FACTORS INFLUENCING IMPLEMENTATION OF FOREST CONSERVATION MEASURES IN RACHUONYO SOUTH DISTRICT, HOMA-BAY COUNTY.

BY

MUKODO ODIPO OWINO GEORGE

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS IN PROJECT PLANNING AND MANAGEMENT

UNIVERSITY OF NAIROBI.

2012

DECLARATION

This research project is my original work and has never been presented for the award of any degree in any other university.

Signature_____ **Date** 23. 11. 2012

MUKODO ODIPO OWINO GEORGE

L50/66353/2010

This research project has been presented for examination with my approval as the university supervisor.

Sign._____ **Date** 23.11.2012

MR. SHEM MIGOSI MAGETO

DEDICATION

This research project is specifically dedicated to my loving wife Rose Atieno Mukodo for her encouragement and her contributions both in financing this course and her moral support.

ACKNOWLEDGEMENT

I wish to recognize and acknowledge with special thanks the efforts of my research supervisor Mr. Shem Mageto. He continuously guided me until i ended up with a good project report within a reasonable time. Secondly, I acknowledge all lecturers from department of extra-mural studies who prepared me well in various units especially Dr. Ouru Nyaega of Research Methods which was very handy in my project proposal work. I must thank most sincerely the respondents for their co-operation in filing in the questionnaire truthfully and within the allocated time.

During course work, the following lecturers are acknowledged for their exciting lectures which have contributed immensely in this project project, these are; Mr. Awino Joseph, who is also resident lecturer for his superb lecture during research seminar, Dr. Mwangi for his lecture on statistical methods which was very important during research project analysis as well as Mr. Abila and Mrs. Ngwalla J.

May I also recognize my employer Teachers Service Commission through its agent Mr. Maurice Ogutu, Principal, Agoro Sare High School for being patient with my constant absence especially during data collection. I want to recognize the efforts of the typist of this proposal for his thorough work.

TABLE OF CONTENT

CHAPTER ONE

CHAPTER TWO

CHAPTER THREE

CHAPTER FOUR

CHAPTER FIVE

LIST OF FIGURES

LIST OF TABLES

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

CCs - County Councils

CFAs - Community Forest Associations

NTFPs - Non Timber Forest Products

IUCN - 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

MEA - Millennium Ecosystem Assessment

ABSTRACT

This study was to establish how factors influence implementation of forest conservation measures in Rachuonyo South district, Homa-bay County. Forest covers around 30% of the world's land area where it provides food, wood medicinal plants and multiple other goods and services for hundreds of millions of people. Despite these advantages,plunder of Kenya forest has continued over the years even with pleas to conserve them. 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. This study was out to achieve the following specific objectives; the effect of level of income among the rural population living next to forests, government funds allocated for forest conservation to the district, government policies on forest conservation, level of education of the adjacent population to the forest as well as level of awareness of these population of the importance of forest, and social cultural factors and their influences on implementation of conservation measures in Kasipul division. The study findings are expected to be beneficial to the government in establishment of proper policies on implementation of forest conservation measures in Rachuonyo south district; it would also realize the problems facing rural Kenya population in terms of awareness of the importance of trees. The study was based on conservation theory. Conceptual framework was used to show the relationship between dependent and independent variables. The study adopted a descriptive survey design. It targeted 40 villages located within a radius of 10 kilometers around Wire and Kodera forests. A sample of 10% of the target population was taken. Structured questionnaire and interview schedules were used to collect information from respondents. Content validity was ascertained through expert judgement while reliability was established through test retest. Questionnaires were hand delivered and picked by the researcher who also conducted interviews to forest officers. Data analysis was done by both qualitative and quantitative techniques. Quantitative data was analysed by use of simple descriptive statistics that is, frequencies, percentages and averages. The qualitative data was analysed and reported in narrative form. Data analysis, presentation and interpretation was done through the use of tables and a summary, conclusion and recommendation of the study done.The findings showed that poverty level of education were the major cause of poor implementation of forest conservation measures. Others were inadequate financing, policies as well as socoi-cultural factors. In conclusion, it was found that level of income and education remain 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 Information

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).Yet despite their importance and despite the substantial efforts that have been made to manage forest sustainability, this critical position of the global landscape is beset with problems, ranging from persistent poverty to unsustainable use, from illegal exploitation to the loss of cultural and biological diversity. 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 et.al, (2005).

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 einkorn 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).

Stern, (2006) observed that deforestation contributes at least 18% of man -made carbon dioxide emissions, and that while forest conservation is allowed for industrialized countries in the Kyoto protocol, it is not permitted for developing countries where most deforestation occurs. He therefore proposed avoided deforestation as one of the four key "elements" of a global climate change mitigation strategy, arguing that it would be a highly cost effective way of reducing greenhouse gas emissions fairly quickly.

Chinese civilization originated in the Yellow river Basin. In this region forest cover is estimated to have decreased from 53% to 8% in the last 4000 years with the rate of deforestation being particularly acute since 14thcentury, Edmonds, (1994). The earliest reference to Chinese knowledge of "forestry" management is in the book of Odes Shi Jing, (1000-600 BCE), which recognized the importance of vegetation Loess Plateau for human society, Menzies, (1996). The rise and fall of each Chinese Dynasty was always accompanied by environmental change particularly deforestation. Rebuilding and urban development after warfare caused high demands for timber thus logging, Menzies, (1992a). Early awareness of environmental issues is attributed to the Chinese philosopher Mencius, (372-289 BCE) who stressed the importance of not over hunting animals or overcutting forests.

Although china had Philosophy of Harmony, with nature, frequent deforestation occurred through various periods in Chinese history transforming the environment significantly, Elvin, (1998). The present denuded landscape of China is generally the outcome of millennia of deforestation caused by the establishment of agriculture and gathering of forests products, practices linked to the population growth and state interest, Menzies,(1992). Large areas of tropical forests have been converted into rubber plantations to ensure the availability of rubber for national defense and economic development in face of an international embargo after the 1994 revolution, Xu, (2006).

Environmental protection was initiated where some natural forests were designated as logging ban areas. However, the conservation policies were short lived. There have been cases in which local forests agencies have demarcated potential nature reserves without going into the field to access tenure, Harkness, (1998). Insufficient government funding for the operation of nature reserves has resulted in increasing activities to raise revenue, such as tourism development, and even the use of natural resources Harkness,(1998), Protected Area Taskforce(PATF), (2004).

The history of control of Kenya forests by the government for conservation purposes dates as far as the colonial period. By 1908, the colonial government had put all the major forest areas in the country under the control of the government. The colonial government emphasized that, the public goal was best served through the protection of forest and water resources even if this meant the displacement of the local communities, Kamugisha, Ogutu, and Stahl (1997). The management of forest resources in Kenya is guided by the national forest policy supported by the forest act, Wass, (1995). There are existing conflicts between the objectives of conservations programs and those of the local communities Ghai, (1994),Salafsky and Wollenberg, (2000). This has been the biggest hindrance in conservation efforts, Scott,(1998).

The plunder of Kenya's forests has continued over the years despite pleas to conserve them because of mismanagement, irresponsible and corrupt behavior of politicians and government officials. This destruction has manifested itself in the form of deforestation, the Shamba system, human settlements, cultivation; charcoal production and grazing. In addition to the Mau forest complex, all the other four water towers; namely Mt. Kenya, Aberdare ranges, Mt. Elgon and Cherangani hills have receded alarmingly, Nobel Laureate Prof. WangariMaathai, (Sept 2009).

Kakamega forest in Western Kenya is a complex and fragmented wet forest, divided into southern and northern blocks by past encroachment; and it has been under attack from inside and outside for many years Kokwaro, (1998).

Kakamega district is one of the most populated in Kenya and human pressure on the forest is extremely severe. Agricultural encroachment has led to large scale destruction, Barbier and Burgess, (2001); MEA, (2005). Over the years, Kakamega forest has been subjected to disturbances of various kinds. The forest is currently facing ominous threat of survival due to deforestation and associated degradation. Overall, the size of the forest has been shrinking

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 act2002sought 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 Ghananian log species coupled with enhanced utilization of installed capacity of timber firms, have resulted in the increased of exports of logs from the country. Baffoe, (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).

After World War I during British rule commercial tea cultivation, expanded resulting in more forests clearance. Some new forests reserves were established because of catchment values, Hamilton and Bensted- Smith, (1989). After independence in 1961, regulations over natural resources were relaxed partly due to the government decreased capacity to enforce regulations and partly as a result of government policy, Hamilton and Bested- smith, (1989). The cultivation of the Cardamom – a valuable cash crop which spread from 1950s' had serious deteriorating effects to the forests, Iverson, (1991).

rapidly due to human disturbance that has gradually contributed to the fragmentation and loss of forest, Fashing, (2004). Approximately 20% of the forest was lost in the last three decades, Lung and Schaab, (2004).

Kodera and Wire forests in Rachuonyo South district also experiences similar factors as any other forest in the country. Therefore need to investigate factors influencing forest conservation in Rachuonyo South District

1.2.Statement of the problem

The plunder of Kenya's forests has continued over the years despite pleas to conserve them. This destruction has manifested itself in the form of deforestation, the shamba system, human settlements, cultivation, charcoal production and grazing.In addition to Mau forest complex, all the other four water towers, namely Mt. Kenya,Aberdare ranges, Mt. Elgon and Cherengani hills have receded alarmingly. Nobel Laureate Prof. WangariMaathai, (Sept.2006).Fashing (2004), established that the overall size of the forest has been shrinking rapidly due to human disturbance. Approximately 20% of the forest in Rachuonyo south district has been lost in the last three decades, Lung and Schaab, (2004). While on a visit of Kodera forest, the Prime minister 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 habor 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 livelihoods 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). Therefore based on the concerns of Prof. Wangari Maathai, Marik, Lung and Schaab, the study seeks to establish the factors influencing forest conservation measures in Rachuonyo South district.

1.3. Purpose of the study

The purpose of this study was to investigate factors influencing implementation of forest conservation measures in Rachuonyo South District Homa-Bay County.

1.4. Objectives of the study

The objectives of this study were;

1. To investigate how the level of income influence implementation of forest conservation measures in Rachuonyo South District.
2. To determine how allocation of government funds influence implementation of forest conservation measures in Rachuonyo South District.
3. To establish how government policies influence implementation of forest conservation measures in Rachuonyo South District.
4. To investigate how the level of education of adjacent communities influence implementation of forest conservation measures in Rachuonyo South District.
5. To examine the extent to which social, cultural factors influence implementation of forest conservation measures in Rachuonyo South district.

1.5. Research Questions

The study sought to answer the following questions drawn from Research Objectives

1. How does the level of income influence implementation of forest conservation measures in Rachuonyo South district?
2. What is the contribution of Government allocated funds on implementation of forest conservation measures in Rachuonyo South district?
3. To what extent do Government policies influence implementation of forest conservation measures in Rachuonyo South district?

4. How does the level of education of adjacent communities influence implementation of forest conservation measures in Rachuonyo South district?
5. Which influence do socio-cultural factors have on implementation of forest conservation measures in Rachuonyo South district?

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.

The indirect effects include improved health; education and gender equality. The restored forest contribute to household and community well being by providing funds to pay fees for Primary and higher levels of education, reducing the length of time for women to collect firewood and water, diversifying diets and serving as a food source in times of hardship, improving access to clean water, improving health through the use of herbal remedies and wild foods and fruits providing forage for livestock resulting in higher dairy production and contributing to biodiversity conservation.

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 officers charged with forest conservation. This problem was taken care of by accompanying the questionnaire

with the letter of transmittal which assured them that any information they gave would be treated with a lot of confidentiality.

However, through structuring of research instruments, questionnaires and interview schedules, objectivity was enhanced. The validity and reliability of instruments through piloting and test retest created adoptable results. Financial constraint was cushioned through soliciting for funds from well-wishers and charitable organization.

1.8. Delimitation of the study

This research was undertaken in Rachuonyo South District, Kasipul Division. The division was divided into ten locations and eighteen sub locations. However the research was based on the villages around government forests, Wire and Kodera forest in Kamuma East and West sub-locations and Kodera East and West sub-locations respectively. An area of approximately 30km square mainly rural population dominated was used for this research. The interviewees were residents of the above four sub locations. The respondents were all adults of 18 years and above. The research also focused on forest officers and administrators. The researcher used questionnaires, audio-visual equipment, photographs, and video-camera and interview schedule in collection of data.

1.9. Basic assumptions of the study

This research operated on the basis of the following assumptions; first that there were challenges facing implementation of forest conservation measures in Rachuonyo South District. Among the challenges were level of income, allocation of funds for forest conservation, government policies on forest conservation, level of education and social cultural factors. 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 terms

Level of income: is the amount of money received during a period of time in exchange for labour or services, from sale of goods or property or as a profit from business.

Funds: this is a source of supply; a stock or sum of money or other resources set aside for a specific purpose.

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

Level of education: having lack of knowledge or factual information of a particular thing in general or state of being ignorant or lack of awareness.

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

Forest: refers to land with a tree canopy cover of more than 10% and area of more than 0.5 ha.

Conservation: Refers to the act of trying to protect or preserve something or the limiting of how much of a resource you use.

Forest Conservation: refers to the retention of existing forest or creation of new forest according to afforestation or reforestation standard

Implementation: Is the carrying out, execution or practice of a plan, a method or any design for doing something.

Sustainable forest management: refers to concept that aims to maintain and enhance the economic, social and environmental value of all types of forests for the benefit of present and future generations.

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, scope 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 level of poverty, finance, level of education 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, reliability and validity, data analysis and presentation.

Chapter four gives details on data analysis, presentation and interpretation. It gives an introduction to the findings, demographic variables of the respondents, selected challenges and the level of effects. Here it gives an analysis of level of income and forest conservation, amount of funds allocated and forest conservation, level of education and forest conservation, government policies and forest conservation, socio-cultural factors and forest conservation and possible solutions to factors influencing implementation of forest conservation measures and discussions on the stated factors.

Chapter five gives a summary of the findings, discussions, conclusion, recommendations and suggestions for further research. It gives a summary of the findings of the bio data of the respondents, the level of income of adults living next to the forests and its effect on implementation of forest conservation measures, level of education and its effect on implementation of forest conservation measures, government policies, funding and socio-

cultural factors and their influence on implementation of forest conservation measures in Rachuonyo South district.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter gives literature based on the following areas; concept of conserving forestry and its relationship with forest conservation, influence of level of income of adjacent community on forest conservation, influence of government funds on forest conservation, government policies on forest conservation, education or awareness of the local communities on forest conservations, social cultural factors on 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. Stern, (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. Level of income and forest conservation

There is a renewed interest in the international community in the potentials of forestry to address poverty as indicated by the World bank's, (2002) and Asian development bank's ADB, (2002) new forestry strategies, FAO's community forestry initiative Warnes, (2000) poverty and natural resources management programs of bilateral and agencies like as the U.K, the Netherlands and the U.S Anderson, (2002), the European Union-UNDP initiate on poverty and environment and the new commitments of conservations organizations like the World Conservation Union and the world wildlife Fund, Gutman, (2002) to address poverty issues.

An overemphasis on protected areas only credible conservation tool has not always been a good strategy. Under certain conditions it has even increased poverty. Although the percentage of the earth's surface devoted to protected areas are protected in name only and that many suffer from widespread illegal use, which in some cases is leading to loss of biodiversity. Carey, Dudley and Stolon, (2000) along similar line to the economic development first approach, it has sometimes been argued that, the eradication should come first and that the environment can be addressed later, but the long term consequence of such an approach are to be very serious Cole and Neumayer, (2005).

While it is clear that species gathered from wild can be important to poor people especially in times of crisis, some economists point out that poorer households generally have no other livelihood options open to them and those others would not choose to depend on wild resources for their survival if given a choice. It is preciously because they are so poor that they depend on such safety nets. Instead it is claimed that tying livelihoods and poverty reduction objectives to natural resource conservation creates a poverty trap Wonder, (2001), for example argues that the potential of tropical forests to lift people out of poverty is very limited. Dove, (1993) argues that forest conservation is unlikely to lead to poverty reduction

because the poor tend only to have the rights to low value forest products. Whenever products become valuable, the poor lose access.

In America, one of the conservation of forest strategies is through payments of ecosystem services (PES) which is defined as a voluntary, conditional transactional transaction with at least one seller, one buyer and a well-defined environmental service, Wunder S. (2005). PES has been hailed by multilateral development aid agencies as a more cost efficient approach to conservation than previous community based conservation efforts, Wonder, (2006); Hope, (2005). The government proposes to set up a fund from which permanent income will provide funding for food production, social development, conservation and alternative energy Supply, Larrea, (2007).

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 burn 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.

Bondo district, located in Western Kenya, Nyanza province faces a number of development challenges that are common with other districts in Kenya like Rachuonyo South district HIV pandemic is high with prevalence rate of 23.6 percent. Orphans are many and left to fend for siblings contributing to school dropouts at a tender age, engagements in commercial sex by young girls and activities that degrade environments such as charcoal burning among boys, East African Newsletter, (March 2007).

2.4. Allocation of Funds and forest conservation

The emergence of payment for ecosystem services (FES) as policy instrument must be seen as partly a response to a need to identify additional sources for funding conservation and partly as a response to the widespread disappointment with the environment efficacy of more conventional approaches to conservation; the establishment of protected areas or unconditional economic incentives, Mcshane and Wells (2004), PES has been hailed by

multilateral development aid agencies as more cost efficient approach to conservation than previous community based conservation efforts, Wunder, (2006); Hope et al. (2005).

In Brazil, the system of public protected areas continues to be severely underfunded while not including enough of the world's priority biodiversity and natural habitats, at the present coverage and quality of protection, biologist estimate that only 50-70% of the existing species will be conserved, Myers, (2000).

Richard, (1999) classifies innovative financial incentive mechanisms into four main categories-transfer payments involving the transfer of costs or benefits between different stakeholders, including fiscal market based instruments and international transfer payments; the promotion of markets or trade based approaches, promoting and influencing private or public investments flows; and a properly rights approach in which properly and utilization rights are created, clarified or modified. The category of the property right approach illustrates that the classified mechanisms do not all represent financing mechanisms. Powell and white, (2001) presentenced a typology of incentive mechanism according to the degree of government intervention in the administration of the mechanism. In vulnerable forest ecosystems, resource development aimed at economic benefits often leads to destructive practices. To address this problem, the centre for Applied Biodiversity Science at Conservation International has developed the concept of "conservation concessions" Rice,(2002).Under a conservation concession agreement, government or local resource users agree to protect natural ecosystems in exchange for a steady stream of structured compensation. The opportunity costs of foregoing natural resource exploitation, including lost employment and government revenue from taxes, serves as a basis for determining the amount of payment. Payment may also reflect costs of government administration and enforcement. Blom, E., Zwaan and W. Fernserda, (2002) describe the mechanism of purchase of nature, in the support of the acquisition of relatively small but critical nature areas that are

at risk, by local NGOs. An example of the strategic purchase of nature is the acquisition of an area that links up two nature reserves, thereby increasing the conservation value.

Brazil's law of National conservation units aims to repair and mitigate environmental damage caused by land development projects. Passed in 2000, the draws from earlier legislation that required developers in certain categories to obtain an environmental project license, and to offset environmental damage by creating an ecological station. The equivalent of 0.5 percent of the total project cost must be directed toward the conservation unit, with the actual percentage determined by the licensing authority depending on the projects overall environmental impact. To date, the tax has generated $130 million to support Brazils protected areas, Ferraz, (2003). Bilateral and multilateral assistance has moved to incorporate conservation into overall poverty reduction schemes. Projects that show how species into greater poverty reduction or sector strategies will likely have a better chance of securing multilateral or bilateral funding , Lapham and Livermore, (2003).

The effectiveness and success of protection in any part of the world normally depends on many local factors of economic, social and political nature Joppa, L. N, S. C. Loarie, and S. L. Pimm.(2008). In Nigeria, various factors are obstructing the effective implementation of conservation policies .One of the problems is that of inadequate funding of institutions programs and other activities concerned with biodiversity conservation in the country.

2.5. Government policies and forest conservation

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. Tenure transfer has been incomplete in many instances, with

continued restrictions on access and use of forests, or strict regulations, White, Martin, (2002). The current system of public protected areas continues to be severely underfunded while not including enough of the world's priority biodiversity and natural habitats. At the present coverage and quality of protection biologists estimate that only 50-70% of the existing species will be conserved, Myers and NRA Mittermeier, C .G. (2000).

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.

Ghana's 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). The increase in global demand for Ghananian log species coupled with enhanced utilization of installed capacity of timber firms, have resulted in the increase of exports of logs from the country, Ayine, (2008). A major concern to conservation of the forest resources is the gap between the intentions of national policies and the realities on the ground

as well as the highly skewed power structure in favor of governments and the industry on one hand and the marginalized local communities on the other Baffoe, (2007). For local communities to meaningfully participate and benefit from the forest resources management, they must fully understand their legal rights for doing so and must also demonstrate commitment and accountability, Soto (2001). Ghana has come a long way in pursuing sustainable management of her forest resources through the implementation of various forest policies although they lack attention accorded the human dimensions.

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).

Over the years, Kakamega forests have been subjected to disturbances of various kinds. The forest is currently facing ominous threat of survival due deforestation and associated degradation due to human associated disturbance, Fashing, Peter, Forrestes, Alison, Scully, Christina and Cords Marina (2004).

2.6. Level of education of local communities 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).

Most natural resource planners recognize genetic diversity and its underlying process as essential components of ecosystem and species stability, adoptability and conservation, but rarely is there any explicit provision for the conservation of genetic diversity in management planning and decision making, therefore, goals for the conservation of genetic diversity must include the maintenance of variation that affects the fitness of individuals, provides for adaptation to future environmental change, and permits such ongoing genetic process as genre flow and natural selection to occur while genetic drift is minimized, Namkoong, (1993).

In Africa, successful marketing of non, timber forests products in order to conserve forests remains a challenge and in particular the high cost of product promotion, the high availability of substitutes, the lack of access to market information, the lack of financial instruments, the lack of technical support, inadequate community organization, lack of market value, poor quality control, lack of attractive product presentation, lack of management capacity and poor understanding of consumers demands and needs, Marshall and others, (2003).

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 $ 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).

At the Kenyan coast, the approach that has been adopted in various conservation programs, including the Kayas is to conduct educational and awareness activities both among the local communities and further afield, using various media. This will revise interest in the Kayas within various groups of people. It is important to include new values in the information package such as the importance of the Kayas in terms of their biological diversity, to broaden the stakeholder or constituency base beyond local communities, Githitho, (1998).

2.7. Social-cultural factors and forest conservation

The influence of gendered relationships on access to forests and on forests sustainability remains a concern for scholars and practitioners. Approaches to forest management the world over have undergone profound changes from central state control to the 70's through community based approaches of the 80's and the devolution of 90's. Women involvement in

a range of independent variable. In addition to this the security of women's property rights and access to forest and tree resources serve as an important incentive for their adopting resource conservation measures, Meinzen- Dick, Brown, Fildstein and Quisumbing(1997). In addition, because they are the ones responsible for feeding the family they are most likely to be burdened by deteriorating forest condition and thus have a tendency to conserve in order to mitigate hardship. Men are largely involved in timber extraction and have less frequent involvement in forest unlike women who use products e.g. firewood, NTFP and are more likely to be in the forest more often, which is an aid for monitoring, Pandolfelli, (2007).

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.

The main gender mainstreaming aspects incorporated include issues of gender empowerment where under social framework women's workload is to be reduced through introduction and popularization of modern and appropriate technology and by impacting

decision making has hardly kept pace with the earlier changes and they don't seem to fare any better under devolution programs, Jumbe and Angelsen, (2007).

In a study across 12 countries in Africa, Asia and Latin America, Gibson et al. (2005) hypothesized that where resources users regularly monitor and sanction resource use the condition of forest resources or more specifically, the commercial and subsistence values of forests as perceived by both users and forest authorities, will likely be better than where rules are not enforced.

It is generally recognized that forests are important for the poor, majority of whom are women, and who often do not own land but do use forest resources for subsistence, as safety nets and even to generate modest incomes. Women are critical actors in management of forest resources. Relative participation of men and women in various capacities of decisions making have been the key items under study. Agrawal, (1997, 2001, 2003) observes that women are often excluded from participation for various reasons including; the rules governing the community forestry groups, social barriers stemming from cultural constructions of gender roles, responsibilities and expected behavior, logistical barriers relating to the timings and length of organizational meetings and male bias in the attitudes of those promoting community forestry initiatives. Rules of forests closure designed to regenerate deteriorating forests often ban entries of both animals and humans. These disadvantage women who have a daily responsibility for cooking fuel and tending cattle, Agarwal, (2007). Recent study showed a significant improvement in forest quality, especially where women are involved in the executive committee of the community forest user groups (CFGs) Agrawal, (2007). Their involvement in the environment conservation enhances women overall sense of involvement in the CFGs and improves women's general knowledge and information CFC rules and activities. Similar work by Agrawal, (2004) finds that women's participation has substantial positive effects on regulating illicit grazing and felling, even after controlling for the effects of

technological skills to communities, UTZ, (2001). Private and community forestry activities will be supported through harmonized extension service and financial incentives designed in a gender sensitive manner, also gender specific and farmer to farmer extension advice as well as financial incentives will be provided for the establishment of forest plantations on farmland. Extension on agro- forestry practices will be gender sensitive and women's preference on species selection will be given due consideration, URT, (2001).

Gender participation was considered a main factor in assessing the sustainability of CEAs. Kabutha and Humbly, (1996) reported that women managed as much as 74% of Kenya's smallholding firms, implying that they hold the power to sustainable production of the country's land resources. In addition, the presence of young men and women in the membership of forest associations is vital to their success and sustainability.

People living in poverty are more vulnerable to environmental changes developing the gender-poverty links. It has been documented that 70 percent of the poor in the world are women who tend to be more vulnerable to environmental challenges and climate change in particular. Women and men respond differently to environmental changes due to traditional, socially and specific roles and responsibilities, State of environment report, (2007).

Most programs addressing climate change issues are gender neutral. It is therefore necessary to focus on a wide range of factors that influence gender and climate change. The capacity of women to cope with climate change and gender related patterns of vulnerability are limited, state of the environmental reports, (2007).

The level of women participation in planning and decision-making on climate protection is very low even in industrialized countries and this is linked above all to the heavily technical nature and male dominance in key areas of work, energy, transport and town planning, Climate alliance, (2005). Consequently, it is generally men who profit more from the newly emerging jobs in these areas, be it renewable energies or emissions trading.

2.8. Theoretical framework

This study was based on conservation theory. Gifford Pinchot formulated a conservation theory called the resource conservation ethic which proposes that people view nature as a natural resource for their use. He stressed that his theory could only work if people used natural resources prudently to provide the greatest good of the greatest number of people for the longest time.

Conservation reserves are generally large areas in which maintenance of native biota and natural eco-system processes are primary management objectives. The reserve approach to preserving biota has a long history and deep philosophical roots, Cronon, (1995). Modern preservation programs in the United States began with establishment of National parks, wildlife refuges, and wilderness areas on federal lands, the Adirondack preserve in New York state, and many smaller private preservation efforts in the late 19^{th} and early 20^{th} century, Worster, (1973).

Reserves and dominant paradigm of modern conservation biology, the objective being fully protect existing habitat and populations from direct human modifications, Noss and Cooperiderr, (1994). Meta-population dynamics is one type of theoretical construct that builds on the concept of habitat islands but is focused on specific species. A meta - population is a collection of local populations, which interact via individuals moving between local populations, Hanski and Gilpin, (1991). In most meta- population analyses, the intervening areas between suitable habitats (matrix) are treated as totally unsuitable, ignoring their potential positive role. The basic premise of matrix-based conservation theory is that it is essential to maintain suitable habitat and populations of native species outside of large reserves, that is, in the matrix, Lindenmayer and Franklin, (2003). Mesoscale reserves are one of the most important elements of a matrix –based conservation strategy, Hunter, (2004).

2.9. 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 2.1 below.

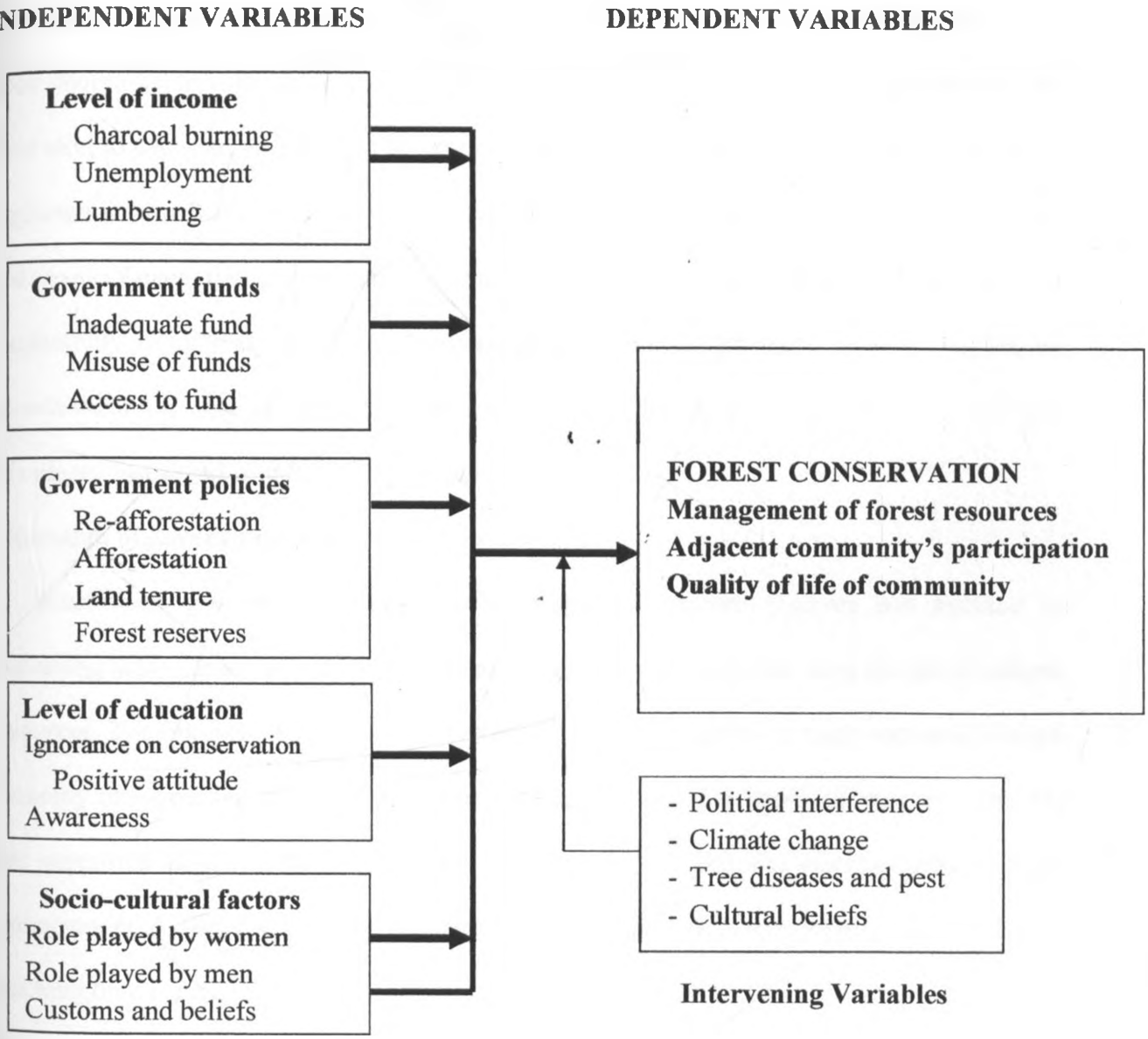

Fig2.1: Conceptual framework

Source: Researcher 2012

Level of income on forest conservation

Environmental destruction is linked to level of income. There is low understanding and appreciation of the critical linkages between environmental sustainability and poverty reduction by policy decision makers. Poverty contributes to unsuitable use of resources and environmental degradation, such as reliance on wood as the main source of long term fuel. Poor people exploit the environment in their struggle to survive. With few alternatives the poor tend to over exploit the environmental resources (soils, water and vegetation).This over-exploitation provides a short term method of survival but leads to environmental degradation and even fewer future alternatives. Environmental degradation leads to failing crop productivity or increasing levels of disease that in turn create more poverty. Population growth means an increasing demand for fuel wood and this places forest and woodland and this places forest and woodland areas under pressure

Allocation of government funds

Insufficient government funding for the operation nature reserves has resulted in increasing activities to raise revenue, such as tourism development and even the use of natural resources. The European Union is visibly present as a donor agency in many sectors of Kenya economy in supporting projects on environment, including biodiversity and poverty. The EU has supported Biodiversity conservation program (BCP), and the National Environment Management Authority (NEMA) capacity to oversee and in turn support local initiatives touching on the environment. As a follow up to BCP, the EU is presently funding the recently launched Community Environmental Facility (CEF). The main concern of the CEF is to promote community involvement in conservation issues and through local development planning and governance. Much of the CEF support the local communities are channeled through community-based initiatives of existing organizations has led to funds being misdirected.

Government policies

Reforestation is a key intervention to climate change, the policy actions and decisions on the ground indicate the contrary for example, the sector has continued to receive a small share of the budget allocation at both national and local levels in spite of its important contribution to the national economy. The true economic contribution of the sector to the national economy is underestimated and there is little appreciation of environmental issues and their importance in the long term sustainable development of the country. There is lack of afforestation policy which controls seedling nurseries away from the forests where the locals could buy the seedlings.

Forest policies have consistently been dictated by the economic priorities of the successive governments for exploitation of timber resources for revenue resources. The major concern to conservation of forest resources is the gap between intentions of national policies and the realities on the ground as well as the highly skewed power structure in favour of governments and industry on one hand and the marginalized local communities on the other.

Level of education

Active participation of communities in all aspects of forest management, taking into account people's needs, aspirations, rights, skills and knowledge, will contribute to efficiency, sustainability and equity of forest-based measures to tackle climate change.

Broadly investment in education could increase education consciousness of the people hence promote long term goals. A larger percentage of Kenyans lack awareness of the impacts of ecological decline. Kenyan's attitudes and interests in defending the environment low. Conducting educational and awareness activities both among the local communities further afield using various media to revive interest is necessary.

Socio–cultural factors

Women have yet to achieve social and economic status equal to their economic contribution. Women spend between five to eight hours searching for fuel wood, but still claims low leverage points in decision making at household level which is largely patriarchal in nature.

The capacity of women to cope with climate change gender related patterns of vulnerability are limited for example, women are more exposed to effects of climate change and natural disasters as well as social roles, discrimination and poverty. They are under-represented in many for of policy formulation and decision making on climate change, greenhouse emissions and adaptation.

Vulnerability and mitigation are part of the 1988 UN International panel on climate change agenda but gender perspectives have still not been incorporated into its work. The level of women's participation in planning and decision making on climate protection is very low even in industrialized countries and this is linked above all to the heavily technical nature and male dominance in key areas of work.

2.10. 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 have 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.

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 adopted 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 was therefore adopted because it is concerned with existing programs which are forest conservation measures. It employed questionnaires as research tool. The information which was gathered helped in making recommendations for the study.

3.3. Target population

The study targeted all the villages around Wire and Kodera forests in Rachuonyo South District as well as a provincial administration, 500 forest guards and forest officers. According to the records at the chief's offices there are 108 homes around the two forests. The registrar of persons' office at Kosele confirms the number of adults in these homes is 470.

3.4. Sample size and sampling techniques

3.4.1. Sample size

According to Mugenda, (2003), 10% to 30% of the total accessible population is appreciated for the study depending on the population size. Using multiple sampling methods, a sample of 10% was selected for the study; the table below illustrates the sample frame.

Table 3.1 Sample Frame

Respondents	Total Pop.	Sample
District commissioner	1	1
District officer	1	1
Chiefs and sub-chiefs	4	4
District forest officer	1	1
Forest guards	500	50
Villagers	470	47
Total	**977**	**104**

Source: District registrar of person's office

3.4.2. Sampling procedure

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 and provincial administration. Simple random sampling was used to provide an opportunity for selection of each element of the subgroups.

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 provincial administration 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. The questions comprised of closed ended questions which will be geared towards answering the research objectives.

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 47villagers living around the forests and each of the 50 forest guards and 7 interview guides for each of the management. The items reflected the five objectives and five 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 judgement made better by a group of professionals and experts in the field of study.

3.5.3. Reliability of the 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 0.9 was attained. This was satisfactory.

3.6. Data collection procedures

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 Rachuonyo South District 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

	Objective	Type of variable	Indicator	Measure	Level of scale	Data collection method	Approach of analysis
1.	To investigate how the level of income influence implementation of forest conservation measures in Rachuonyo South District	Level of income (independent variable)	- Charcoal burning - Unemployment - Lumbering	- Number of trees cut - Number of people unemployed	Nominal	- Interviews - Questionnaire	- Qualitative - Quantitative
		Forest conservation measures (dependent)	- Quantity of forest - Attitude of adjacent communities towards forest conservation	- Improved quality of forest community lives - Positive attitude toward forest conservation	Nominal	- Interviews - Questionnaire	- Qualitative - Quantitative
2.	To determine how allocation of government funds influence implementation of forest conservation measures in	Government funds (independent)	- Access to funds - Inadequate funds - Misuse of funds	- Easy access to the funds - Adequate funds - Improved accountability of funds	Nominal	- Interviews - Questionnaires	- Qualitative - Quantitative
		Forest conservation	- Quantity of forest	- Improved quantity of	Nominal	- Interview - Questionnaires	- Qualitative - Quantitative

	Rachuonyo South District	measures (dependent)	- Attitude of adjacent community towards forest conservation	forest and community lives - Positive attitude towards forest conservation			
3.	To establish how government policies influence implementation of forest conservation in Rachuonyo South District	Government policies (independent)	- Re-afforestation - Afforestation - Land tenure	- Quantity of forest - Number with little deeds	Nominal	- Interviews - Questionnaires	- Qualitative - Quantitative
		Forest conservation measures	- Quantity of forest - Attitude of adjacent communities towards forest conservation	- Improved quantity of forest and community lives - Positive attitude towards forest conservation	Nominal	- Interviews - Questionnaires	- Qualitative - Quantitative
4.	To assess how the level of education of adjacent community influence implementation of forest conservation measures	Level of education (independent)	- Ignorance on conservation - Awareness - Attitudes of adjacent community	- Number of people who know the value of forest - Positive attitude toward forest conservation	Nominal	- Interviews - Questionnaires	- Qualitative - Quantitative
		Forest conservation measures (dependent)	- Quantity of forest - Attitude of adjacent community to	- Improved quantity of forest and community lives	Nominal	- Interviews - Questionnaires	- Qualitative - Quantitative

			forest conservation	- Positive attitude towards forest and conservation			
5.	To examine the extent to which socio-cultural factors influence implementation of forest conservation measures in Rachuonyo South District	Socio-cultural factors (independent variable)	- Role of men - Role of women - Customs and beliefs	-	Nominal	- Interviews - Questionnaire	- Qualitative - Quantitative
		Implementation of forest conservation measures (dependent)	- Quantity of forest - Attitude of adjacent community toward forest conservation	- Improved quantity of forest and community lives - Positive attitude towards forest conservation	Nominal	- Interviews - Questionnaires	- Qualitative - Qualitative

3.9. Ethical Consideration

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		Females	Males	
977	**104**	**51**	**39**	**90**

90 copies of the questionnaires were returned duly filled giving a response rate of 86.5%.

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 in years	Frequency		Percentage		Total (%)
	Male	Female	Male	Female	
20-30	20	25	43.5	43.1	43.3
31-40	5	8	10.9	13.8	12.5
41-50	6	5	13.0	8.6	10.6
Over 50	15	20	32.6	34.5	33.6
Total	**46**	**58**	**100**	**100**	**100**

Table 4.2 reflects that 104 respondents were contacted, 43.5% male and43.1%female fell under age 20-30 years, 10.9% male and13.8% female fell between 31-40 years,13.0% male and 8.6% female fell between 41-50 years while32.6% male and 34.5% female were of age 50 years and above. This implied that majority of the respondents fell between ages 20 -30 years.

4.3.2 Education Level of Respondents

Education impacts skills and knowledge to the persons enabling them to perform better in their reasoning and duties. 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	Percent
Primary	59	56.7
Secondary	28	26.9
Middle level college	14	13.5
University	3	2.9
Total	**104**	**100**

As reflected in the table 4.3, majority of the respondents (56.7%) were primary school leavers, (26.9%) had attended up to secondary school level, (13.5%) have attained middle level college education and only (2.9%) 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	Percent
0-2 years	41	39.4
2-5 years	20	19.2
5-10 years	13	12.5
Over 10 years	30	28.9
Total	**104**	**100.0**

From the table 4.4, majority of the respondents (39.4%) had been in association with the forest for a period of less than 2 years, followed by (28.9%) who had been in association with the forest for more than 10 years, (19.2%) had been in association with the forest for between 2-5 years while (12.5%) for between 5-10 years. This implied that majority of the respondents had been in association with the forest for only two years and therefore could not understand the impact of destruction of forest or the importance of sustainable co-existence with forest.

4.4.Level of income and forest conservation

Level of income refers to amount of money received during a period of time in exchange for labor or services from sale of goods or property or as a profit from business.

4.4.1. Income per month

The level of income of the residents next to the forest has been cited as an important factor that influences implementation of the forest conservation measures. This is proved by Wonder, (2000) who claimed that tying livelihood and poverty reduction objectives to natural resource conservation creates a poverty trap.

The study sought to establish the influence of level of income on forest conservation. The residents living next to the forests were asked in the questionnaire how their level of income influences implementation of forest conservation measures. Table 4.4 shows the summary of their responses.

Table 4.4. Income per month

Income K.sh/month	Frequency	Percentage %
0-400	63	60.6
4000-10000	28	26.9
10000-15000	11	10.6
15000 and above	2	1.9
Total	**104**	**100.0**

Table 4.4. Indicates that of the 104 individuals who participated in the study 60.6% earn Ksh.4000 and below, 26.9% earn between Ksh.4000 and ksh.10000, 10.6% earn between ksh.10000 and ksh.15000 while only 1.9% earn above ksh.15000.This meant that majority seek alternative means to supplement their low income. This proves that level of income influence implementation of forest conservation measures since instead of afforestation, majority did deforestation for charcoal or timber.

4.4.2 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	25	24.0
Small business	08	7.7
Handouts from relatives	13	12.5
Others	58	55.8
Total	**104**	**100.0**

Table 4.5 illustrated that out of 104 respondents, majority 55.8% have no clear cut source of income, 24% get their income from farm produce, 12.5% get handouts from relatives employed elsewhere while 7.7% get their income from small business. Table 4.5 indicated that majority 55.8% get most of their money from other sources like charcoal burning, lumbering and other forest products which is in contrast with implementation strategies.

4.4.3Type 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	03	2.9
Gas	07	6.7
Firewood	74	71.1
Charcoal	20	19.2
Total	**104**	**100**

Table 4.6 shows that majority of the respondents 71.1% use firewood and 19.2% use charcoal as fuel for cooking. This implies that the forest provides a good source of these fuel thus inhibiting strategies that may lead to stopping them from over harvesting from the forest.

4.4.3. 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	67	64.4
4 acres-4 acres	23	22.1
8 acres-10 acres	14	13.5
10 acres and above	0	0
Total	**104**	**100**

Table 4.7 shows that majority of the respondents (64.4%) have less 3 acres of land, 22.1% have between 4 acres and 7 acres of land, 13.5% have between 8 acres and 10 acres of land. This implies 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.

4.4 Influence of level of funding on implementation of forest

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

4.5.1 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 4.8

Table 4.8 Is amount of fund allocated adequate?

Response	Frequency	Percentage
Very adequate	07	6.7
Adequate	13	12.5
Inadequate	23	24.0
Very inadequate	59	56.7
Total	**104**	**100**

Table 4.8 indicated that 56.7% of respondents said that the amount allocated for implementation of conservation measures is very inadequate, 24.0 said it is inadequate, 12.5% observed that it is adequate while only 6.7% said it is adequate.

4.5.2 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 4.9

Table 4.9 Areas of use of allocated funds

Uses	Frequency	Percentage
Conservation awareness	3	2.9
Tending tree nurseries	9	8.7
Seminars	77	74.0
Research	15	14.4
Total	**104**	**100.0**

Table 4.9 illustrates that most of the funds 74.0% are used for seminars, 14.4% used for research, 8.7% for taking care of tree nurseries while only 2.9% is used to promote resident awareness on conservation. This implies that priorities on forest conservation are upside down making it difficult to implement conservation strategies.

4.5.3 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 4.10.

Table 4.10 Source of funds for forest conservation

Source	Frequency	Percentage
NGO's	44	42.3
Government	29	27.9
Bilateral/multilateral	22	21.1
Community	9	8.7
Total	**104**	**100**

Table 4.10 indicates that the greatest source of funds was from the NGO's at 42.3%. The second best source was government 27.9%, then bilateral and multilateral institution at 21.1%. The least was community 8.7%. 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.

4.5.4 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 4.11

Table 4.11 Challenges in use of funds and forest conservation

Challenge	Frequency	Percentage
Long waiting periods of funds	10	9.6
Lack of conservation awareness	26	25.0
Misappropriation of funds	37	35.6
Corruption in the ministry	31	29.8
Total	**104**	**100.0**

Table 4.11 illustrates that a large proportion of respondents 35.6% indicated that the worst challenge is due to misappropriation of funds meant for conservation; this was closely followed by corruption within the ministry at 29.8%, lack of awareness 25% and the least challenge was indicated as long waiting period of funds to be released at 9.6%. this implies that funds are not put into proper use thus inhibiting implementation of forest conservation strategies.

4.6 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 4.12

Table 4.12 Constraints on implementation of forest conservation measures

Constrain	Frequency	Percentage
Inaccessibility of funds	8	7.7
Government regulatory framework condition	45	43.3
Inadequate education training and skills	34	32.7
Forest guards work inefficiency	17	16.3
Total	**104**	**100.0**

Table 4.12 indicates that the biggest constraint the communities faced in implementing forest conservation measures is the government regulatory framework condition 43.3%. Others were inadequate education, training and skills 32.7%, forest guards' inefficiency 16.3%. The remaining 7.7% pointed at inaccessibility of funds 7.7%.

To understand the impact of the constraints to implementation of forest conservation strategies, respondents were asked to state how they would wish to manipulated the constraints to implement forest conservation measures. Their responses are summarized in table 4.13

Table 4.13 Control measures to constraints and forest conservation

Control	Frequency	Percentage
Forest conservation awareness campaign	43	41.3
Involvement of local communities in forest conservation	32	30.8
Better forest legislation	9	8.7
Prosecution/sacking of inefficient officers	20	19.2
Total	**104**	**100.0**

Table 4.13 illustrates that out of 104 respondents, majority (41.3%) would wish involvement of local communities in implementing forest conservation strategies, 30.8% indicated that forest conservation awareness be conducted 19.2% indicated they preferred

prosecution and sacking of inefficient officers while 8.7% indicated better legislation. 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.

4.6.1 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 4.14

Table 4.14 Effectiveness of policies on forest conservation

Policy	Frequency	Percentage
Law enforcement to control illegal extraction	45	43.3
Creation of parks and protected areas	17	16.3
Licensing of extraction of forest products	24	23.1
Fire protection	18	17.3
Total	**104**	**100**

Table 4.14 shows that 43.3% of respondents indicated that law enforcement to control illegal extraction is the least effective, followed by licensing of extraction of forest products 23.1%, fire protection 17.3% and creation of parks and protected areas was voted as the best policy at 16.3%. 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.

4.6.2 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 4.15

Table 4.15 Suggested policies on forest conservation

Suggested policy	Frequency	Percentage
Creation logging ban areas	14	13.5
Poverty environmental trade offs	52	50.0
Enhance agro-forestry	23	22.1
Create tree planting days	15	14.4
Total	**104**	**100**

Table 4.15 indicates that majority of respondents (50%) would appreciate poverty environment tradeoffs, 22.1% of them prefer enhancement of agro-forestry, 14.4% welcomed creation of national tree planting days while 13.5% suggested creation of logging ban areas. This implies that poverty is the main cause of poor implementation of forest conservation measures.

4.7 Influence of 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 4.16

Table 4.16 Education and training undertaken by respondents

Courses	Frequency	Percentage
Bee keeping	6	5.8
Agro-forestry	11	10.6
Tree seedlings management	17	16.3
None	70	67.3
Total	**104**	**100**

Table 4.6 shows that majority 67.3% have not attended any form of training geared to forest conservation, 16.3% have attended tree seedlings management, 10.6% agro-forestry while 5.8% have trained on bee keeping. This implies that majority lacked training and skills to implement forest conservation strategies.

4.7.1 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 4.17

Table 4.17 Availability of forest conservation information

Information	Frequency	Percentage
Not available	65	62.5
Availability and adequate	3	2.8
Available but outdated	22	21.2
Available but inadequate	14	13.5
Total	**104**	**100.0**

Table 4.17 shows that majority of respondent (62.5%) agree that there is no information available is outside 13.5% indicated that the information available is inadequate while 2.8% noted that the information available is adequate. This meant that the residents are faced with ignorance against rising personal needs that is why implementation of forest conservation measures has challenges.

4.7.2 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 4.18

Table 4.18 Importance of forest to residents

Importance	Frequency	Percentage
For hunting	08	7.7
Firewood and timber	56	53.8
Medicine	27	25.0
Rain catchment	13	12.5
Total	**104**	**100**

Table 4.18 shows that majority 53.8% see forest to be important for provision of firewood and timber, 26% said it's important for medicine, 12.5% for rain catchment while 7.7% 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.

4.7.3 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 4.19

Table 4.19 methods used for communication

Method	Frequency	Percentage
Letters and means	12	11.5
Radio (local channel)	55	52.9
Barazas (community gathering)	26	25.0
Newspapers	37	35.6
Total	**104**	**100.0**

Table 4.19 shows that the medium most used to pass information on forest conservation is through radio (local channel) at 52.9%, followed by newspaper 35.6%. Others are Barazas (community gathering) 25% and the least were through use of letters and memos at 11.5%. Table 4.18 showed that the main medium of communication with the community is through radio (52.9%) followed by newspapers 35.6%. 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. The best channel to relay information to majority of the resident is barazas yet only 25% of respondent indicated it is used. This explains why implementation of forest conservation measures had been poor.

4.8 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 4.20

Table 4.20 Participation in conservation programs

Participation	Frequency	Percentage
Males reign with supremacy	28	26.9
Men are the sole policy and decision makers	31	29.0
Women excluded from high status, occupation and position	25	24.0
Youths excluded from participation	20	19.2
Total	**104**	**100.0**

Table 4.20 highlights that out of 104 respondents 29.8% indicated that men's sole policy and decision making influence forest conservation implementation strategies, 26.9% said it's the supremacy of men, 24.0% indicated that it's the exclusion of women from high status, occupation and position while 19.2% said it's the exclusion of youth.

4.8.1 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 4.21

Table 4.21 Remedies on participation

Mechanisms	Frequency	Percentage
Supporting women participation	23	22.1
Involving youths from primary school level upwards through education/training	38	36.5
Awareness campaign	29	27.9
Voting women in power	14	13.5
Total	**104**	**100**

Table 4.21 shows that majority of respondents 36.5% prefer involvement of youth in implementation of forest conservation measures, 27.9% advised awareness campaign, 22.1% supported women participation while 13.5% 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.

4.8.2 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 4.22

Table 4.22 Land ownership and forest conservation

Owned by	Frequency	Percentage
Women and men jointly	12	11.5
Women only	05	4.8
Men only	56	53.8
Communal	31	29.8
Total	**104**	**100**

Table 4.22 indicates that most of the land is owned by men 53.8% followed by communal ownership at 29.8%. Others were joint ownership at 11.5% and women ownership was the least at 4.8%. This implies that women cannot plant trees even if they want without permission from men who own most of the land.

4.8.3 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 4.23

Table 4.23 Influence of customers and beliefs forest conservation

Customs/beliefs	Frequency	Percentage
Females roles is in kitchen	10	9.6
Only males can cut/plant trees	44	42.3
Males are the sole decision makers	27	26.0
Females are like property	23	22.1
Total	**104**	**100**

Table 4.23 shows that respondents 42.3% indicated that the belief that only males can cut and plant trees is a major factor that influence implementation of forest conservation measures. Others were males as decisive makers 26%, females being viewed as property 22.1% and only 9.6% 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.

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 implementation of forest conservation measures in Rachuonyo south district with more focus on Kasipul and Kodera Sub-locations where the government forest are located. The research objectives were used to guide the collection of the required information from the respondents.

The study findings revealed that 43.5% of male and 43.1% of females was of age (20-30), 10.9% males and 13.8% females were of age (31-40), 13% males and 8.6% of females were of age 41-50 years while 32.6% of males and 34.5% of females were of age over 50years

On level of education, the study showed that 56.7% of respondents had attained primary level, 26.9% had secondary level, and 13.5% had college level while only 2.9% had attained university level of education.

The findings showed that majority of the respondents 39.4% had been in association with the forest for a period of less than 2 years, followed by 28.9%, those who had been in association with the forest for more than 10years; those who had been association with the forest for between 2-5 years were 19.2% and those that had been in association with the forest for between 5-10 years were 12.5%

The study further was to establish the factors that influence the implementation of forest conservation measures. The study established that, one of the factors influencing implementation of forest conservation measures in Rachuonyo South District was the level of income of the communities living next to the forests. The study showed that majority of the

respondent 60.6% earn kshs.4000 and below, with only 1.9% earning kshs.15000 and above. The low income level meant that respondents used the forest products to supplement their income.

The study showed that among the unemployed respondents, their main source of income was not specific (55.8%). The respondents who got income from farming were 24.0%, those from handout from employed relatives were 12.5% and from small business 7.7%. Without specific source of income, the forest resources are the likely target.

On type of fuel used, the study findings showed that majority of the respondents 71.5% use firewood, 19.2% used charcoal, 6.2% use gas and only 2.9% use electricity. This meant that total of 90.3% use fuel from the forest. This influences forest conservations measures

The study furthers showed that the residents next to the forest lacked adequate land for farming. 64.4% of them had between 0-3 acres of land, 22.1% had between 4-7 acres, 13.5% had between 8-10acres while, 13.5% had more than 10 acres 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.

On level of funding for implementation of forest conservation measures, the study findings illustrated that majority (56.7%) respondents indicated that the funding is very inadequate, 24% noted that the fund is inadequate while only 6.7% said it is adequate. This meant that funds for implements on of forest conservation had a higher negative influence

The study showed that a larger proportion (74.0% of allocated funds are used to conduct seminars, only 14.4% was used for research, 8.7% on the nurseries and a paltry 2.9% for conservation awareness campaign. 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 (42.3)% come from the NGO,s, 27.9% from government, 21.1% from bilateral and

multilateral donor institutions while the community was the least source of funds at 8.7%. This implied that the government rely 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 funds (35.6%), and then corruption in the ministry (29.8%), lack of conservation awareness (25%) and the least was long waiting periods for release of funds at 9.6%. This mean that funds are not put into proper use therefore implementation is affected.

The study findings revealed that government revealed that government regulatory framework conditions (43.3%) is a major constrain on implementation of forest conservation measures. 32.7% of the respondents indicated that its due to inadequate education, training and skills; The least constraint was in accessibility of funds at 7.7%. This implied that the government need educate the communities of the forest laws if meaning implementation is expected.

The study showed that constraints to forest conservation measures were controlled majority through forest conservation awareness campaign 41.3% and involvement meant that the residents living next to the forest only lacked the awareness and the involvement in order to own the project of conserving forest.

On effectiveness of government policies, the study findings showed that among the policies that least assist in implementation of forest conservation measures is the law enforcement to control illegal extraction (43.3%) followed by licensing of extraction forest products 23.1%, fire protection 17.3% and the best was creation of pass and protected areas 16.3%. This meant that there is laxity in enforcement of law and corruption in licensing

The study further indicated the policies that could improve government community partnership on implementation of forest conservation measures are forestry environment tradeoffs (50.0%), enhancement of agro-forestry (22.5%). Creation of tree planting days 14.4% and creation of logging has areas 13.5%. this meant that low level of income and government centered policies is the cause of poor implementation and assured of mutual gain from forest, this conservation strategies would be carried out.

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 (67.3%) of the residents had not undertaken any form of education and training concerning forest conservation. 16.3% had trained on tree seedling management and 10.6% on agro forestry. Lack of skills and training of the local community is the cause of poor implementation of forest conservation strategies.

On availability of forest conservation information, the study findings shows that 62.5% indicated that it's not available with the rest noting that its available but either outdated or inadequate. This implies that the local communities next to the forest are ignorant of the importance of conserving the forest thus poor implementation of strategies.

The study showed that 53.8% of the respondents noted that forest s important for provision of timber and firewood, 26.0% said forest is important for extraction of medicine. Only 12.5% indicated that its useful for rain catchment with 7.7% seeing it as important 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 52.9% noted that they get communication from radio (local channel), 35% from newspapers, 25% from Baraza and 11.5% through letters and

memos. 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. Men reign supreme 26.9%, they are the sole policy and decision makers (29.8%). The study indicated that women are excluded from high status occupation and position 24.0% and youth exclusion of women and youth yet they are the ones affected most by deforestation.

The findings of the study showed that the best remedy to solve the issue of participation is through involving youth from primary school level to higher institutions of learning (36.5%) and awareness campaign 27.9%. other were supporting women participation (22.1%) and voting in women in power (13.5%). This meant an all-inclusive involvement would improve implementation of forest conservation measures if it's done with awareness campaign.

The study showed that land is owned by majority men 53.8%, communal ownership 29.8%, Women and Men joint ownership 11.5% and women who own thus not supposed to own land. This meant that women must seek for permission to plant trees on a piece of land or involvement in conservation of forest.

The study further showed that customs and beliefs influence implementation of conservation measures. Majority 42.3% noted that the belief that only males can plant and cut trees is a bad belief. Other customs and beliefs that influence forest conservation are, males are decision makers (26%), females are a like property (22.1%) and females' role is in the kitchen 9.6%. This implied that women are not involved in implementation of forest conservation measures yet she is affected by forest destruction through fetching of firewood and water

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 level of income and level of education 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 afforestation and re-afforestation 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 level of income on implementation of forests conservation measures in Rachuonyo South District; 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. On influence of allocation of government funds on implementation of forest conservation measures in Rachuonyo South District; the study established that the district allocation is barely enough to conduct forest inspection and re-afforestation. Most of the funds are also misappropriated hence actual conservation remains with limited funds. In solving this problem, the study suggested strict auditing of usage of funds and follow up on completion of objectives of the district on which the funds were allocated. It also recommended prosecution of individuals who misappropriate or embezzle forest conservation funds.
3. Influence of government policies on implementation of forest conservation measures in Rachuonyo South District; 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.
4. Influence of level of education on implementation of forest conservation measures in Rachuonyo South District; 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.

5. Influence of social cultural factors on implementation of forest conservation measures in Rachuonyo South District; 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 modern 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.

5.4.2. Recommendations for Further Research

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

1. To what extent do factors influencing implementation of forest conservation measures apply to other regions in Kenya?
2. Why do school dropouts 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 measures?

REFERENCES

A Squith et al. (2007) *Global experiences with payment for watershed services; major challenges and solutions.*

Asante S. Michael(2005) .*Deforestation in Ghana.Explaining the chronic failure of forest preservation policies in developing country.*

Agarwal, B. 2001.*Participatory exclusions, community forest and gender: an analysis and conceptual framework. World development.*

Agarwal, B. *Gender Inequality, cooperation and environmental sustainability.* In J.B. Baland, S. Bowles and P. Bardhan (eds), *Inequality, collective Action and environmental sustainability.*

Agarwel, B. (1997). *Environmental action gender equity and women's participation. Development and change.*

Andesso, et al. 2002.*Nature, Wealth and power: Emerging Best practice for revitalizing rural Africa.*

Ayine Dominic M. 2008.*Social Responsibility agreements in Ghana's Forestry sector.Developing legal tools for citizen empowerment series. London*

Balmford, A., Moore, J.L, Brooks, T., Burges, N., Hansen, L.A., Williams, P. and Rahbek, C. 2002. *Conservation conflicts across Africa.*

Baffoe A. 2007 *Addressing Conservation Community concerns in forest management in West and Central Africa.*

Barbier, E.B, Burgess, J.C (2001).*The economics of tropical deforestation Journal of economic surveys.*

BETTs, R. 2000. *Offset of the potential carbon sink from boreal forestation by decreases in surface albedo.*

Blom, E., D. Zwaan and W. Fernserda, 2002. *Financing mechanisms for conservation in the Guiana Shield and purchase of nsture.*

Carey, C. N. Dudley and S. Stolton 2000.*Squandering paradise? The importance and vulnerability of the world's protected areas. Gland WWF-Worldwide Fund for Nature.*

Conte C. A. (2004): *Highland Sanctuary; Environmental History in Tanzania's Usambara Mountains. Ohio university press, Athens, ohio.*

Cronon, William (editors).1995. *Uncommon ground, W.W Norton & Co: New York*

Department 0of resource surveys an remote sensing and Kenya forests working group (DRSRS and KFWG). 2006. Changes in forest covers in Kenya's Five Water Towers, 2003-2005.

Diamond, J. 1997. "Location, location, *location: the first farmers"*

Dore, M. 1993. *"A revisionist view of tropical deforestation and development environmental conservation.*

EdmondsRL. 1994, *patterns of China lost harmony: a survey of the country`s environmental degradation and protection.*

Emerton L. (1991). *Utilization of Kakamega. Forest reserve by adjacent Households. KIFCON Socioeconomic report.Forest Department, Kakura.*

Elvin M., 1998. *The environmental legacy of Imperial China.The China quarterly.*

Fashing, peter, Forrestes, Alison, Scully, Christina and Cords, Marina. 2004. *"Long-term tree population dynamics for the conservation of the Kakamega forest, Kenya", Biodiversity and conservation.*

FAO (2000), *The challenges of sustainable forestry development in Africa. FAO (2001)*

FAO (2005) *Promoting regional cooperation in forestry and in arid and sub-humid zones of Africa.*

Fischlin, A.,Ayres, M., Karnosky, D.,Kellomarki, S., Louman, B., Ong, C., Plattner, G. K., Santoso, H., Ian Thompson, I./ Booth, T. H, Marcar, N., Scholes, B., Swanston, C., and Zamolodchikor, D. 2009. *Future environmental impacts and vulnerabilities.Adaptation of forests and people to climate change; a global assessment report.*

Food and Agriculture Organization (FAO), 2001.*State of the World Forest Information Division.*

Food and agriculture Organization (FAO) 2003. *State of forest and tree genetic resources in Dry zone Southern Africa Development community countries*

Gibson, C. J.T. Williams and E. Ostrom.(2005). *Local Enforcement and Better Forests. World Development 33*

Githitha, A. 1998a. *Institutional challenges in conservation. The case of the sacred Kaya forests of the Kenya coast.*

Gbadesin, A. 1996, *Management of forest resources by women. A case study from the Olokemeji forest reserve area, South Western Nigeria. Environmental conservation.*

GhaiDhaham, 1994. *Environment, livelihood and empowerment. Development and change Vol. 25.*

Hanskin, I and M. Ciplin.1991.*Metapopulation dynamics; brief history and conceptual domain.*

Harkness J. 1998. *Recent trends in forestry and conservation of biodiversity in China, The China quarterly.*

Hamilton, A.C. &Bensfed. Smith, R (eds) (1998): *Forest Conservation in East Usanbara Mountains, Tanzania.*

Hunter, M.L. 2004.*A meso-filters conservation strategy for complement fine and coarse filters. Submitted to conservation Biology.*

Huen, M., et al.1997. *"Site of einkorn Wheat domestication identified by DNA fingerprinting"*

Iversen, T.I (1991): *The Usambara Mountains, N.E Tanzania: history, Vegetation and conservation.*

Jepme, C.J. and Blom, M. 1992. *Global trends in tropical forests degradation: the Indonesian case.*

Joppa, L. N, S.C. Loarie, and S.L. Pimm. 2008. *" on the protection of protected areas" proceedings of the national academy of science.*

Johnson C.O, 2003. *Nigeria; illegal logging and forest women's resistance. Review of African political economy.*

Jumbe, T.B.L and A. Angelsen. 2007. *Has forest co-management in management in Malawi benefited the poor? In N. Dinella and V. Popov (eds) Political Institutions and Development: Failed Expectations and Renewed Hopes. Cheltenham, UK: Edward Elgar.*

Kabutha, C. and Humbly, H. 1996.*Gender concerns in Agroforestry. In people and Institutional participation in Agroforestry and sustainable development.*

Kamungisha J.R., Ogutu Z.A and Stahl M. 1997.*Parks and people-conservation and livelihoods at crossroads.Regional soil conservation unit (RSCU).Nairobi Kenya.*

Katerere Y and Mohammed Katerere, J.C. (2005).*From Poverty to Prosperity; harnessing the wealth of Africa's Forest.In forests in the Global Balance – changing paraigms.*

Kokwaro, J.O (1988). *Conservation status of Kakamega Forest in Kenya; the easternmost relic of the equatorial rainforest of Africa*

Larrea, Carlos, 2007. *Why Norway should help Ecuador to keep Oil under the soil?*

Lindenmeyer,David B, and Jerry F, Franklin. 2003.*Conservingforest biodiversity : a comprehensive multi-scaled approach.*

Maathai, W (2005). An appeal for the forests of Central Africa. *Unasylva No. 220-COFO 2005; dialogue into action.Food and Agriculture Organization of United Nations Rome.*

Mariki, Stephen W.L. 2001. *The role of forestry in poverty alleviation; Tanzania.*

Menciss N.K, (372-289 BCC). *"Science and civilization in China".Vol. 6.3. Joseph Needham (ed) Cambridge.*

MEA; 2005.*The millennium ecosystem assessment island press, Washington D.C Ministry of Agriculture (MA) and Rural development.*

Meshane, T.O. and M.P Wells, 2004.*Getting biodiversity projects to work: towards more effective conservation and and development (New York; Columbia University Press)*

Menzies NK. 1996. Forestry in *"Science and civilization in China" Vol. 6.3.*

Meinzen- Dick, r, Brown, L, fildstein, H, and Quisumbing, A. 1997. *Gender, property rights and natural resources.World Development.*

Ministry of environment and natural resource (MENR). 2007. *Participation in sustainable forest management. 2007 Draft rules and guidelines.*

Moyini, Y. Muramira, E. Emerston L. and Schechambo, F. *The cost of environmental Degradation and loss to Ugandas Economy with particular references poverty eradication.*

Myers, NRA Mittermeier,C.G. *mittermeier,G.A.Bfonseca and J kent 2000. Biodiversity hotspots for conservation priorities.*

Noss R.F and A.Y cooperrider .1994 *saving nature`s legacy: protecting and Restoring Biodiversity. Island press, Washington D.C*

NRMMC (Natural resource management Ministerial council)(2004). *National diversity and climate change action plan 2004-2007.*

Ongugo, P.O, Mburi, M.T.E, Maua, J.O, Koech, C.K. and Othim, R.A. 2007. *Emerging community Institutions for PFM process Implementation in Kenya. A paper presented to the 3rd International PFM Conference. Addis Ababa. Ethiopia.*

Pandolfelli, L.R. Meinzen-Dick, and S. Dohen. 2007. *Gender and collective action: A conceptual framework for analysis. CAPR: Working paper No. 64. Washington DC:*

PATF (protected Area Task Force) 2004.*Protected Area Task Force report of the China council for International cooperation on Environment and development (CCICED).Evaluation on and policy recommendations to the protected area of China.*

Poverty and environment; *East African Newsletter Vol. 1 March 2007.*

Powell, I. & A. White, 2001. *A conceptual framework for developing markets and market-based Instruments for environmental services of forests.*

Poverty and Environment; Kenya Newsletter Vol.1 Nov. 2011

Republic of Kenya.*The forest Act 2005*

Rice, R., C. Sugal, S. Ratay and G. da Fonseca 2002.*Sustainable Forest management. A review of conventional wisdom*

Salafsky N. and Wollenberg E. 2000, *linking livelihoods and conservation: A conceptual framework and scale for assessing the integration of human needs and Biodiversity World Development Vol. 28.*

Solomon, S., D. Q.N, M. MANNING, Z. CHEN, M. MARQUIS, K.B., AVERYT, M. TIGNOR, AND H.L. MILLER (EDS). 2007. *Summary for policy makers. Climate change 2007: the physical science basis. Contribution of working group 1 to fourth assessment report of intergovernmental panel on climate change Cambridge University Press, Cambridge U.K.*

Schabel, H.G., (1990): *Tanganyika Forestry under German Colonial Administration, 1891-1919, Forest and conservation history.*

Stern, N. (2006) *"Stern review: The Economics of climate change", Cambridge University Press. Cambridge, UK.*

Scott, Penny 1998, *from conflict to collaboration: People and forests at Mt. Elgon, Uganda. IUCN.Gland, Switzerland and Cambridge. UK.*

State of the environment report Kenya Newsletter vol.2 March 2007.

The united republic Tanzania, Ministry of natural resources and tourism, 2001.*National forest program.*

Thurow,T.L.1995. *Influence of Range conditions on patterns of social change in Transmara District, Kenya. Proceedings of the internationals Rangelands conference .Salt Lake City,USA*

Namkoong G. 1993. *A gene conservation plan for loblolly pine.*

UNEP (2002).*African Environment outlook; past, present and future perspectives.United Nations Environmental Programme, Nairobi.*

URT (United Republic of Tanzania) (2003) *National Census.*

(WRI) World Resources Institute, et al. (2005) World resources 2005- *the wealth of the poor – managing Eco-systems to fight poverty.*

Worster, D.1973. American environmentalism; *the formative period*, 1860-1915. Wiley, New York.

Wass, Peter. 1995. *Kenya's Indigenous Forests: status, management and conservation Gland: International Union for conservation of Nature (IUCN).*

World bank 2002. *A revised forest strategy for the World Bank group. World Bank, Washington D.C.*

White Andy and Martin, Alejandra, 2002.*Who owns worlds? Forest tenure and public forests in transitions. Washington D.C forests trends and center for international environmental law.*

World Bank 2002.*a revised forest strategy for the World Bank group. World Bank, Washington D.C.*

Wunder, S. 2005. *Payment for environmental services: some nuts and bolts. CIFOR occasional paper No. 42 Jakarta.*

Wunder S. 2006. *"Are direct payments for environmental services spelling down for sustainable forest management in the tropics?*

Wunder, Sven- 2001. *"Poverty Alleviation and Tropical forests: what scope for Synergies?" World development.*

Warner, K. 2000. *Forestry and sustainable livelihoods.*

XV J.C. 2006. *The political, social and Ecological transformation of a landscape: The Case of rubber in Xishuangbanna, China. Mountain research and development.*

APPENDICES

Appendix 1: Letter of Transmittal

MUKODO O.O. GEORGE,

UNIVERSITY OF NAIROBI,

DEPT. OF EXTRA MURAL STUDIES

P.O. BOX 8

OYUGIS.

TO ALL RESPONDENTS

RACHUONYO SOUTH DISTRICT

Dear Sir/Madam,

RE: CHALLENGES FACING FOREST CONSERVATION MEASURES IN RACHUONYO SOUTH DISTRICT; HOMABAY COUNTY.

I am a post graduate student in the University of Nairobi, pursuing a Masters degree in project planning and management. I am conducting a study on challenges facing forest conservation measures which requires research. The research topic is to identify the challenges facing forest conservation measures in Rachuonyo South District.

I am hereby seeking permission to obtain data from you. NO NAME SHALL BE REQUIRED FROM ANY RESPONDENT.

Thank you in advance.

Yours sincerely,

Mukodo O. O. George

Appendix II: QUESTIONNAIRE FOR HOUSEHOLD SURVEY

SECTION A: DEMOGRAPHIC CHARACTERISTICS

Put a tick on the box chosen.

1. Age……20-30years ( ) 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) 0-2 years ( )

   (b) 2-5 years ( )

   (c) 5-10 years ( )

   (d) Above 10 years ( )

SECTION B: LEVEL OF INCOME AND FOREST CONSERVATION

1. Are you employed? Yes [ ] No [ ]
2. If yes; what is your wage bracket?

   a) Sh.0-4000p.a

   b) Ksh.4000-10000p.m

   c) Ksh.10000-15000p.m

   d) Ksh.15000 and above
3. If not employed, which is the best source of your daily expenditure?

   a) Family [ ]

   b) Small business [ ]

c) Relatives [ ]

d) Others (not specified)[ ]

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

a) Electricity [ ]

b) Gas [ ]

c) Firewood [ ]

d) Charcoal [ ]

5. 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: LEVEL OF FUNDING AND FOREST CONSERVATION

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

a) Very adequate [ ]

b) Adequate [ ]

c) Inadequate [ ]

d) Very inadequate [ ]

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

a) Conservation awareness [ ]

b) Tree nurseries [ ]

c) Seminars [ ]

d) Research [ ]

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

a) NGO's [ ]

b) Government taxes [ ]

c) Bilateral and multilateral institutions [ ]

d) Community [ ]

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

a) Long waiting periods [ ]

b) Lack of awareness [ ]

c) Misappropriation [ ]

d) Corruption [ ]

SECTION D: 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 trade offs

   c) Enhance agro-forestry

   d) Create tree planting day

SECTION E: LEVEL OF EDUCATION AND FOREST CONSERVATION

1. State the training you have undergone that could be of help in forest conservation

   a) Bee keeping

   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. In your own opinion, why are forests 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

SECTION F: 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

PAGE 2

THIS IS TO CERTIFY THAT:
Prof./Dr./Mr./Mrs./Miss/Institution
George Owino Odipo Mukodo
of (Address) University of Nairobi
P.O.Box 2461, Kisii.
has been permitted to conduct research in

Location	
Rachuonyo South	District
Nyanza	Province

on the topic: Factors influencing implementation of forest conservation measures in Rachuonyo South District, Homa Bay County.

for a period ending: 30th November, 2012.

PAGE 3

Research Permit No. *NCST/RCD/17/012/34*
Date of issue *24th October, 2012*
Fee received *KSH. 1,000*

Applicant's Signature

Secretary
National Council for Science &Technology

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed with-out prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

GPK6055t3mt10/2011

(CONDITIONS–see back page)