economic threats and underlines a breakdown of law and order, with ramification to internal security and conflicts.

The vegetation in Trans Mara ranges from open woodlands to partially open and closed canopy forests. Much of the rangeland (pastures) in the sub-county is confined to the open woodland glades. Tall trees of up to 40 metres of predominantly *Diospyros abyssinica* are found in the region. Some of the forests are characterized by vertical forest structures typical of those found in the tropical rain forest of Kakamega in western Kenya (Kiyiapi 1995). The differences in topography greatly influence drainage conditions hence different forest types. Soil erosion is evident in the intensely cultivated areas along the Trans Mara-Kisii border where much of the natural forest is cleared and land converted into maize and sugarcane plantations. This situation is replicated in other parts of the sub-county where overgrazing and deforestation is rampant. The increasing demand for timber and charcoal has led to wanton destruction of forests and affected the Mara and Migori Rivers.

1.2 Statement of the problem

Residents of Trans Mara sub-county are concerned with climate change, prolonged draught and changing rain patterns due to forest destruction which has manifested itself in the form of deforestation, the shamba system, human settlements, cultivation, charcoal production and grazing. In recent, we have seen the government deploying forest officers in Nyakweri forest to evict the victims but Trans Mara sub-County has experienced adverse environmental changes in the past few decades due to human-induced factors (Jaetzold et al., 2010; Narok County Development Profile, 2013). Approximately 23% of the forest in Trans-Mara sub-county has been lost in the last three decades, Geoffrey Wahungu, (2013). While on a visit of Nyakweri forest, Governor Samuel Tunai gave a very strong warning on the destruction of forest through charcoal burning and logging, Kenya newsletter volume 1 (Nov. 2011).Forest provides food, wood, medicinal plants and multiple other goods and services for hundreds of millions of people. They harbor a significant position of the globes biodiversity and they perform a range of environmental services. Nunez, (2003). Despite the significant contribution of forests to local lively-hoods and the

national economy, forest destruction, poor management and environment degradation still continue and being with it negative impacts on marginal communities that depend on forests and forest product, Marik, (2001).

Deforestation is rampant and is a serious concern all over the world. The research proposal was to find out the challenges in forest conservation projects in Trans Mara sub-county, Narok County. The research came up with possible ways of eliminating the challenges for better forest conservation.

1.3 Purpose of the study

The purpose of the study was to investigate factors influencing forest conservation projects in Trans Mara Sub-county, Narok County.

1.4 Objectives of the study

The objectives of the study are;

i) To investigate how the sources of income influence forest conservation project in Trans Mara sub-county

ii) To establish how the level of awareness influence forest conservation project in Trans Mara sub-county

iii) To examine the extent to which social-cultural factors influence forest conservation project in Trans Mara sub-county

iv) To establish how government policies influence forest conservation project in Trans Mara sub-county

1.5 Research questions

i) How do the sources of income influence forest conservation project in Trans Mara sub-county?

ii) How does the level of awareness influence forest conservation project in Trans Mara sub-county?

iii) Which influence do social-cultural factors have on forest conservation project in Trans Mara sub-county?

iv) To what extent do government policies influence forest conservation project in Trans Mara sub-county?

1.6 Significance of the Study

This proposal was hoped to achieve the following;

The proposal would assist in curbing the effects of climate change, reduce soil erosion, and provide job opportunities. Not only are the restored woodlands important economic assets, they are also fostering richer habitats and the recovery of a variety of species. Conservation manifest a multiple effect generated through improved livelihoods, security for social services and improved sustainable land use management resulting in improved environmental services such as better soil and quality.

1.7 Limitations of the Study

The main limitations of this study were lack of adequate finance and the fact that some of the respondents were unwilling to answer the questionnaire truthfully due to fear of victimization leading to obtaining erroneous data. This is particularly from forest officers charged with forest conservation. This problem was taken care of by explaining more about the intention of the research. Financial problem was solved through getting support from the parents and my elder brother.

1.8 Delimitations of the Study

The research took place in Trans-Mara sub-county, Narok County. The sub-county is divided into two districts and five divisions. However, the research was based on the villages around Nyakweri forest and

Maasai game reserve which is approximately 41km^2. The interviewees were residents of the above five divisions. The respondents were all adults of 18 years and above. The research also focused on forest officers. The researcher used questionnaires, audio-visual equipment, photographs, and video-camera and interview schedule in collection of data.

1.9 Assumptions of the study

The research was based on the assumption that there are several factors that influence forest conservation projects in Transmara sub-county, but this study focused on only four variables; sources of income, awareness, social-cultural factors and government policies. Also that the selected sample was representative of the total population and that the respondents were cooperative and provided true honest answers to the research questions.

1.10 Definition of significant of Terms

This section deals with the definition of key terms used in the study.

Forest: It is an ecological system dominated by trees and other woody vegetation.

Environment: It is an area where different social actors with symmetrical political power are competing for the access to and control of natural resources.

Environmental conservation: It means managing the environment in a way that enables human development without jeopardizing the supply of resources for future generations.

Policy: A plan or action as a government or business intended to influence and determine decisions, actions and other matter.

Socio-cultural factors: The influences in a society and its cultures that change people's attitudes, beliefs, norms, customs and lifestyles.

Preservation: This concept refers to initiatives that prohibit the economic exploitation of forests or other natural resources of an ecosystem.

Biodiversity: is the variability among living organisms. It includes diversity within and among species and diversity within and among ecosystems.

1.11 Organization of the study

Chapter one provides the background to the study, statement to the problem, purpose of the study, objectives of the study, research hypothesis, and significance of the study, limitations of the study, delimitations of the study and the definitions of significant terms.

Chapter two is a review of literature it focuses on forest conservation and the challenges countries are facing. The review discusses in detail the four variables of the study; that is the sources of income, awareness, social-cultural factors and availability of proper policies and how they affect forest conservation measures.

Chapter three on methodology gives details on research design, target population, sample population, sample size and sample procedure, data collection methods, data collection instruments, piloting, reliability and validity, data analysis and presentation, ethical consideration, references and appendices.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature relevant to the research problem. The research is reviewed under the following sub-headings: influence of sources of income of adjacent community on forest conservation, education or awareness of the local communities on forest conservations, social cultural factors on conservation, government policies on forest conservation and summary of literature review as well as theoretical and conceptual framework.

2.2 Concept of Forest Conservation

Concern about the conservation of nature has a long history but its expression as "biodiversity conservation is a relatively recent phenomenon, Nunez, (2003). Biodiversity is a term that was developed as a means of describing the variety of life at a time when concern was increasing about the loss of such variety, Purvis and Hector, (2000).Land use and climate change are predicted to lead substantially in the geographical spread of species and eventually to species extinction.The2007 fourth assessment report of the intergovernmental panel on climate change predicts that between 20% to 30% of all known species may disappear before the end of the century. Stem, (2006) review on the economic climate commissioned by the Government of the United Kingdom, has highlighted the cost of delaying action to combat climate change. Australia's National Biodiversity and climate Change Action Plan, (NRMMC 2004) has been developed to minimize the impact of climate change on biodiversity through adaptive planning.

Agenda 21, adopted at the United Nations Conference on Environment development (UNICFD) in Rio de Janeiro (Brazil) in 1992; underscored the important role that states consider preparing National reports and communicating the information therein to the commission on sustainable development (CSD) including

activities they undertake to implement agenda 21, the obstacles and challenges they confront and other environment and development issues they find relevant. Projections suggest that 40 percent of the biodiversity of subtropical forest could be lost, even under stable climate scenarios, Fischlin, (2009).
Whereas as earlier initiatives focused on debt for nature swaps, increasing attention is now being given to efforts to valuate ecosystem services. New initiatives can be expected following discussions at the UN Frame work convention on climate change (UNFCCC) cop 13 meeting.

Global temperatures have fluctuated over the past 400,000 years. Earth is currently warmer than it has been in its recent past. The intergovernmental panel on climate change (IPCC) found that eleven of the last twelve years (1995-2006) rank among the warmest years since 1850, Solomon, (2007. Forests are shaped by climate. Changes in temperature and precipitation regimes therefore have the potential to dramatically affect the forests nationwide. Climate is also shaped by forests. Afforestation in certain areas may reduce surface reflectivity, or albedo, such that any reduction on radioactive forcing (warming) gained from increases in carbon sequestration are offset, Betts, (2000).

The availability and quality of waters in many regions of the world are more and more threatened by overuse, misuse and pollution and it is increasingly recognized that both strongly influenced by forests. Moreover, climate change is altering forests role in regulating water flows and influencing the availability of water resources, Berkerp, Orlando and Burton, (2003). Therefore, the relationship between forests and water is a critical issue that must be accorded high priority.

2.3.1 Sources of income and forest conservation

Sources of income for most people who live around the forest areas is through destruction of the trees inform of charcoal burning, lumbering, firewood and clearing forest for farming, this is due to high poverty rate and that become their source of income. Forests perform a multitude of ecosystem services and contribute directly to the livelihoods of more than one billion people living in extreme poverty (World Bank 2004). Despite the national and international efforts devoted to global problems of deforestation, forest degradation has steadily increased throughout much of the world (White et al. 2002).

In Central America is an apt location for examining forest-poverty-biodiversity linkages. About half its population is classified as poor and a third of its area is mountainous. It is particularly rich in biodiversity, with 4,715 endemic plant species and 451 endemic vertebrates (UNDP 1999). It is part of the Mesoamerican biodiversity hotspot (Myers et al 2000), one of 25 places in the world characterized by extremely high plant endemism and high levels of natural habitat loss to date. This biodiversity continues to be threatened by land use change. A recent NASA study

(Sader et al, n.d.) Found annual deforestation rates during the 1990s ranging from 0.16 percent to 1.28 percent in eight Landsat scenes, with a mean of 0.58 percent. A similar sample study by Achard et al (2002) reported annual deforestation rates of 0.8 percent to 1.5 percent.

In China, many people living in or near forests are poor (Zhou and Veeck 1999), and while there has been a dramatic reduction in the poverty rate in China over the last decades, poverty is still a serious problem, particularly in rural areas (Chen and Ravallion 2008; 2009). The recent rapid and dramatic changes in forest tenure in poor regions in China makes it an ideal context to study how individual preferences affect

forest management decisions and the implications for the effectiveness of strengthening property rights to stimulate investment in forest resources and improve households' livelihoods.

More than elsewhere, forests in the dry land of sub-Saharan Africa have the potential to contribute to poverty reduction and food security as long as they are well valued and sustainably managed. The inhabitants of these areas are mostly farmers, herders and forest product gatherers their livelihood are therefore largely dependent on forests and woodland services and forest management has to respond to their many and diverse needs. Poverty and environmental degradation are major problems in dry land sub-Saharan Africa, where forests and trees contribute significantly to rural livelihoods. An approach to conservation is that of treating local inhabitants not as destroyers of the forests who stand on the way of conservation programs but rather as constituent members of the forest ecosystem, who can perform positive role in the implementation of a conservation program, Davenport, (1998); Curvan and Tshombe, (2001).

In Cameroon, local dwellers rely mainly on forest products and on agriculture, shifting cultivation and slash and bum are not only the most widespread agricultural systems in tropical forest, Jepma and Blom, (1992); Cleavers, (1992); Naumano and Yemefack, (2000) but also constitute the major cause of their destruction.

Non- timber and forest products (NTFPs) have played an important role in the Ghanian economy by way of supporting rural livelihoods. They contribute significantly to the income and food security of many rural households in Ghana, Falcons, (1994); FAO,(2001); Ahenkan and Boon, (2008).

Kenya's indigenous forests are home to many communities whose livelihoods depend on the natural resource. Approximately 2.9 million people live adjacent to forests in Kenya. This is over a tenth of the total population, Wass,(2005).

Kakamega district is one of the most populated in Kenya and human pressure on the forests is extremely severe. Agricultural encroachment has led to large scale destruction. Barbier and Burges, (2001) in recent years, and illegal tree felling and charcoal burning are rampart, debarking of certain trees for traditional medicine and firewood collection are serious problems.

2.3.2 Awareness and forest conservation

Lack of awareness of the importance of forest conservation may hinder or bring challenges for its conservation especially when the communities around the forest are poor. In Britain, the demand for most environmental services is highly correlated with personal income. Humans value the aesthetic aspects of the natural world more once their material need have been satisfied, Perlin, (1991).

Brazil is undergoing rapid change due to increasing urban development, which particularly affects native vegetation. Similarly, the riparian vegetation in the São Francisco River Basin in the Caatinga, a savanna-like domain in Brazil, has been undergoing constant change due to inappropriate land use, pollution from pesticides, desertification caused by the removal of native vegetation for agricultural development and disorganized exploitation of various timber and non-timber products without reforestation (Campello et al., 1999). Local people develop close links with riparian natural resources. By using these resources and managing the ecosystem, they understand and are directly involved in the process of landscape change (Bell, 2001). To understand the processes of degradation and thus recover the vegetation of these areas, it is believed that local people must become integral participants in ecosystem restoration. Importantly, this

participation will be beneficial to the environment if these people understand environmental problems and are willing to contribute to their solutions.

Human resources development, particularly in terms of professional training has not been sufficient to meet the needs associated with sustainable management and enhancing development opportunities.

In Tanzania investment in forests related education is a challenge. From 1993 to 2002, the number of forests bachelor degrees awarded has been increasing steadily, but the number of post graduate degrees has declined significantly, FAO, RIFFEAC and VICN, (2003). The importance of community and public involvements in the management of the forest has been recognized and promoted across Africa with many countries adopting new laws and policies to support this, Katere and Mohamed Katere, (2005). This has increased community involvement in several sectors including forests management, ecotourism, advocacy, public education and forestation and reforestation. Valuable information to the local communities on the benefits they could get from conserving forest is necessary as well as the information on effects of forest destruction. Eastern Africa has rather limited forest and woodland cover amounting to approximately 13per cent, UNEP, (2002).

Local communities should be made aware that forests and woodlands are a vital resource. Their effective utilization is important and should be based on the equitable sharing of benefits, costs and knowledge. Forests are a source of wealth that can be realized through sustainable harvesting of timber and non-timber products tourism and ecotourism and carbon trading. The forest water watersheds catchment value for Uganda for example has been calculated to be US S 13.2 million per year, Moyini and others, (2002).

It must be noted that existing information on forests and woodland is often outdated and incomplete. This is partly because most of it is obtained from secondary sources. For instance, no forestry inventory has been done in Angola since independence in 1975, Chenje, (2000). Therefore an important challenge is to develop and update its forest and woodlands database and to develop effective monitoring and evaluation systems.

In Kenya, there has been major effort to educate communities that live adjacent to major forests. This has been geared towards enhancing their understanding of the requirements of both the new forests policy and act and how both these new government documents relate to their involvements in the management of forests resources, Ogungo, Mburi, Maua and Othim (2007). Nurse and Edward, (1993) described the former forest management system that has been practiced in Kenya over the years as de-motivating for local communities and one that has made them participate in the destruction of the country's forest and tree resources. This has resulted in the formation of 100 community forest associations (CFA's) within different forests distributed across the country. Most CFAs have people who have worked in the forestry and agricultural sectors as members. They have knowledge of tree planting and management hence they guide other members of the CFAs in carrying out forestry related activities. There is a vast potential in the indigenous knowledge of members of CFAs since they have lived in the forests for a long time. Members of CFAs often know the tree species in the forests, their use, abundance and diversity. Such knowledge is also in education, research and even ecotourism.

This knowledge need to be tapped as a way of enhancing the sustainability of the forests resources. Forests provide intangible and not often tangible benefits to those communities who participate in their management. Tangible benefits that are available to the CFAs from the forests contributed to the cohesiveness of the CFA members, Ongugo, Mburi, Maua, Koech and Othim, (2005).

Therefore, the first step toward the process of increasing local knowledge and promoting environmental citizenship is to investigate the perceptions of local people and access their "vision" of the surrounding environment (Fernandes et al., 2006). Previousworks, such as by Lykke (2000) and Xu et al. (2006), have shown that by accessing local representations of the native vegetation, it is possible to identify changes in the landscape. Local people may be able to indicate which species have declined over the years, and this information may be used to support future reforestation projects. Moreover, as illustrated by Tabuti (2007), in addition to reporting which species have declined, people can identify the causes associated with these declines and landscape modification and reflect on their own attitudes toward the environment.

2.3.3 Socio-cultural factors and forest conservation

Researchers such as Klopp (2004) have argued that though human survival is based on exploitation of the environment, it is also driven by certain socio-cultural forces. Among the reasons pushing communities to degrading their environment are attitudes to as well as behavior arising from socio-cultural conditions that exacerbate and promote environmental degradation.

Avoiding degradation requires some knowledge and care for the ecological diversity one is depending on (Heathal and Binswangera 1996; Cropper and Griffiths 1994). This applies to herders and cultivators alike. Most peasant cultivators do not plan on a long-term basis and exploit the land as much as possible. Mono-cropping and population growth aggravate the problem as land is subdivided among heirs who are normally sons (Arbor 1992). An emphasis of land sub-division in marginal areas is counter-productive (Campbell *et al.* 2000; Ovuka 2000; Muchena 2008). Related to this is the pastoral practice of keeping large herds for status and prestige. The result is devastating to the environment, leading to total breakdown of the ecosystem (Anderson and Grove 1987)

Gender inequalities in gaining access to and control over natural resources continue to undermine a sustainable and inclusive development in developing countries (World Bank et al. 2009, Meizen-Dick et al. 2011). Gender differences arise from the socially constructed association between men and women resulting in gender disparities in the distribution of productive resources. Such disparities are explained by evidence which suggests that households do not make decisions in allocating resources in a unitary manner and gender preferences need to be upheld (Alderman et al. 1995; Haddad, Hoddinott & Alderman 1997). Also, there is often exclusion of women from decision making at household, community, and national levels (Agarwal 2001). Therefore gender relations and power dynamics will determine how rural men and women are able to take up innovations from research and their access to and control over key assets.

Assets can be categorized into six groups namely human, physical, financial, natural, political and social (Meizen-Dick et al 1997).

Women living around the Olokemeji forest reserve in Nigeria tend to adopt practices that lower pressure on forests such as the cultivation of less nutrient demanding crops such as cassava and yam, and using environmentally friendly farming systems such as terracing and Taungya, Gbadegesin, (1996). Similarly village women from Nigeria's cross river state, successfully resisted men's alienation of large forests blocks from whose ranges they gather many non-timber forest products (NTFPs) that Constitute the bulk of their families' means of subsistence and income generations, Johnson, (2003).

Women in Tanzania have yet to achieve social and economic status equal to their economic contribution. Women are still rarely seen in decision making spheres, Mhina, (2001). Despite the role of women in forestry and gains accrued at family level, their role and position remains at the lowest level both at the household and national level, Chingonikaya, (2004). In forest depleted areas, Tanzania women spend

between five to eight hours searching for fuel wood, Mhina, (2001), but still claims low leverage points in decision making at household level which is largely patriarchal in nature.

There is evidence that women's participation in decision making in forest management has been found to improve forest regeneration (Agarwal 2007, 2010), it reduces the incidence of illegal harvesting and other unsanctioned activities (Agarwal 2009, Agrawal *et al*. 2004), preserve biodiversity (Claudia 2008), and their presence in forest user groups enhances the capacity to manage and resolve conflicts (Westerman *et al.* 2005).

In developing countries both men and women remain dependent on forest goods and services such as firewood, fodder, soil and water protection, and regulation of the climate which influences their agricultural activities. Women use these resources to ensure well-being of their families as the meet their role of food provision. Therefore, women need to be involved in decisions regarding the management of forest resources. It is increasingly evident that women living closer to the forest are taking up the role of co-managers and co-protectors of forests, along with governments and other bodies (Mwangi et al. 2009; Aguilar et al. 2011). This is because women who bear the responsibility for feeding families have greater interactions with forest resources and are more inclined to conserve them in order to mitigate the burdens that may be associated with deteriorating forest condition in future (Acharya & Gentle 2006; Agarwal 2010). Furthermore, there is a vital need for more effective forest management since these resources are under threat because of increasing global trade, climate change, population rise, urbanization, and energy and food insecurity (CIFOR 2008; WB 2010). The inclusion of women in forest conservancy, governance and decision-making could determine the ultimate success of such initiatives. Their inclusion could offer a prospective pathway for empowerment both within their private and public lives (Torri 2010). Women's inclusion in forest management also implies a possible pathway for sustainable use of natural resources as an alternative source of livelihood (Obare and Wangwe 2009; WB 2010; FAO 2011). Gender roles

generate different benefits and values for men and women arising from the use of forest products. Miruka et al. (2012) study indicates that men trade in forest products such as honey, timber, building materials and charcoal while women on firewood and weaving materials.

Therefore, men and women might have different motives for conserving forest resources because of the different roles and obligations in the household or even at community level. As a result, incorporating gendered aspects into forest conservation could help improve the outcome of forest conservation initiatives.

Understanding gender differentiated motives is crucial in strategizing the appropriate measures for forest conservation considering the different needs for men and women. Gender motivations for forest conservation are also paramount in order to protect biodiversity, ecosystem services and habitat and reduce the impact of climate variability to forest communities.

2.3.4 Government Policy and Forest Conservation

Land use planning in America has traditionally meant "planning for development." Over the past 25 years, hundreds of communities and several states have recognized the need to preserve land for farming, forestry, watershed protection, wildlife habitat, recreation areas, or open space. A common problem is that public planners have not clearly delineated certain lands for preservation. Meanwhile, non-profit organizations have not fully perceived themselves as land use planning agencies (Wright and Czerniak 2000); and have often pursued a piecemeal and reactive preservation strategy in response to weak local zoning and the swift pace of development (McQueen and McMahon 2003). Thus, in most places in America, including New York, New Jersey, and Pennsylvania, privately owned open land seems to be at once for sale for development and available for preservation. The competition to preserve or develop land causes considerable friction between developers and land preservationists. Meanwhile, governments have

a schizophrenic relationship to land: they want to see it developed so the tax base will increase and the economy will grow, yet they are also active in preserving land.

In Latin America, the almost direct overlap between forest and rural poverty in many countries puts forests and forest use at the centre of the growing national and global concern about poverty reduction, rural development, forest protection and rehabilitation and sustainable growth, World resources Institute (WRI), (2005).

On policy side, governments are exploring new institutional arrangements for forest management and development. Most African governments have attempted to change the traditional land tenure system as a way of bringing the people into the global market structures (Shipton 1998; Okoth-Ogendo 1991). However, the new system especially in communal land has not been successful. For instance, scholars believe that nomadic production systems could be the most appropriate use of marginal and fragile ecological areas (McCabe 1990; Moore 2005; Behnke and Scoones 1992; Bovin and Manger 1990). Unlike sedentary production systems, communal land tenure allows for 'opportunistic' use of pasture, thus taking advantage of environmental variations (WISP 2007; Orindi *et al.* 2007).

In china, environmental protection was initiated such that some natural forests were designated as logging ban areas. However, the conservation policies were short lived during the turbulent times that followed, rather than implementing conservation areas, this period saw extensive environmental degradation resulting from the creation of enormous projects on water control industry and agriculture. There have been cases in which local forests agencies have demarcated potentials nature reserves on a map without going into the field to access the tenure, Harness, (1998).

In Indonesia's community forest program, farmers are allowed to use degraded state forest for coffee based agro forestry system provided they protect the rest of the forest resulting in tenure benefits. A recent study, Asquith, (2007) reveals considerable optimism for pro-poor watershed payment for ecosystem

services (PES). Six countries observed that poverty environment trade- offs can be minimized with appropriate design and implementation and that this project tend to involve transfers of wealth from wealthier urban areas to poorer rural areas and can empower the poor by explicitly recognizing them as valued service providers.

In Democratic Republic Of The Congo (DRC) they ought to Place forest conservation in the hands of local communities which would creates an incentive to conserve. Legitimizing the customary rights of forest-dwelling communities and involving them in the preservation of their own land would make it their own interest to ensure forest resources are used in sustainable ways, in order to safeguard their future homes and livelihoods. Furthermore, implementing community-based conservation as the lynchpin of forestry policy would create a harmony between this ground-level conservation mechanism and more centralized initiatives such as REDD. Legitimizing the roles and rights of forest dwelling communities would ensure their voices are heard in planning and implementation of REDD and other centralized conservation efforts, while the long-term knowledge of the forest ecosystems that the local communities can provide will help determine which forest areas may me best suited to which uses. Ground-level conservation also provides a means of overseeing protected areas and harvesting practices, which can be economically and logistically infeasible when implemented in a top-down manner.

Allard Blom characterized typical top-down, centralized policy structures as “conservation for the people”, and basically community-oriented, bottom-up structures as “conservation by the people”. Establishing equilibrium between community-based conservation and national policy initiatives would implement “conservation with the people”, utilizing the unique knowledge of forest-dwelling communities to create and implement sound forestry policy, and shaping top-down policies in a way that recognizes the communities’ rights. Conserving with the people in this manner is crucial in moving forward with forestry

policy in the DRC, creating a farsighted set of policy initiatives that protect a precious environmental resource while supplying the economic benefits and community stability to a newly democratic country with extensive potential.

For a long time, Kenya did not have a comprehensive legislative framework for environmental regulation (Migai-Akech 2006; Nicholas 2008; Obare and Wangwe 2006). Environmental law was confined to common law and a number of related statutes scattered in several sectors such as water, health, forestry, agriculture and industry (Mbuvi *et al.* 2007; Migai- Akech 2006; Kamau 2005). However, increasing environmental activism culminated in the enactment of the Environmental Management and Coordination Act (EMCA) which was mandated to coordinate the activities of various agencies (GoK 2000, 1994; NEMA 2004; van Koppen *et al.* 2007; Ongugo 2007).

Vision 2030, a draft forest policy (2006) is in place and a new forest Act (2005) came into effect in February 2007. Key provisions include; establishments of semi-autonomous Kenya forest service; Broader mandate of the service to cover all forests, increased role and responsibility for local communities and other stake holders in management of forests; promotion of commercial tree growing, excision of gazette forests require EIA and parliamentary approval; management plan required for all major forest ecosystems; creates a professional forestry society; establishes a forest management and conservation funds. The management of forest resources in Kenya is guided by the National forest policy supported by the Forest Act, Wass, (1995). The main activities of the forest department include active management of plantations, law enforcements to control illegal extraction, licensing of extraction of forest products and fire protection. The Kenya wildlife service (KWS) was created as a parastatal in 1990 to control national

parks countrywide. Creation of parks and protected areas to enhance conservation is common, Ghai,(1994), Salafasky and Wallenberg (2001), Kamugisha, Ogutu, and Stalhl M. (1997).

2.4 Theoretical Framework

Tragedy of the commons theory (William Forster Loyd, 1833)

The tragedy of the commons concept is important in understanding of environmental degradation of our society. It is a dilemma in itself rooted to the situation in which multiple individuals, acting independently and rationally consulting their own self-interest, will ultimately deplete a shared scarce resource, even when it is clear that it is not in anyone's long-term interest for this to happen (Hardin, 1968). The basic idea espoused by the tragedy of the commons concept is that if a resource is held in common for use by all, then ultimately that resource will be destroyed (Hardin, 1968). The resource shared in common in this case is the trees that are cut down for charcoal production, timbers and clearing forests for agricultural farming (growing of maize, beans, vegetables and sugarcane). To avoid the ultimate destruction, the human values and ideas of morality must be changed (Foddy *et al*., 1999).

This theory assumes that every human exploiter of the shared common resources is driven by self-interest (Ostrom *et al*., 2002). When the carrying capacity of the commons is fully reached, the exploiters might find themselves in a dilemma of whether to continue with their actions or not. The gain of doing so would go solely to them, but the loss from their actions would be "Communized", therefore they will not give up their actions (Hardins, 1968). Because the privatized gain would exceed his share of the communized loss, a self-seeking exploiter would not change his behavior (Hardin, 1968). Others reasoning in the same way, would follow the suit and ultimately, the common property would be ruined (Ostrom *et al.*, 2002). Communities around Nyakweri forest in Trans Mara sub-county have exploited the trees in burning

charcoal, lumbering and clearing some part of it for farming. The climate has changed and we have human-animal conflict since the forest has been destroyed.

2.5 CONCEPTUAL FRAMEWORK

Conceptual framework shows the diagrammatic relationships between the independent variables and the intervening variables to the dependent variable. The indicators of the independent variables are shown in figure 1 below.

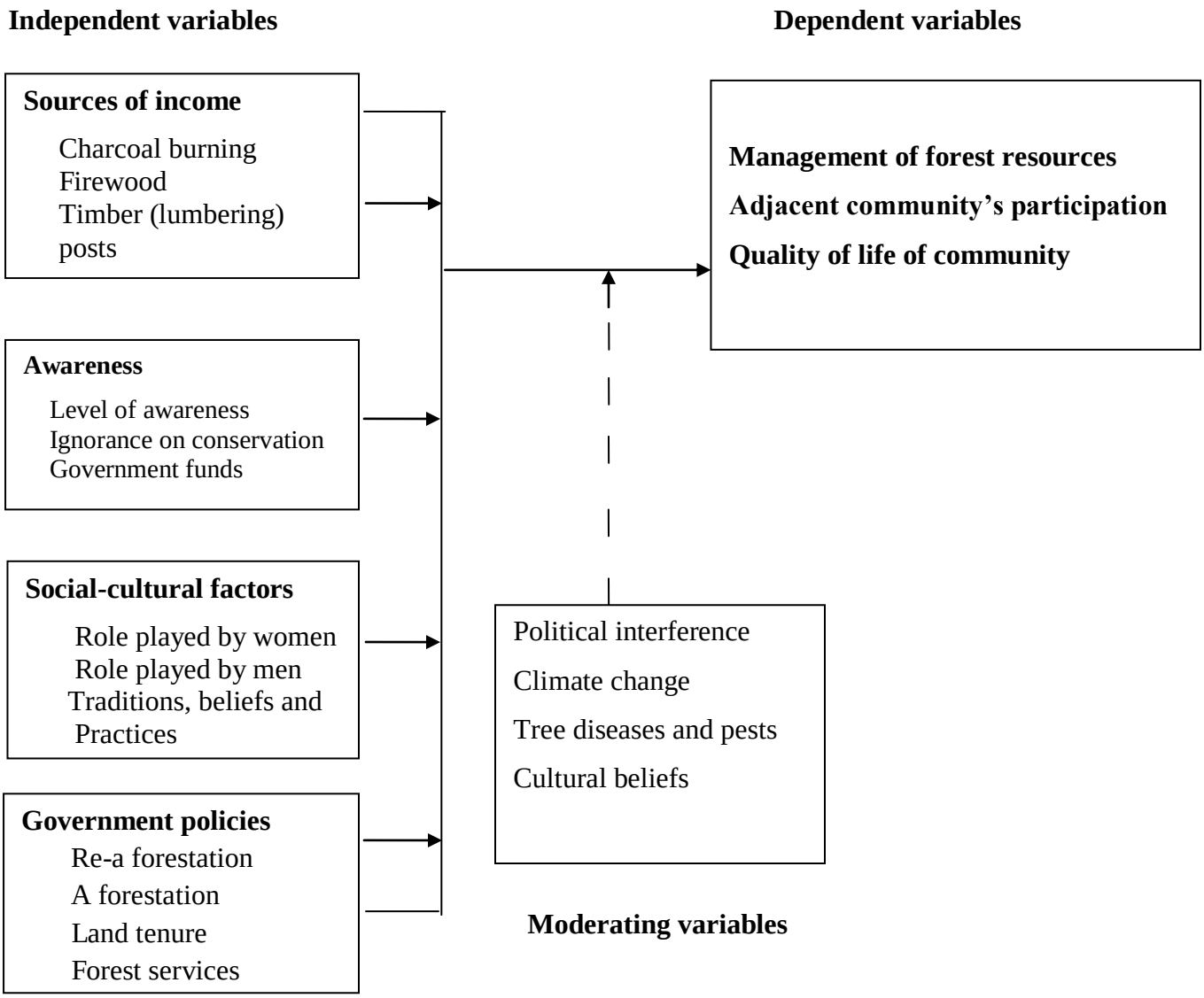

Fig 1: Conceptual framework

Source: Researcher 2016

2.6 Summary of literature review

Forest and woodlands are declining primarily as result of increase in wood fuel collection, conflicts, increasing urbanization and industrialization, FAO, (2000). These opportunities are diminishing. Between 1990 and 2000, Africa's forest and woodlands receded faster than the global average; deforestation in Africa to place at an average of 0.8 percent, as compared to the world average of 0.2 percent, FAO,(2005).

In Kenya, one of the major causes above is government policy; legal, institutional, technical and economic constraints have undermined wider adoption of sustainable forest Management as well as limited opportunities for development. Improving opportunities available to local users will have benefits at local level, with potentially positive spinoffs at the national, sub regional and regional level. The importance of community and public involvement in the management of forests has been recognized and promoted across Africa with many countries adopting new laws and policies to support this, Katerere and Mohamed-Katerere, (2005).

One study indicate that current global expenditures on protected areas amount to approximately $ 6.5 billion per year, but the amount required to fully support conservation objectives would cost an estimated $ 45 billion per year, Balmford, (2002). This shortfall is exacerbated when considering the stark ratio of conservation investment in developed and developing nations. Relative participation of men and women in various capacities of decision making has been the key items in forest conservation. Agarwal, (1997,2001, 2003) observes that women are often excluded from participation for various reasons including rules governing the community forest groups, social barriers stemming from cultural constructions of gender roles , responsibilities and expected behavior, logistical barriers relating to timings and length of organizational meetings and male bias in the attitudes of those promoting community forestry initiatives. Mackenzie, (1995) warns against assuming a necessary and complimentary

relationship between women and sustainability as these may be limited by the existing structure of incentives such as limited control over land, labour technology.

Despite the above scholars' contributions in forest conservation, there is more to be studied. Influence of high school students in forest conservation and community around the forest to get 30% of the revenue to be fully involved in forest conservation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter contains research design, sample size and sample selection, research instruments, data collection procedures, reliability and validity of research instruments and methods of data analysis.

3.2 Research design

Descriptive survey was used in conducting this study because it is concerned with describing, recording, analyzing and reporting conditions that exists in the present, Kothari (2003). Gay, (1981) defines descriptive research as a process of collecting data in order to test hypothesis or to answer questions concerning the current status of the subjects in the study. This design is therefore appropriate because it is concerned with existing programs which are forest conservation measures. It employs questionnaires as research tool. The information which will be gathered will help in making recommendations for the study.

3.3Target population

The population refers to an entire group of individuals, events or objects having a common observable characteristic (Mugenda&Mugenda, 2003). The study targeted all people around Nyakweri forest and Maasai mara game reserve in Trans Mara sub-county as well as 1200 forest guards and forest officers.

According to the records at the registrar of persons' office at Trans Mara confirms the number of adults around Nyakweri forest is 2800.

3.4 Sampling techniques and sample size

3.41 Sampling techniques

3.42 Sample size

Stratified random sampling techniques procedure was used in this study to ensure that all the villagers living around the forest are represented as well as the forest guards, forest officers. Simple random sampling was used to provide an opportunity for selection of each element of the subgroups. The sampling frame is provided below in table 3.1

Table 3.1 Sampling frame

Respondents	Total Population	Sample
Forest Officers	200	20
Forest guards	1000	100
Villagers	2800	280
Total	4000	400

Source: District registrar of person's office

3.5 Research instruments

The instrument for data collection was the questionnaire. Questionnaires were important in saving time because it gathers data over a large sample, Kombo, Tromp, (2006). Interviews schedule was used to provide detailed information from the forest guards and forest officers, by creating a rapport with the respondents explaining the purpose of the study and meaning to questions which might be unclear to them. Primary data was used and was collected by use of questionnaires and interview schedule.

3.5.1 Piloting of the research instruments

Piloting means pre-testing the instruments with a few respondents to test their accuracy. That is data collection instruments (questionnaires and interview schedule). Here the researcher pilot tested the instruments by giving them to two groups of ten respondents living next to the forests. After successful piloting, the researcher gave the instruments to the sampled population. Mugenda and Mugenda, (2003) say that pretest sample should be between 1 to 10 percent of what you intended to use.

3.5.2 Validity of research instruments

Mugenda, (2003) defines validity as the accuracy and meaningfulness of inferences which are based on the research results. In other words, validity is the degree to which results obtained from the analysis of the data actually represents the phenomena under study. There was one questionnaire for each of the villagers living around the forests and each of the forest guards and interview guides for each of the management. The items reflected the four objectives and four research questions. The items were based on the themes enumerated under literature review. All the items in the instruments related accurately to the research topic.

The validity of the instruments was also reflected on the items which were structured in simple English language, which the respondents found easy to understand. Rules pertaining to interviews were observed. The content validity in this research was achieved through piloting of the research instruments on two groups of ten respondents living around the forest. The research instrument was further analyzed by restructuring the question items to meet the objectivity of the research hence validity. The instruments were subjected to validation by experts in the area of study. This is according to Mugenda and Mugenda, (2003) who noted that validity is judgment made better by a group of professionals and experts in the field of study.

3.5.3 Reliability of research instruments

Mugenda, (2003) defines reliability as a measure of the degree to which a research instrument yields consistent results after repeated trials. Reliability in search is influenced by random error. As random error increases, reliability decreases. Random error is the deviation from a true measurement due to factors that have not effectively been addressed by the researcher.

To establish reliability of the questionnaires therefore, the split half technique was used. The researcher gave questionnaires to the sampled group. At random, the researcher divided the scored items into two groups. Each subject's total score from the two groups of items were computed and the scores correlated from all the subjects. An index of 0.8 was attained. This was satisfactory.

3.6 Data collection procedure

Permission to collect data was sought from the Ministry of Education's permanent secretary through the dean of postgraduate studies of University of Nairobi and a copy given to Transmara sub-county Forest officer before proceeding to the field for data collection. The researchers made personal visits to all the sampled villages, provincial administration, forest guards and the forest officers. The first visits were for acquainting one with respondents and explain the intention of the study. The second visit was to conduct an interview with the Provincial administration and forests guards and forest officers. Finally the researcher made arrangement with the sub-chiefs to issue the questionnaire to the villagers.

3.7 Data analysis techniques

After data collection, the items from the questionnaire were coded and scored to yield quantitative responses which assisted the researcher to generate answers to the research questions. The responses from interview schedule were analyzed, aggregated and frequencies worked out.

The data analysis was done by both quantitative and qualitative techniques. Quantitative data was analyzed by use of simple descriptive statistics, like frequencies and percentages. The qualitative data was analyzed and has been reported in a narrative form.

3.8 Operationalization Table

Table 3.2 Operationalization table

Objective	**Type of variable**	**Indicator**	**Measure**	**Level of scale**
To investigate How sources of income influence forest conservation in Transmara Sub-	Sources of income (independent Valuable)	-charcoal burning -Unemployment -Limbering	-Number of trees cut -Number of People unemployed	-Nominal

county	Forest conservation Projects (dependent Valuable)	-Quality of Forest -attitude of adjacent communities towards forest conservation	-Improved quality of Forest and community lives -Positive attitude towards forest conservation	-Nominal
To establish How the level of education And awareness Influence forest Conservation in Transmara Sub-county	Level of Education (independent Valuable)	-Ignorance on Conservation -awareness -Attitude of the Adjacent community Quality of Forest	-Number of People who Know the Value of forest -Positive Attitude towards Forest conservation	-Nominal
	Forest conservation Projects (dependent	-Attitude of Adjacent Community To the forest	-Improved quality of Forest and community	-Nominal

	Valuable)	conservation	lives -Positive attitude towards forest conservation	
To examine to which extent Social –cultural Factors influence Forest conservation In Transmara Sub-county	Social cultural factors (independent Valuable)	-Role of men -Role of women -Customs ,beliefs And practices		-Nominal
	Implementation Of forest conservation measure (dependent Valuable)	-Quality of Forest -Attitude of Adjacent Community to the forest Conservation	-Improved quality of Forest and community lives -Positive attitude towards forest conservation	-Nominal
To establish How	Government Policies	-re-aforestation -A forestation	-Quality of Forest	

government Policies Influence Forest Conservation In transmara Sub-county	(independent Valuable)	-Land tenure	-Number with Title deeds	
	Forest Conservation Projects (dependent Valuable)	-Quality of Forest -Attitude of Adjacent Community To the forest conservation	-Improved quality of Forest and community lives -Positive attitude towards forest conservation	-Nominal

3.9 Logistical and Ethical Considerations

The ethical consideration in this study was based on collection of information from the groups without biases. A lot of secrecy was attached to this endeavor and high professionalism in interviewing, observation and audio visual data collection from respondents. The respondents were informed earlier of the intention of conducting the research and a letter of authority was used to build trust. They were also given the freedom to ignore the items they did not want to respond to under the principle of informed consent.

CHAPTER FOUR

DATA ANALYSIS, REPRESENTATION, INTERPRETATION AND DISCUSSION

4.1. Introduction

This chapter includes data analysis, representation and discussion.

4.2. Response Rate

To ensure that the response rate was good, the researcher discussed the questionnaires with the supervisor to ensure its validity as well as with the respondents in a friendly atmosphere to iron out any ambiguity. The researcher further explained the importance of research to the respondents to avoid absenteeism hence he administered and collected the questionnaires immediately. The following were the return rates as highlighted in table 4.1.

Table 4.1 Questionnaire return rate.

Target	**Sample**	**Return Rate**		**Total**
	Population	Male	Female	
4000	**400**	**210**	**150**	**360**

360 copies of the questionnaires were returned duly filled giving a response rate of 90%.

4.3 Demographic Variables of the Respondents

4.3.1 Age of Respondents

Respondents were asked to indicate their ages in the given brackets. Field data revealed the information represented in the table 4.2

Table 4.2. Age of the respondents

Age in years	Frequency		Percentage		Total (%)
	Male	Female	Male	Female	
18-30	120	70	57.14	46.67	52.78
31-40	60	35	28.57	23.33	26.39
41-50	20	25	9.52	16.67	12.50
Over 50	10	20	4.76	13.33	8.33
Total	**210**	**150**	**100**	**100**	**100**

Table 4.2 reflects that 360 respondents were contacted, 57.14% male and46.67%female fell under age 18-30 years, 28.57% male and23.33% female fell between 31-40 years,9.52% male and 16.67% female fell between 41-50 years while4.76% male and 13.33% female were of age 50 years and above. This implied that majority of the respondents fell between ages 18 -30 years.

4.3.2 Education Level of Respondents

Education impacts skills, knowledge and attitude to the persons enabling them to improve in their performance. The researcher hence asked the respondents to indicate their highest level of education. This is represented in 4.3.

Table 4.3. Education level of respondents

Level of Education	Frequency	Percentage
Primary	160	44.44
Secondary	110	30.56
Middle level colleges	60	16.67
University	30	08.33
Total	**360**	**100**

As reflected in the table 4.3, majority of the respondents (44.44%) were primary school leavers, (30.56%) had attended up to secondary school level, (16.67%) have attained middle level college education and only (8.33%) had gone to university. This meant that after primary school, majority do not join secondary just like after secondary level of education majority do not proceed to university. Youths were faced with unemployment crisis against rising personal needs that is why they engage in destructive activities like charcoal burning.

4.3.3 Years of Association with Forest

The researcher asked the respondents to state the number of years they had associated with the forest. The table below shows their response.

Table 4.4. Association with forest

No. of years	Frequency	Percentage
0-5	55	15.28
5-10	85	23.61
10-15	120	33.33
Above 15 years	100	27.78
Total	**360**	**100**

From the table 4.4, majority of the respondents (33.33%) had been in association with the forest for a period of less than 10-15 years, followed by (27.78%) who had been in association with the forest for more than 15 years, (23.61%) had been in association with the forest for between 5-10 years while (15.28%) for between 0-5 years. This implied that majority of the respondents had been in association with the forest for 10-15 years and therefore could not be able to conserve the tree for future use but only more years of destruction hence climate change.

4.4 Sources of income

Residents were asked to state the source of their most income if they are not employed. The findings were tabulated in table 4.5.

Table 4.5 Sources of income

Source	Frequency	Percentage
Farming	110	30.56
Small business	95	26.39
Relatives	30	08.33
Others	125	34.72
Total	**360**	**100**

Table 4.5 illustrated that out of 360 respondents, majority 34.72% have no clear cut source of income, 30.56% get their income from farm produce, 26.39% get their income from small business while 8.33% get their income from relative. Table 4.5 indicated that majority 34.72% get most of their money from other sources like charcoal burning, lumbering and other forest products which are in contrast with implementation strategies.

4.4.1Type of fuel used

The type of fuel residents living next to the forests may influence implementation of forest conservation measures. The respondents were asked to indicate the type of fuel they mostly use for cooking. Table 4.6 indicates their responses

Table 4.6. Source of cooking fuel

Source	Frequency	Percentage
Electricity	30	08.33
Gas	50	13.89
Firewood	120	33.33
Charcoal	160	44.44
Total	**360**	**100**

Table 4.6 shows that majority of the respondents 44.44% use charcoal and 33.33% use firewood as fuel for cooking, 13.33% use gas, and only 8.33% use electricity. This implies that the forest provides a good source of this fuel thus forest conservation is a challenge.

4.4.2. Size of land and forest conservation

The size of land one owns has a bearing on forest conservation since if the land is small, one is likely to encroach into the forest for farming or grazing thus destroying the forest. This fact is supported by coal and Neumeyer, (2005) who noted that long term consequences of eradicating poverty first and thinking of environment later to be serious. The study endeavored to investigate to investigate the influence of size of land owned by adjacent communities on implementation of forest conservation measures. The resources were tabulated on table 4.7.

Table 4.7 size of land and forest conservation

Approximate Land size	Frequency	Percentage
0-3 acres	120	33.33
4-7 acres	100	27.78
8-10 acres	85	23.61
10 acres and above	55	15.28
Total	**360**	**100**

Table 4.7 shows that majority of the respondents (33.33%) have less 3 acres of land, 27.78% have between 4 acres and 7 acres of land, 23.61% have between 8 acres and 10 acres of land. This shows that majority have insufficient land thus the temptation of encroaching the forest for forest products e.g. timber, fuel or to farm. This makes implementation of forest conservation difficult.

4.5 Influence of awareness and education on implementation of forest conservation measures

Education and awareness impacts skills on communities of how to take care of the biodiversity, it also makes the residents to reason thus foresee the impact of their actions. The view is backed by Ogunga, (2007) who persist that education to communities enhances their understanding of the requirement of forest policy act and how these relate to their involvement in the management of forest resources. In this regard, respondents were requested to mention the trainings they had undergone in relation to forest conservation implementation measures. Their responses are illustrated in table 4.8

Table 4.8 Education and training undertaken by respondents

Courses	Frequency	Percentage
Beekeeping	30	08.33
Agro-forestry	75	20.83
Nursery management	105	29.17
None	150	41.67
Total	**360**	**100**

Table 4.8 shows that majority 41.67% have not attended any form of training geared to forest conservation, 29.7% have attended nursery management, 20.17% agro-forestry while 8.33% have trained on bee keeping. This implies that majority lacked training and skills to implement forest conservation strategies.

4.5.1 Availability of forest conservation information

Information rather than ignorance is very important in pursuing on objective. This is proved by nurse and Edward (1993) who said that it is ignorance that makes local communities to destroy forest. This resulted in formation of community forest association (CFA's) which consisted of people who have worked in the forestry agricultural sectors as members. In view of this respondents were asked to state whether or not they have relevant information necessary for forest conservation. Their responses are in the table 4.9

Table 4.9 Availability of forest conservation information

Information	Frequency	Percentage
Not available	95	26.39
Available and adequate	70	19.44
Available but outdated	160	44.44
Available but inadequate	35	09.72
Total	**360**	**100**

Table 4.9 shows that majority of respondent (44.44%) agree that the information which is available is outdated 26.39% indicated that the information is not available is while 9.72% noted that the information which is available is inadequate. This meant that the residents are faced with ignorance against rising personal needs that is why implementation of forest conservation measures has challenges.

4.5.2 Importance of forest

Forest conservation is very important in the improvement of biodiversity among other benefits Githitho, (1998) confirmed this when he said that new values should be included in information package such as the importance of the kayas in terms of their biological diversity. Therefore respondents were requested to state the importance of forest to them. Their responses are in the table 4.10

Table 4.10 Importance of forest to residents

Importance	Frequency	Percentage
For hunting	50	13.89
Firewood and timber	200	55.56
Medicine and extraction	60	16.67
Rain Catchment	50	13.89
Total	**360**	**100**

Table 4.10 shows that majority 55.56% see forest to be important for provision of firewood and timber, 16.67% said it's important for medicine, 13.89% for rain catchment while 13.89% indicated its important place for hunting. This concurs with Agrawal, (2007) who found that rules of forest closure designed to regenerate deteriorating forest, which ban entries of both animals and human as disadvantageous to women who have daily responsibility for cooking fuel and tendering cattle. Poverty has also played a role in inhibiting implementation measures through illegal logging.

4.5.3. Methods of communication used to pass information regarding implementation of forest conservation measures

The medium through which is passed to the communities is crucial if the message has to reach a bigger proportion. In this regard respondents were asked to state the method through which information is passed to them. Their responses were summarized in the table 4.11

Table 4.11 methods used for communication

Method	Frequency	Percentage
Letters and memos	50	13.89
Radio(Local channel)	190	52.78
Barazas (community gathering)	100	27.78
Newspapers	20	05.56
Total	**360**	**100**

Table 4.11 shows that the medium most used to pass information on forest conservation is through radio (local channel) at 52.78%, followed by Barazas (community gathering) 27.78%. Others are letters and memos 13.89% and the least were through use of newspaper at 5.56%. table 4.18 showed that the main medium of communication with the community is through radio (52.79%) followed by (community gathering) 27.78%. this implied that important information on forest conservation do not reach the resident since with low level of income, majority cannot afford radios or batteries or newspapers.

4.5.4. Amount of funds allocation

This is a source a stock of sum of money or other sources of set aside for specific purpose.

Access to finance has seen to be challenging and was cited as the most prominent implementation of forest conservation measures. This view is supported by Joppa et al, (2008) who said that effectiveness and part of the world depends on many local factors of economic, social and political. This study sought to establish the influence of funding on forest conservation implementation strategies. In this regard,

respondents were asked if the amount allocated at the district is adequate. Their responses are illustrated in table 4.12

Table 4.12 is amount of fund allocated adequate?

Response	Frequency	Percentage
Very adequate	60	16.67
Adequate	70	19.44
Inadequate	120	33.33
Very inadequate	110	30.56
Total	**360**	**100**

Table 4.12 indicated that 33.33% of respondents said that the amount allocated for implementation of conservation measures is inadequate, 30.56% said it is very inadequate, 19.44% observed that it is adequate while only 16.67% said it is very adequate. This implies that the amount of funds allocated is not enough to carry out duties within the ministry.

4.5.5 Where the funds are used

Proper management of funds put aside for conservation of forests is a key in implementation various strategies. The study sought to determine where most of the funds are used for. In this view, respondents were requested to state their area where most of the funds are used. Their response were captured and summarized in the table 4.13

Table 4.13 Areas of use of allocated funds

Uses	Frequency	Percentage
Conservation awareness	60	16.67
Tree nurseries	50	13.89
Seminars	210	58.33
Research	40	11.11
Total	**360**	**100**

Table 4.13 illustrates that most of the funds 58.33% are used for seminars, 16.67% used for conservation awareness, 13.89% for taking care of tree nurseries while only 11.11% used for research. This implies that priorities on forest conservation are not given an upper hand hence making it difficult to implement conservation strategies.

4.5.6 Sources of funds for conservation

Sources of funds are an important requirement if serious implementation of forest conservation strategies is to be accomplished. This is proved by Wunder, (2006), Hope et al, (2005) when noted that payment of Ecosystem services (PES) has been hailed by multilateral development aid agencies as more cost efficient approach to conservation come from. The responses were tabulated in table 4.14

Table 4.14 Source of funds for forest conservation

Sources	Frequency	Percentage
Ngo's	220	61.11
Bilateral/Multilateral	80	22.22
Government	40	11.11
Community	20	05.56
Total	**360**	**100**

Table 4.14 indicates that the greatest source of funds was from the NGO's at 61.11%. The second best source was bilateral and multilateral institution at 22.22%. then government at 11.11%, The least was community 5.56%. This implies that the government largely relies on loans and NGO's in order to conserve the forest. This effects implementation of forest conservation strategies given that the NGO's and the loan may be tied to certain conditions.

4.5.7 Challenges in use of funds

The numerous challenges that forest conservation institution have made it difficult for implementation of forest conservation strategies. The respondents were thus requested to the state the serious challenges that inhibit implementation of proper conservation measures. Their responses were put in table 4.16

Table 4.15 Challenges in use of funds and forest conservation

Challenges	Frequency	Percentage
Long waiting periods	70	19.44
Lack of awareness	90	25.00
Misappropriation	110	30.56
Corruption	90	25.00
Total	**360**	**100**

Table 4.15 illustrates that a large proportion of respondents 30.56% indicated that the worst challenge is due to misappropriation of funds meant for conservation; this was closely followed by corruption within the ministry at 25.00%, lack of awareness 25.00% and the least challenge was indicated as long waiting period of funds to be released at 19.44%. This implies that funds are not put into proper use thus inhibiting implementation of forest conservation strategies.

4.6 Influence of social cultural factors on implementation of forest conservation measures

The influence of culture, beliefs and gendered relationships on access to forests and on forests sustainability remains a concern. This view is backed by Kabutha and Humbly, (1996) who reported that women managed as much as 74% of Kenya's small holding firms, implying that they hold the power to sustainable production of the Country's land resources. In this regard the respondents were requested to state the extent to which participation of different groups' effect implementation of forest conservation measures. They were further asked how they were overcoming them. Their responses are illustrated in table 4.16

Table 4.16 Participation in conservation programs

Participation	Frequency	Percentage
Males reign with supremacy	130	36.11
Males are the sole policy and decision makers	150	41.67
Women exclude from high status, occupation and position	50	13.88
Youth excluded from participation	30	08.33
Total	**360**	**100**

Table 4.16 highlights that out of 360 respondents 41.67% indicated that men's sole policy and decision making influence forest conservation implementation strategies, 36.11% said it's the supremacy of men, 13.88% indicated that it's the exclusion of women from high status, occupation and position while 8.33% said it's the exclusion of youth.

4.6.1 Remedies on participation

Participation should be all inclusive and not exclusive if implementation of forest conservation strategies is to bear fruits. The respondents were asked to indicate how they would try to overcome challenges they faced on participation. The information to this effect is represented in table 4.17

Table 4.17 Remedies on participation

Mechanisms	Frequency	Percentage
Promote awareness	70	19.44
Support women participation	90	25.00
Involving youth in forest conservation Through education and training	140	38.89
Voting women in power	60	16.67
Total	**360**	**100**

Table 4.17 shows that majority of respondents 38.89% prefer involvement of youth in implementation of forest conservation measures, 25.00% Support women participation, 19.44% Promote awareness, while 16.67% suggested voting women in power. If youth who destroy forest are involved in its conservation, they would understand the need for sustaining the forest for their own good.

4.6.2 Influence of land ownership on forest conservation

Land ownership is key in influencing implementation of forest conservation measures since land scarcity promote communities to encroach the forest. For this reason residents were asked to state own land in their community. Their responses were illustrated in table 4.18

Table 4.18 Influence of land ownership and forest conservation

Owned by	Frequency	Percentage
Women and men jointly	100	27.78
Women only	30	08.33
Men only	170	47.22
Communal	60	16.67
Total	**360**	**100**

Table 4.18 indicates that most of the land is owned by men 47.22% followed by Women and men jointly 27.78%. Communal ownership at 16.67% and women ownership was the least at 8.33%. This implies that women cannot plant trees even if they want without permission from men who own most of the land.

4.6.3. Influence of culture and beliefs on implementation of forest conservation measures

Culture and beliefs of a community is important when conservation of forest is concerned. This is supported by Agrawal, (1997,2001,2003) who observed that women are often excluded from participation for various reasons like social, barriers, logistical barrier, responsibilities and expected behaviour. Due to this, respondents were requested to state culture and beliefs that mostly influence implementation of forest conservation measures. The responses were tabulated in table 4.19

Table 4.19 Influence of customs and beliefs forest conservation

Customs/beliefs	Frequency	Percentage
Female role in the kitchen	60	16.67
Only males are allowed to plant or cut trees	100	27.78
Males are the sole decision makers	120	33.33
Females are like property in home	80	22.22
Total	**360**	**100**

Table 4.19 shows that respondents 33.33% indicated that males as decisive. 27.78% belief that only males can cut and plant trees is a major factor that influences implementation of forest conservation measures, 22.22% females being viewed as property and only 16.67% of respondents indicated that females rule in the kitchen as being responsible for poor implementation of forest conservation strategies. This meant that alienation of females by men on participation on forest conservation strategies have hindered proper implementation. Men are largely involved in timber extraction and have less frequent involvement in forest unlike women who use product like firewood are more likely to be in the forest more often, which is an aid for monitoring.

4.7 Government policies and implementation of forest conservation measures

Government policies in general and on forest conservation in particular were of great concern since it provides enabling regulations. However, forest conservation was still faced with numerous challenges. This is supported by vision 2030, a draft forest policy (2006) and a new forest act (2005) which noted that there is need for establishment of a semi-autonomous Kenya forest service, increased role and responsibility for local communities and responsibility for local community and other stakeholders in

management of forest, establishment of a forest management and conservation funds among others. In this regard, the respondents were requested to state major constraints on implementation of forest conservation measures and how they were managing them. Their responses were highlighted in table 4.20

Table 4.20 Constraints on implementation of forest conservation measures

Constrain	Frequency	Percentage
Inaccessibility of funds	50	13.89
Government regulatory	130	36.11
Government regulatory framework conditions	100	27.78
Inefficient of forest guard	80	22.22
Total	**360**	**100**

Table 4.20 indicates that the biggest constrain in implementing forest conservation measures is government regulatory at 36.11%, followed by government regulatory framework conditions at 27.78%, inefficient of forest guards at 22.22% and inaccessibility of funds at 13.89%.

4.7.1. How to deal with constraints in order to implement forest projects

To understand the impact o the constraints to implementation of forest conservation strategies, respondents were asked to state how they would wish to manipulate the constraints to implement forest projects. Their responses are summarized in table 4.21

Table 4.21 Control measures to constraints and forest conservation

Control	Frequency	Percentage
Forest conservation campaign	140	38.89
Involving local communities in forest Conservation	120	33.33
Prosecution/sacking of inefficient forest Officers	100	27.78
Total	**360**	**100**

Table .4.21 illustrates that out of 360 respondents, majority (38.89%) indicated that forest conservation awareness be conducted, 33.33% would wish involvement of local communities in implementing forest conservation strategies, and 27.78% indicated they preferred prosecution and sacking of inefficient officers. From the funding it is evident that the communities living next to the forest only require participation and awareness to implement the forest conservation measures.

4.7.2 Effectiveness of government policies on forest conservation

Policies are meant to protect forest, but their implementation at times may be difficult. Harness, (1998) noted that there have been cases in which local forest agencies have demarcated potential nature reserves on a map without going into the field to access the tenure. In view of this respondents were requested to indicate government policies that least assist in implementation of forest conservation measures. Their responses were put in table 4.22

Table 4.22 Effectiveness of policies on forest conservation

Policy	Frequency	Percentage
Law enforcement to control illegal extraction	110	30.55
Creation of packs and protected areas	90	25.00
Licensing of extraction of forest products	100	27.78
Fire protection	60	16.67
Total	**360**	**100**

Table 4.22shows that 30.55% of respondents indicated that law enforcement to control illegal extraction is the least effective, followed by licensing of extraction of forest products 27.78%, creation of parks and protected areas was voted as the best policy at 25.00% and fire protection 16.67%. This implies that although some policies are good, implementation of the same is poor on the ground. Laxity in law enforcement and corruption in licensing inhibit implementation.

4.7.3 Suggestions on policies that could improve community government partnership on conservation.

A major concern to conservation of the forest resources is the gap between the intentions of national policies and the realities on the ground. This fact is supported by Baffoe, (2007) who observed that there is a highly skewed power structure in favour of governments and industry on one hand and the marginalized local communities on the other. It is for this reason why respondents were requested to suggest the appropriate policy that would enhance community-government partnership on forest conservation. Their responses were tabulated in table 4.23

Table 4.23 Suggested policies on forest conservation

Suggested policy	Frequency	Percentage
Creation of logging ban areas	90	25.00
Poverty environment tradeoffs	110	30.56
Enhance agro-forestry	100	27.78
Create tree planting day	60	16.66
Total	**360**	**100**

Table 4.23 indicates that majority of respondents (30.56%) would appreciate poverty environment tradeoffs, 27.78% of them prefer enhancement of agro-forestry, and 25.00% welcomed creation of national tree planting days while 16.66% suggested creation of logging ban areas. This implies that poverty is the main cause of poor implementation of forest conservation measures.

CHAPTER FIVE

SUMMARY CONCLUSION AND RECOMMENDATIONS OF THE STUDY

5.1. INTRODUCTION

This chapter contains the summary of the findings, conclusion, recommendations and suggestion for further research

5.2. Summary of the study findings

The purpose of this research was to investigate factors that influence forest conservation projects in Transmara sub-county with more focus on Maasai Mara game reserve and Nyakwer forest. The research objectives were used to guide the collection of the required information from the respondents.

The study findings revealed that 57.14% male and46.67%female fell under age 18-30 years, 28.57% male and23.33% female fell between 31-40 years,9.52% male and 16.67% female fell between 41-50 years while4.76% male and 13.33% female were of age 50 years and above. This implied that majority of the respondents fell between ages 18 -30 years. On education level, majority of the respondents (44.44%) were primary school leavers, (30.56%) had attended up to secondary school level, (16.67%) have attained middle level college education and only (8.33%) had gone to university.

The findings showed that majority of the respondents (33.33%) had been in association with the forest for a period of less than 10-15 years, followed by (27.78%) who had been in association with the forest for more than 15 years, (23.61%) had been in association with the forest for between 5-10 years while (15.28%) for between 0-5 years. This implied that majority of the respondents had been in association with the forest for 10-15 years

The study further was to establish the factors that influence forest conservation projects in Transmara sub-county. The study established that, one of the factors influencing forest conservation projects in Transmara sub-county was the source of income of the communities living next to the forests. The study

showed that majority of the respondent 34.72% have no clear cut source of income, 30.56% get their income from farm produce, and 26.39% get their income from small business while 8.33% get their income from relative.

On type of fuel used, the study findings showed that majority of the respondents 44.44% use charcoal and 33.33% use firewood as fuel for cooking, 13.33% use gas, and only 8.33% use electricity. This influences forest conservations measures. The study furthers showed that the residents next to the forest lacked adequate land for farming. (33.33%) have less 3 acres of land, 27.78% have between 4 acres and 7 acres of land, 23.61% have between 8 acres and 10 acres of land while none meant that the respondents had pressure of land and this made them to encroach the forest for farming, in search of pastures or other forest products.

The study showed that (38.89%) indicated that forest conservation awareness be conducted, 33.33% would wish involvement of local communities in implementing forest conservation strategies, and 27.78% indicated they preferred prosecution and sacking of inefficient officers. From the funding it is evident that the communities living next to the forest only require participation and awareness to implement the forest conservation measures.

Influence of level of education, the study showed is one of the key factors that influence implementation of forest conservation measures. The study showed that a large percentage 41.67% have not attended any form of training geared to forest conservation, 29.70% have attended nursery management, 20.17% agro-forestry while 8.33% have trained on bee keeping. This implies that majority lacked training and skills to implement forest conservation strategies.

On level of funding for implementation of forest conservation measures, the study findings illustrated that majority 33.33% of respondents said that the amount allocated for implementation of conservation measures is inadequate, 30.56% said it is very inadequate, 19.44% observed that it is adequate while only

16.67% said it is very adequate. This meant that funds for implements on of forest conservation had a higher negative influence The study showed that a larger proportion 58.33% are used for seminars, 16.67% used for conservation awareness, 13.89% for taking care of tree nurseries while only 11.11% used for research. This implies that the ministry has its priorities upside down. More funds are used in board rooms instead of the forest.

On sources of funds for forest conservation, the study noted that majority of funds comes from the NGO's at 61.11%. The second best source was bilateral and multilateral institution at 22.22%, then government at 11.11%, the least was community 5.56%. This implied that the government relies on loans and NGO's in conservation of forests hence poor implementation of conservation strategies. This is because the loans or NGO's may pace conditions before releasing the funds

The study further showed that the worst challenge on implementation of forest conservation is misappropriation of funds30.56% , this was closely followed by corruption within the ministry at 25.00%, lack of awareness 25.00% and the least challenge was indicated as long waiting period of funds to be released at 19.44%. This implies that funds are not put into proper use thus inhibiting implementation of forest conservation strategies.

The study findings revealed that government regulatory at 36.11%, followed by government regulatory framework conditions at 27.78%, inefficient of forest guards at 22.22% and inaccessibility of funds at 13.89%. This implied that the government need educate the communities of the forest laws if meaning implementation is expected.

On availability of forest conservation information, the study findings show that (44.44%) agree that the information which is available is outdated 26.39% indicated that the information is not available is while 9.72% noted that the information which is available is inadequate. This meant that the residents are faced

with ignorance against rising personal needs that is why implementation of forest conservation measures has challenges.

The study showed that 55.56% see forest to be important for provision of firewood and timber, 16.67% said it's important for medicine, 13.89% for rain catchment while 13.89% indicated its important place for hunting. This meant that the local communities, being poor see the forest as a source of basic necessities like cooking fuel, due to lack of awareness, implementation of forest conservation measures is made very difficult.

The study findings showed that majority of communicates through radio (local channel) at 52.78%, followed by Barazas (community gathering) 27.78%. Others are letters and memos 13.89% and the least were through use of newspaper at 5.56%. This implies that majority do not access forest conservation information since due the low income level majority have no radios or could not buy newspapers.

On social cultural factors, the study showed that makes participation on forest conservation is very high. 33.33% indicated that males as decisive. 27.78% belief that only males can cut and plant trees is a major factor that influences implementation of forest conservation measures, 22.22% females being viewed as property and only 16.67% of respondents indicated that females rule in the kitchen as being responsible for poor implementation of forest conservation strategies.

This meant an all-inclusive involvement would improve implementation of forest conservation measures if it's done with awareness campaign.

The study showed that most of the land is owned by men 47.22% followed by Women and men jointly 27.78%. Communal ownership at 16.67% and women ownership was the least at 8.33%. This implies that women cannot plant trees even if they want without permission from men who own most of the land.

The study further showed that customs and beliefs influence implementation of conservation measures. Majority 33.33% indicated that males as decisive. 27.78% belief that only males can cut and plant trees is

a major factor that influences implementation of forest conservation measures, 22.22% females being viewed as property and only 16.67% of respondents indicated that females rule in the kitchen as being responsible for poor implementation of forest conservation strategies. This meant that alienation of females by men on participation on forest conservation strategies have hindered proper implementation. Men are largely involved in timber extraction and have less frequent involvement in forest unlike women who use product like firewood are more likely to be in the forest more often, which is an aid for monitoring.

On effectiveness of government policies, the study findings showed that 30.55% of respondents indicated that law enforcement to control illegal extraction is the least effective, followed by licensing of extraction of forest products 27.78%, creation of parks and protected areas was voted as the best policy at 25.00% and fire protection 16.67%. This implies that although some policies are good, implementation of the same is poor on the ground. Laxity in law enforcement and corruption in licensing inhibit implementation.

The study further indicated the policies that could improve government community partnership on implementation of forest conservation measures are forestry environment tradeoffs (30.56%), 27.78% of them prefer enhancement of agro-forestry, and 25.00% welcomed creation of national tree planting days while 16.66% suggested creation of logging ban areas. This implies that poverty is the main cause of poor implementation of forest conservation measures.

5.3. Conclusion of the study

From the study, the conclusions based on the findings were drawn. As proven by past studies and based on the study findings, it can be concluded that sources of income and level of education and awareness remain the major challenges to implementation of forest conservation measures.

Poor income or lack of regular income leads the communities living next to the forest to turn to the forest to a living leading to its destruction. Level of education determines the level of exposure and by extension

the importance of the importance of forest conservation. Education or awareness would make the local communities living next to the forest to easily understand the importance of a forestation and re-a forestation that is, sustainable management of forest. Lack of communication between the government through its agents and the communities led to these communities not owning the forest but treat is as governments. The study has also shown that policies and laws governing forest conservation are not clear to the communities leading to massive destruction of forests. On financial challenges encountered by forest conservation programs, the study established' that the major financial challenges were mismanagement of allocated funds and misappropriation. Other challenges were lack of enough funds and lack of information on the sources of funds. To ensure the funds were used properly, the study found out the methods used to monitor proper use of the grants was keeping of proper records and frequent audit of the receipts. The study showed that culture and laws of the communities living next to the forest may affect positively or negatively the implementation of conservation of forests. It was found that women in some communities are not allowed to plant trees and this is made worse by the fact that most of the land is owned by men. Therefore, men are the ones who decide on what is to be planted and who plants.

5.4. Recommendations

The following recommendations were put in forward.

5.4.1. Recommendations for Policy Making

1. Influence of sources of income on implementation of forests conservation projects in Transmara sub-county; the study established that most communities living next to the forest are either youth who have no source of regular income. In response to this problem, the study recommends that government should come up with youth empowerment programs which train and educate especially in enterprise management with more emphasis on effective use of acquired funds. This may store them from forest destruction.

2. Influence of level of education and awareness on implementation of forest conservation projects in Transmara sub-county; the study revealed that majority of the communities living next to the forest are school dropouts hence are poor and do not understand the importance of conservation. More women than men were uneducated yet they stand to gain more if forests were conserved. To effectively play its role in conservation, the study recommended that forest conservation be strategically included and examined under the various curricula of different learning institutions in Kenya. The study also suggest the need to communicate and disseminate information to communities living next to the forest so that they are made aware of every government program any and any difficulties being experienced in the delivery of the programs. Also the communities should be made aware of the benefits of conservation of forests and the negative impact that result due to destruction of forests.

3. Influence of social cultural factors on implementation of forest conservation projects in Transmara sub-county; the study established that most communities are still engrossed in their cultures regarding forests in terms of food medicine for various illness and place of worship or shrine. This does not include conservation of forests. The study also revealed that women are prohibited' from planting trees and that they do not own land yet they need forests more than men for provision of firewood and water. In response to these problems, there is need to educated communities of the importance of embracing modem culture while only retaining only progressive cultures. A mind shift among spouses especially among men should also be encouraged so that they give full support in forest conservation as well as management of forest products.

4. Influence of government policies on implementation of forest conservation projects in Transmara sub-county; the study established that some policies are exclusive of local communities in the management of forests. The study suggested on multi-sectoral approach in implementation measures.

5.4.2. Recommendations for Further Research

The following questions were suggested to form a basis for further investigations.

1. How do women and youth contribute in forest conservation projects?

2. Why do school dropouts around the forest areas turn to charcoal burning and lumbering as the main source of income?

3. What influence does the level of education of the local communities living next to the forest have on implementation of forest conservation projects?

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APPENDIX I

BUDGET

ITEM	COST (KSHS)
Stationery	8000
Internet services	9000
Typing	6000
Printing	10000
Transport and communication expenses	20000
Research permit	3000
Photocopying	12000
Binding	8000
Contingencies	12000
Total	88000

APPENDIX II

TIME SCHEDULE

TIMETABLE	ACTIVITY
May 2016	Topic formulation, objectives and research Questions
June-July 2016	Literature review materials, research Methodology and questionnaire piloting
August 2016	Final draft, presentation and defense
September 2016	Corrections on the proposal
October 2016	Collection of data, interpretation and final project
November 2016	Final defense
December 2016	Graduation

APPENDIX III

QUESTIONNAIRE FOR HOUSEHOLD SURVEY

SECTION A

DEMOGRAPHIC CHARACTERISTICS.

Please read the following questions and fill in the blank spaces or put a tick (√) in the brackets where appropriate.

1. Age: 18-30years ( ) 31-40years ( ) 41-50years ( ) over 50years ( )

2. Sex: Male ( ) Female ( )

3. Position: Father ( ) Mother ( ) Child ( )

Any other (specify).....

4. Level of education

Standard eight ( ) Certificate ( ) Diploma ( ) Degree ( )

Any other (specify).....

5. Number of years of association with forest

(a) 0-5 years ( )

(b) 5-10 years ( )

(c) 10-15 years ( )

(d) Above 15 years ( )

SECTION B

SOURCES OF INCOME AND FOREST CONSERVATION

1. Are you employed? Yes [ ] No [ ]

2. If not employed, which is the best source of your daily expenditure?

a) Family [ ]

b) Small business [ ]

c) Relatives [ ]

d) Others (not specified) [ ]

3. What type of fuel do you use most in cooking?

a) Electricity [ ]

b) Gas [ ]

c) Firewood [ ]

d) Charcoal [ ]

4. Approximate the size of your family land

a) Less than 3 acres [ ]

b) 4-7 acres [ ]

c) 8-10 acres [ ]

d) More than 10 acres [ ]

SECTION C

AWARENESS AND FOREST CONSERVATION

1. Have you undergone any of the following forest conservation training?

a) Beekeeping [ ]

b) Agro-forestry [ ]

c) Nursery management [ ]

d) None [ ]

2. Comment on availability of forest conservation information to you

a) Information not available [ ]

b) Information is available [ ]

c) Information is available but outdated [ ]

d) Information available is inadequate [ ]

3. Why do you think forests are important?

a) For hunting [ ]

b) For firewood and timber [ ]

c) For medicine extraction [ ]

d) Rain catchment [ ]

4. What is the method of communication through which you mostly get information regarding forest conservation?

a) Letters and memos [ ]

b) Radio (local channel) [ ]

c) Barazas (community gathering) [ ]

d) Newspapers [ ]

5. In your opinion comment on amount of funds allocated for forest conservation

a) Very adequate [ ]

b) Adequate [ ]

c) Inadequate [ ]

d) Very inadequate [ ]

6. From your observation, what do most of the funds allocated used for?

a) Conservation awareness [ ]

b) Tree nurseries [ ]

c) Seminars [ ]

d) Research [ ]

7. Where do most funds for forest conversation come from?

a) NGO's [ ]

b) Government taxes [ ]

c) Bilateral and multilateral institutions [ ]

d) Community [ ]

8. State the most serious challenge in using forest conservation funds

a) Long waiting periods [ ]

b) Lack of awareness [ ]

c) Misappropriation [ ]

d) Corruption [ ]

SECTION D

SOCIAL-CULTURAL FACTORS AND FOREST CONSERVATION

1. State the challenges that of different groups of people on implementation of forest conservation measures

a) Makes reign with supremacy [ ]

b) Males are the sole policy and decision makers [ ]

c) Women exclude from high status, occupation and position [ ]

d) Youth excluded from participation [ ]

2. How would you overcome the challenges [ ]

a) Promote awareness campaign [ ]

b) Support women participation [ ]

c) Involving youth in forest conservation through education and training [ ]

d) Voting women in power [ ]

3. In your family, who owns land?

a) Women and men jointly [ ]

b) Women only [ ]

c) Men only [ ]

d) Communal [ ]

4. Which customary culture and culture and beliefs influence implementation of forest conservation measures?

a) Females roles is in the kitchen [ ]

b) Only males are allowed to plant or cut trees [ ]

c) Males are the sole decision makers [ ]

d) Females are like property in a home [ ]

SECTION E

GOVERNMENT POLICIES AND FOREST CONSERVATION

1. State the major challenges on implementation of forest conservation measures

a) Inaccessibility of funds [ ]

b) Government regulatory [ ]

c) Government regulatory framework conditions [ ]

d) Inefficient of forest guard [ ]

2. How would you deal with the challenges in order to implement forest conservation measures?

a) Through forest conservation campaign [ ]

b) Involving local communities in forest conservation [ ]

c) Better forest legislation [ ]

d) Prosecution/sacking of inefficient forest officers [ ]

3. Which of the following government policies least and in forest conservation

a) Law enforcement to control illegal extraction [ ]

b) Creation of packs and protected areas [ ]

c) Licensing of extraction of forest products [ ]

d) Fire protection [ ]

4. Suggest a policy that could best enhance government community co-operation in forest conservation

a) Creation of logging ban areas [ ]

b) Poverty environment tradeoffs [ ]

c) Enhance agro-forestry [ ]

d) Create tree planting day [ ]