

COMMUNITY ACTIVITIES ON PROTECTED AREAS

A CASE STUDY OF MOUNT ELGON

NATIONALPARK,

UGANDA

BY

AMASIO DINAH MERCY

REG NO: BEM/40244/91/DU

A RESEARCH REPORT SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE AWARD OF BACHELOR

OF SCIENCE IN ENVIRONMENT

MANAGEMENT OF KAMPALA

INTERNATIONAL

UNIVERSITY

SEPT, 2012

DECLARATION

I, Amasio Dinah Mercy declare that this report on the “Man’s socio-economic activities on protected areas” Mount Elgon National Park is my original work and has not been submitted to any institution or university for any form of academic award.

Amasio Dinah Mercy

BEM/40244/91/DU

Signature 

Date 19th - 09 - 2012

APPROVAL

This is to certify that this research report on the “man’s socio-economic activities on protected areas” Mount Elgon National Park has been supervised by me as a university supervisor and is ready for submission.

Supervisor

Mr. Ammon Orishaba

Signature.....

Date.....

DEDICATION

I dearly dedicate this book to my beloved parents Mr. Epiat John and Mrs. Egulance Epiat, my brothers and sisters for their contribution towards my academic achievement through prayers and financially.

May the Almighty God bless them abundantly!

ACKNOWLEDGEMENT

First, I owe my sincere gratitude to the Almighty God for the good health and protection while carrying out this research.

Special appreciation goes to my supervisor Mr. Ammon Orishaba for the tireless supervision and perusal through my work and particularly for his inspiration and guidance in the accomplishment of this study.

I dearly thank my parents Mr. Epiat and Mrs Epiat Egulance, sisters Mercy and Oliver, brothers Charles, Simon and Frank for their spiritual encouragement and financial support in conducting this research. God richly bless you all.

My great thanks to my friends Anna, Ann, Janet, Peter, Jacky and Benon for their emotional encouragement in times of difficulty when I was carrying out this research.

Last but not least, I would like to appreciate all my respondents who responded within a short time and made this work possible.

TABLE OF CONTENTS

Table of Contents

DECLARATION.....	ii
APPROVAL.....	iii
DEDICATION	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF ACRONYMS.....	x
ABSTRACT	xi
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.0 Introduction	1
1.1 Background of the study.....	2
1.1.1 Location	2
1.1.2 Mount Elgon History.....	3
1.1.3 Volcanism.....	3
1.1.4 Caves.....	4
1.1.5 Glaciations	5
1.1.6 Climate and soils	5
1.1.7 Vegetation.....	6
1.1.8 Wildlife and other attractions	6
1.1.9 Local people and Demography	7
1.2 Statement of the problem	7
1.3 Objectives of the study	9
1.3.1 General objectives.....	9
1.3.2 Specific objectives.....	9
1.4 Research questions.....	9
1.5 Purpose of the study.....	9
1.6 Scope of the study.....	10
1.7 Significance of the study.....	10

CHAPTER TWO	11
LITERATURE REVIEW	11
2.0 Introduction	11
2.1 Communities and their activities	15
2.2 Impacts of community activities on MENP	19
2.3 The philosophy behind national park management	22
2.3.1 Management history of Mount Elgon national park	23
2.4.1 Protected Areas Establishment	24
2.4.2 Institutional Strengthening.....	25
2.4.3 Financial Sustainability.....	26
2.4.4 Environmental Management and Ecosystem-Based Management	27
CHAPTER THREE	30
METHODOLGY	30
3.0 Introduction	30
3.1 Research design	30
3.2 Sample techniques and size.....	30
3.3 Data collection methods.....	30
3.3.1 Observation.....	30
3.3.2 Questionnaire	31
3.3.3 Interviews	31
3.3.4 Using available information and documented evidence.....	31
3.3.5 Focus Group Discussions	31
3.4 Data processing and analysis.....	32
3.5 Limitations of the study	32
CHAPTER FOUR	33
PRESENTATION, ANALYSIS AND DISCUSSION OF THE FINDINGS	33
4.0 Introduction	33
4.1Demographic distribution of the respondents	33
4.1.1 Distribution of the respondents by Gender.	33
4.1.2 Distribution of the respondents by Age.....	34
4.1.3 Distribution of the respondents by number of people per household.....	35
4.1.4 Education level of the respondents.....	35
4.1.5 Occupation of the respondents	36
4.2 Communities living around the park and their socio-economic activities	37

4.2.1 Communities living around MENP.....	37
4.2.2 The socio-economic activities practiced in and around MENP.....	39
4.3 Impacts of these activities on the park	41
4.4 Approaches to sustainable park management	46
4.4.1 Resource management and protection programme.....	46
4.4.2 Community Conservation and Development Programme	48
4.4.3 Research and Monitoring Programme	50
4.4.4 Plantations Management Programme	51
CHAPTER FIVE.....	52
CONCLUSION AND RECOMMENDATIONS.....	52
5.0 Introduction	52
5.1 Conclusion.....	52
5.2 Recommendations.....	52
5.3 Area for further research:	53
APPENDIX 1.....	56
QUESTIONNAIRE.....	56
APPENDIX II	58
INTERVIEW GUIDE FOR PARK OFFICIALS.....	58

LIST OF TABLES

Table 1: IUCN protected area management categories	13
Table 2: Distribution of the respondents by gender.....	33
Table 3: Distribution of the Respondents by age	34
Table 4: Number of people per household	35
Table 5: Distribution of the respondents by Educational level.....	36
Table 6: Distribution of the respondents by occupation.....	37
Table 7: Distribution of the respondents by their communities	37
Table 8: Socio-economic activities practiced in and around MENP.....	40
Table 9: impacts of socio-economic activities on MENP	41

LIST OF ACRONYMS

ARPA	-	Amazon Regional Protected Areas Program
CFA	-	Community Forest Associations
EAC	-	East African Community
EBS	-	Ecosystem Based Management
EMS	-	Environmental Management System
FEC	-	Forest Exploration Centre
GEF	-	Global Environment Facility
IUCN	-	International Union for Conservation of Nature
LVBC	-	Lake Victoria Basin Commission
MECDP	-	Mount Elgon Conservation and Development Programme
MENP	-	Mount Elgon National Park
MERECP	-	Mount Elgon Regional Ecosystem Conservation Programme
NGOs	-	Non Government Organisations
PAF	-	Protected Areas Fund
UWA	-	Uganda Wildlife Authority
WCPA	-	World Commission on Protected Area

ABSTRACT

The study on man's socio-economic activities on protected areas was carried out on Mount Elgon national park and was specifically aimed at identifying communities and their socio-economic activities, the impacts of these activities on the park and the sustainable park management approaches. The study used simple random sampling for the community members and purposive for the knowledgeable about park management, methods of data collection were questionnaire, interview, observation and use of available literature.

The communities living around the park were the Bagishu, the Sebei and the Benet. Their socio-economic activities in and around the park included bee keeping, commercial coffee and wheat growing, hunting, pastoralism, maize and beans growing, lumbering and bamboo collecting. The impacts of these activities on the park were as follows; land degradation resulting into mass wasting, soil erosion, loss of soil fertility, loss of forest generation due to over harvesting of the forest products, damage of the growing seedlings and shrubs by the grazing animals, poaching leading to loss of some animal species and destruction of vegetation due to agricultural encroachment on the park. The approaches to sustainable park management programmes that are implemented are; resource management and protection programme which involve programmes like park, community conservation and development programme, Research and monitoring programme and plantation management programme.

The study concluded that man's socio-economic activities has numerous negative impacts on the park and due to this, the MENP officials still face several challenges in the management of the park. Also, though UWA has tried to involve the surrounding communities in the management of the park, most of communities still have negative attitudes as most of them said that the land belongs to communities and thus they have a right to use the resource.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Generally, protected areas are understood to be those in which human occupation or at least the exploitation of resources is limited. The definition that has been widely accepted across regional and global frameworks has been provided by the International Union for Conservation of Nature (IUCN) in its categorisation guidelines for protected areas. The definition is as follows: "A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." Worldwide or nationally, how to manage areas protected for conservation brings up a range of challenges - whether it is regarding the local population, specific ecosystems or the design of the reserve itself - and because of the many unpredictable elements in ecology issues, each protected area requires a case-specific set of guidelines.

Enforcing protected area boundaries is a costly and labour-heavy endeavour, particularly if the allocation of a new protected region places new restrictions on the use of resources by the native people which may lead to their subsequent displacement. This has troubled relationships between conservationists and rural communities in many protected regions and is often why many Wildlife Reserves and National Parks face the human threat of poaching for the illegal bush meat or trophy trades which is resorted to as an alternative form of sustenance. There is increasing and justifiable pressure to take proper account of human needs when setting up protected areas and these sometimes have to be "traded off" against conservation needs. Whereas in the past governments often made decisions about protected areas and informed local people afterwards, today the emphasis is shifting towards greater discussions with stakeholders and joint decisions about how such lands should be set aside and managed. Such negotiations

are never easy but usually produce stronger and longer-lasting results for both conservation and people. In some countries, protected areas can be assigned without the infrastructure and networking needed to substitute consumable resources and substantively protect the area from development or misuse. The soliciting of protected areas may require regulation to the level of meeting demands for food, feed, livestock and fuel, and the legal enforcement of not only the protected area itself but also 'buffer zones' surrounding it, which may help to resist destabilisation.

1.1 Background of the study

Mount Elgon is the eighth -highest mountain in Africa and it rises from the broadest base of any freestanding mountain in the world. Like most other major East African Massifs, Elgon is the relic of an extinct volcano, whose formation was associated with the tectonic activity that created the **Rift Valley** several million years ago. Elgon's tallest peaks form a jagged circle around the more or less intact caldera. It is possible to climb to the peak in as little time as three days on a less strenuous ascent than other peaks in Eastern Africa. On the wooded slopes, are Caves, Gorges waterfalls and hot springs as some of the features are the most stunning in Uganda. The Park was designated as a Protected Area in 1992 and is host to a diversity of at least 68 mammals, over 400 tree species, 300 prolific bird species, among others. The communities surrounding Mt. Elgon National Park have often borne the costs and rarely received the benefits associated with neighbouring the Mt. Elgon Forest, hence have usually had little vested interest in the conservation and management of the forest resources. As a result, local peoples' attitudes often have been biased against the forest ecosystem.

1.1.1 Location

The park is named after **Mount Elgon**, an extinct shield on the border of Uganda and Kenya, 140 km North East of Lake Victoria. It is uniquely split down the middle by the Kenyan-Ugandan border. Mount Elgon is an important water catchment for the Nzoia River which flows to Lake Victoria

and for the Turkwel River which flows into Lake Turkana. . The International boundary is marked by the Suam and Lwakaka Rivers, and the beacon on Sudek Peak. Administratively, the Mountain falls in two districts (in Uganda), Kapchowra District to the north and Mbale District to the South. Mt Elgon's caldera is located at approximately 1o09' North latitude and 34o33' East longitude. The summit is some 100km NNE of Lake Victoria and 235km.ENE of Uganda's capital city of Kampala. The area of Mt. Elgon National Park is 1121square km.

1.1.2 Mount Elgon History

Although **Mount. Elgon** was well known to Arab traders passing along old slaving routes to its East (Kenya), explorer Henry Morton Stanley was the first to write about Mount. Elgon when he presumably saw it while circumnavigating Lake Victoria in 1875. Joseph Thompson, a British explorer and geographer was the first European to visit Mt. Elgon in 1883. Thompson referred to the mountain as "Masawa" or "Elgon" and generated curiosity among the explorers. In 1890, with a 400 men caravan, Frederick Jackson of the Imperial British Exploration Association was the first European to visit the Caldera and to climb any of the major peaks. Ironically, Jackson climbed from the south and probably never even saw Masaba peak which was late named Jackson's summit after him. Mt. Elgon has been called a "Mountain of Illusion" partly because of the number of hiking parties lost on its slopes in the past and because no one could determine its highest point. Sudek and Koitobos peaks (Kenya) were both proclaimed "the top of Elgon" at different times. Wagagai, the highest peak (4321m), does not protrude markedly above the caldera rim and conceals its height well. In fact, Wagagai peak was overlooked by explorers until the early 20th century

1.1.3 Volcanism

The rocks of the Elgon massif are entirely volcanic in origin, and include tuffs, coarse agglomerates, basalts and mudflow materials. The volcanic activity associated with Mt Elgon is dated to early Miocene, 10-25 million

years ago. The base of Mt Elgon covers an area of about 4000square km, more than the base of Mt. Kilimanjaro. It is thus thought that at one time, Mt Elgon may well have been higher then Mt Kilimanjaro. Following a major eruption at some time in the past, the summit of Elgon collapsed into the chamber from which volcanic material had been expelled. The resulting Elgon caldera is about 8km in diameter, making it one of the largest examples of this type of feature in the world. The floor of the caldera lies at about 3500meters, or some 800meters below the highest point on the crater rim. That high point is Wagagai at 4321meters. Just north of Wagagai is Jackson's peak at 4160meters. The general outline of Mt Elgon is that type of shield volcano, with very gentle slopes in the order of 3°-4°. In detail, however, the lower part of the mountain is made up of a series of benches separated by prominent cliffs. The characteristics terrain is the product of differential weathering of the various volcanic materials. At a micro-scale therefore, the result is a very broken, rugged landscape of cliffs and mesas

1.1.4 Caves

There are numerous caves on Mt Elgon, some of them up to 300 or more meters in length. These caves are as a result of differential weathering of various volcanic materials. Some of the Mt Elgon's caves are the result of small-scale salt mining operations in the period before European contact. Many of these mining caves and others as well, were used as semi-permanent shelters by people of the region until well in the 20th century. Other Mt Elgon caves have been created or enlarged by the activity of animals, with the objective of again being to gain access to salts of sodium, calcium and magnesium. Buffalo, bushbuck, waterbuck, giant forest hogs, monkeys and baboons are well known to obtain salt from the caves. Notwithstanding the unusual importance of this mining action by humans and other animals, however, most of Mt Elgon's caves are the result of mechanical weathering and solution or chemical weathering. On the volcanic massif, solution action has dissolved calcites that act as cements, holding together the agglomerated pyroclastic materials that make up the bulk of Mt Elgon. With the cement of these agglomerates dissolved, the

result has been the collapse or rock-fall of residual material and thus the creation of caves.

1.1.5 Glaciations

Unlike Mts Kilimanjaro and Kenya, and the Rwenzori mountains, Mt Elgon has no glaciers. However, there are extensive signs of glaciations in the upper reaches of Mount Elgon, with the last glaciers having disappeared 10000 years ago. Moraines are present both within Mt Elgon crater and on the outer slopes of the mountain. On the northern slopes, moraines occur as low as 3350 meters. One terminal moraine feature within the crater rim is 150 meters high and 3 km long. The numerous tinny rock basin lakes that are particularly attractive features of the upper mountain are also legacies of glaciations. Finally the effects of past glaciations on distribution of parent material continue to have very important influence on the distribution of Mt. Elgon's communities above 3500 meters.

1.1.6 Climate and soils

The climate is moist to moderate dry. Annual rainfall is over 1,270mm. The dry season runs from June to August, and December to March, although it can rain at any time. The climate of Mount Elgon shows an approximately bimodal pattern of rainfall, with the wettest months occurring from April to October (van Heist, 1994). The forest zone receives the maximum rainfall (Synnott, 1968) and is important in the mountains role as a water catchment for several million people (van Heist, 1994).

The soils of Mt. Elgon are primarily volcanic in origin. They are relatively are young and fertile, being high in calcium, sodium and potassium. Under natural conditions, these soils support a varied tropical forest. Cleared of forest cover, these same soils support a highly productive agriculture and high population density, although landslides are a hazard on steeper cleared slopes during rainy periods. The soils of Mt. Elgon's forest belt are brown to red-brown clay- loams. They are up to a meter or more deep. Above 3000 meters, however, shallow black humus soils predominate.

1.1.7 Vegetation

Elgon's slopes support a rich variety of vegetation ranging from montane forest to high open moorland studded with the giant lobelia and groundsel plants. The vegetation varies with altitude. The mountain slopes are covered with olive *Oleahochstetteri* and *Aningueria adolfi-friedericii* wet montane forest. At higher altitudes, this changes to olive and *Podocarpus gracilior* forest, and then *Podocarpus* and bamboo *Arundinaria alpina* zone. Higher still is a *Hagenia abyssinica* zone and then moorland with heaths *Erica arborea* and *Philippia trimera*, tussock grasses such as *Agrostisgra cilifolia* and *Festucapilgeri*, herbs such as *Alchemilla*, *Helichrysum*, *Lobelia*, and the giant groundsels *Seneciobarbatipes* and *Senecioelgonensis*. The botanical diversity of the park includes giant podocarpus, juniper and Elgon olive trees cedar *Juniperusprocera*, pillarwood *Cassipoureamalosana*, elder *Sambucusadnata*, pure stands of *Podocarpusgracilior* and many orchids. Of the 400 species recorded for the area the following are of particular note as they only occur in high altitude broad-leaf montane forest: *Ardisiandra wettsteinii*, *Carduusafromontanus*, *Echinopshoehnelii*, *Ranunculuskeniensis* (previously thought endemic to Mount Kenya), and *Romuleakeniensis*.

1.1.8 Wildlife and other attractions

Elephants and buffalo can be found on the lower slopes. The park is also home to a variety of small antelope and forest monkeys, including the Black-and-white Colobus and Blue Monkey. Over 300 birds can also be found in the area, including the endangered Lammergeier, African Goshawk, and Baglafaecht Weaver. Maathai's Longleg an endangered dragonfly was discovered here in 2000 and named after Nobel Prize winner Wangari Mathaai.

Together with the fauna and flora, the park has a variety of scenery; this includes cliffs, caves, waterfalls, gorges, mesas, calderas, hot springs, and the mountain peaks. The most popular areas are the four explorable, vast

caves where frequent night visitors such as elephants and buffaloes come to lick the natural salt found on the cave walls. Kitum cave, with overhanging crystalline walls, enters 200 m into the side of Mt. Elgon. At the Endeless bluff there a panoramic view of the areas' escarpments, gorges, mesas, and rivers. The highest peak of Mt. Elgon on the Kenya side, Koitobos, measures 13,852 ft (4,155 m), and is easily reached by hikers in about two hours from the road's end. Activities include vehicle circuits leading to animal viewing areas, the caves and Koitobos peak, self-guided walking trails (Ask for the Kitum Cave guide book at the gate), hiking to Endeless Bluff and Koitobos Peak, primate and bird watching, cave explorations

1.1.9 Local people and Demography

Mount Elgon is home to three tribes, the Bagishu, the Sabin and the Ndorobos. The Bagishu and the Sabin are subsistence farmers and conduct circumcision ceremonies every other year to initiate young men (and in the Sabin's case, girls) into adulthood. Traditionally, the Bagishu, also known as the Ba-Masaba, consider Mount Elgon to be the embodiment of their founding father Masaba, and you may hear the mountain called by this name. Local people have depended on forest produces and have made agreements with the park to continue to harvest resources such as bamboo poles and bamboo shoots (a delicious local delicacy).

Over 90% of the population of Mbale and Kapchorwa districts is rural, with subsistence agriculture being the dominant economic activity. Significantly, in sub-counties bordering the national park, rural population densities reach over 600 people per square km, amongst the highest such densities in the world. The high population densities on the borders of the park are testament of fertility of the soils and the dependability of rainfall in those areas.

1.2 Statement of the problem

There have been a number of controversial questions raised about the impact of humans in the area and its future management. For example,

should people be left in the park as a natural part of the ecosystem? What is their current impact on the flora and fauna of the area? What impact is increased tourism likely to have on the area? What access should local people be given to forest resources, for example grazing land, timber and bamboo? And what are the implications for the park of resource use by the expanding communities adjacent to the park? Whilst not offering answers to all these questions, the studies carried out by Project Elgon in 1996 and 1997 have provided new information which has aided National Park management and local people to make informed decisions about their impact on the ecosystem which supports them. It has also added to the growing base of knowledge about the human, animal and plant communities on Mount Elgon. In response to the volume of work which is needed if we are to fully understand the issues surrounding the conservation and development of this area, further work is required to be carried out.

The status of people currently living in the park is of critical importance to the future of the National Park. Land tenure rights of people living in the park are at present uncertain and this has created conflict between local people and the management of the National Park. People are generally unwilling to use resources in the park sustainably, as there is no incentive to invest time and money in sustainable practices when eviction may be imminent. It is becoming of increasing urgency to decide whether people who are currently living in the park should be allowed to do so on a permanent basis. In addition to this, local people have been progressively moved out of Mount Elgon National Park (MENP) and MENP management are currently deciding whether to relocate those people who are still living in the park. The majority of the human population living in the National Park are living in the Benet parish therefore this study will focus on the roles of man's socio-economic activities on MENP.

1.3 Objectives of the study

1.3.1 General objectives

To find out the role of man's socio-economic activities on Mount Elgon National Park

1.3.2 Specific objectives

- i. To identify the communities living around the park and the socio-economic activities carried out in and around Mount Elgon National Park.
- ii. To assess the environmental impacts of these activities on Mount Elgon National Park.
- iii. To find out the approaches used for sustainable park management

1.4 Research questions

- i. What are the communities living around the park and the socio-economic activities carried out in and around the park?
- ii. What are the environmental impacts of these activities on Mount Elgon National Park?
- iii. What are the approaches used for sustainable park management?

1.5 Purpose of the study

Most national parks are facing threats from the surrounding communities though they are considered to be protected. National parks act as banks to diverse species which face extinction pressure and yet these areas are threatened.

Therefore, the study was aimed at ensuring protection, preservation and management of the area while benefiting the communities. However, man should appreciate this purpose instead of looking at it for other land uses. The importance of this resource is for the world at large.

1.6 Scope of the study

The study was carried out from March to August 2012. The study on man's socio-economic activities on protected areas was carried out on Mount Elgon national park and was specifically aimed at identifying communities and their socio-economic activities, the impacts of these activities on the park and the sustainable park management approaches.

1.7 Significance of the study

The study will be useful to the government planners, Uganda Wildlife Authority, NGO's and researchers who will need current information. The awareness in the status of the area will make the above named stakeholders to view these national parks in an investment perspective where it should be highly valued. Also, it will help in implementation bit of sensitising and empowering the affected communities to come up with appropriate ways of carrying out sustainable socio-economic activities while ensuring proper conservation of the national park.

To the researcher, the study is a partial requirement for the award of the degree of Bachelor of Science in Environmental Management course.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Protected areas are locations which receive protection because of their recognised natural, ecological and/or cultural values. There are several kinds of protected areas, which vary by level of protection depending on the enabling laws of each country or the regulations of the international organisations involved. The term "protected area" also includes Marine Protected Areas, the boundaries of which will include some area of ocean. There are over 161,000 protected areas in the world (as of October 2010) with more added daily, representing over 13 percent of the world's land surface area. By contrast, only 1.17% of the world's oceans is included in the world's ~6,800 Marine Protected Areas. Protected areas are essential for biodiversity conservation. They are the cornerstones of virtually all national and international conservation strategies. They are areas set aside to maintain functioning natural ecosystems, to act as refuges for species and to maintain ecological processes that cannot survive in most intensely managed landscapes and seascapes. Protected areas act as benchmarks against which we understand human interactions with the natural world. Today they are often the only hope we have of stopping many threatened or endemic species from becoming extinct.

Generally, protected areas are understood to be those in which human occupation or at least the exploitation of resources is limited. The definition that has been widely accepted across regional and global frameworks has been provided by the International Union for Conservation of Nature (IUCN) in its categorisation guidelines for protected areas. The definition is as follows: "A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." Protected areas are designated with the objective of conserving

biodiversity and providing an indicator for that conservation's progress, but the extent to which they defend resources and ecosystem dynamics from degradation are slightly more complex. Protected areas will usually encompass several other zones that have been deemed important for particular conservation uses, such as Important Bird Areas (IBA) and Endemic Bird Areas (EBA), Centres of Plant Diversity (CBD), Indigenous and Community Conserved Areas (ICCA), Alliance for Zero Extinction Sites (AZE) and Key Biodiversity Areas (KBA) among others. Likewise, a protected area or an entire network of protected areas may lie within a larger geographic zone that is recognised as a terrestrial or marine ecoregions (see, Global 200), or a crisis ecoregions for example the range of natural resources that any one protected area may guard is vast. Many will be allocated primarily for species conservation whether it is flora or fauna or the relationship between them, but protected areas are similarly important for conserving sites of cultural or indigenous importance, and considerable reserves of natural resources.

IUCN Protected Area Management Categories

Through its World Commission on Protected Areas (WCPA), IUCN have developed six Protected Area Management Categories that define protected areas according to their management objectives which are internationally recognised by various national governments and the United Nations. The categories provide international standards for defining protected areas and encourage conservation planning according to their management aims.

Table 1: IUCN protected area management categories

Box 1	Protected areas management categories
CATEGORY Ia	Strict Nature Reserve: protected area management mainly for science
Definition	Area of land and/or sea possessing some outstanding or representative ecosystem, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.
CATEGORY Ib	Wilderness Area: protected area managed mainly for wilderness protection
Definition	Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to persevere its natural condition
Definition	Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generation, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.
CATEGORY III	Natural Monument: protected area managed mainly for conservation of specific natural features
Definition	Area containing one, or more, specific natural or cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.
CATEGORY IV	Habitat/species Management Area: protected area managed mainly for conservation through management

	intervention
Definition	Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.
CATEGORY VI	Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems
Definition	Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

Source. (IUCN 1994)

Natural parks

Nature protection has a long history going back to ancient Greece. In old Greek legends it was told that Mother Earth, Demeter, has taken some measures to protect remarkable Oak trees. Gilgameslegnd talks about, one of the most prominent and three thousand years old legend of Sumerians in the Middle East, King Gilgams of Uruk and Enkidu's killing Ranger Humbala who was assigned to protecting God Enlil Cedar Forests (Caglar, 2004). Exploitation and destruction of natural resources have a background as old as world history. Parallel to that, necessary protection measures aiming at protecting orchards and other fruit trees were taken. In 1343 in Dortmund, Germany, afforesting agricultural lands and pastures were regulated by legislative provisions. Similarly, special protection measures taken to protect wild birds like eagles, hawk and heron, in England in 1250

deserve to be mentioned here (Taze, 2008). The idea of putting a particular area having scenic beauty, put landscape, flora, fauna and recreational opportunity under protection status was born in medieval Holland. In 1576 Orange Prince and Lahey Mayor reached an agreement to protect Lahey Forests as keeping its natural characteristics. However, a systematic protection and codification efforts, creating national parks, reserved areas and establishing institutional co operations were originated mainly from 19th century (Yucl and Babus, 2005). On other hand, several nature protection efforts were launched in the USA in late 19th century. Thousands of areas were put under protection as scenic rivers, national trail roads, nature parks, natural monuments, etc. Consequently, all those efforts were combined under a single concept called 'Natural Parks'. In this sense, it is apparent that the idea of 'Natural Park' is an American invention symbolised by the creation of Yellowstone National Park by Congress. Such a progress marked the beginning of a worldwide movement that has spread to more than 100 countries as of 2006 (National Park Service, 2006)

2.1 Communities and their activities

Eldon Kathy 2001, human race is a complex fact by the fact that we have the same body organs and blood we end up becoming isolated from certain people by the mode of communication created in languages thus defining our community and our mode of life, and not the colour skin. The world has got thousands of languages mainly in South America, Asia and Africa. The area has that kind of statistics because most of the individuals speak their native languages and attach high value and esteem to their way of life and are highly preserving their culture n all forms. In Europe, it is also a society with variety of languages which distinguish the people's community both the eastern and western Europe, people have different languages and communities and thus defining their interaction with resources.

Africa is also a rich continent with dozens of communities, and basically majority of them being a society characterised by poverty which stir the usage of the resources differently and guided by their culture. Uganda has

several ethnic groups like the Nilotics, Luo, Bantu, Cushtic, Hamites and others with variety of tribes and communities under each. Uganda population is one of the fastest growing in the world and has been highly mobile in the past due to political turmoil. Immigration rates to the region have been high and encroachment upon the old Forest Reserve area proceeded unchecked until the early eighties. Recently as the politics of the country have stabilised, Uganda National Parks Authority has managed to assert its authority in its areas of jurisdiction. Security has been stepped up, investment in tourism has increased and encouragement and support for research efforts have been extended.

Around MENP, a pastoralist population called the Sebei, of Nilo-Cushtic origin, live on the northern slopes of Mount Elgon between about 2500 and 3000m where they graze their cattle, sheep and goats on pastures within the forest and on the high moor lands. The households of the Sebei were thought to number about 210 in 1991 (Howard, 1991), with each household containing an extended family. Apart from the Sebei there are no other recorded traditional residents of the area currently gazetted as Mount Elgon National Park. Were & Wilson (1970), the Bagishu are of Bantu origin and have gradually moved further up the lower slopes of Mount Elgon having moved into the area from the east in the sixteenth century. There is always a cultural circumcision carried out by these people in every even year.

A number of forest dwellers still live in the park. They are primarily pastoralists, practising subsistence agriculture in gardens next to their houses. Prior to cultivation, the areas are burnt and cow dung is added to the soil to fertilise it. The gardens are then planted for two or three years. The high altitude prohibits the production of maize, but potatoes (*Solanumtuberosum*) and matooke (*Musa sapientum*) are widely grown. When the evictions occurred, many of these gardens and grazing areas around them were abandoned. Immediately after the 1990 evictions the forest was lacking the dense shrub layer characteristic of East African upper montane forests (Richards, 1996) and extensive areas of top-soil were exposed due to

the activity of cattle (Katende, A. pers. comm.). The current pastoralists concentrate grazing activity on the Benet grasslands which meander through the forest at an altitude of approximately 2500 - 2800 m. It is not certain whether the Benet grasslands have always been open grassy areas (van Heist, 1994) but they are maintained as artificial climax by heavy grazing. A number of cattle graze in the forest, but they are fewer in number than before the evictions. Although the Ndorobos live illegally in the area they are tolerated by the National Park, who is currently deciding whether to relocate them. Human settlements in the National Park are dispersed over a wide area with homesteads frequently over a kilometre apart. Households were sampled in the park between altitudes of 2100-2800 m. The park is dominated by forest in this area. The dispersed settlement in the forest around the Benet grasslands at 2800m is the highest altitude human settlement on the mountain. The community was much larger before 1983 when most of the people from the village of Benet were evicted from the area by park authorities (a detailed description of the dwellings and pastoral economy of the community prior to this time was made by the Brathay Exploration Group in 1962 (Thomas, 1962)). Grasslands meander through the forest at approximately 2800 m and are used to graze animals by small communities of people who live in the park and by animal owners at lower altitude who travel to the grasslands regularly for grazing.

Land use by local communities in the park is centred on pastoral activities as the high altitude prohibits large scale production of crops. In addition to cattle, a smaller number of goats, donkeys and chickens are kept. Subsistence crops are grown in small gardens next to the houses. These gardens were usually burnt prior to their creation, and they are fertilised with cattle manure. Potatoes (*Solanum tuberosum*) are the main crop grown in addition to a small amount of matoke (*Musa sapientum*) and other vegetables. Cash is mostly obtained from the collection and sale of forest products, the production of bamboo baskets and the sale of meat from cattle, goats, donkeys and chickens. These products are also exchanged for maize and other goods which cannot be grown at this altitude. Many of the

people who live in this area have a second home at a lower altitude outside the park where agricultural production is based. They live in homes near the grassland while they look after the cattle. Outside the park, fewer animals are kept as there is little grazing land available at this altitude. The main crops grown are maize (*Zea mays*), potatoes (*Solanum tuberosum*) and matoke (*Musa sapientum*) with a number of other seasonal vegetables. The main source of cash is from the sale of maize. Cash is also obtained from the sale of forest and animal products. The proportion of income derived from the sale of forest products decreases with distance from the park boundary (Scott, 1994). Towards the trading centres (furthest away from the park boundary) the collection of forest products decreases and the amount of people purchasing forest products increases (Scott, 1994).

According to Scott (1994), the most important forest resources (more than 50% of households closest to forest collect them) are firewood, ropes, pole wood, vegetables (including mushrooms), bamboo shoots, bamboo stems, crop stakes and grazing. Some of these forest resources are collected by a small proportion of people in and around the trading centres, but the only forest product sold by over 10% of people living far away from the forest is bamboo shoots (17%) (Scott, 1994). Firewood is collected by the highest proportion of households. Although most people only collect dry wood, some admit to felling live trees when dry wood is scarce. Although the proportion of people using on-farm trees for firewood is increasing (38%), the forest is still the main source of firewood. Ropes are mainly used in house and granary construction. Vine species and bark from particular tree species are used for this purpose. Pole wood is also used for the construction of houses. In this area, pole wood is usually made by felling and splitting mature trees. Sustainable methods of pole production such as coppicing and pollarding are rarely used. The collection of many vegetables, especially mushrooms, coincides with periods of food shortage (during the early rains, just after planting), and as such represents an important source of nutrition (Scott, 1994). Bamboo shoots are collected each year. They are smoked and eaten as a seasonal delicacy or sold. Bamboo stems are collected primarily for the

construction of houses and granaries, ceremonial purposes, crop staking and they are weaved into baskets. Basketry is historically common in the Kapchorwa district, but it has been gradually declining with the increasing availability of plastic utensils. Some families rely on basketry for their main source of income. Baskets can be exchanged for maize or cash. Crop stakes are used primarily to support matooke trees. Demand for stakes is lower in the Kapchorwa district than in other parts of the mountain because matooke production is lowest in this district (Scott, 1994). However, matooke production is increasing in the area and the demand for crop stakes is likely to increase accordingly.

In addition to the forest resources, a number of medicinal plants are collected from the forest. These are harvested sustainably by medicinal specialists. The forest is also used for a small amount of illegal hunting (mainly Black and White Colobus monkey (*Colobusguereza*) for circumcision ceremonies), collection of thatching grass, fruit, drinking tubes, white ants and caterpillars, sand for smearing houses, rich soil used as fertiliser for cabbage crops, mineral deposits used for salt-licks by cattle and charcoal. Traditional sites in the forest are used for circumcision ceremonies and the graves of ancestors (Scott, 1994).

2.2 Impacts of community activities on MENP

Pressure placed by agriculture on biodiversity, over the last century, population, market pressures and the development of new agricultural technologies have encouraged patterns of agricultural development tending towards agricultural intensification (i.e. increasing scales of monoculture production, intensive mechanical tillage, irrigation, and the use of synthetic fertilizer, pest control agents and a restricted diversity of crop and livestock varieties), often leading to natural resources degradation. The growing food demand by a wealthier and larger global population is expected to induce further encroachment of agriculture on unmodified ecosystems (10 billion hectares by 2050), with inevitable negative impact on biodiversity (WEHAB, 2002).

The majority of the human population increase is expected to take place in the biodiversity-rich developing countries of the tropics (e.g. the Caribbean, the Philippines, Sri Lanka and the Western Ghats of India), where 19 out of 21 regions of concentrated biodiversity ("biodiversity hot-spots") and human population in these areas is increasing faster than anywhere else). These areas of high population growth (many of which lie adjacent to protected areas) are also experiencing rapid changes towards urbanization where demand for agricultural products is expected to increase as income levels in these areas rise. The anticipated result of such demographic changes is that increased production pressures will be placed on both the wild lands and the agricultural production systems in and around protected areas (McNeeley and Scherr, 2003).

The simplification of agro-ecosystems to monoculture production and the removal of non-crop vegetation from the farm unit (e.g. hedgerows, shelter belts and field margins) has contributed to the homogeneity of agricultural landscapes by reducing botanical and structural variation, resulting in both a reduced capacity of agricultural areas to serve as habitat for wild species as well as to effectively internally regulate populations of pests and disease causing organisms which affect crop productivity (Soil Association, 2000; Defra, 2003). This has resulted in a widespread decline in farm species abundance and diversity across many taxonomic groupings, including high rates of wildlife mortality and reduced reproductive success of many species (Stolton *et al.*, 1999; Gliessman, 1999; Kegley, 1999; Edge 2000; Soil Association 2000; Bugg and Trenham, 2003, Benton *et al.*, 2003). This loss of biodiversity has also resulted in a reduced capacity of agro-ecosystems to perform many essential ecosystem functions such as purification of water, internal regulation of pests and diseases, carbon sequestration, and degradation of toxic compounds (Altieri, 1999).

Elevated nitrogen and phosphorus levels in aquatic ecosystems have led to extensive eutrophication and degradation of freshwater and marine ecosystems in many areas where agriculture is concentrated. Synthetically compounded nitrogen fertilizer poses multiple risks to both wildlife

populations and human health. Dissolved nitrate levels of 2 ppm or greater are known to interfere with normal development of amphibians with levels above 10 ppm known to be lethal (Environment Canada 2002; Bugg and Trenham, 2003). The use of pesticides (i.e. herbicides, fungicides, rodenticides and insecticides) poses both known and unknown risks to biodiversity, impacting wildlife on many different levels, from direct to indirect lethality to non-lethal but severely debilitating effects. Each of these impacts has the potential to interfere with the reproductive success of wildlife and further reduce the habitat quality and biodiversity of agricultural and surrounding ecosystems (Edge, 2000). It is estimated that 70-90 percent of ground applied pesticides and 25-50 percent of aerially applied pesticide reach their target (WWF, 1999). The remaining amount is released into surrounding ecosystems and enters the food chain, affecting animal populations at every trophic level (Gliessman, 1999). Over 672 million birds are exposed to pesticides each year in California alone with an estimated 10 percent of these animals dying from this exposure. Birds exposed to sublethal doses of pesticides are often afflicted with chronic symptoms that affect their behaviour and reproductive success (Kegley, 1999). Pesticides are also known to negatively affect insect pest-predator population dynamics in agro-ecosystems (Landis, 2002) and to disproportionately effect insect predator populations, resulting in pest population resurgences and the development of genetic resistance of pests to pesticides (Flint, 1998). In addition, endocrine-disrupting compounds found in many pesticides still in use pose an additional and unknown long-term risk to wild biodiversity. Significant evidence of endocrine disruption from pesticide exposure has been documented for many different taxonomic groups including: birds, reptiles, fish, snails and oysters resulting in adverse effects to growth, development, or reproduction (US/EPA, 1997; Environment Canada, 2000).

Recent studies have also provided evidence of the impacts and risks to agro-ecosystems and wild biodiversity from genetically engineered crops. Transgenic crops pose a suite of ecological risks to native and cultivated

ecosystems through: the spread of transgenes to related wild types via crop-weed hybridization; reduction of the fitness of non-target organisms; the evolution of resistance of insect pests to pesticide producing crops; soil accumulation of the insecticides produced by transgenic crops; unanticipated effects on non-target herbivorous insects; and the creation of new pathogenic organisms via horizontal gene transfer and recombination (Altieri, 2001).

2.3 The philosophy behind national park management

In general two philosophies exist for natural resource management throughout history: the one is conservationism and the other is preservationism.

Conservationism is an idea that recognises “wise use” of natural resources. According to Gifford Pinchot, the most prominent inspirer of the conservationism, the term conservation means wise use of natural resources in brief. He was the first person drafting forest management plans for the purpose of providing the greatest good of the greater number for the long run (Hays, 1959). This philosophy considers natural resources as a source of raw materials for economic development. Since conservationists became aware of the scarcity of natural resources first, they perceived that those resources had to be wisely used. This means that we, as human beings, must use natural resources depending on economic and scientific methods. We can use natural resources, but we cannot exploit them. Theoretically, conservationism never let people exploit natural resources.

According to Dryzek (1997), the main concept of conservation movement was the rational use of natural resources as an input. This movement did not want to preserve environment for aesthetic concerns, scenic beauty, and recreational reasons, or for human health. Instead the movement sought only to ensure those resources such as minerals, timber and fish that had to be used reasonably and wisely. Consequently, there would be huge amount of natural resources to provide raw materials for growing industrial economy. Conservation movement means to seek to limit the types of

exchange value uses. In other words, natural resources have a limited usage fields only to be an input in production process. And not any other usage field or exchange value exists other than economic concerns.

In the contrast to conservation movement, preservation movement means to “to seek to isolate parts of the ecosystems and protect them from any exchange-value use in social production system” (Schnaiberg and Gould, 1994, p. 144). Preservationists tend to protect ecosystem as a whole from any raw material withdrawals and additions. The nature should remain however as it is. This movement denies any economic activity in a particular area.

2.3.1 Management history of Mount Elgon national park

Mount Elgon has been controlled by the Forest Department since 1929. It became Mount Elgon Crown Forest in 1940, and became a Forest Reserve in 1951. The main objective of the working plan for 1968-1978 (Synnott, 1968) was to protect the forest, with secondary objectives in the extraction of timber. Since the restoration of civil stability in Uganda, the government has been increasingly aware of conservation issues, and in 1988, a forest rehabilitation project was initiated on Mount Elgon. The upper reaches of Mount Elgon received the protected status of a National Park in 1992. Prior to this, the area had been a Forest Reserve (gazetted in 1951) with objectives in forest protection and timber extraction (Synnott, 1968). The Mount Elgon Conservation and Development Project has been assisting the National Park authorities with forest and community issues since 1987. The current aim of the project is to "promote community development and conserve Mount Elgon's ecosystem for present and future use" using a "community based resource management approach" involving the participation and empowerment of local communities in the development process (MECDP, 1995). Working in conjunction with MENP, park regulations have been formulated with reference to the needs of local people and their resource use levels, and enforced in conjunction with a comprehensive extension programme. Collaborative management has been piloted in two parishes,

with the aim of extending it to all forest-adjacent parishes before the project ends in 2000. IUCN have commissioned a number of resource inventories and assessments. Katende et al. (1990) carried out a biodiversity inventory for woody perennials and birds. A Land Mapping and Biodiversity Survey of Mount Elgon National Park was carried out in 1993 to assist the development of a long term management plan (van Heist, 1994). The survey described numerous aspects of the mountain with an emphasis on plant biodiversity. A "resource use assessment" was commissioned for the same purpose detailing resource use by people groups across the mountain through a series of semi-structured interviews and group discussions (Scott, 1994).

2.4 Management approaches of protected areas

2.4.1 Protected Areas Establishment

In the 1990's, annual deforestation rates in Brazil were approximately 17,000 square kilometers and corresponded to average annual emissions of 200 million tons of carbon. Annual deforestation peaked in 2004 at approximately 27,000 square kilometers, an area about the size of the state of Massachusetts. Since that time deforestation has declined steadily to approximately 6,000 square kilometers. Between 1998 and 2010, deforestation declined by 77%. While, the decline cannot be attributed to ARPA alone, scientific research supports the conclusion that protected areas of the Amazon, as a tool for conservation, are important contributors to protecting large, contiguous areas of forest. Resulting benefits include conserving biodiversity and maintaining crucial ecosystem services, particularly the reduction of carbon emissions from deforestation, preventing floods and soil erosion, and regulating regional and perhaps even global rainfall and temperature.

ARPA had as its goal the protection of 12 million hectares of forest; by 2008 it had reached 24 million hectares in 44 new protected areas. Of that total, approximately 13.2 million hectares are under strict preservation protection while 10.8 million hectares are in sustainable use reserves. This balance

between conservation and sustainable use is one of the innovations of ARPA. All told, the project supports 62 protected areas – nearly a third of all protected areas in the Brazilian Amazon – and funds efforts to improve park management for more than eight million hectares of strict preservation areas. Detailed biodiversity monitoring at the level of individual protected areas and covering all the areas supported by the project was part of the original plan, but proved to be beyond the scope and timeline of ARPA Phase I. Stakeholders cited the complexity of the task, lack of capacity for ground monitoring, and the staggering number of biodiversity indicators as contributing factors. To address resource constraints, during Phase II, the focus will be on locally monitored, and fewer, environmental indicators. Satellite deforestation monitoring carried out for the entire Amazon by the Brazilian space agency (INPE) will continue to cover all ARPA-supported protected areas and complement local PA monitoring where possible.

2.4.2 Institutional Strengthening

ARPA has contributed to both State and Federal level park management capacity. State governments (Mato Grosso, Acre, Tocantins, Rondônia and Amazonas) have increased capacity as evidenced by state financing for development and management of state protected areas replicating ARPA processes. ARPA contributes to state government capacity in the Amazon by helping institutionalize the political will for conservation and increase support for conservation goals at the state level. ARPA management innovations have been applied in other Brazilian protected areas within the Amazon region. Institutional strengthening, or "parks consolidation," as it is termed within the project, takes place in two stages. The first entails establishment of management councils, purchase of equipment, signage and management plans. The second stage extends into biodiversity research and monitoring activities. Of the 95 Parks that received consolidation support in Phase I, 35 are moving toward Stage 2 consolidation in Phase II.

Though ARPA has enhanced management capacity for protected areas, human resource constraints emerged as an important issue. The often difficult field conditions characteristic of Amazon protected areas and the

lack of financial incentives contributed to high staff turnover. A stable, trained staff strengthens institutional capacity. Human resources and communication procedures and policies such as handbooks, improvement and maintenance of the Program's website, and a newsletter/magazine are planned for in Phase II to improve outreach and ensure dissemination of learning so that that ARPA becomes institutionalized in federal and state agencies.

2.4.3 Financial Sustainability

One indication of increasing in-country commitment to conservation finance is the establishment of the Amazon Fund within BNDES (National Bank for Economic and Social Development), financed by donors and Brazilian private sector entities. A 20 million riel contribution from the Amazon Fund was part of the bridging finance between ARPA phase I and II. Financial benefits associated with carbon sequestration from ARPA protected areas have not yet accrued as a result of the Amazon Fund, but are expected to. With multilateral processes for ecosystem services such as REDD still under discussion, the Amazon Fund reflects Brazil's readiness to receive potential contributions from REDD+ activities.

The Protected Areas Fund (PAF) was created by the ARPA program as a reserve endowment to be capitalized for protected area management. At the end of Phase I the fund had \$24.5 million plus €10 million committed but not deposited. Since then, the fund has grown through contributions from private and international donor organizations. The terminal evaluation for the project identified the need to diversity funding sources to buffer the losses that may result from fluctuations in currency and global equity markets. As the contributions cited above indicate, the PAF has moved in that direction. With two ARPA parks expected to receive budget from the PAF, clarity around procedures for access will continue to be important going forward. The PAF is maintained by Funbio. This organization was created almost 20 years ago as a governance safeguard to receive biodiversity project funds. It is now a clearing house for GEF project funds while also managing three other endowment funds. At the 42nd meeting of

the GEF Council in June 2012, Funbio was approved to the second stage of review after its application for accreditation as a GEF implementing agency.

Phase I included plans for sub-projects for implementation of sustainable use and revenue-generation. However, most were contracted late in the first phase and are on-going. The progress to impact mission could verify some private sector operations contributing to local alternate income generation within ARPA sites. Support to additional and appropriate ventures could further diversify the financial basis for ARPA's sustainability. Nevertheless, project stakeholders acknowledged less-than-desired progress in this area, with only isolated cases of alternative income projects, and a lack of learning from the activities that did take place. Non-timber forest products and their use in income generation will be explored further in Phase II of ARPA.

2.4.4 Environmental Management and Ecosystem-Based Management

An Environmental Management System is defined by the International Organization of Standardization as a part of the management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy (ISO, 1996). Environmental Management (EMS) is a systems approach that anticipates and avoids environmental and conservation problems by setting goals and objectives; identifying and organizing people, skills, knowledge, technology, finances, and other resources; assessing risks and setting priorities; identifying and assessing various options; auditing and monitoring; and applying environmental management tools as required (Thompson, 2002).

On the other hand, Ecosystem-based management (EBM) is an approach to guiding human activity using collaborative, interdisciplinary, and adaptive methods with the long-term goal of sustaining desired future conditions of ecologically bounded areas that, in turn, support healthy, sustainable communities (Quinn, 2002). Ecosystem-Based Management (EBM) has been used by government agencies to improve management of natural resources.

Although originating in different sources, both approaches merge in protected areas, where there is a need to conciliate conservation objectives with economic and social concerns and needs. The management of Mount Elgon has changed considerably since Mount Elgon National Park (MENP) was formed in 1992 from its former status as a Forest Reserve. Since this time, the Mount Elgon Conservation and Development Project (MECDP) have been assisting management authorities with in-forest and community issues, and more recently, UWA-Face have been involved in the development process. In the last eight years, management policies have shifted from the protection and extraction of forest resources, to an increasing involvement of local communities in management decisions, and an emphasis on sustainable utilization of resources. This culminated in a new management plan for the park in 1995. To facilitate this, a "resource use assessment" was carried out between 1993 and 1994 by the MECDP (Scott, 1994). The survey covered resource use in six of the 58 forest-adjacent parishes in MENP.

IUCN has worked with both the local authorities and local communities to develop simple bylaws regulating agriculture in farm areas close to the national park. Local communities have designed forest resource management policies and by-laws that secure rights to their own investments, reduce conflict with the park authorities and which are integrated into local and national development plans. As a result, local farmers agreed to restrict open grazing on lands, especially towards the end of the dry season. The breaking of this simple barrier resulted in greatly enhanced local efforts to reduce erosion and retain soil, water and nutrients, and to plant trees (mainly indigenous) on farm. As a result of this, the National Park Authority granted local communities greater productive use rights within the park, through the signing of collaborative resource management agreements that allow local people to harvest certain agreed-to resources (foods and medicines for example), and allow bee hives to be located inside the National Park

The Mount Elgon Regional Ecosystem Conservation Programme (MERECP) is a regional programme of the East African Community (EAC) whose oversight, coordination and supervision was delegated to the Lake Victoria Basin Commission (LVBC). It was designed by IUCN through multi-stakeholder consultations, discussions and interaction with the EAC, Government of Kenya and Uganda through relevant national government agencies, local governments/districts, user groups, NGOs, private sector, local communities, conservationists and researchers. The MERECP redesigned implementation strategy aims to impart benefits to local communities and enable them to sustainably manage the ecosystem resources. It is similar the REDD+ project in that it encourages the reduction of deforestation and forest degradation. MERECP was designed as an element of implementation of the EAC (2001-2005) Strategic Plan, which addressed the mandate of the EAC to manage transboundary watershed areas of East Africa including Mt Elgon. MERECP attaches importance to implementation approaches that provide incentives to local communities to conserve and protect the Mt Elgon ecosystems for its range of ecosystem functions (ranging from improved forest management and conservation including wildlife and biodiversity values, maintenance of water sources and ecotourism among other things). The redesigned MERECP programme strategy offers guidelines for the implementation of the benefit sharing arrangements under the Community Forestry Associations (CFAs) especially for carbon sequestration and forest conservation activities. In addition to the EAC, many actors are involved in programme implementation at various levels.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presented the methodology which was used during the study; these included the study design, sampling methods and data collection methods.

3.1 Research design

The descriptive research design was used because it involved getting facts on the phenomena and describing the existing situation and reporting. Where it was possible to test and measure the large number of sample while having no control of the variables.

3.2 Sample techniques and size

The technique that was used in the study was random sampling technique because it gave each respondent an equal chance of being selected to give his/her views. Random sampling only applied to the community members. Purposive sampling on the other hand was used specifically on respondents who were knowledgeable in the field of study that is national park management. These respondents included park rangers and wardens in charge of conservation. The study employed random sampling method purposely because it minimised biased tendencies and helped in the generalisation of data. The study defined the population, listed the elements of the population, and determined an adequate sample size of which a representative sample of 60 participants was selected.

3.3 Data collection methods

3.3.1 Observation

This involved systematically selecting, watching and recording behaviour using the eyes and characteristics of living things, objects or phenomena.

Recording involved image data in form of photographs to show really what is on ground.

3.3.2 Questionnaire

This was used because it gave the respondents a chance to objectively give their honest opinions without any influence of the researcher's presence or feeling timid, and it also enabled the data to be collected over a large area within the limited time.

This also enabled the respondents to fill at their own convenient time which reduced bias and incomplete response due to lack time.

3.3.3 Interviews

The research mainly used face- to- face interviews which provided first-hand experience and personal contact with interviews. Interviews also provided high capability for facial validation which was instrumental in giving insights into various reasons for certain responses from participants.

3.3.4 Using available information and documented evidence

These are basically materials which contain the information about the area of study. This included information from past research and from different individuals which are relevant and from reliable resource.

3.3.5 Focus Group Discussions

Here, groups from different communities and other relevant stakeholders in the protected area were chosen for response considering the issues that were raised through the research objectives. The research study used focus discussion guide to collect data from the knowledgeable respondents. This guided and controlled the interview in order to facilitate data collection. This group also examined the data that was derived from other data collection methods, devise the appropriate data presentation techniques; and assess the relevance of the data to be included in the final findings.

3.4 Data processing and analysis

Two categories are important and reliable in this process, this include exploratory and confirmatory methods. Exploratory method was typically used to discover what the data was saying, also involved computing frequencies and percentages and displaying the data in tables. While confirmatory method used ideas from probability theory in an attempt to answer specific questions and often included calculations. To sum up, data was sorted and coded manually, qualitative and quantitative data analysis were used.

3.5 Limitations of the study

The community was reluctant in giving the information since most of them were not willing to be identified as the ones who have given the information.

Some members of the community demanded for payment before they could release the information they had which hindered the researcher from getting the some information due to the limited finances available.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND DISCUSSION OF THE FINDINGS

4.0 Introduction

This chapter covers the presentation, analysis and discussion of the findings centring on the main themes which are; the communities and their socio-economic activities on protected areas, the impacts and the sustainable park management strategies.

4.1 Demographic distribution of the respondents

The study sought about the differences in different characteristics of the respondents and the findings were as represented in Table 1 and 2

4.1.1 Distribution of the respondents by Gender.

The study involved both males and female from the study area (Pete village) as indicated in the table 1 below.

Table 2: Distribution of the respondents by gender

Gender	Respondents	Percentage (%)
Females	33	55%
Males	27	45%
Total	60	100%

Source: *Field Research Findings (2012)*

In table 2 above, 55% of the respondents interviewed were females and 45% were males, this figure was the result of availability of the respondents on the study area. According to the researcher, this implies that females, being the most vulnerable sex dominated the sample because they are always left behind these areas to take care of the elderly and the family so they are the ones who mostly carry out the socio-economic activities in and around the park.

4.1.2 Distribution of the respondents by Age

The study sought information about the age distribution of the respondents and the following were the findings as presented in table 2

Table 3: Distribution of the Respondents by age

Age group	Frequency	Percentage (%)
18-25	10	16.7%
26-35	30	50%
36-45	15	25%
46+	5	8.3%
Total	60	100%

Source: Field Research Findings (2012)

According to the study findings in table 3, it was established that the age group 18-25 was represented by 16.7% of the total sample, age group 26-35 constituted of 50% where as age group 36-45 and 46+ constituted of 25% and 8.3% of the total sample respectively. This implied that the majority of the sample fell in age category 26-35 because this majority of the respondents are young energetic people yet unemployed and have families to take care of therefore, they strongly carry out the socio-economic activities in and around the park in order to meet their needs.

4.1.3 Distribution of the respondents by number of people per household

The study sought information on the number of respondents per household and the following were the finding:

Table 4: Number of people per household

Number of people	Frequency	Percentage %
<5	7	11.7%
6-10	23	38.3%
11>	30	50%
Total	60	100%

Source: *Field research findings 2012*

In table 4 above, majority of the households had more than 11 people per home (50%). This clearly indicated that respondents who had more than 11 people per household dominated because they are the ones who mostly depend on and carry out different socio-economic activities in and around the park so as feed this large number of people in their homes and thus the most affected by the management of park. Also, it could be the reason as to why the population is high around the park with the associated effects of a large population such as encroachment of the park boundaries for settlement, agriculture and other activities.

4.1.4 Education level of the respondents

The study sought information on the education levels of the respondents and their qualifications were identified and presented in table 5 below.

Table 5: Distribution of the respondents by Educational level

Education level	Frequency	Percentage (%)
Never been to school	14	23.3%
Primary	18	30%
Secondary	10	16.7%
Certificate	8	13.3%
Diploma	6	10%
Degree	4	6.7%
Total	60	100%

Source: Field research findings (2012)

According to table 5, 23.3% of the respondents had never been to school, 30% had acquired primary education, 16.7% secondary level, 13.3% had certificates; those that had attained diploma were 10% whereas 6.7% had attained degrees. This implies that most of the respondents had only reached primary level as represented by 30 % followed by those who have never been to school (23.3%) thus most of them do not have knowledge on the importance of this park and therefore have to carry out different economic activities since they say that the land belongs to them and they can not die of hunger while the wild animals are conserved.

4.1.5 Occupation of the respondents

The study further sought information on the occupation of the respondents and the findings were as presented in table 6 below.

Table 6: Distribution of the respondents by occupation

Occupation	frequency	Percentage (%)
Civil servants	8	13.3%
Self employed	20	33.3%
Unemployed	32	53.3%
Total	60	100%

Source: *Field report findings (2012)*

According to the study findings in table 6, civil servants constituted of 13.3% of the sample, self employed 33.3% whereas the unemployed dominated the sample with 53.3% purposely because most of the socio-economic activities carried out in and around the park is done by the unemployed since they do not have any other source of income and thus this is the only way they can get income to provide for their families hence the most affected by the management of the park.

4.2 Communities living around the park and their socio-economic activities

4.2.1 Communities living around MENP

Table 7: Distribution of the respondents by their communities

Community	Frequency	Percentage (%)
Bagishu	29	48.3%
Sebei	23	38.3%
Benet	8	13.3%
Total	60	100%

Source: *field research findings (2012)*

According to the findings in table 7, the Bagishu constituted 48.3% of the sample, the Sebei 38.3% and the Benet represented 13.3% of the sample. This implies that the Bagishu dominated the sample because; those being the first occupants of this area have established the highest population in the area.

The Bagishu, alternately referred to as Gisu, Bamasaaba, (people of Bugisu region) are closely related to the Babukusu people of Kenya. According to Mr. Masindi Muliro, once a veteran politician and elder of the Babukusu from Kitale, was from the Bakokho clan, with its base at Sirilwa, near Bumbo in Uganda. Mountain Elgon, known locally known as Masaaba (a volcano 4'321m), the legendary father of the Bagishu people, has a long history of human occupation. The Bagisu, a Bantu speaking people, who constitute 5 per cent of the population were the first settlers on the mountain's western and southwestern slopes. Traditionally agriculturalists, they began cultivating in Mt. Elgon's fertile volcanic soils in the 14th century. They have remained on the mountain's slopes up to the present day and now currently inhabit the Mbale District. Today, the Bamasaaba inhabit the eastern districts of Sironko, Manafwa, Manjiya and Mbale and western Kenya. Ancestral worship and magic are common. The people either try to ban evil by means of magic, or they contact a medicine man prescribing herbs for the cure of illness and disease. Ceremonies with sacrificial offering are performed in order to appease the spirits or simply to thank them for a good harvest. Oracles were often consulted. They are known throughout East Africa for producing high quality Arabica coffee. They are a mainly agricultural people, farming millet, bananas, vegetables, honey, bamboo and sorghum on smaller holder plots. Traditional resources such as medicinal plants and water, sacred grounds and ancestral folklore, passed on orally to younger generations, all contribute to the inseparable relationship between the people and the mountain. The Bamasaaba are also famous for their traditional male circumcision ceremonies (Mwaga dance), held every even year. This ceremony is an important cultural link between the local people around Mt. Elgon.

Another community the *Sebei* settled on the northern slopes of the Ugandan side of Mt. Elgon and is currently concentrated within the Kapchorwa District. The land stretches from the cold heights of Mt Elgon to the hot plains of Karamoja. These people are very proud of their individuality and customs. One of the unique customs that distinguishes them from the rest

of their neighbors is female circumcision. These people circumcise both boys and girls though female circumcision is fading out as said by one of the respondents who feels hurt for their culture. The Sebei were pastoralists by nature and even today, the Basiboro (Konjek) section of them are still pastoral. On the Greek river plain, the influence of the Kitosh brought about the practice of maize-growing. Now, they also grow coffee which was introduced into their land from Bagishu. Today the Sebei have also adapted agricultural practices such as commercial maize and wheat cultivation.

Benet community Socially, economically, and politically marginalized; the Benet (also known as Ndorobos) are without doubt one of the most miserable communities in Uganda! They comprise a cluster of Sabinyas who have lived in and around Mt Elgon forest for more than two centuries, initially as hunters and gatherers but later on as sedentary pastoralists and small-scale farmers without land tenure rights. For the last 200 years the Benet community lived on the moorland of Mt. Elgon where they practiced pastoralism, hunting of wild game and gathering fruits. *The Ndorobos* chiefly depend on milk, meat, wild fruits and honey being pastoralists, hunters and gatherers. The Ndorobos have only their animals, wild animals, birds the river and the sky as their neighbours. They were completely plugged off from modern economic activities. However some are adopting cultivation of the food crops such as maize, beans, bananas and coffee for commercial purpose.

4.2.2 The socio-economic activities practiced in and around MENP.

Further the study wanted to know from the respondents the socio-economic activities carried out in and around the park and the following were the findings as represented in table 8 below.

Table 8: Socio-economic activities practiced in and around MENP.

Activities	Frequency	Percentage%
Agriculture(cropgrowing such as beans, passion fruits, cabbage,maize,coffee, “sukuma wik”etc)	17	28.3%
Bee keeping	5	8.3%
Cattle keeping	3	5%
Tourism	10	16.7%
Hunting	5	8.3%
Tree planting for timber, poles, firewood.	10	16.7%
Harvesting building materials	10	16.7%
Total	60	100%

Source: field report findings (2012)

From the table 8, agriculture accounted for the largest percentage of the activities (28.3%), followed by tourism, tree planting for timber and harvesting building materials represented 16.7% each, then bee keeping and hunting represented 8.3% each and lastly cattle keeping represented 5%. Agriculture as an activity dominates the area because of the favourable climate, fertile soils, ready market for the produce and it being the only venture for the unemployed and those who have attained low levels of education as seen in table 5 and 6.

4.3 Impacts of these activities on the park

The study wanted to confirm from the respondents whether the activities have impacts on the park and about 56 of the respondents (93.33%) answered “yes”. According to the several respondents, the following are the impacts as presented in table 9.

Table 9: impacts of socio-economic activities on MENP

Impacts of socio-economic activities on MENP	Frequency	Percentage (%)
Loss of vegetation covers due to agricultural encroachment.	18	30%
Loss of threatened species of animals	15	25%
Loss of various tree species due to over harvesting of firewood.	10	16.7%
Harvesting of construction materials	5	8.3%
Poaching of animals	4	6.7%
Tourism activities	6	10%
Fires	2	3.3%
Total	60	100%

Source: field research findings (2012)

According to table 9, loss of vegetation cover was represented by 30%, loss of threatened species 25%, loss of various tree species 16.7%, harvesting of construction material 8.3%, poaching of animals 6.7%, tourism activities 10% and fires represented by 3.3%. Loss of vegetation covers due to agricultural encroachment dominated the impacts because most of the people in this area mainly depend on agriculture thus carry out this activity throughout the year and hence higher impacts.

According to one of the respondents who is a ranger in MENP, large animals have become increasingly scarce since the large increase in human populations on the mountain in the 1980s in response to the political regime. Although most elephants (*Loxodonta africana*) and buffaloes (*Syncerus caffer*) were eradicated from the Ugandan side of the mountain during this time, buffaloes have been seen regularly in recent years, and elephants have been found near the border with Kenya (Howard, 1991; van Heist, 1994). Leopard (*Panthera pardus*), a threatened species, were also sighted recently, along with bushbuck (*Tragelaphus scriptus*) and the spotted red tailed monkey (*Cercopithecus ascanius*) which was thought to be locally extinct (van Heist, 1994). The most commonly sighted mammal species on the mountain are the black and white colobus monkeys (*Colobus guereza*) and blue monkeys (*Cercopithecus mitis*), hyrax (*Heterohyrax brucei*), antelope and duiker (*Sylvicapra grimmia*) (Katende *et al.* 1990; Howard, 1991; van Heist, 1994).

In interview with most of the respondents, encroachment of cultivation into the national park is a major threat to the Mt. Elgon ecosystem, due to both the area affected and the amount of degradation caused by the removal of natural vegetation. Encroachment has resulted in the destruction of approximately 25000 hectares within the past generation, or about one fifth of Mt. Elgon's forest. Virtually all of the forest cover below an elevation of 2000meters has now removed although some of this area is now naturally regenerating or being replanted with trees as most of the respondents have observed it. Most of the encroachment has occurred relatively recently. Incidences of encroachment have continued to occur for a variety of reasons including a strong community desire for more agricultural land, influenced by factors such as declining land productivity in some areas and high population pressure, Problems caused by false information being spread by politicians or community leaders for personal popularity or gain and past involvement of park staff in allowing cultivation to occur in the park, as a result of low salaries, late payment of salaries and job insecurity.

In addition, problems with identifying and marking the correct boundary have occurred in a number of areas, with different boundary surveys over the years producing different results either as a result of lack of information or because of manipulation of the true boundary by the surveyors as a result of community pressure and payment

According to Mr Richard Matanda the UWA warden in-charge of conservation, said the encroachers have gone as far as the moorland. He also said rivers have turned into streams and are soon drying up because of encroachment and farming on the slopes where the rivers flow from. In the State of Environmental Report 2002, he estimated that soil erosion was responsible for 80 per cent of the land degradation, indicating that the most affected areas are the steep slopes of Mt. Elgon that experience mass wasting. Reports from Uganda Wildlife Authority (UWA) indicate that due to massive encroachment, there is a decline in forest resources, depleting soil fertility.

Fragmented land holdings and intensive use of land for subsistence farming, coupled with the growing animal population, have posed serious concern over sustainability of the forest cover as it was also noted that illegal grazing of cattle has a range of impacts on the park as some of the respondents outlined as below;

- Loss of forest regeneration through grazing and trampling, thus leading to changes in species composition
- Damage of growing seedlings and shrubs
- Trampling causing erosion on trails used by cattle, and over time making the trails wider.
- Grazing on grassland areas, preventing tree or shrub re-growth and thus leaving the areas as bare and susceptible to soil erosion.
- The deliberate use of fire to encourage new grass growth also helps maintain grasslands

Cattle grazing are having significant negative impacts on the park environment in some areas particularly where large herds of cattle are taken into the park and are allowed to graze both on the grasslands and within the forest itself.

In an interview with Mr. Madaya Benon a ranger at the park, he said that most communities surrounding Mt. Elgon rely heavily on firewood and charcoal for their energy needs, with much of this collected from the National Park. Current levels of firewood collection do not appear to be having a major impact where only dead wood is collected, but the sustainable level of harvesting is not known. Obvious damage to vegetation has occurred where green timber is cut for firewood and the setting of fires for charcoal production creates the threat of wildfires in the forest. Given the large and growing demand for energy in the densely populated communities surrounding Mt. Elgon National Park, the collection of firewood has posed a major threat to the Mt. Elgon ecosystem in the long term because of limited alternative sources of wood, or alternative sources of energy such as electricity become more available. Fuel wood is the energy source for over 90% of households in both Mbale and Kapchorwa Districts, and remains an important energy source even for a significant proportion of the industry in the two Districts. Soap works, vegetable oil factories, distilleries, and brick and tile works all commonly use firewood as their primary source of energy.

Most homes get poles for constructing their houses while others practice pit sawing for timber got from Mt. Elgon National Park. The removal of split and round poles for construction occurs at higher levels and has the potential to have a serious impact on the Mt. Elgon ecosystem; particularly on species which are favoured for this purpose.

A wide range of forest products are collected from Mt. Elgon National Park. Many of these are collected at what appear to be sustainable levels and are not considered to pose a serious threat to ecosystem viability. However, sustainable levels of harvesting of each product, or of particular species, are not known thus leading to depletion of some forest products.

Poaching of animals remains a serious problem in Mt. Elgon National Park, although current levels of poaching are low as a result of the numbers of animals being low. Poachers are mainly interested in obtaining meat for their own consumption and for sale in nearby communities. Buffalo and various small antelope are the main species targeted.

The hunting of colobus monkeys, in order to use their pelts in regalia associated with circumcision rites, is a highly sensitive issue. Though killing of colobus has been illegal for many years the socio-cultural significance attached to circumcision has led the practice to persist.

Tourist impact on the Mt. Elgon environment is thus currently low. However, there is some evidence of erosion on tourist trails (often exacerbated by use of local resource collectors and grazing animals) and firewood is collected around camping areas. As tourist numbers increase, these and other impacts such as rubbish or effluent pollution also increase. Also, collection of firewood around campsites, for use of visitors, porters, and guides needs are on the increase.

Past Research activities do not appear to have had any significant negative impact. However, Mount Elgon National park operations have also had minor impacts such as clearing small areas of vegetation for establishment of rangers' huts or other infrastructure thus leading to destruction of vegetation and other forest resources.

Uncontrolled wildfire does not have a major impact on the conservation of the forest zone of Mt Elgon National Park due to the relatively high rainfall arid moist vegetation type however; wildfires occur regularly in areas such as the moorlands, grasslands and bamboo forests. Fires result from a variety of sources such as hunters, bamboo collectors and cattle rustlers. There are also incidences of fires being deliberately lit by people as a protest following conflict or disagreement with the Park authorities.

Indications are that regular burning of the heath land and moorland is changing the vegetation structure and compositions in the area and thus having an impact on the habitat values for the small mammal communities.

4.4 Approaches to sustainable park management

The management of MENP is done by both the officials and the surrounding communities as well. Therefore, there are several programmes that have been put in place to ensure sustainable management of the park and during the interview; the following were the programmes that are used.

4.4.1 Resource management and protection programme

Park Bylaws and law enforcement

Park by law set out the rules and regulations governing use of the Park and its resources. These bylaws are clear and comprehensive and they are carefully reviewed at regular intervals to ensure that they remain relevant and facilitate achievement of the management objectives. Mt. Elgon National Park bylaws have been revised to ensure they reflect the current objectives of the management programmes in particular the increased emphasis on community conservation and collaborative management. At the same time there is sensitization of the communities and district leadership regarding these bylaws and this has enabled the communities be aware of them and thus ensuring sustainable management.

Poaching and other illegal activities persist within MENP although at low levels. Effective law enforcement is implemented together with education and community conservation activities, to control these activities for the long-term conservation of the Mt. Elgon ecosystem. A programme of effective surveillance is critical to the achievement of the park's law enforcement and community conservation objectives. Patrols have been hampered in the past by problems relating to the locations of ranger posts, the transport of supplies, and inadequate communications systems to maintain contact with ranger posts. Also, enhancement of radio communications systems, construction of the new base camp at Wanale Ridge and improved logistical

support for Kapchorwa operations has enabled the Park to carry out surveillance activities more efficiently and effectively

Boundary Management

Management of the boundary has ensured both the establishment and maintenance of a clear, well marked and well understood boundary, and with overcoming conflicts and tension between the Park and surrounding communities. Between 1994 and 1997, Mt Elgon National park undertook to mark the park boundary clearly and unambiguously. The entire length of the boundary, other than those sections which coincide with the Uganda-Kenya border is being planted with a 5-10 metres wide band of eucalyptus trees. This band of eucalyptus is intended to remove all ambiguity concerning location of the boundary, and also to constitute a resource that can eventually be exploited to supply local residents with fuel wood poles and construction timber on a sustainable basis to ensure that it continues to serve both purposes. The boundary is regularly patrolled and appropriate forest management measures carried out as required.

Restoration of habitats

In so far as practicable, the Park has restored the ecosystem of MENP to the conditions present at the beginning of the 20th century. In effect, this means rehabilitation of degraded vegetation communities and re-introduction of locally extinct species where feasible. There is also improved anti-poaching efforts and enhanced levels of cooperation with the Kenyan counterparts, independent movement of certain species into MENP in Uganda from across the Kenya border. A sound understanding of the biophysical and cultural resources of Mt. Elgon National Park is important for their effective management. As there are still many gaps in knowledge about these resources, inventories and other ecological studies are considered a high priority. An understanding of the crop raiding behaviour of animals living in the Park is also important to help develop mechanisms to control these animals and reduce their impact on surrounding communities. Over the centuries, fire, agricultural encroachment, grazing

and removal of forest products has had a considerable influence on the composition and distribution of plant communities on Mt. Elgon. While it is widely believed that the encroachment and loss of forest cover have had serious environmental and economic implications, the impact of fire, grazing and the removal of forest products are not fully understood. Therefore, applied research is carried out to permit the managers and communities better understand these impacts and therefore the issues to be considered in designing sustainable management regimes.

4.4.2 Community Conservation and Development Programme

This programme is based on the premise that long term conservation of Mt Elgon ecosystem can only be assured if residents of adjacent communities understand park management issues, and share both in the benefits flowing from the operation of the protected area and in the responsibilities for managing that area. Park managers must also understand and take appropriate action on issues that are of concern to local communities. This programme has objectives which include; To raise awareness understanding and appreciation for the park's ecological values and build support for the conservation of these values amongst local communities, to ensure that residents of adjacent communities secure meaningful material and non material benefit as a result of park management operations and the use of the National park, to accommodate and provide for use by local residents of renewable and cultural resources of the park, in ways consistent with the long term conservation of harvested species and with the long term protection of the overall Mt Elgon ecosystem and to nurture and support the sharing of responsibility for the long term management of the resources of the national park between the residents of adjacent communities and the staff of the national park. Therefore, there are several programmes under this programme and these include the following:

Community Representation and Liaison

This ensures effective community understanding of, and involvement in, Park management issues, effective channels of communication between Park authorities, local government and local communities.

Collaborative Management

This is whereby the MENP officials genuinely share with locally resident people, benefits, decision making authority and responsibility in the effective and sustainable management through meaningful negotiation and written agreement. Mt. Elgon National Park is continuing to work with communities to develop collaborative management arrangements which involve sharing the benefits and responsibility for Park management with adjacent communities. Collaborative management agreements have been piloted in a number of areas, and are gradually expanding to other areas as successful arrangements are developed. This has encouraged most the communities as they feel they are part of the park management and thus promoted sustainable management.

Conservation Education

One of the more successful components of the MENP community education programme is the Forest Exploration Centre (FEC) at Kapkwai. This facility is located just inside the Park boundary, on the northwest side of the park. It has dormitory accommodation for groups of up to 32 people, associated latrines and washing areas, a dining/meeting hall, a kitchen building, and an extensive and still growing trail network. The FEC delivers conservation education programmes to school groups especially at the P4-P6 levels. Also, the Park has extended the reach of its conservation education programme to adult members of communities. The FEC is available for use by diverse groups in addition to schoolchildren. Wildlife clubs have been introduced, the complex is also used by groups involved in Park related initiatives such as community drama groups who carry the Parks conservation messages to communities in the vicinity of MENP.

Revenue sharing

Accordance with Uganda Wildlife Statute (1996) 20% of tourist revenues from gate receipts is to be shared with communities living adjacent to protected areas. Mt Elgon national park is no exception. To enable this to occur, mechanisms have been put in place to ensure recording and collecting the revenue and then distributing this to communities through the approved system and this has provided direct benefit to communities from the operation of Mt. Elgon National park.

4.4.3 Research and Monitoring Programme

Mt Elgon National Park conducts its own research with a view to strengthening specific management programs. As well, the Park welcomes researchers from other institutions that wish to study certain aspects of the biophysical cultural resource themes. Monitoring is focused on collecting data which is evaluated and applied to management decisions relating to many different aspects of the Park operation. Monitoring enables them get information about the following aspects which helps them in park management.

- Incidence, location and type of illegal activities occurring within the Park
- Volumes of forest products harvested (legally and illegally) from the Park and the impact of this harvesting on the ecosystem.
- Populations and distribution of key plant and animal species
- Patterns and levels of visitor use, together with impacts associated with that use. and visitor satisfaction with facilities and services
- Numbers of participants. Activities, and attitudinal/behavioral results relating environmental education and interpretation programmes
- Health, education, and socio-economic circumstances of residents of communities in the vicinity of the park.

4.4.4 Plantations Management Programme

Plantations are considered to be an important resource, for local and regional wood supplies, revenue generation and to reduce the impact of illegal harvesting from natural forests in the park. UWA Board decided that they will be managed on a sustainable basis for wood production therefore a management plan for the plantation has been prepared and it is to manage the plantations for timber and other forest products to:

- Provide a source of revenue for the sustainable management of Mt. Elgon National Park
- Contribute to national and local needs for wood products
- Provide a buffer against harvesting of wood products from the surrounding natural forest with in Mt Elgon National park
- To provide employment and other socio-economic benefit to the local people neighboring the plantations

To ensure the achievement of the above objectives the following management programmes have been implemented.

Review and Amendment of General Management Plan

Information is obtained concerning Park resources and the ways in which those resources are used, and as more experience gained in managing those resources. It is entirely appropriate and the management plan is always modified and improved. Under normal circumstances the plan is reviewed and amended every 5 years. However, if new circumstances or information is required, the plan is amended at any time before this.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents conclusions and recommendations of the results presented in chapter 4. The researcher also supplements them with personal views. The conclusions were reached basing on the discussion of findings of the study and the recommendations made arising from the conclusions reached. The areas for further research have been also explored.

5.1 Conclusion

Generally, the major activity that was identified during the study was agriculture because most of the respondents were not employed and with poor education background which was coupled with the large number of people in the area. This activity has enormous effects on the vegetation and habitat in general, the climate of the area and the continued existence of the Mount Elgon national park. This therefore, calls for an integrated park management strategy that does not only address the issues of the park separately but also includes and involves the communities at all levels from decision making to implementation, monitoring and evaluation

5.2 Recommendations

Based on the findings the researcher recommended the following;

A number of on-farm management techniques should be used to protect or enhance on-farm habitat for wild biodiversity. Leaving natural snags and the erecting of artificial perches or houses for native song birds, raptors and bats to provide on-farm roosting, nesting sites and refuges to support populations of wildlife. Where mechanical equipment is used for on-farm vegetation management, harvest or clearing of land, the postponing of such operations until after ground-nesting fledge lings have emerged may significantly decrease nesting losses

The government should change the compensation policy in MENP conservation. The government has to work with all MENP stakeholders to enable creating effective socio-economic to all surrounding community members whose income have been affected since the establishment of the MENP.

Also, the government should ensure that it employs most of the natives of the surrounding communities who have excelled in the courses related to natural resource management so that their relatives can consider the park as important to their families.

In order to make MENP sustainable and productive to the surrounding communities, the interests of these people should be given priorities and always an understanding should be reached before action is taken.

5.3 Area for further research:

Through this study, the researcher discovered a gap in the field of research which ought to be researched on maintaining local people's culture. Therefore, this research finds the following area for further research:

Cultural impacts of tourism on MENP surrounding communities.

REFERENCES

- Boy, G. and Allan, I. (1988). Snowcaps on the equator. The fabled mountains of Kenya, Tanzania, Uganda and Zaire. The Bodely Head, London. Chapter 3: Cave-riddled Colossus: Mount Elgon (Boy)
- Britton, P. L. (Ed.) (1980) Birds of East Africa. East African Natural History Society, Nairobi.
- Davenport, T. Howard, P. and Dickenson, C. (1996) Mount Elgon Biodiversity Report. Republic of Uganda Forest Department, P.O. Box 1752, Kampala, Uganda.
- Davies, K. A. (1952). The building of Mount Elgon. Geological Survey of Uganda, Memoir VII Geological Survey Department, Entebbe.
- Delany, M. J. (1974) Rodents of Uganda. British Museum (Natural History), London.
- van Heist, M. (1994). Land Unit Map of Mount Elgon National Park. IUCN technical report, unpubl.
- Howard, P. C. (1991). Nature Conservation in Uganda's Tropical Reserves. Forest Department/Ministry of Environment Protection Uganda.
- Katende, A et al, 1990, Birds and Woody Perennials Inventory: Mount Elgon Forest Reserve, Sustainable Development and Forest Conservation in Uganda, Technical Report No. 1, IUCN.
- Van Someren, V. G. L. (1922) Notes on the birds of East Africa .Novitates Zoologicae. 29: 1-246.
- Van Someran, V. G. L. (1932) Birds of Kenya and Uganda, being addenda and corrigenda to my previous paper in NovitatesZoologicae 29, 1922. Ibidem 37:252-380.
- Katende, A et al, 1990, Birds and Woody Perennials Inventory: Mount Elgon

APPENDIX II

INTERVIEW GUIDE FOR PARK OFFICIALS

SPOT INFORMATION

- A) Amasio Dinah Mercy Date of interview.....
- B) Interview number 1-6
- C) Survery interview
- D) Considering the various measures taken by different concerned agencies as well as government to ensure sustainable park management of Mount Elgon national park, there are still challenges. This calls for immediate concern to address this issue inorder to have the park conserved and protected to reduce on the impacts of the socio-economic activities on the park.

LEADING ISSUES

- The various socio-economic activities carried out in and around the park
- The impacts of these activities on the park
- The sustainable park management approaches to be implemented to ensure management of the park