IMPACT OF COMMUNITY BASED ECOTOURISM ON HOUSEHOLDS' LIVELIHOODS AND ENVIRONMENTAL MANAGEMENT IN IL NGWESI AND LEKURRUKI GROUP RANCHES, LAIKIPIA COUNTY, KENYA.

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(C82/5077/2004)

A thesis submitted in fulfilment of the Degree of Doctor of Philosophy in the School of Humanity and Social Sciences of Kenyatta University

May 2014

DECLARATION

"This thesis is my original work and has not been presented for a degree in any other university or for any other award"

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DEDICATION

This thesis is dedicated to my family for the support, patience and encouragement throughout the period of my study. I hope that their unwavering commitment and love becomes a worthy sacrifice for all those who are concerned with uplifting the living conditions of the marginalised people and it remains a remainder of the abilities and inherent knowledge local communities have for sustainable development.

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OPERATIONAL DEFINITION OF TERMS

Mass Tourism:-

A form of tourism that involves organized tours to destinations and whose behaviour is aloof and characterized by non-local orientation and with little of its revenue spent in the destination areas (Hall and Page 2001; Fennell, 2003; Yordanov, 2008).

Alternative Tourism:-

A form of tourism that seeks unspoilt environments of natural areas, and focused on the benefits to the local communities through induced management skills, revenue, and reduced leakages and social tension while preserving the local traditions (Fennel, 2003).

Ecotourism:-

Form of tourism based on travel to natural and undisturbed areas, with a focus on environmental and cultural conservation and with benefits to the local community (Fennell, 2003).

Community Based Ecotourism:-

A variant of ecotourism based on community participation in decision making, ownership and management of tourism projects and where a major proportion of benefits remain in the local community (WWF, 2001).

Common Property Regime:-

Ownership, access and use of resources guided by communal rights where members have equal opportunities based on norms and principles that define the belonging of an individual to a group and claims rights over such resources.

Entitlement:-

Claim that a member (Stakeholder) of a group is permitted to demand or command or seek in a jointly owned venture so as to produce and/or supply goods or services where payments or returns are made.

Participation: -

Involvement of local community in decision making, election of officials and in sharing of proceeds from Community Based Ecotourism taking place in the group ranches

Group Ranch:-

A parcel of land belonging to a group of people who exercise rights over it under common property regime as enacted in the constitution of Kenya under the Group (Land Representative) Act of 1968.

Social Capital:-

Networks linking people within and between social groups based on trust and norms that form elements of daily lives of people, affecting their productivity with associated consequences to individuals and groups who make up a social unit.

Livelihoods:-

The capabilities, assets and activities required for a means of living contributing to benefits to local community in the short and long term in terms of access to education, health, water, income generation, agriculture/livestock development, security and infrastructure.

Wellbeing:-

The state of a household or an individual being able to access and experience decent living through shelter, clear and portable water, education, health, security, and healthy environment with opportunities for employment, income, freedom and participation.

Household:-

A unit of a society comprising a family occupying a homestead as a dwelling place with a recognized leader (head) together with other members.

Environmental Management: -

Access, use, governance and protection of natural resources in order to enhance sustained availability

ABBREVIATIONS AND ACRONYMS

AWF	African Wildlife Foundation
BESP	Borana Education Support Programme
CBET	Community Based Ecotourism
CFA	Community Forest Association
CIESIN	Centre for International Earth Science Information Network
CREST	Centre for Responsible Tourism
DESA	Department of Economic and Social Affairs
DFID	Department for International Development
DRSRS	Department of Resource Surveys and Remote Sensing
ESOK	Ecotourism Society of Kenya
ETM+	Enhanced Thematic Mapper plus
GDP	Gross Domestic Product
GNP	Gross National Product
GoK	Government of Kenya
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environment and Development
KCPE	Kenya Certificate of Primary Education
KWS	Kenya Wildlife Service
KPR	Kenya Police Reservists
LEP	Lewa Education Programme
LWF	Laikipia Wildlife Forum
MTW	Ministry of Tourism and Wildlife

NASA	National Aeronautic and Space Administration
NRT	Northern Rangelands Trust
SWOT	Strength, Weakness, Opportunities and Threats
TIES	The International Ecotourism Society
TM	Thematic Mapper
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNCTAD	United Nations Conference on Trade and Development
UNF	United Nations Foundation
VCT	Voluntary Counselling and Testing
WRMA	Water Resource Management Authority
WFP	World Food Programme
WTO	World Tourism Organization

ABSTRACT

The rangelands in Kenya experience socio-economic challenges of poverty, low literacy, food insecurity, low incomes, unemployment and inequality in the context of environmental hardships of low unreliable rainfall, frequent and prolonged drought, poor soils, pest and diseases. They are conflict zones over pasture, space and water between local communities and between humans and wildlife. Indigenous communities here have developed land use diversification and livelihoods strategies such as Community Based Ecotourism (CBET) to cope with these challenges. CBET is a means of environmental conservation and livelihoods through the preservation of biodiversity and reduction of rural poverty. This study therefore focused on the impact of CBET on households' livelihoods and environmental management in Il Ngwesi and Lekurruki Group Ranches in Laikipia County. Specifically, the study sought to establish the nature and level of households' participation in CBET; examine socio-economic benefits to members; evaluate the effect on households' livelihoods and on the conditions of resources and determine the overall challenges facing CBET. The study formulated two null hypotheses that sought to test the significant of CBET on households' livelihood and on environmental management. Data were sought from both primary and secondary sources. Primary data were collected using questionnaires administered to purposively selected respondents who represented households; through interviews among key informants who were selected through snowball process and through Focus Group Discussions (FGDs) conducted among members representing different social units; and satellite imageries on vegetation cover changes. Secondary data were derived from publications. Data were subjected to qualitative and quantitative analysis while satellite imageries were analysed and classified using Erdas 9.1 and GeoVis 2.0 remote sensing softwares. To test the hypothesis, Chi-square (x^2) tests were done; while to determine the viability of CBET, a SWOT analysis was conducted. The study found out that local communities participating in forums where decisions to introduce CBET were made; they gave space for conservation, elected officials and provided labour among other activities. It was also found out that group ranch members were entitlements to attend and participate in meetings where group ranch issues were deliberated on, had the right to information, to employment and to development projects emanating from CBET proceeds among others. From CBET members benefited from employment, security, bursaries in support of education, construction of schools, up grading of roads, transportation of members with ranch vehicles, water projects among others. Environmental benefits included protection of catchments, increased pasture in the conservancies, and regeneration of forests and increased wildlife population among others. Analysis on land use and land cover changes showed that areas under closed forest and shrubland had increased while those under grassland had decreased giving way to woody vegetation encroachment. The significance of CBET on households' livelihoods was positive on welfare programmes, infrastructure development and education, while on environmental management; it was positive in forest and wildlife resources, and pasture. SWOT analysis indicated internal strengths and weaknesses as well as the external opportunities and threats of CBET which led to the conclusion that CBET was a viable venture in the study area. However, CBET faced challenges of misappropriation of funds, low community involvement, donors' domination, marketing and human-wildlife conflict among others. To mitigate the challenges, engagement of independent auditing of books of account to check on misappropriation, formulation of appropriate policies to govern donor-community partnership, recruitment and deployment of additional guards to contain human wildlife conflict among others were recommended.

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Tourism is one of the fastest growing sectors in the world. It has become the largest industry in terms of the number of people involved, the amount of resources generated and employment capacity. In its blueprint entitled '*Tourism Vision 2020'*, World Tourism Organization (WTO) projects that tourism will remain a major development agent across continents with close to 1.6 billion arrivals by the year 2020 (WTO, 2004a). Tourism is an important source of income, employment and wealth in many countries where international tourism accounts for a larger share of foreign exchange and export earnings than any other industry in the world (Frederico, 2002). According to Centre for Responsible Tourism (CREST) (2009), international tourism receipt was US $ 852 billion in 2009. In addition, 60 countries had tourism as their number one export in the same year. The business volume that tourism is generating equals or even surpasses that of oil exports, food products or automobiles (UNF, 2010). It is an important tax base for governments and influences a considerable investment in infrastructure which triggers positive externalities in other sectors; making it the most promising driving force for the economic development of the less developed countries and in regions endowed with areas of natural beauty (Frederico, 2002).

As an economic venture in different nations of the world, sustainability of tourism is largely dependent on ecological integrity. Unfortunately, tourism has caused unprecedented disturbance of the very environment it relies on, contributing to pollution, contamination of societies, alienation and exclusion (Williams, 2003). Arguably, uncontrolled tourism expansion is likely to lead to environmental degradation which in turn poses serious threat to this sector. For instance, mass tourism which is the most practiced form of tourism has impacted negatively on the destination areas both ecologically and socially (Hall and Page 2001; Fennell, 2003; Yordanov, 2008). It has led to depletion of natural

resources, caused environmental degradation while the high pattern of consumption by tourists has generated waste that puts pressure on host regions, undermining the local ecosystems. This further causes pressure on available resources consumed by local residents including land, fresh water and marine resources (Frederico, 2002). This has led to poverty in destination areas where local community livelihood resources are contaminated while the apparent exclusion of tourism attractions deny them access to traditional assets (Gakahu, 1992; Sindiga, 1999, Njogu, 2004)

The need for sustainable forms of tourism has led to search for alternative forms of tourism which in the late 1980s led to the emergence of ecotourism that was hinged on environmental protection and on benefits for the local communities (Kiss, 2004). At the World Summit on Sustainable Development in Johannesburg in 2002, the WTO came up with the theme of 'Tourism and Poverty Alleviation'. The theme was based on the premise that tourism is one of the few opportunities for the poor that can be supported and promoted for sustainable development (Goodwin, 2006). The emphasis on the role of local communities in the development and sustainability of tourism led to the introduction of Community Based Ecotourism (CBET) as a social dimension in the definition of ecotourism (WWF, 2001). CBET is described as a development tool that conserves biological and cultural diversity, promotes sustainable use of biodiversity and shares benefits equitably with local communities (UNEP, 2002; Fennell, 2003). It recognizes the local communities as the principal stakeholders whose participation is paramount with substantial control and involvement in its development and management with a major portion of the benefits remaining with them (Frederico, 2003; Kibicho, 2004). CBET increases local community capacity by reducing tourism's negative impact while enhancing positive effects including influencing local community livelihood opportunities while managing the environment sustainably (Okazaki, 2008; Goodwin and Ashley, 2006).

In Kenya, tourism is considered an important sector in the development process (GOK, 2010a). It accounts for 12 percent of the Gross Domestic Product (GDP), making it the third largest contributor of wealth after agriculture and manufacturing, and the third largest foreign exchange earner after tea and horticulture. In 2007 the sector had about a million arrivals, an increase of 12.5 percent from the previous year, earning Kshs. 65.4 billion, an increase of 11.6 percent. In 2010 the sector realised Kshs. 73.6 billion in revenue from an approximately 1.1million arrivals. The sector accounts for nine percent of total wage employment in the country and is a major source of government revenue. Further, tourism is identified as one of the key drivers for achieving the goals of Kenya's development blueprint, the Vision 2030 (Republic of Kenya, 2008).

Tourism in Kenya has witnessed the emergence of CBET activities, mainly in the rangelands of the country (Ecotourism Kenya, 2005). These are the drier regions of the country that are traditionally inhabited by indigenous pastoral communities and are habitat for variety of wildlife making them preferred destinations for nature based tourism. Paradoxically, despite Kenya being among world leaders in this sector, poverty and marginalization still dominate major tourist destinations in the rangelands (Akama, 1999; Sindiga, 1999; Nina, 2006). These areas face a myriad of socio-economic and environmental problems such as degradation, inequality, human-wildlife conflicts, food insecurity, drought, famine, poor infrastructure, water shortage, poverty, illiteracy and diseases, among others (Nina, 2006). In Laikipia County, CBET activities have been introduced as a viable way of improving livelihoods and conserving the environment. This is particularly so in Il Ngwesi and Lekurruki Group Ranches which were formerly utilized for pastoralist activities. Consequently, there is need to examine the role of CBET in households' livelihoods and in management of the environmental resources.

1.2 Statement of the Problem

The nexus between poverty and utilization of environmental resources is a real issue in the sustainable development of Kenya. This is particularly so in the rangelands where the main economic activity has been pastoralism that has been negatively impacted by increasing environmental degradation, human wildlife conflicts, food insecurity, climate change, poor infrastructure and poverty among other factors. CBET has been introduced in the group ranches as an alternative livelihood strategy to mitigate the effects of poverty, enhance households' livelihoods and improve environmental management. In Laikipia County, two ranches: Il Ngwesi and Lekurruki Group Ranches have established CBET with the involvement of the local communities. Consequently, it is important to establish the impacts of CBET on households' livelihoods and environmental management in these two areas.

1.3 Objectives of the Study

The general objective of the study was to determine the effects of CBET on households' livelihoods and environmental management in Il Ngwesi and Lekurruki group ranches in the context of the nature and level of community participation, entitlements, benefits, constraints and solutions sought. Specific objectives of the study were to:

1. To investigate the nature and level of household participation in CBET in Il Ngwesi and Lekurruki group ranches
2. To find out households' socio-economic benefits in CBET in Il Ngwesi and Lekurruki group ranches.
3. To find out the effects of CBET on households' livelihoods in Il Ngwesi and Lekurruki group ranches.

4. To determine the effects of CBET on the conditions of rangelands resources in Il Ngwesi and Lekurruki group ranches.
5. Assess the overall challenges of CBET as a livelihood and environmental management strategy in Il Ngwesi and Lekurruki group ranches

1.4 Research Questions

1. What has been the level of households' participation in CBET in Il Ngwesi and Lekurruki group ranches?
2. What are the households' socio-economic benefits of the CBET in Il Ngwesi and Lekurruki group ranches?
3. What have been the effects of CBET on household in Il Ngwesi and Lekurruki group ranches?
4. How has CBET influenced the management of the rangeland resources in the group ranches
5. What are overall challenges of CBET as a livelihood and environmental management strategy in Il Ngwesi and Lekurruki group ranches?

1.5 Study Hypotheses

Two hypotheses were developed to determine the relationship between CBET and household's livelihoods and environmental management in the group ranches as follows: -

H_o: There are no significant households' livelihood benefits associated with CBET activities in Il Ngwesi and Lekurruki group ranches.

$H_{o:}$ CBET initiatives have no significant influence on environmental management in the study area.

1.6 Justification and Rationale of the Study

Laikipia County was traditionally inhabited by nomadic pastoralists. Today, however, the district is occupied by a large number of people who have migrated from other parts of the country. The immigrants have considerably changed the human landscape resulting from sedenterization, land fragmentation and exclusion. About 50% of the County is under private wildlife conservation and ranching while the drier regions in the north are inhabited by the pastoralists Maasai people (Republic of Kenya, 1997). It is in the latter area that CBET has been introduced in communally owned group ranches (Lewa, 2001; Ecotourism, 2005).

In Kenya, group ranches were established under the Land (Representative) Act of 1968 with the purpose of promoting commercial ranching while conserving traditional land uses and the rangeland resources (Lenaola, Hadley, Timothy, 1996). However, from the 1970s most group ranches underwent sub-division as a result of demands for individual ownership such that, hitherto communal holdings were disrupted (Rutten, 1992; Lucenaka, 1996). However, Il Ngwesi and Lekurruki group ranches have remained intact where CBET was introduced as a land use diversification strategy. It's the ownership and their management system under communal property regime that make them ideal CBET study sites.

In Kenya, nature tourism is associated with national parks and game reserves owned by the State (Gakahu, 1992; Sindiga, 1999; Rutten, 2002; 2004). On the other hand, majority of ecotourism projects in the group ranches are in partnerships with investors who operate eco-lodges and conservation areas

under lease agreement (Rutten, 2002; 2004; Kibicho, 2004). However, the CBET activities in Il Ngwesi and Lekurruki group ranches are owned and managed by the local community (Lewa, 2001; Ecotourism Kenya, 2005); making the two group ranches unique study sites.

By conducting an empirical investigation on CBET in the group ranches, the study has developed a databank that forms a reference point for policy makers, stakeholders in the tourism industry and local community based groups seeking to develop similar projects. By examining impact on households' livelihood and environmental management, and through a SWOT analysis, the study has been able to pinpoint the viability of CBET as a resource management strategy in marginalized and fragile areas in the rangelands. The study also provides additional information for integrated conservation and CBET as an avenue for local community involvement they occupy in the tourism sector (Gakahu, 1992; Sindiga, 1999; Njogu, 2004).

By focusing on households as the principal stakeholders, the study was able to examine and understand the place of households in community based enterprises. The study also contribute to literature on rangeland resource utilization and management strategies through community projects in the face of increased individual private land tenure system. The justification and rationale for the selection of this study site therefore, revolves around the characteristic of land ownership and land uses in it. The sustained ownership under community land classification makes the site unique. Further, the introduction of CBET as a land use diversification strategy under joint ownership among the group ranch members prompted the need for an academic discourse on the impact on households' livelihoods and environmental management in the contexts of socio-economic and environmental constraints in the rangelands.

1.7 Scope and Limitations of the Study

The study focused on Il Ngwesi and Lekurruki group ranches in the context of communal land ownership. Other ranches that were sub-divided or were privately owned were left out of the study. Among the limitations of the study was the remoteness of the study site. The study area is approximately 280 kilometres north of Nairobi in a generally remote and somewhat desolate part of the northern frontier. The area is arid and characterized by a poor road network, thus difficult to access most parts of the region. Another limitation was the low literacy, which required a face-to-face questionnaires administration, making the process tedious and time consuming. However, to ease the process, services of guides and research assistants familiar with the local language and terrain were engaged.

1.8 Study Area

This study was conducted in Il Ngwesi and Lekurruki Group Ranches in Laikipia North District, Laikipia County. Laikipia North District was curved from the larger Laikipia District (now Laikipia County) in Rift Valley Province (Figure 1.1). Laikipia North District comprises Mukogodo and Il Ngwesi Divisions and Ewaso, Naibor, Segers and Ol Moran Wards. The other districts forming Laikipia County are Laikipia East and Laikipia West. Laikipia County is an 8,696.1 square kilometres plateau area bound by the Great Rift Valley to the West, the Aberdare Ranges and Mount Kenya to the south. To the North West it descends towards the floor of the Rift Valley while to the north and east it falls into areas that extend to expansive arid land. The County lies between 1800 metres to 2600 metres above sea level. The County's main drainage is the Ewaso Nyiro River and its tributaries which drain from the Aberdare Ranges and Mount Kenya. The major tributaries include, Nanyuki, Rongai, Burguret, Segera, Naromoru, Engare, Moyak, Ewaso Narok and Ngobit rivers.

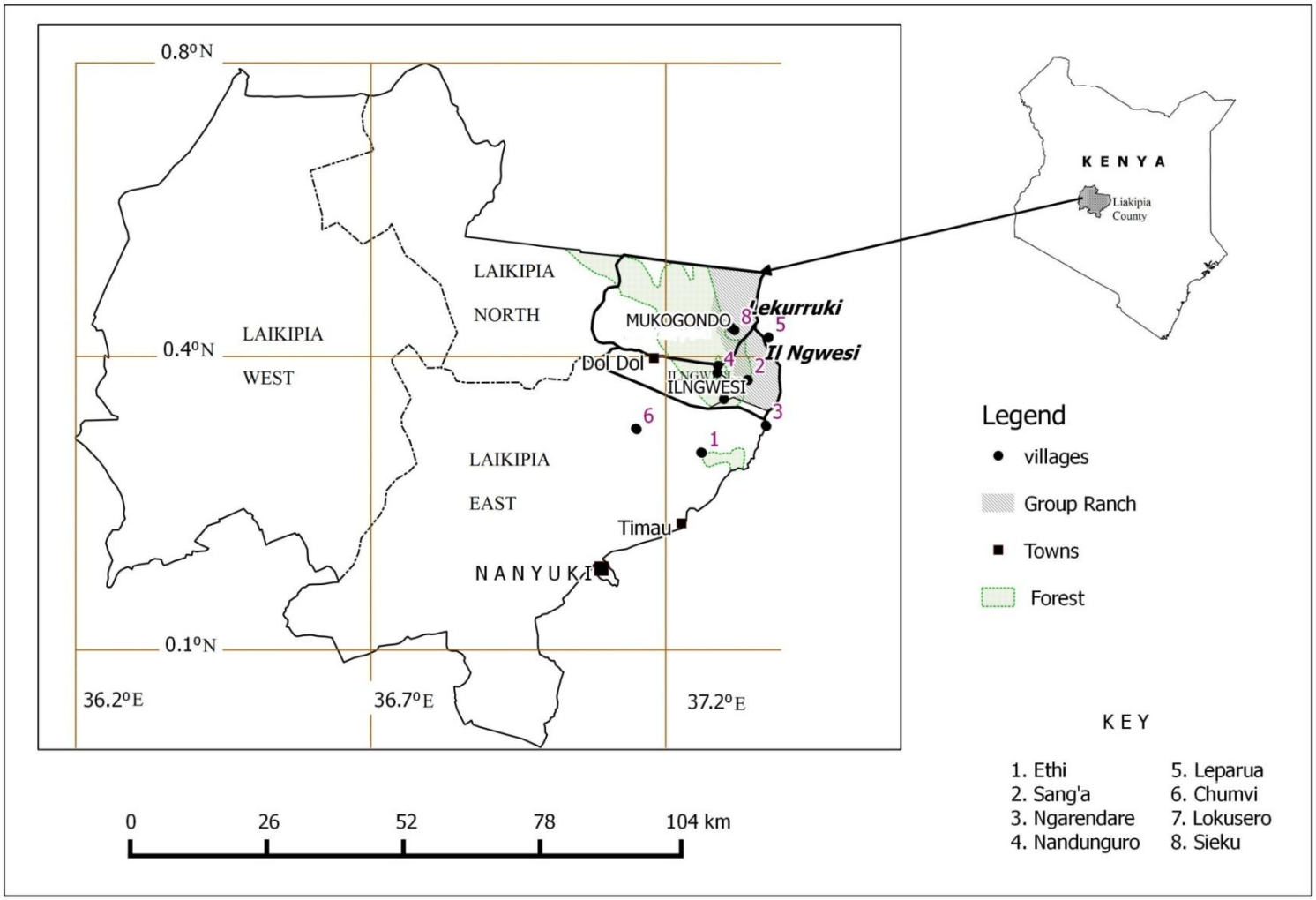


Figure 1.1: Map of Laikipia County Showing Study Area.
(Source: Field data and Republic of Kenya (2002)

1.8.1 Population of Laikipia County

This was an area with a low population but has seen an increased growth from immigrants, especially from the neighbouring higher potential and densely populated counties. The County has a population of 399,227 (Republic of Kenya, 2010c). The population distribution is influenced by the physical and climatic factors, making the higher potential areas of Rumuruti more attractive and therefore more densely populated compared to the drier areas of Lamuria and Mukogodo. The land in the County is categorized under smallholder farms (26.3 percent), large farms (56.9 percent), forest reserves (8.6 percent) and 7.3 percent pastoralism zone (Republic of Kenya, 1997). In the various categories of land, there are diverse land uses of pastoralism and commercial livestock and tourism in communal group and private ranches, arable and mixed farming in the smallholders farms, and both exotic and natural forest conservations dotting cross the County.

1.8.2 Climate, Vegetation and other natural resources of Laikipia County

The district is located on the leeward side of Mount Kenya and depicts dry conditions throughout the year. It has an average annual rainfall between 400 mm and 750 mm, and temperatures of between 16^{o}C and 26^{o}C. Rainfall distribution varies, with the slopes of Mount Kenya and Aberdare ranges receiving higher annual totals. Mukogodo division records low rainfall of slightly over 400 mm annually; however, Mukogodo forest receives above 706 mm annually. The sunshine duration is between six and eight hours daily with June and February being the coolest and hottest months respectively (Republic of Kenya, 1997; 2002). Only 20.5 percent of the total land area falls under the high and medium potential. The remaining 79.5 percent of the district is of low potential for crop based agriculture. Soils are of high inherent fertility though their agricultural production is limited by the poor climate with frequent dry

spells and poor rainfall distribution in terms of space and time (Republic of Kenya, 2002). The Leeward location of the county has exacerbated these conditions.

The dominant vegetation types include grassland and shrub in the dispersal lowland area, which is characterized by low rainfall conditions. However, along the river valleys there are acacia trees and bushes forming luxuriant riverine vegetation. As one ascends to the higher grounds, the grassland and sparse shrubs change into denser shrubland dominated by woodland vegetation that forms a continuous canopy over the land. Areas with more rainfall include the Mukogodo forest which covers an area of 30,189.5 hectares (Republic of Kenya, 1997). Other forests are Ngarendare in the South East tip of the county and Rumuruti, Ewaso Narok, Marmanet, Shamanet and Lariak forests in the North West; making a total forest cover of 58,000 hectares of both indigenous and planted trees. These forests also provide important wildlife habitats.

The County has significant wildlife species found in the large-scale ranches, in the unsettled smallholdings, group ranches, government forests and Laikipia National Reserve (Frank, Woodroffe and Ogada 2005). While wildlife is an important natural resource in the county and has great potential for game related tourism it is also a source of conflict between the farming and grazing communities. The County also has an expansive land area endowed with pasture and attractive sceneries. Though tourism is not well developed in the County, the initiatives in large-scale private ranches have introduced facilities such as hotels and lodges as well as access roads and air strips necessary for such activities (Republic of Kenya, 1997).

1.8.3 Socio-economic and Environmental Conditions in the County

Laikipia County experiences a myriad of socio-economic and environmental challenges that undermine household's livelihoods. The higher potential zone of the County is faced with the challenge of land sub-division into uneconomical units measuring an average size of between 2 acres to 5 acres with freehold titles (Republic of Kenya, 2001). On the other hand, there are hardships in the drier parts of the county characterized by poverty and food insecurity. Over 48 percent of the population is classified as poor while 59.3 percent depend on relief aid from the Government of Kenya and the World Food Programme (WFP) (Republic of Kenya, 2001).

1.9 The Study Sites

This study was conducted in Il Ngwesi and Lekurruki group ranches located in Mukogodo and Il Ngwesi Divisions in Laikipia North District in Laikipia County and data was collected from households of members found in eight the villages of Ethi, Nanduguro, Leparua, Chumvi, Ngarendare, Lekusero, Sang'a and Sieku (Fig 1.2). The divisions cover an area of 1,129 km^2 with a population density of 12 (Republic of Kenya, 2010c). They represent the driest parts of the larger Laikipia District with vegetation characterized by thorny shrubs, apart from the Mukogodo forest. The study site falls within the Lower Highland Ranching and Lower Middle Ranching Agro-Ecological Zones associated with low erratic rainfall and high temperatures (Jaetzold and Schmidt, 1983).

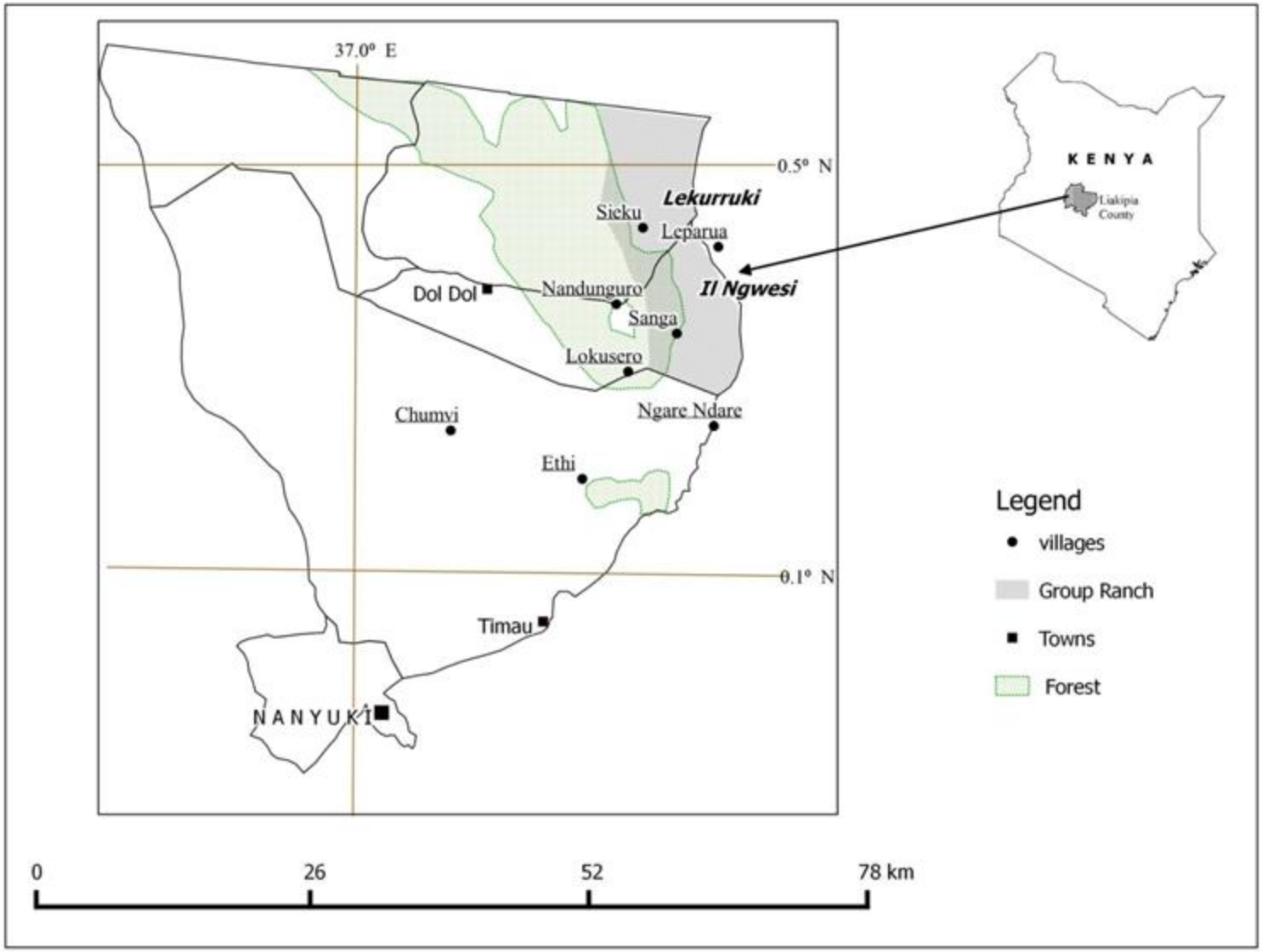


Figure 1.2: Map of the study area showing villages for group ranch members
Source: Field data

It is occupied by indigenous pastoralist community of Laikipia Maasai and of the Mukogodo Maasai Yiaku (people). Socially, the study is classified among the areas inhabited by vulnerable people, with a high level of illiteracy and low income. Vulnerability is exacerbated by limited crops cultivation, while reliance on livestock is affected by frequent droughts (Republic of Kenya, 1997, 2001). Among the economic activities practiced here include tourism, found in both private and group ranches (Republic of Kenya, 1997; Lewa, 2001; Kathiw'a, 2004).

Land tenure system in the study area is communal ownership under group ranches such as Il Ngwesi, Lekurruki and Makuria. The group ranches are registered and recognized in the laws of Kenya under the Group (Land Representative) Act of 1968 and their legitimacy and legality is found in the new constitution of Kenya Part 5, Article 63 Section 2(a) categorised under community land by being lawfully registered in the name of group representatives under the provision of the law (Republic of Kenya, 2010b). Il Ngwesi Group Ranch covers a total area of 21,435.925 acres compared to Lekurruki's 16,500 acres

1.9.1 Management Structure of Il Ngwesi and Lekurruki Group Ranches

According to Il Ngwesi (2010), the operation of the group ranches is based on an elaborate organizational structure that is responsible for the day-to-day running of its affairs (Figure 1.3). Top in the hierarchy is the Annual General Meeting (AGM) which is the group ranch supreme organ. The AGM involves all registered members who participate in deciding all matters affecting the group ranch. In an AGM resolutions are passed and adopted and membership register updated. Below the AGM is the Group Ranch Management Committee (GRMC) that comprises elected officials from seven neighbourhoods of Ethi, Chumvi, Leparua, Nanduguro, Ngare Ndare, Sang'a and Lokusero where

majority of group ranch members reside. Each village has their elected officials that include a chair, vice-chair, secretary, vice-secretary, treasurer and members. One of the village officials joins other nominees from the other villages to form the GRMC. The GRMC has special roles as the custodian of the group ranch title deed, calling the AGM.

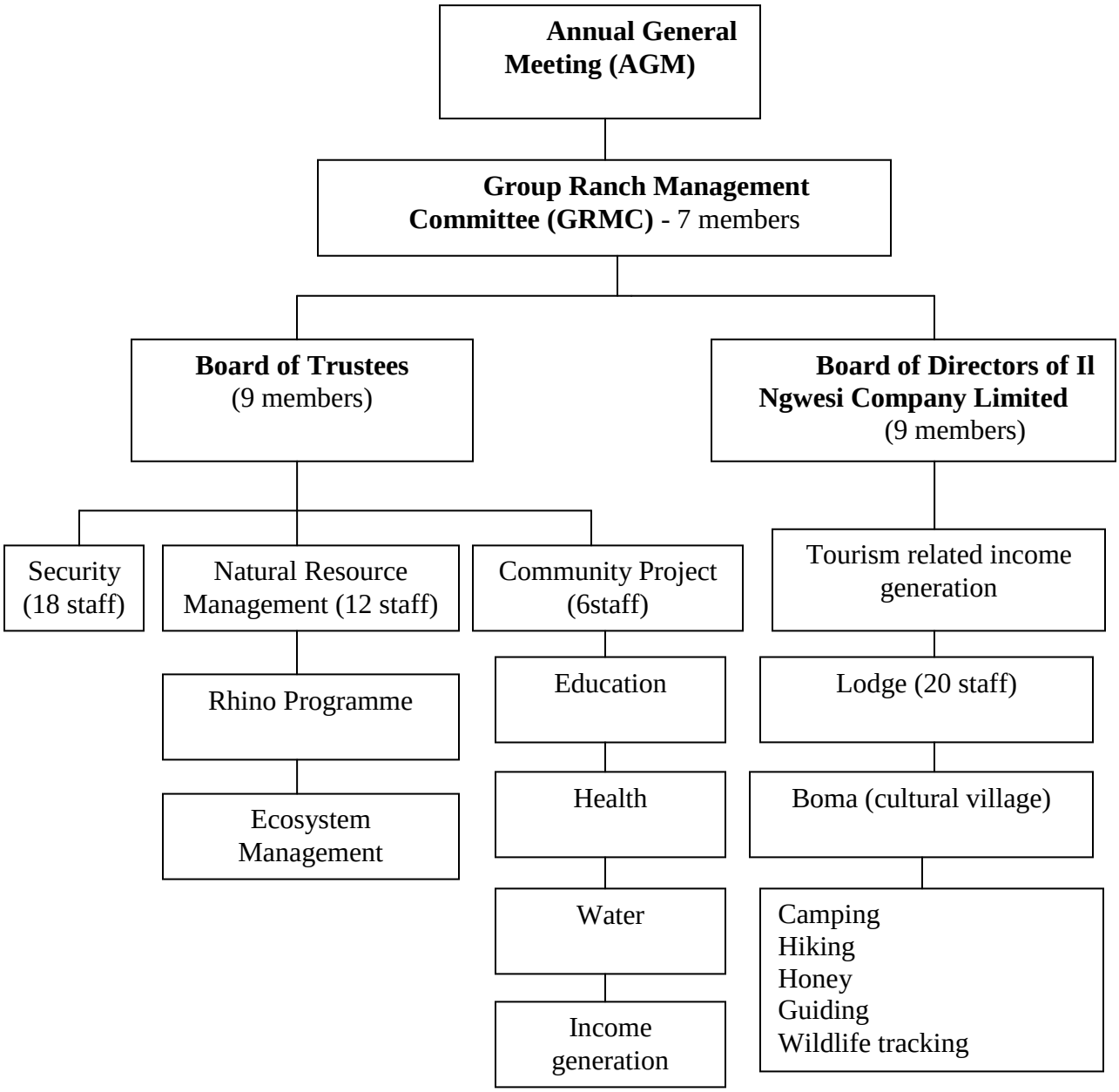


Figure 1.3 Organogram for Il Ngwesi Group Ranch
Source: Il Ngwesi (2010)

Next in the hierarchy are two wings; the Board of Trustees (BOT) and the Board of Directors (BOD). The BOT comprises fourteen members who are elected at the AGM. The fourteen members include two representatives from each neighbourhood. They are mandated to oversee Natural Resource Management (NRM) programmes and the distribution and development of community projects. Under NRM the BOT focuses on security of group ranch resources and conservation projects; specifically, rhino programme and ecotourism management. On community projects, the board addresses matters of education, health, water and income generating projects.

The BOD on the other hand comprises nine members of whom seven are members of the GRMC and the remaining two are co-opted to represent interest groups and individuals as may be deemed appropriate. In Il Ngwesi, the members of BOD are registered as the directors of Il Ngwesi Company Ltd which is the business wing of the ranch. The company is registered as a limited liability entity with a share capital of 10,000 of which 9,993 belong to the community. The remaining seven shares belong to the directors of whom six are members of the group ranch. The board concentrates more on ecotourism projects.

On the other hand, Lekurruki group ranch which borders Il Ngwesi to the north covers land area of 16,500 acres. During the study, documents pertaining to its management were unavailable, making key informants the most dependable sources of information. Interviews showed the group ranch was incorporated and registered under the Land (Group Representative) Act of 1968. The ranch was initiated at independence by the Mukogodo Maasai (Yiaku) people who felt marginalized by the dominant Laikipia Maasai people and is managed in a similar way as that of Il Ngwesi.

According to one informant, the Yiaku people and their culture are among the indigenous heritages of the world threatened with extinction. He pointed out that currently, only three elderly men are known to be fluent in the Yiakunte language, a factor attributed to interactions with Laikipia Maasai people and the eventual assimilation. Initially, the encounter between the Laikipia Maasai and Yiaku people was one of hostility and domination leading to marginalization and occupation of their territory. For instance, the study was informed that the name Mukogodo is derived from the word *'kododo'* meaning 'to squat'; a seating posture the Yiaku people adopted as they spied on their aggressors from safe distances, mostly on rock outcrops and raised grounds.

Through interviews and discussion, the study was informed that as the Yiaku people continued to be dominated by the Maasai people and interacted eventually through marriage. Consequently, they took up livestock rearing as their traditional livelihood of bee keeping became increasingly underrated and considered as being an undertaking for the poor. Livestock herding was considered an easier, cheaper and a prestigious way of life. It is this attitude among other factors that lobbyists for Yiaku people consider the principle factor threatening the Yiakunte language and culture. To preserve and hopefully rekindle the Yiaku culture and lifestyle, an annual event is organized to showcase their different cultural aspects where they display artefacts, and participate in a cultural night conducted in a special site that is considered sacred inside Mukogodo forest.

It was however observed that despite the historical marginalization, domination and assimilation of the Yiaku people they have held onto their traditional livelihood of honey harvesting. This study found that naming of certain revered sites was linked to the practice. For instance, the name Lekurruki that later

became the name of the group ranch means the crow bird, and is also associated with a hill where the crow birds nest and which was traditionally used for securing bee hives.

1.10 Summary

The recognition of tourism among the opportunities for the poor at the 2002 World Summit in Johannesburg reinforced the need for land use diversification initiatives. The introduction and growth of CBET in Il Ngwesi and Lekurruki group ranches of Laikipia North District therefore became an important concern where this study sought to determine its impact on households' livelihoods and environmental management. The study considered the group ranches system that the local community sustained under common property regime as a vital force in securing CBET in the study area. Therefore, despite the socio-economic and ecological challenges associated with the region, CBET was considered as a land use diversification initiative and as a means for linking the local communities with other players in the sector.

CHAPTER TWO: LITERATURE REVIEW, THEORETICAL AND CONCEPTUAL FRAMEWORKS

2.1 Introduction

This section reviews specific literature relating to various sub-themes that are relevant to this study. The focus is specifically on the role of tourism in the socio-economic, environmental and political context of tourism destination areas and the emergence and growth of ecotourism as an alternative form of tourism springing from apparent challenges associated with mass tourism. As a form of alternative tourism, ecotourism underscores the importance of local communities as the principal bearers of tourism impact and therefore an important approach for sustained tourism development. In the discussion, a synthesis is made of the principles behind the emphasis of tourism as an important industry in an economy and the importance of involving the grass root community in the ownership and management of venture. Finally, there is a discussion of the theoretical and conceptual framework on which the study was grounded. In the conceptual framework, interactions between variables such as the asset base available to the local people, households' capacities, ecotourism activities in the group ranches is considered with social capital principles as the avenue through which CBET is practiced.

2.2 Evolution of Tourism and the Emergence of Ecotourism

Tourism is a source of foreign exchange earnings that affects the direction of a country's balance of payment and contributes towards investment of capital projects; it attracts foreign investment hence creating an opportunity for indigenous industrial development; and aids in economic regeneration by providing support for marginal economies (Frederico, 2002). It enhances diversification and the promotion of development by encouraging new economic linkages that increase Gross Domestic Product (GDP) of an economy (Vieta, 1999). In addition, tourism remains a significant source of employment because it retains a relatively high labour demand sector (Vieta, 1999; Ikiara and Okech,

2002; Bichaka, Christian and Bedassa, 2007; Lalnunmawia, 2010). It promotes some aspects of inter-cultural communication, stimulates the expression of traditional wear, harnesses carving industries and provides opportunities for growth of local entertainment. Equally, tourism has the ability to counteract uneven development while promoting regional decentralized development (Wen and Tisdell, 2001). Subsequently, sustainability of regional tourism will depend on how nature is conserved and how minority cultures will be involvement. Tourism therefore helps to promote conservation of biodiversity as well as historical and cultural sites (Okungu, 2001). This is of even greater significance when it concerns ecologically and culturally sensitive areas, where conventional (mass) tourism has a heavy impact (Drakopoulou, Undated).

In Kenya, tourism is considered an important sector accounting for 12 percent of the GDP and the third largest foreign exchange earner after tea and horticulture (Ikiara and Okech, 2002; Republic of Kenya, 2007, 2010a). The sector accounts for 9 percent of total wage employment in the country, and is a major source of government revenue. To further demonstrate its importance, the sector is identified as one of the key drivers for achieving the goals of Kenya's development blueprint dubbed Vision 2030 (Republic of Kenya, 2008).

However, tourism leads to a range of socio-economic and environmental challenges. It causes environmental degradation in natural areas especially if it is not properly managed reducing not only the amenity value of the tourist site but also the ecological functions and values of the environment (UNEP, 2001; Frederico, 2002, Lalnunmawia, 2010). Tourists' destinations are often contaminated with dumping of litter and disturbing of the natural habitat while wanton abuse of ecosystem, including the introduction of alien species happens quite often (UNEP, 2001; Wen and Tisdell, 2001). Consequently,

to make tourism appropriate and sustainable, there emerged in the 1980s a quest for alternative forms of tourism. Among other variants was ecotourism based on the premise that environmental sustainability and welfare of the local community was a prerequisite (Fennell, 2003; Kiss, 2004).

The origin of ecotourism is attributed to post-colonial ‘glorifications of wilderness’ and fascination with ‘indigenous people’ (Mitcheu, 1994). It was integrated into the consumer culture of the post-World War II boom, "making ecotourism a cultural and economic practice for those more sensitised to heightened environmental destruction ..... and linked with exciting tourist experiences in adventurous journeys, breathtaking scenery, and trips to exotic islands" (Bandy, 1996: 542).

According to The International Ecotourism Society (TIES), ecotourism activities should follow the principles of minimal impact, awareness and respect for built and cultural environments, positive experiences for both visitors and hosts, direct financial benefits for conservation, financial benefits and empowerment of local people, raised sensitivity to host countries' political, environmental and social climate and support for International human rights and labour agreements (Gullette, 2001). Fennell (2003) identified ecotourism principles as being interest in nature, contribution to conservation, reliance on parks and protected areas, benefits for local people, education and study, low impact and responsibility, management, sustainability, enjoyment and appreciation, culture, adventure, and small scale. Sindiga (1999) observed that ecotourism emerged as a response to changes and challenges associated with mass tourism in relation to the environment, society and the economy. Sindiga pointed out that, tourism development tends to exclude local people from the planning and implementation of projects. The local inhabitants are forced out of their traditional lands to give way to tourism projects such as parks and game reserves. As a result they become disgruntled and begin to resent such protected

areas. This happened in Kenya where traditional lands held communally by pastoral nomadic peoples were alienated to give way to the parks; destabilizing traditional livelihood systems and causing severe resource degradation and unprecedented human-wildlife conflicts. Loss of biodiversity despite protectionism has been unabated and local people living around protected areas are languishing in poverty (Njogu, 2004) Therefore, ecotourism represented a paradigm shift in tourism by focusing more directly on raising local income, sustainable development, community participation and empowerment (UNEP, 2001; Fennell, 2003; Diamantis, 2004). It is seen as a means of empowering the local community through incentives for conserving the biological resources in their environment subject to benefits for individual families or households; thereby making ecotourism a means for rural development.

Local communities involvement in tourism in Kenya has been low and mainly confined to the supply of goods and services, sale of handicrafts and entertainment by traditional dancers; where the local people must contend with competition by entrepreneurs from other parts of the country who are better prepared to do business and have access to credit (Gakahu, 1992). The local community decried the status quo and expressed the need for their involvement in tourism activities in their regions (Kibicho, 2004).

Ashley and Garland (1994) cited in Sindiga (1999) observe that community participation in resource management for tourism has the potential capacity of increasing income and employment, and of developing skills and institutions for empowering local people. Ecotourism is therefore perceived as a factor for economic growth, equitable distribution of resources and a process of alleviating poverty. Frederico (2003) observes that the greater priority of ecotourism should be on socio-economic objectives generally and to poverty reduction in particular. Okazaki (2008) argued that community

participation therefore is an integral part of tourism in order to help increase community's carrying capacity by reducing negative impacts while enhancing positive effects.

The emphasis on community participation in tourism has hence introduced a new horizon in the scope and practice of ecotourism leading to the concept of Community Based Ecotourism (CBET). Arguably, CBET represents the social dimension in the definition of ecotourism (WWF, 2001). It makes tourism harmonious with the social climate where residents benefit from tourism and not become its victims (Okazaki, 2008). For instance, in Namibia community-based ecotourism enterprise development has played a central role in the generation of community revenues, employment and additional benefits (Hoole, 2010). It is the aspect of community involvement underscored in CBET that formed a basis for this study. As the principal stakeholders, the local people are considered as the main bearers of CBET outputs. It was this niche that this study sought to examine while focusing on effects of households' livelihoods and environmental management.

2.3 Community Based Ecotourism (CBET)

Alleviation of poverty has become a priority agenda at the global scale since the declaration of the United Nations Millennium Development Goals (MDGs) in the year 2000 (UNDP, 2000). Consequently, the World Tourism Organization (WTO), national tourism administrations and development agencies have been encouraged to seek new approaches for tourism development that focus on local economic impacts and in particular on poverty alleviation (Frederico, 2003). During the UN Commission on Sustainable Development in 1999, governments were called to maximize the potential of tourism in eradication of poverty by developing appropriate strategies in cooperation with major groups and indigenous and local communities (Frederico, 2003; Goodwin, 2006).

At the United Nations Conference on Trade and Development (UNCTAD) in 2001, WTO argued that tourism can make a meaningful contribution to reduction of poverty by engaging in pro-poor and destination based development projects (Frederico, 2003). The poor in this case represent people who do achieve minimum levels of satisfaction of their most basic needs and who lack the capacity to escape from this situation by themselves (Goodwin, 2006). O'Neill (2008) describes CBET as a practice in which local people, usually those who are poor or economically marginalized in rural parts of the world open up their homes and community to visitors seeking sustainably achieved cultural, educational or recreational and travel experiences. In return, the host community receives incomes as employees, managers, entrepreneurs, as food and service providers or as stakeholders.

Kiss (2004) pointed out that CBET is popular as a means of linking conservation and local livelihood and preserving biodiversity while simultaneously reducing rural poverty. Its popularity is based on the premise that biodiversity must pay for itself by generating economic benefits, particularly for local people. Therefore, regions containing abundant special natural areas can target ecotourism in order to promote their local economy leading to a reduction in economic gap between regions (Wen and Tisdell, 2001).

CBET therefore represents a form of tourism where the local community has substantial control over, and are involved in its development and management. It is an arrangement where a major proportion of the benefit remains within the community (WWF, 2001). It is a form of tourism where decisions are made by local people themselves and benefits go to the community (Babar and Khanal, 2007). Hence, the tenets of CBET are in tandem with the 2002 Quebec Declaration on ecotourism that emphasizes on

the inclusion of local and indigenous communities in planning, development and operation while contributing to their wellbeing (UNEP and WTO, 2002).

However, a major challenge facing tourism development is that there is very little data that demonstrates the impact of tourism on poverty. The sector is managed for foreign exchange benefit rather than as a pro-poor development strategy (Goodwin, 2006). Traditionally, tourism development has been measured and reported at macro-economic levels focusing more on the number of international arrivals, contribution to employment, balance of payment and foreign exchange earnings. There is little mention or demonstration of effects on the poor, particularly the host community. The emergence of the need to boost partnership in conservation efforts encouraged communities to participate but did not stress the need to improve their socio-economic welfare (Rutten, 2004). It is this gap in literature, knowledge and data that this study sought to address. This was done by focusing on the household socio-economic in CBET projects in group ranches, particularly the effects of tourism at the micro-economic level. Considering households as the primary stakeholders in the CBET projects, this study sought to determine the level and nature of local community involvement. In addition, the study sought to determine the entitlement of the households in terms of the defined and expected gains and losses in the context of experienced gains and losses.

Stronza (2000) is of the opinion that when ecotourism is participatory, it ceases being simply an economic incentive, but rather becomes a transforming experience. The emanating attention on local people and their cultures and accruing gains become factors for continuity. People relate differently (i.e. more positively) with nature and perceive their culture as an important livelihood factor. Encounter with tourists and outsiders become a mirror through which people see themselves differently and see their

cultures as significant means of recognition and benefits. On the other hand, CBET is heterogeneous and manifested by questions of; who participates and why? What are the outcomes to stakeholders and households like?

Boonzaaier and Philip (2007) see CBET as a means for empowering local people by developing necessary knowledge and skills in touristic ventures. In a study of the newly established Blouberg visitor *montes* (lodges) among the Hananwa community in Limpopo province, South Africa, they argue that since the *montes* are solely the responsibility of the community, they can benefit the locals financially through opportunities in services to guests such as provision of indigenous foods, cooking and cleaning. Therefore, based on the principles of CBET, the visitor to *montes* would empower the local community by ensuring that members participate in planning and management while exercising greater control over decision-making and on the effects that tourism development may have on their cultures and environment.

In Tanzania, Nelson (2004) points out that CBET initiatives have contributed to an increase in local council revenue that has been utilized in supporting the community and individual development, improved community capacity in managing resources and land use plan, wildlife conservation as well as helping diversify tourism industry in Tanzania. Nelson does not however show how households have been affected by the initiatives. On the other hand, Okwi, Arunga, Kariuki, Kristjanson, Ndeng'e, Notenbaert, and Omolo. (2006) point out that, within Kenya, poverty is highest in the rangelands where the principal livelihood opportunity is in livestock keeping. They contend that, livestock keeping offers remunerations that are not sufficient to lift practitioners out of poverty given the vulnerability of the natural resource base upon which livestock production depends. Similarly, Homewood (2009) observes

that the livelihoods of rural communities in the Mara-Amboseli-Kitengela ecosystem in Kenya remain strongly dependent on livestock production. However, alongside livestock production are diversification strategies particularly among households neighbouring high-earning, top-end protected areas. Ironically, the proportion of households benefiting from the wildlife tourism revenue associated with these protected areas is low, as is the level of benefits that such households receive on average. In the same vein, Radeny, Isabelle, Ogutu, and Patricia, (2009) found it difficult to relate environmental/ecosystem services of wildlife to people's livelihoods in the rangelands of Kenya; an indication that indigenous people benefit little from wildlife/tourism efforts.

In a different perspective, Kiss (2004) pointed out that; studies on CBET lack quantitative data and rigorous analysis. Many of the documents are often vague, lack baseline and monitoring data; focus on just a few species, and do not distinguish between revenues and profits while they overlook issues such as income distribution and displacement effects. Therefore, to address the apparent inadequacies in CBET studies, this study undertook a rigorous discourse in order to determine the connections between households' variables and CBET with a view of establishing opportunities for sustainable livelihood (DFID, 2002; IFAD, 2007b) if tourism is to address the needs of the local community.

2.4 CBET in Kenya

In Kenya, tourism started as a consumptive expedition of sport hunting, bird shooting and wild animal capture (Sindiga, 1999). It later changed to non-consumptive products of game watching, safari drives, visit to scenic landscapes, beach tourism and ornithology. By the late 1970s, interests emerged on conserving whole ecosystems by apportioning some of the tourism revenue to the local communities living around protected areas. Local community participation in tourism therefore became necessary on

the premise that when the integrity of both nature and culture is protected the benefits of tourism and conservation can be sustained (Okungu, 2001).

Sindiga (1999) pointed out that ecotourism idea gained momentum in Kenya in the 1980s following falling standards in the management of national parks and reserves. Consequently, ecotourism came to be associated with minimum negative impact on ecosystem and positive contribution to livelihoods and environmental development of destination areas (Republic of Kenya, 2007). In recognizing the symbiotic relationship between the environment and tourism, Kenya acknowledges ecotourism as a means of protecting the global resources (Republic of Kenya, 2007). Consequently, ecotourism came to be perceived as a form of tourism that has no negative impact on the ecosystem and that positively contributes to the socio-economic and environmental development in the tourist destination areas.

On the other hand, the Kenya Wildlife Service (KWS) underscores the importance of ecotourism as a strategy that saves wildlife and the environment, by generating revenue for the local communities, and having low impact on both the environment and cultures, while creating jobs and enhancing conservation of wildlife and biodiversity (Republic of Kenya, 1996). Consequently, to achieve the tenets of ecotourism, KWS introduced in 1996, an inclusive strategy where local communities are allowed to establish tented camps and tourist activities under a programme dubbed ‘Parks Beyond Parks’ (Rutten, 2002).

Some of the most innovative CBET projects are taking place in the semi-arid areas. Among them are initiatives found in the Rift Valley and Coast Provinces where a growing number of communities are setting aside areas for wildlife conservation. Examples of such initiatives can be found in the Greater

Amboseli, Taita- Taveta, Laikipia-Samburu, and the Mara Focal Areas (Ecotourism Kenya, 2005). As a result of engaging many local communities in CBET projects, Kenya received The International Ecotourism Society (TIES) Award in 2002 (Eco-Resorts, 2002).

The importance accorded to tourism as a development strategy and as means of poverty reduction in Kenya cannot be overemphasized. While designing a poverty reduction strategic plan for Laikipia District, community based wildlife programmes were proposed (Republic of Kenya, 2001). Through such programmes, it was envisaged that, there will be reduced human-wildlife conflict and increased income through wildlife based tourism.

Paradoxically, despite Kenya being a regional leader in agriculture, industrial advancement, foreign exchange earnings and tourism, poverty has remained high over the years (IFAD, 2007a). For instance, while exploring private sector and CBET partnership in the Maasai region, Rutten (2004) pointed out that the local communities are not only excluded from the main profits from wildlife tourism but have also to pay a price by losing access to crucial natural resources such as land and water.

However, the process can be reversed if communities are encouraged to diversify activities in their neighbourhoods by initiating, among other activities, ecotourism. A part from expanding their land use opportunities they will be conserving the resource base upon which their livelihoods rely on. In addition, by involving the local communities, it will be possible to undo the peripheral status host communities find themselves in the tourism sector through enhanced participation in decision making and sharing of stakes (Gakahu, 1992). Therefore, sustainable CBET should be internally initiated, and where there is a partnership, the community should be made aware of costs and potential benefit. According to Kibicho

(2004) local communities must be actively involved in tourism projects from the initial planning stage and eventually in sharing the benefits and costs of projects. It is hoped that by engaging the local community in wildlife based tourism there will also be an attitude change where conservation areas, national parks and game reserves will be embraced.

This study sought to examine the effects of CBET on host communities, whereby property owners gave space to conservation and embraced tourism as a business venture. By focusing on households as the principal stakeholders, the study sought to determine the livelihood gains and losses with intent to contribute to policy formulation and literature. As a business enterprise therefore, the viability of CBET requires analysis. Saville (2002) argued that ecotourism has been sought as an alternative enterprise among communities experiencing declining opportunities as a result of unsustainable resource utilization and management strategies. Saville identifies three types of tourism, namely; educational tourism, religious tourism and nature or leisure tourism as suitable for development in the Gulf of Mannar region in Tamil Nadu, India where the fishing community was experienced declining revenues because of enormous pressure on marine biodiversity reserve. A SWOT analysis was therefore done for each of the identified ecotourism products and eco-enterprises that would provide income generating opportunities for local fishing community while conserving the environment.

On a similar basis, this study sought to determine viability of CBET in the group ranches through a SWOT analysis. Indeed, livestock production as the principal livelihood opportunity in the rangelands is diminishing. The frequent and prolonged drought associated with the current climate change is adversely affecting the natural resource base upon which livestock production depends. Through the SWOT

analysis this study focused on the scope within which players in CBET may secure to achieve sustainable utilization and management of rangeland resources.

Kathiw'a (2004) sought to establish the socio-economic and ecological attributes of ecotourism by comparing Il Ngwesi and Makuria Group Ranches in Laikipia District. In the study Kathiw'a pointed out that Makuria Group Ranch operated in only livestock production while Il Ngwesi Group Ranch combined livestock production and ecotourism. From the study, Kathiw'a found out that there was more wildlife in Il Ngwesi Group Ranch than Makuria Group Ranch. It was therefore concluded that the practice of ecotourism had both positive and negative socio-economic and ecological impacts; where the positive outweighed the negative. In relation to Kathiw'a's study, this study analyses the effects of CBET on the ecology by examining a temporal dimension of land cover changes in the group ranches.

Frank, Woodroffe and Ogada (2005) observe that a large part of Laikipia County remains a wildlife habitat area where the county hosts a variety of carnivore species among them lions, leopards, cheetahs, spotted and stripped hyenas and African wild dogs. As tourism grows, most tourists to Africa want to see large carnivores. Unfortunately, the presence of these carnivores expose other land users; particularly the pastoralist to predation, hence undermining livestock production. They noted that pastoralists in group ranches in Laikipia County loose 0.7% of their cattle and 1.4% of goats and sheep to predators. It is this kind of experience that this study sought to examine in relation to CBET in the study area where wildlife conservation has been embraced as a land use strategy among the traditional pastoralism.

2.5 Theoretical and Conceptual Framework

This study utilized various approaches that seek to address the welfare of poor people in the context of their entitlements to access, utilization and management of the natural resources available to them. The theoretical framework upon which opportunities for households' livelihoods are based conceptualize the importance of environmental resource management and the involvements of all stakeholders; particularly the poor. Consequently, the study critically examined the Sustainable Livelihood Approach (SLA) (IFAD, 2007b); the Social-Ecology System (SES) (Simonseen, 2007); Political Ecology (Wallace, Cortner, Moote, and Burke 1996); Natural Resources Management (NRM) approach (Commonwealth of Australia, 2009) and the Social Capital Theory (Coleman, 1988; Putnam, 1995; Portes and Landolt 1996; Portes 1998) which was adapted to form the conceptual framework upon which the study was based.

2.5.1 Theoretical Framework

The framework focused on among others concepts: the Sustainable Livelihood Approach (SLA) (IFAD, 2007b). SLA focuses on understanding the livelihoods of poor people by drawing on the factors that affect their livelihoods and the types of relationships between them (factors). It aims at identifying the main constraints and opportunities faced by poor people as expressed by them while seeking to support autonomous interventions. The approach is used in planning new development activities and in assessing the contributions that existing ones make to sustain livelihoods. The approach revolves around a framework that helps in understanding the complexities of poverty and a set of principles to guide on actions to address and overcome poverty. It places people, particularly the poor at the centre of inter-related influences that affect how they create a livelihood for themselves and their households. The framework considers the resources and livelihood assets available to the poor and underpins the facts

that access to the livelihood assets is strongly influenced by people's vulnerability in terms of economic, political and technological trends. This involves susceptibility to shocks such as epidemics, natural disasters, civil strives and seasonality of production and employment opportunities in relation to prevailing social institutions which affect the way people combine and use the assets to achieve their livelihood strategies. Pertinent to this study SLA provides an insight on the social fabrics at play in influencing how people access resources and livelihood assets in Il Ngwesi and Lekurruki Group Ranches.

Another theoretical concept is the Social-Ecological System (SES) in the Resilience Framework (RF) (Simonseen, 2007) seen as a way of coping with stresses caused by ecological impacts. In the dry lands, there are many shocks and stresses that can destroy or damage the natural resource base and adversely affect livelihood prospects over both the long and short term (Susannah, Chasca, and Stringer 2010). Resilience Framework underscores the capacity to continually change and adapt given that changes in nature and society challenge the adaptive capacity of people. The approach focuses on the dynamic interplays between periods of gradual and sudden change and how to adapt to the sharp change. CBET in the study area represents a change in the way local people access livelihood asset in the group ranches. Therefore, the new livelihood strategies adopted illustrate the resilience with which people adapted to the land use change.

To sustain the changes associated with the new livelihoods and land use practice of CBET, the adaptive management of the ecosystem underscored in the political ecology concept (Wallace, Cortner, Moote, Burke, 1996) was considered. The political dimension of resource management seeks to answer questions on how societies view nature, the role of government, the role of the market and the role of the

citizens. The adaptive management dimension therefore focuses on desired ecological states and the means of achieving them from a social perspective on the premise that the definition of an ecosystem and the criteria for a healthy ecosystem are essentially value judgments (Norton 1992, in Wallace, Cortner, Moote, and Burke 1996). Adaptive management of ecosystem recognizes that managing human societies is part of maintaining healthy ecosystems which is also political since the public itself must decide what values to place on the issues surrounding ecosystem management. Therefore, CBET as a land use and livelihood strategy subscribes to the concept of political ecology since it is essentially based on the inclusion and participation of the group ranches' members in its governance.

Another theoretical concept that was considered in view of environmental management was the Natural Resources Management (NRM) approach. NRM enables community participation, enhances awareness and knowledge and better management practices (Commonwealth of Australia, 2009). It is a system that focuses on how management affects the quality of life and the ways in which people and natural landscapes interact. It recognizes that people and their livelihoods rely on the health and productivity of the landscape and their action as stewards of nature. As a variant of environmental management, NRM focuses on scientific and technical understanding of resources and ecology and the life supporting capacity of those resources.

From the analysis of theoretical concepts and approaches, this study identified common property regime in the ownership and management of the group ranches as an intriguing concept of CBET. The communal approach to CBET ventures are arguably founded on in-built tenets underscored in the social capital theory which revolves around the concepts of trust, norms and networking. It is with reference to the social capital theory (Coleman, 1988; Putnam, 1995; Portes, 1998; Portes and Landolt 1996, 2000)

that this study sought to establish the basis upon which CBET in the study area is founded. Social capital refers to the links, shared values and understandings in society that enable individuals and groups to trust each other and so work together.

From this perspective, this study was based on the premise that sustainable common property management and utilization strategy is a function of inbuilt systems that bind the players in a partnership that underscores individual and common benefits. As an alternative form of tourism, ecotourism emphasises on the need for environmental conservation and local community welfare. Based on common property regime, the study of ecotourism in the group ranches recognizes the role of the local community as the principal bearers of emerging consequences.

2.5.2 Conceptual Framework

To analyse the effects of ecotourism on households' livelihoods and environmental management in the study area, the study used the social capital theory as its conceptual framework. Social capital was considered as a medium through which local communities invested their asset base of material, human, cultural and financial resources in ecotourism activities (Putnam, 1995; Coleman, 1988; Portes 1998; Portes and Landolt, 1996, 2000). In this context, social capital represents the connections within (bonding) and between (bridging) social networks (Aldridge, Halpern, and Fitzpatrick, 2002). It entails social contacts that affect productivity of an individual and/or a group. It underscores the importance of community participation for common success and describes the tangible substances that account for the daily lives of people in terms of goodwill, fellowship, sympathy and social intercourse among individuals and families who make up a social unit (Putnam, 2000). Social capital is seen as a public good that consists of social structures that facilitate certain actions by actors within a given setup

(Coleman, 1988). It facilitates individual and/or collective action, generated by networks of relationship, reciprocity, trust and social norms.

According to Putnam (1995), social capital is a producer of civic engagement and a factor for resource possession by a group based on norms and trust. On the other hand, Arefi (2003) argues that social capital leads to consensus building hence shared interests and agreement among various actors and shareholders in order to induce collective action. Therefore, collective actions are indicators of increased social capital.

However, Portes and Landolt (2000) caution that social capital may lead to negative consequences such as exclusion of outsiders, excess claim on group members, restriction on individual freedom and downward levelling norms. Figure 2.1 depicts the conceptual framework where various variables interact in the context of CBET to generate outputs on households' livelihoods and environmental management.

The framework conceptualized a system of CBET in group ranches where ecotourism is perceived as a common action by group ranch members with the intent to secure livelihoods and environmental management. It illustrates that; for CBET to succeed there must be consensus among the members based on rules that regulate the access to and use of resources. The regulations are based on trust among the members whose stake in the projects is more or less assured.

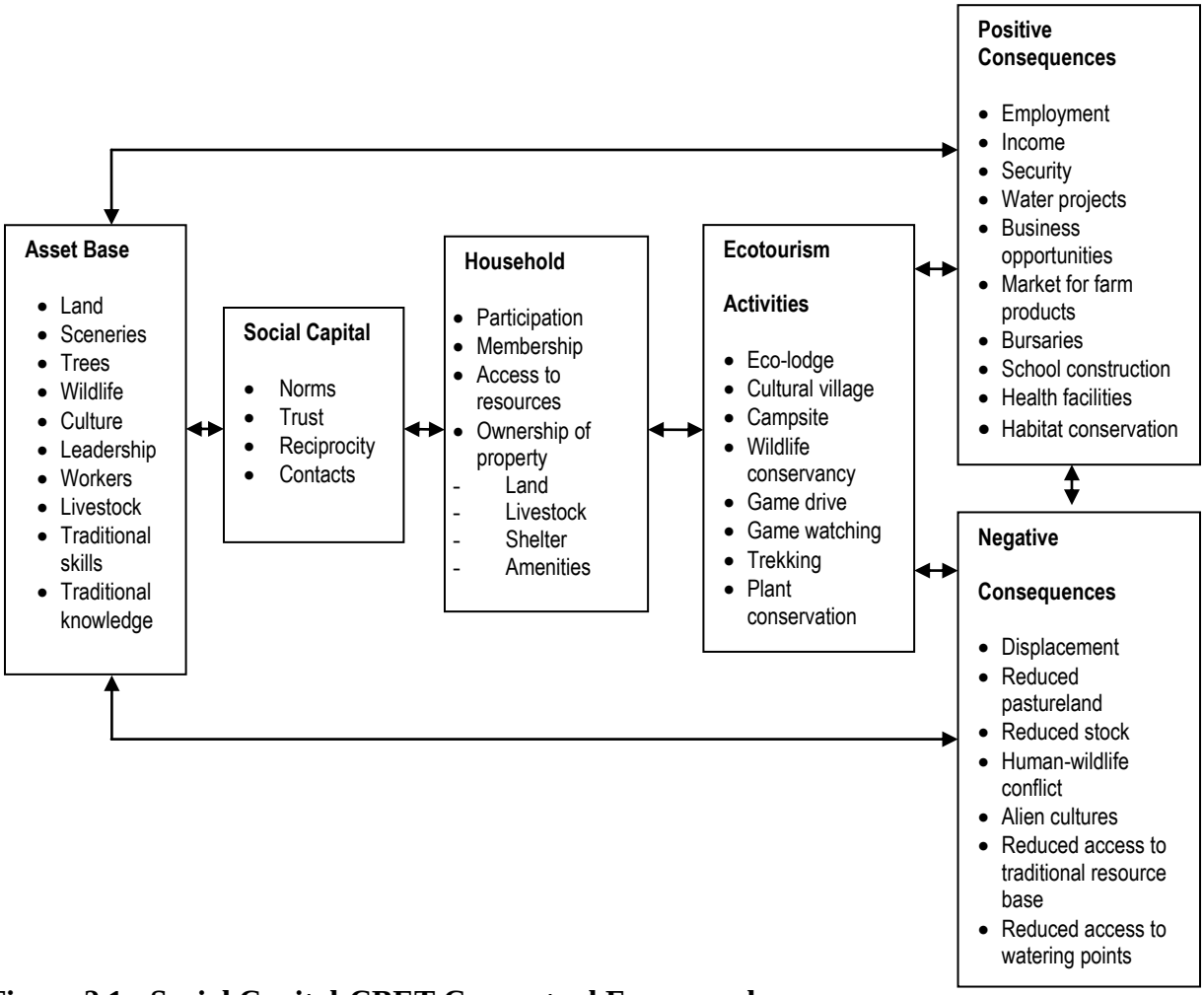


Figure 2.1: Social Capital-CBET Conceptual Framework

Source: **Modified from (Portes 1998; Portes and Landolt 1996, 2000)**

In the framework, social capital is considered as a medium for livelihoods and environmental management in the group ranches, with its principles of trust, norms, reciprocity and contacts perceived as the factors for community participation. Applying these tenets, the local community invests its resource base of land, material, human, culture, among others in ecotourism activities of wildlife conservation, cultural villages, eco-lodges, campsites, entertainment and tour guide on the strength of anticipated benefits.

The emerging positive consequences of CBET may include development and/or support of education facilities through construction of institutional infrastructure, provision of bursaries and tuition fees, security, employment opportunities, incomes, business opportunities, infrastructure, development of water facilities as well as enhanced positive human-wildlife relationship. Equally, there are anticipated negative consequences of displacement, reduced pastureland, human-wildlife conflict, and restricted access to traditional resource base of herbs and watering points, among others.

Through the social capital, households are anticipated to participate in ecotourism projects in various ways as members of the group ranches and owners of the resources, as workers/employees, asmembers of management team, and so on. Participation is to be guided by defined norms and enhanced through trust in the management and structures in the systems.

2.6 Summary

From the review of literature, tourism has become in the recent past an important alternative for socio-economic development and environmental management. It is considered as an opportunity for the poor and as an input for sustainable development. The evolution of tourism which gave rise to ecotourism was seen as a panacea for local community livelihoods and environmental management. The emergence and growth of ecotourism culminated with CBET which opened up the closed and exclusive nature of conventional mass tourism to local community participation. Through CBET, the place of the local communities as the immediate stakeholders in the utilization and management of tourism attractions are identified. The principles of CBET underscore the need for socio-economic benefits of the local community by ploughing back revenue in destination areas. Pertinent to this study was the emphasis on community ownership and management of tourism activities in the context of social capital theory. Based on this premise, the study sought to determine the effects of CBET on households' livelihoods

and environmental management in Il Ngwesi and Lekurruki group ranches in Laikipia County. It is apparent that community participation in the management of natural resources revolved around theoretical concepts underscored in among other approaches ; the Sustainable Livelihood Approach which underlines the importance of the main constraints facing poor people and opportunities available to them. The approach seeks to identify efforts that are made to exploit those opportunities in order to overcome the constraints. Equally important is the social-ecological system that seeks to pinpoint how poor people resolute on the various challenges they face. To be able to make meaningful steps in addressing any ecosystem based challenges, the importance of people's role in determining their livelihoods is made through consensus expressed in the political ecology concept. Consensus significantly influences the participation of the poor as stakeholders in joint management of natural resources. This is in full realization that people and their livelihoods rely on the health and productivity of the landscape and their action.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methods and techniques used in the study. It describes the research design, the variables of analysis, target population, sample and sampling techniques, data collection procedures and tools, data processing and analysis techniques. The study therefore sought to determine how CBET as a land use and a rangelands resource management strategy has impacted on households' livelihoods and environmental management.

3.2 The Research Design

The study used a survey design with the purpose of generating and analysing data on the effect of CBET on households' livelihoods and environmental management. The study site was selected because of its unique characteristics as a local community owned and managed entity that has embraced ecotourism as a land use diversification strategy in the wake of subdivision of group ranches and leasing of such undertakings to private investors elsewhere. Data were collected from both primary and secondary sources and analysed using both qualitative and quantitative techniques.

3.3 Variables of Analysis

To establish the effects of CBET on households' livelihoods and environmental management, a number of variables were identified for analysis. These included the natural resources in the group ranches as the basis for the various land uses. To link the resources to local community livelihoods, an analysis was conducted on the land uses in the group ranches and CBET as a leading activity whose sustainability was largely linked to natural resources of wildlife and forests. To understand the genesis of CBET in the group ranches, an analysis was conducted on the players who took a leading role in its introduction.

Sustenance of CBET is perceived as a function of local community involvement, therefore, the study sought to find out how the local communities participated. This led to analysis of the nature and level of community involvement. Arguably, participation in joint ventures such as CBET would be based on the perceived commodity that stakeholders command. To find out what the local communities considered as their commodity bundles to command in CBET, an analysis of households' entitlements was done. Since CBET was meant to transform the stakeholders' livelihoods, an analysis of benefits received was done. On environmental management, the study analysed the effects of CBET on rangeland resources such as water, wildlife, soils, pasture, forest and soil, as well as the vegetation land cover changes since the introduction of CBET.

3.4 Sampling Techniques and Sample size

The target population were households in Il Ngwesi and Lekurruki group ranches, including the leaders and managers of the ranches. Though the study site covers delimited areas of Il Ngwesi and Lekurruki Group Ranches, it was found that the group ranch members reside in villages outside the group ranges in the expansive Mukogodo and Il Ngwesi Divisions of Laikipia North District while some villages were located in Laikipia East District (Figure 1.2). Only Sang'a and Sieku villages were found within Il Ngwesi Lekurruki Group Ranch respectively while Leparua village was in Isiolo County bordering Laikipia County on the East. A total of eight villages were identified which formed the strata from which households were selected. A sample of 181 households was selected. The selection of the households was influenced by the residential pattern in the villages scattered across the area. To select the respondents, the research team approached the group ranch leadership in order to be guided on the location where their members resided. In the villages, respondents were purposively selected from each household that was selected. It was noted that, given the patriarchal nature of social relation, a single

household would have several families. In such instances, only the head or a representative was selected. From this exercise, samples from villages were as follows; Ethi (14), Chumvi (19), Ngare Ndare (23), Nanduguro (31), Lekusero (12), Leparua (32), Sieku (30), and Sang'a (20). The study found out that Ethi, Chumvi, Sang'a and Leparua were predominantly occupied by members of Il Ngwesi group ranch; Sieku by members of Lekurruki group ranch while Nanduguro, Lekusero and Ngare Ndare had members of both ranches.

3.5 Tools of Data Collection

To obtain the required information, data were collected from both primary and secondary sources. Primary data was obtained using questionnaires administered to households selected from the different the villages where group ranches members reside. Other tools of data collection included interviews with key informants and FGDs with various segments of social units that comprise the local community. Primary data was also sourced from remote sensing and satellite images of the study site to determine the land cover changes. On the other hand, secondary data was sourced through study of relevant documentaries and publications. Eight research assistants, among them three translators were recruited and trained to administer the questionnaires and conduct interviews.

A pilot study was conducted in Chumvi village before commencement of data collection. The exercise involved administering of the questionnaire to five purposefully sampled households and two key informants. This helped to varnish data collection tools and train research assistants. From the pilot, it was found that group ranch members reside in different villages outside the group ranches; some of which were cosmopolitan. This finding merited the adoption of both purposive and snowball sampling techniques for selection of households heads and key informants respectively. It was also found that the

community followed a patriarchal socialization whereby a single household could have several nuclei families. In such instance, only the head or a representative was sampled for questionnaire administration. Finally, the research team had to rely on contacts to identify group ranch members who are residents of cosmopolitan villages such as Ethi, Ngare Ndare and Chumvi.

3.5.1 Questionnaire Survey

A questionnaire (Appendix 1) was used to collect data from the respondents selected from the households. The questionnaire had both open and close ended questions and was administered to household heads either male or female. Among the major aspects focused in the questionnaire included; the social characteristics of respondents, natural resources in the group ranches considered important; the different land uses taking place; the genesis of CBET; nature and level of households' participation in planning and management of CBET enterprises; socio-economic benefits and losses suffered by the households since the introduction of CBET in the group ranch and challenges facing the management of CBET and suggested solutions.

3.5.2 Interviews

Using an interview guide (Appendix 2), data was collected from twelve (12) key informants who were purposively selected following a snowball procedure. Snowball sampling involved identification of a respondent with knowledge of the subject matter and from whom other individual were exposed through reference. This was necessary because the research team was not aware of the individuals who processed the desired information. Among the key informants were local government officers, elders, group ranch management members and liaison officers from group ranch linkage offices. The interview focused on the role the individuals had in the group ranch; and experience with CBET as a form of land use. Key issues from which information was sought included the historical account of the group ranches; the

factors for sustained community ownership, recruitment and registration of members, partners and nature of collaboration with other players in the conservation and ecotourism sector. Focus was also on the integration of CBET into the group ranches, and the entitlement the local community commanded; the benefits and loses associated with CBET, the challenges facing the activities and the suggested solutions. Further, interviews were conducted with representatives of five (5) institutions namely, Borana Ranch, Lewa Conservancy, Mpala Research Centre, Laikipia County KWS Chief Wardern and LWF who also engage in conservation and associate closely with the Il Ngwesi and Lekurruki Group Ranches. The purpose of interviews with these institutions was to find out how CBET in the group ranches was linked with the other players in the sector, the types of association particularly with the private sector institution in ecotourism.

3.5.3 Focus Group Discussions (FGDs)

FGDs were conducted since they were considered as an efficient and important way of gaining insight into how people constructed environmental and social issues; shared their knowledge, experiences and prejudices; and argued their different points of view (Melanie and Clair, 2001). Further, they were perceived as powerful techniques in data collection among stakeholders with experiences of an event (Krueger, 1994). Consequently, five (5) FGDs were conducted among different social units from the different villages. These were in Leparua village among Il Ngwesi elders; among women residing in Il Ngwesi cultural (*manyatta)* centre; among the youth in Chumvi and Sang'a villages and among Lekurruki group elders in Nanduguro. The discussions involved groups of eight to ten members who were selected through contacts in the respective villages. The exercise was facilitated by the researcher accompanied by a translator. The proceedings were in other audio and note forms. Using a predesigned schedule (Appendix 3), FGDs sought to establish the local community experiences with CBET, benefits

received, challenge faced and solution that the different players identified. The proceedings were recorded on note pads and recorded on video with a digital camera.

3.5.4 SWOT Analysis

To establish the viability of CBET in the study area, a SWOT analysis was conducted (Chapman, 2006). SWOT analysis was considered to be a useful technique for understanding strength and weaknesses of Il Ngwesi and Lekurruki Group Ranches in CBET business while identifying the opportunities open to them and the threats they faced. The analysis sought to uncover opportunities that the group ranches would exploit to make CBET sustainable. Similarly, by understanding the weaknesses CBET faced, the study was able to suggest possible mitigations to threats that would otherwise undermine sustainability. Throughout the research, the study was able to identify internal capacities of the group ranches by evaluating strengths and weaknesses, while identifying external forces contained in the opportunities and threats. The results of the analysis were presented in a SWOT matrix (Chapman, 2006).

3.5.5 Analysis of vegetation change

To determine the effect of CBET on the environment, data was derived from satellite images on vegetation cover changes since the introduction of CBET in the study area. The study considered changes on vegetation cover as the most visible indicator of the effect of CBET on environmental management. This argument was based on the observation that, conservation areas were set aside and human activities particularly grazing and harvesting of vegetation matter were restricted. It was therefore expected that there would be a change in vegetation cover. Subsequently, satellite imageries from Landsat TM of 1987, ETM of 2000 and ETM+ of 2007 were obtained and proceeded to determine vegetation changes.

The choice of the three images was based on temporal factors associated with the introduction of CBET in the study area. The year 1987 marked a decade prior to the introduction of CBET when pastoralism was the dominant land use. Since pastoralism is founded on accumulation of livestock for both social and economic reasons with little regard for the carrying capacity, it severely impacted on the vegetation cover (Darkoh, 1990). In addition, to rekindle pasture and control pests, pastoralists were often involved in bush clearing and burning which further impacting on the vegetation. Therefore, a decade before the introduction of CBET in the study area was considered sufficient time to represent the base year for analysing land cover changes. The year 2000 marked a transition between traditional land uses and CBET. The year 2007 was a decade after CBET was introduced and therefore sufficient to evaluate effects on land cover change in the area.

The images were classified using onscreen digitization methods, while incorporating ground truthing surveys. Erdas 9.2 and ArcGis 9.2 were used for the image georeferencing and processing so as to derive various colour composites and band ratios to enable image interpretation. Of greater importance were colour bands 7, 4, 2 which provide a “natural-like” colour; which makes ground features appear in colours similar to their appearance to the human eye, while band 4, 3, 2 which is the standard false colour composite was used since it gives a lot of information and colour contrasts hence enabling classification (Sherbinin, 2002). Most importantly, a colour composite of the images was made since these images were acquired as raw bands. The analysis also followed a step-by-step classification of vegetation cover derived from satellite imageries of Landsat (TM) 1987, ETM 2000 and ETM+ 2007 with the purpose of determining the changes in the different types of vegetation cover in the area. Using Remote Sensing ArcGis 9.3 and GeoVis 2.0 software, reflectances were generated that enabled the study

to classify vegetation in the area into various categories. The results were tabulated to determine the area coverage for each category of vegetation type and to determine the land cover changes in the period of analysis.

The results were shape files which were used to calculate the area in hectares of all the land cover types. The land cover map of the year 2007 was re-classified using the field work data and information in order to establish the changes that have occurred since the introduction of CBET. Through this process, it became possible to link CBET to environmental management as depicted by the changes in the vegetation cover. To deduce what vegetation type changed to what over the years, the derived maps from the various years were overlaid using the ArcGis 9.3 software in order to develop the different maps depicting classification of the various images.

3.5.5 Secondary Data Sources

These included sources from publications and documentations on the operations and management of CBET. Of particular importance was review of Il Ngwesi group ranch strategic plans so as to establish the laid down strategies for CBET. Other documents included records on human-wildlife conflict from KWS to determine the effects of integrating CBET among other land uses in the study, the Laikipia Wildlife Forum reports to determine linkage between players in the sector and Laikipia District development reports to establish the government strategy for the district in relation to CBET.

3.6 Data Processing and Analysis

3.6.1 Data Processing

Data collected using questionnaire was processed to ensure that all responses were categorised in order to make the contemplated comparisons and analysis possible. The processing involved editing, coding,

classification and tabulation. Editing helped to detect errors and omissions, and the appropriateness of the data to the study objectives. Editing also involved scrutiny of all completed questionnaires to ensure that there was accuracy; consistence, uniformity and that they were completely filled in order to facilitate coding, classification and tabulation. This helped to put data into manageable categories that were consistent with the research problem. Further, classification of data was conducted to help arrange responses into classes on the basis of common characteristics and on the basis of the study objectives. Finally, tabulation involved arranging and displaying into matrices summaries of raw data in a concise and logical manner. This way, it became possible to supplement explanations and descriptions of the findings, facilitate comparison and summation of items, and detection of errors and omissions while providing the basis for statistical comparisons.

Data collected through FGDs was processed through debriefing and transcription. Debriefing process entailed discussion of raw data by the research team and recording of the relevant response. This process was reinforced by listening to audio discussions while jotting down relevant points. Further, the transcription process involved noting down of verbatim conversation captured from the FGDs.

3.6.2 Data Analysis

Having coded the data collected using questionnaires; percentages and proportions were generated to describe the nature of the occurrences of the various variables of analysis. Using SPSS software version 11.5, frequencies were generated to identify the characteristics of the various variables and the computations cross tabulated to determine the nature of relationship between the different variables. However, data that could not be subjected to quantitative analysis was presented as narratives to corroborate the descriptive analysis. Narratives were particularly useful when analysing data collected

using FGDs and interviews with key informants and representatives of the various partners in ecotourism sector. Data collected using the different techniques and tools were used to generate a matrix upon which SWOT analysis was based with intent to determine the viability of CBET as a land use and resource management strategy in the rangelands.

The outputs of the analysis showed the magnitude of the occurrence of the variables of analysis. The outputs were further subjected to Microsoft office Excel 2007 programme to generate line graphs and histograms in presentation of the data. To determine the significance of the findings, various variables were subjected to chi-square tests. The use of chi-square helped to determine whether there were differences between the observed and expected outputs when CBET was related to the anticipated and benefit received, and environmental management.

To establish the effect of CBET on the environment, remote sensing softwares were used to analyse the Land-Cover Change in the group ranches. The analysis was done to gather information on land cover trends and for the generation of land cover change scenarios. Using supervised classification method, pixels were clustered into classes corresponding to defined Area of Interest (AoI), or training sites which were selected as representative areas to be mapped. Supervised classification techniques included Parallelepiped, Minimum Distance, Mahalanobis Distance, Maximum Likelihood, Spectral Angle Mapper (SAM), and Binary Encoding. Training classes were defined prior to performing supervised classification. This was done by selecting spectra in which the training sites were defined as individual pixels of the areas of interest.

To determine the reliability of the findings on land cover derived from remote sensing maps, a classification of accuracy was done. To achieve this, an error matrix was generated to determine the pixels assigned to a particular category relative to the actual categories on the ground. Using this technique, it was possible to produce measures of thematic accuracy as well as to estimate the Kappa coefficient which relayed the classification accuracy (Congalton, 1991). The overall classification accuracy represented the percentage of collect number of spots from the different classified pixels categorized to represent the different areas containing the different vegetation types. The realized overall classification accuracy indicated a high reliability of the findings of the vegetation cover in the study area. To corroborate the accuracy, both user's and producer's accuracies were calculated. The former represented the probability that a given pixel will appear on the ground as it is classed, while the latter, represents the probability of a given pixel being correctly identified on the map. On the other hand, the Kappa coefficient presented an index that illustrated the classification accuracy. The coefficient represented both the errors of omission and commission. The former indicated the chance that a given pixel was put into a class it did not belong, while the latter indicated the chance that a pixel was placed in class while it belonged to another. The overall Kappa statistics therefore represented the accuracy with which pixels were classified, denoting a high reliability of the information obtained.

To determine the significance of CBET on households' livelihoods and environmental management, cross-tabulations were done to generate contingency matrices to test the relationship between CBET and the different variables of analysis. The cross-tabs were utilized to examine the significance of CBET using a chi-square test. The test compared observed and expected CBET households' livelihoods variables categorized under economics, infrastructure development, welfare, and education in order to test the null hypothesis (Ho) that 'there is no significant households' livelihood benefits associated with

CBET activities in Il Ngwesi and Lekurruki group ranches'. Similarly, to test the significance of CBET on environmental management, a chi-square test was conducted in relation to environmental resources of water, pasture, wildlife, forest, herbs and soil. To test both hypotheses, the generated values of the chi-square were tested to determine the reliability of the results in generalizing on CBET as a livelihoods and environmental management strategy in the rangelands at significance level of 0.05. Using, chi-square (x^2) test of SPSS version 11.5, a decision rule was set at Alpha (α) = 0.05, where 'α' denotes the probability of a relationship between variables or lack of it. Therefore, H_o was rejected if the Pearson significance level was less than α, meaning that there was 95% confident that such a relationship was significant and was not by chance. However, H_o was accepted if the Pearson significance level was equal or greater than α.

The Chi-Square Model

$$x^2 = \varepsilon^r \varepsilon^k \frac{(o-E)^2}{E}$$

x^2 = Chi-Square
ε^r = Sum of rows
ε^k = sum of columns
O = Observed frequencies
E = Expected frequencies

3.9 Data management and ethical considerations

Throughout the research a humane and sensitive treatment of the research participants was observed. As much as the study focused on truth and knowledge, it was not lost on the need to respect the rights of the participants (Van Damme, Casteleyn, Manno, 2004). Efforts were made to reduce any physical or psychological risk on participants and that none of them was harmed by participating in the research. In addition, the research was designed such that there would be potential benefits for the participants'

communities since the objectives of the study were focused on investigating the effects of CBET on households' livelihoods and environmental management. Further, the principle of autonomy was observed whereby individuals were free to choose to participate or not to participate in the study. To underscore the principle of justice, all participants were regarded equal since only adult respondents were selected. The principle of fidelity was observed where all the information given was used for academic purpose as intended. Finally, the dignity and rights of all participants were assured and maintained by making sure that the research team introduced themselves with due respect and informed the participants of the principle purpose of the study.

3.10 Summary

Using the different techniques and tools of data collection, the study was able gather sufficient material needed for an empirical discourse on the effect of CBET on households' livelihoods and environmental management in Il Ngwesi and Lekurruki group ranches. Similarly, applying the different techniques in data analysis, it was possible to generate information that focused on the study objectives and to make generalization on the effect of CBET in the rangelands. It is imperative to underscore that the process of data collection in particular was not without challenges. However, the role played by the research assistants and local guides went along way to make the research work successful.

CHAPTER FOUR: CBET AND HOUSEHOLD PARTICIPATION IN CBET IN IL NGWESI AND LEKURRUKI GROUP RANCHES

4.1 Introduction

This chapter focuses on the nature and level of households' participation in CBET in Il Ngwesi and Lekurruki Group Ranches. The chapter opens with a brief account of the social characteristics of group ranch members with a view of illustrating the social aspects of the community that has ventured into CBET. To establish the scope of households' participation, the chapter identifies group ranch resources the local community considered important followed by land uses where ecotourism emergences strongly among others. With ecotourism among the leading land uses in the group ranches, the chapter sought to identify how CBET was introduced in the group ranches and the different parties involved in the process. Lastly, the chapter presents the nature and level of community participation and the various stages that households were involved.

4.2 Social Characteristics of Respondents in Il Ngwesi and Lekurruki Group Ranches

This study considered sex, age, marital status and literacy level of the respondent as the most important social characteristics of group ranch members. Sex, age and marital status were considered important in the determining the membership in the group ranches while literacy is a vital component in management of economic enterprises. Consistent with the patriarchal nature of the Maasai people (Solomon, de Leeuw, Grandin, Neate, (eds) (1991)), males (69.1%) respondent were the most dominant compared to females (30.9%). On marital status, majority of respondents (84%) were married; a finding that is consistent with culture and rituals of Maasai people in relation to marriage (Maasai Association, Undated).

Analysis on the age of respondent was considered an important variable since it determined the point at which an individual was included in the list of group ranch members (Il Ngwesi, 2010). From the analysis, Findings revealed that, the highest age bracket was 35.5-40.5 (17.1%) and the lowest were those below 20 years (0.6%). Others age brackets were, 20.5-25.5 (8.3%), 25.5-30.5 (12.7%), 30.5-35.5 (13.3%), 40.5-45.5 (10.5%), 45.5-50.5 (10.5%), 50.5-55.5 (10.5%), 55.5-60.5 (5.5%) and those over 60 years old who accounted for 11%.

On the level of literacy, it was found that 58% of respondents had no formal education, 28.2% had only attained primary level education. When level of literacy was compared with the sex of the respondents, it was found that the effect of low literacy was not discriminative. It was observed that 86.4% of the male respondents had at most primary level education compared to 85% of the female.

The low level of literacy could partly be attributed to the cultural practices of the local people that laid greater emphasise to traditions, and the nomadic lifestyle pastoralists and to some extent to the lack of adequate formal education facilities within reach of children in school going age.

It was however observed during the study that opportunities for formal education were being enhanced in most villages through establishment of nursery and primary schools through local community initiatives, donor support and through County government programmes. This is an indication that prior to the establishment of these schools majority of the people did not have adequate access to formal education or enrolled late given the long distances to the available schools. The long distances travelled by pupils to school through wilderness exposed them to risks of wildlife attack further compromising the chance for acquiring formal education.

In addition, the traditional lifestyle of the native community of livestock rearing that involved children in herding undermined their chances of accessing formal education, while the frequent migrations in search of pasture triggered by drought also disrupted schooling. Further, the adherence to cultural practices by the local community adversely affected the pursuit of formal education. Whenever the youth underwent rites of passage from childhood to adulthood, they acquired new status in the society where the boys become warriors *(moranis)* and the girls are considered mature to enter into marriage (Maasai Association, Undated). The new status acquired by the youth usually removed them from the school system.

4.3 Natural resources and their uses in Il Ngwesi and Lekurruki Group Ranches

Human occupation of an area can be examined in the context of the natural resource base that sustains a group's livelihood. To meet livelihood needs, a group utilizes such resources resulting into unprecedented multiplier effects. It could be argued that, the continued occupation of Il Ngwesi and Lekurruki group ranches by the local community is an illustration of an attachment that the group has developed on the area and the resources within it over time. The community has hence evolved a system of harnessing the resources to meet their livelihood needs in the context of inherent constraints. Consequently, the study identified the resources in the rangeland that the local community considered important and their different uses. Ultimately, the study sought to determine the effects of CBET on these resources and their access by the local community.

Arguably, the introduction of CBET in Il Ngwesi and Lekurruki Group Ranches led a land use system that was based on an understanding of the linkage between it (CBET) and the natural resource base therein since there is relationship between resources perceived as important in the group ranches and the

type of land uses found there. According to Winifred, Kessler, Charles, Cartwright Jr and James (1992) management of public lands and resource, requires knowledge about ecosystems, including relationships to human values, activities and patterns of resource use.

4.3.1 Important Rangeland Resource in Il Ngwesi and Lekurruki Group Ranches

When the question of important resources in the group ranches was asked, respondents gave multiple responses. Consequently, while analysing, considerations were made on the number of times a given resource was identified. Therefore, the frequency distribution that was generated presented the incidences that a given resource was selected. Figure 4.1 presents percentage of responses in relation to group ranch resources that were considered important.

The high percentage attached to wildlife (86.2%) indicated the importance of this resource to the local communities. This finding was attributed to the inclusion of wildlife conservation where the local communities gave part of their land for this purpose. For instance, Il Ngwesi group ranch had given 80% of the group ranch land for conservation, with the remaining 20% being left for settlement (Lewa, 2001; Il Ngwesi, 2010).

Another resource that was considered important was forest (56.4%). In particular, Mukogodo forest plays an important role among the local people both as a dry season grazing area and as a habitat for wildlife; especially the elephants. It is also considered as an important shrine by the Mukogodo Maasai people who retreat there once a year to exhibit and perform their cultural ceremonies.

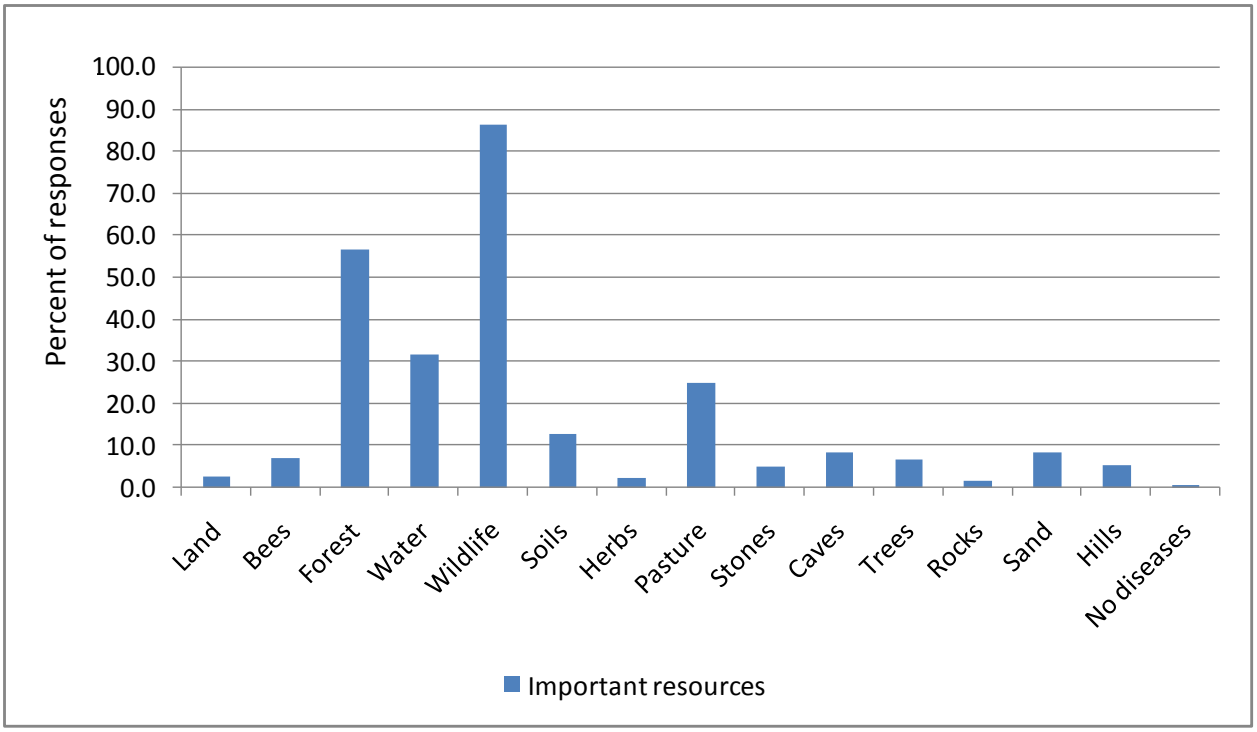


Figure 4.1: Important resources in Il Ngwesi and Lekurruki Group Ranches

(Source: Field Data, 2010)

Despite the local community being largely pastoralists, pasture was not considered among the leading important resources in the group ranches. The weight given to pasture (24.9%) indicates a level of acceptance of the concept of conservancy where pasture within the conservation area was only made available for grazing during drought. However, the importance of pasture in the current conservation areas was apparent prior the introductions of CBET as evident by the act of surrendering space that was previously occupied and traditionally utilized to secure livelihoods.

Generally, the wide range of natural resources that the local community identified underscores the livelihood potentials in rangelands. It also illustrates that the local community have a good view of their territory and therefore the apparent continued occupation of the region is based on experiences,

indigenous resource utilization and management strategies. For instance, though land as a resource was identified by a small group of respondents (2.8%), it was considered as the prime symbol of the local community belonging and therefore the basis of their wealth. The local community had a great attachment to the area where the group ranches were found, implying a sense of territoriality and an attachment to the natural resources therein.

The importance of land as a resource is underscored by the presence of the many other resources it hosted. Among them were bees, soils, herbs, stones, caves, sand, hill and rocks. Among the Mukogodo Maasai people, bee keeping for honey is a traditional livelihood and a source of food that has been sustained through generations. Within the group ranches, evidence of this practice is manifested by the presence of both traditional and modern bee hives (Plate 4.1) perched on acacia trees dotting the expansive land area.

Another important resource was water (31.5%). It is evident that the arid nature of the Laikipia North district; particularly Mukogodo division exposes the residents to livelihood difficulties, especially in reference to water scarcity for domestic use. However, Mukogodo forest serves as a significant catchment area for a number of streams that flow downstream into the expansive lowland rangelands. Equally important as a catchment area is Ngare Ndare forest, from where Ngare Ndare stream springs from. The stream that eventually flows into the Lewa downs serves as an important source of water for domestic use as well as for livestock and wildlife watering. Other important sources of water were boreholes at Lokusero (6.6%) and Chumvi (10.5%) villages, and pipe water projects at Sang'a (15.5%).

Plate 4.1: Bee hives on acacia tree in Leparua
(Source: Field Data, 2010)

Other important resources that were associated with cultural practices and traditional rites of the local people included caves (8.3%) which were revered as shelter in times of aggression as well as secure sheds for sojourners, hunters, gatherers and honey harvesters. They were also considered as shrines where traditional rituals are carried out. Hills (5.5%) and rock outcrops (1.7%) were considered important particularly among the Mukogodo Maasai people who traditionally used them as vantage points whenever they spied on their aggressors. Equally, hills served as secure places for mounting bee hives. Trees (6.6%) were also considered important for hanging bee hives, apart from providing shed from the scorching sun of for humans, livestock and wildlife. They also served as important assembly points where elders consulted and passed time. Herbs (2.2%) that were extracted from trees and shrubs within the group ranches served as the immediate sources of medicine for both curative and preventive

purposes. The science of herb extraction is an indigenous skill that has been passed through generations among these local communities and continues to be practiced.

Soils were considered important resources by 12.7% of the respondents. They were valued as significant media upon which life sprang. It is on soils that pasture, herbs and trees grew to meet the needs of the local community. In Leparua village for example, soils were considered an important resource for plant grown in the vast irrigation strips along the Leparua stream that springs from Lewa Downs. Stones and sand were also given considerations by 5.0% and 8.3% respectively because of their importance in construction of shelter, schools as well as commercial buildings, while sand was also harvested for sale.

4.4 Land Uses in Il Ngwesi and Lekurruki Group Ranches

Prior to the introduction of CBET in the study area, the land was utilized for the purpose of traditional practices of livestock grazing, herb extraction and bee keeping. With the advent of CBET, this study sought to determine the land uses changes in the group ranches (Figure 4.2). It was observed that although pasture received a modest weight (24.9%) among important resources in the group ranches, grazing remained an important land use at 89.5%. It is important to note although access to pasture in the conservation areas was restricted, it was made available to the local communities in times of drought. Therefore, pasture in the conservation areas was a preserve for wildlife conservation but was also considered a storehouse for use by the local community and therefore a significant reserve.

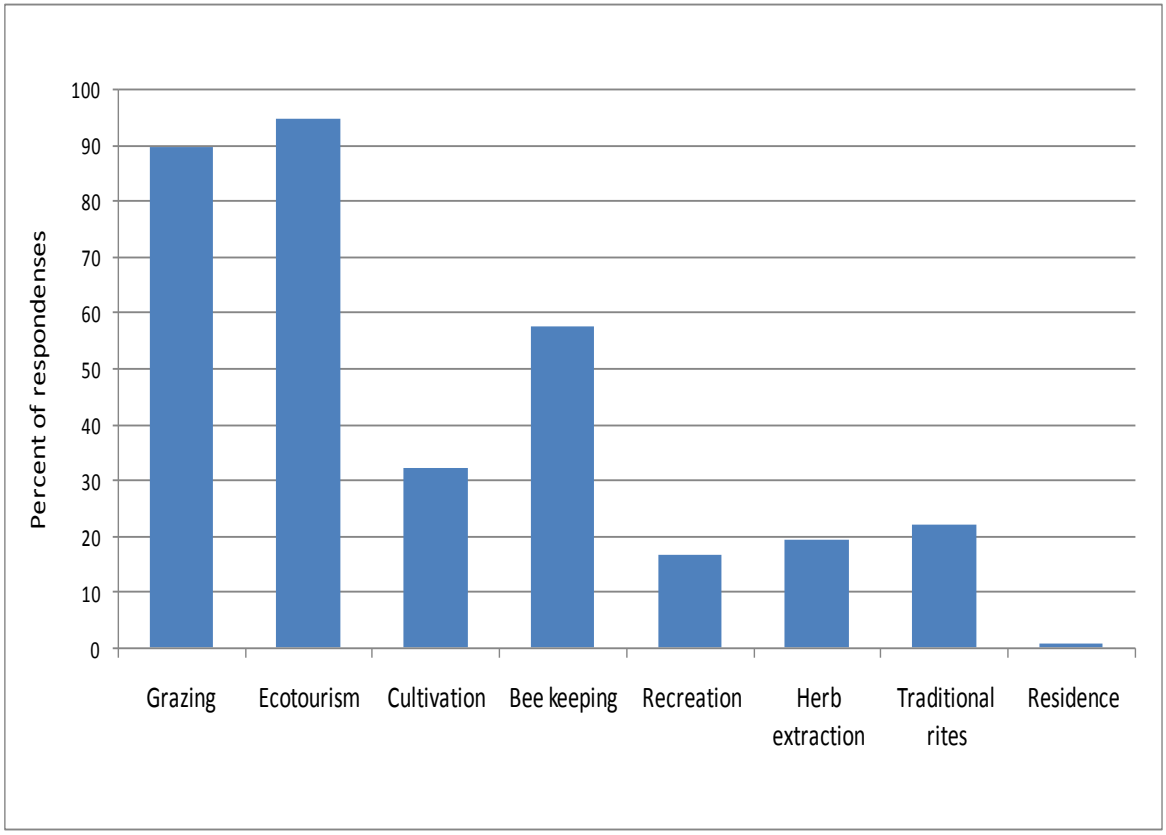


Figure 4.2: Land uses in Il Ngwesi and Lekurruki Group Ranches
(Source: Field Data, 2010)

Bee keeping (57.5%) also remained an important land use in the group ranches in the post CBET period. Bee keeping was considered as an indigenous livelihood activity among the Mukogodo Maasai people (Yiaku) as a source of food and as a component in cultural events such as paying of bride-price. However, bee keeping was practiced across the communities in the two group ranches.

Herb extraction (19.3%) was another form of land use practice found in the study area. The desolate nature of the area is a hindrance to reliable access to modern medical services making the search for alternative treatment important. Though efforts have been put to provide health facilities in the neighbourhoods where the local people reside, such as at Lokusero, and Chumvi, the challenge of having the services across the region still remains. It is perhaps for these reasons that the indigenous people have, over generations, developed techniques and skills of identifying plant species that have

both curative and preventive components against diseases and injuries. These skills and techniques made the local community consider herb extraction as a land use that the local medicine people still practiced in the group ranches.

On the other hand, ecotourism; a new land use system was identified by 94.5% of the respondents. The Introduction of ecotourism in the study area can be traced to the early 1990s, when members of Il Ngwesi II Group Ranch entered into discussions with neighbouring Lewa Conservancy about setting aside some of their land for wildlife conservation and for tourist-related business ventures that could raise income for the community. In 1995/6, with funding from USAID through the Kenya Wildlife Service, a tourist lodge (Plate 4.2; Plate 4.3; Plate 4.4) was built in the conservation area, to be managed and run by the local community; giving visitors the opportunity to experience a unique combination of wildlife viewing, and Maasai hospitality (Il Ngwesi, 2010).

Plate 4.2: One of the Guest Rooms of Il Ngwesi Banda

Source: Field Data 2010

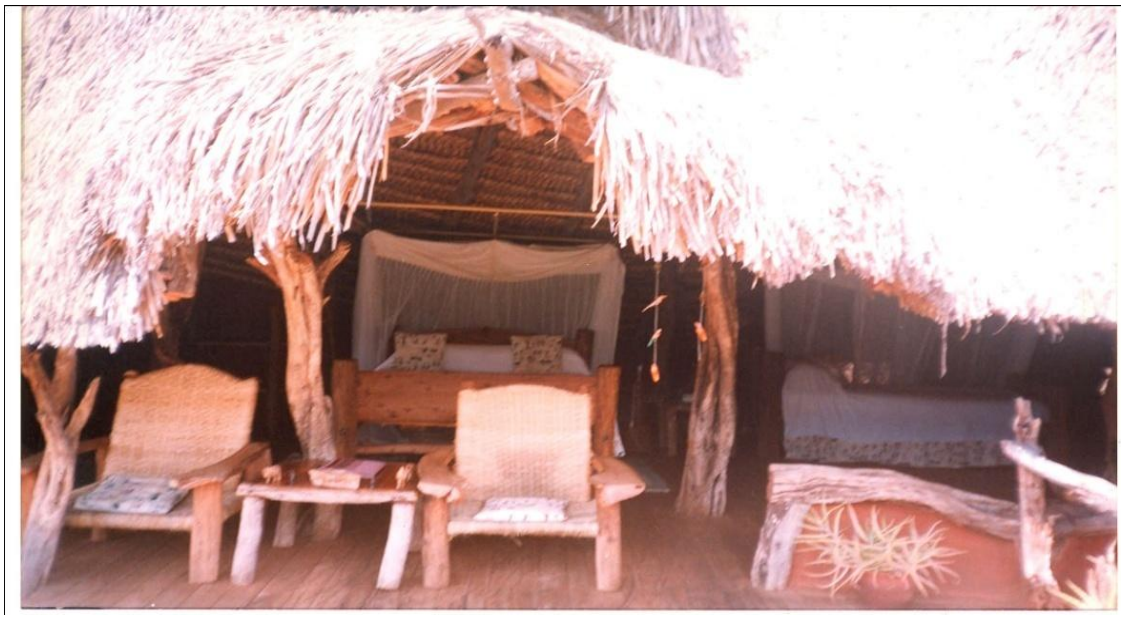


Plate 4.3: Il Ngwesi Banda Star Beds and Lodging Facilities

Source: Field Data 2010

Plate 4.4: A View of Il Ngwesi Conservation Area from one of the Room's Balcony

Source: Field Data 2010

Together with eco-lodge, other different tourism activities were introduced (Figure 4.3), among them are; cultural villages (*manyatta*) (86.4%); sale of curio and other artefacts (74.6); wildlife conservation

(93.2%); conservation of indigenous plants species (57.6%); Il Ngwesi and Tassia ecologies (94.5%) and recreation (16.9%).

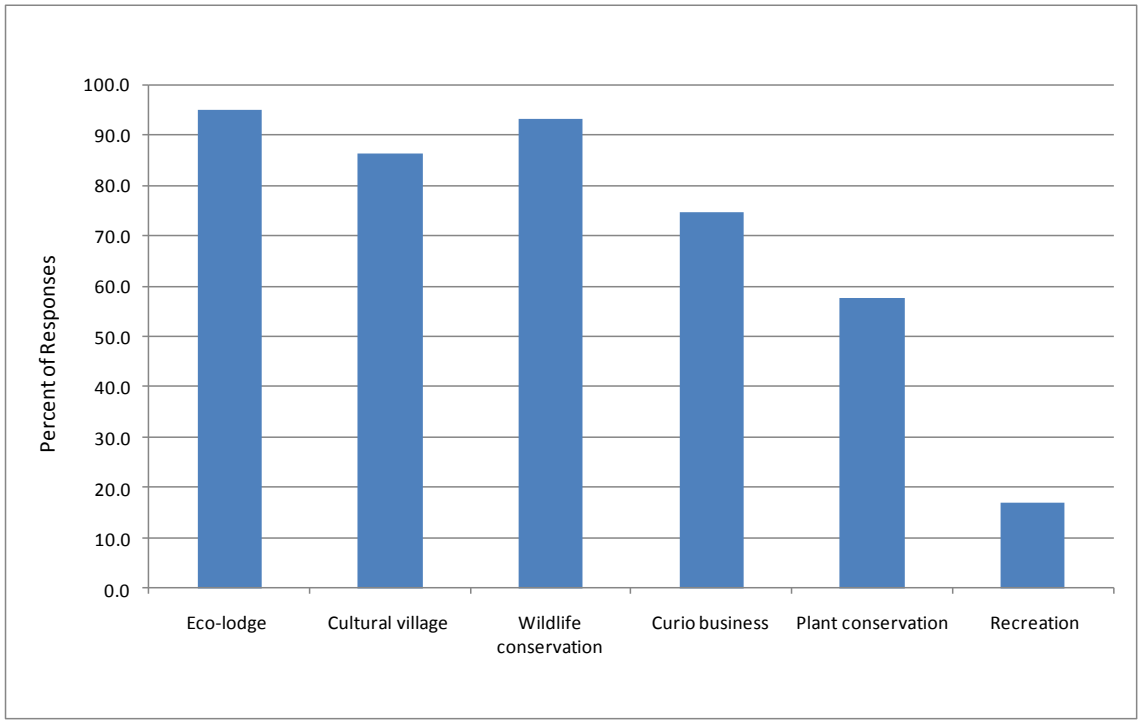


Figure 4.3 Types of CBET Activities in Il Ngwesi and Lekurruki Group Ranches

Source: Field Data 2010

4.5 Introduction of CBET in Il Ngwesi and Lekurruki Group Ranches

Tourism which is practiced in both private and communal ranches in Laikipia County is recognized as an important socio-economic activity (Republic of Kenya, 1997, 2001, 2002; Kathiw'a, 2004; Frank, Woodroffe and Ogada, 2005). The tourism initiatives in the County led in the formation of Northern Rangelands Trust (NRT) in 2005 (NRT, undated) where groups interested in both conservation of wildlife and in providing a livelihood for the community in the region interact. Through NRT, members

exchange ideas and experiences, and offer technical and implementation advices. Currently, there are ten (10) conservancies in the consortium covering a total land area of 1.5 million acres (NRT, undated).

Information from key informants indicated that prior to the introduction of CBET in the region though there was a variety of wildlife in the area and camel trek safaris operated there yet, there was little economic activity for local communities leaving the area underdeveloped. Visitors in the area spought experiences especially in sport hunting given the variety of wildlife found in the region. As sport hunting subsided, there came in 1984 a tour operator involved in camel treks and tented camping. The operator hired local young men as porters, guides and guards; an initiative that encouraged the local community.

However, the head of the Lewa conservancy sensitised the local people to understand that the camel trekkers and campers aught pay back to the community by supporting projects such as water, schools and cattle dips among others, other than just paying the young men they engaged. To demonstrate the opportunities that such initiatives would have on the community, he sponsored some community leaders to a tour of CBET activities in the Maasai Mara to witness for themselves communities that had embraced the conservation concept in their land. Among the experience that the leaders had was an encounter with community leaders there who encouraged them to start their own conservations as part of a community project. On their return, the leaders shared the idea of setting up a conservancy in the group ranch with the community but faced resistance particularly from the younger generation who doubted the sincerity of the ‘white’ man. There was suspicion that their land would be taken away. However, after several meetings, the idea was accepted and the process of identifying a conservation area started in 1994. In addition, Kenya Wildlife Service (KWS) facilitated the setting up the necessary

conservation system in the group ranch while African Wildlife Forum (AWF) gave technical advice on wildlife management.

As a result, ecotourism activities were incorporated in the group ranch in 1995 which culminated in the construction of 16 beds Il Ngwesi (Bandas) eco-lodges in 1996. This included setting aside 80% of the group ranch land for wildlife conservation and which is available for livestock grazing during drought. Out of f the conservation area, 4.6% was reserved as a core conservation area where the eco-lodge is located as well as a rhino sanctuary. Grazing in this area is prohibited even in times of a devastating drought. Though Il Ngwesi remains in the hands of the local community and the conservation area and the lodges are managed by indigenous people, the group ranch has engaged the services of travel agency known as Let Us Travel Company Limited as the marketing agents.

On the other hand, Lekurruki group ranch introduced CBET in 2000 after observing the success in Il Ngwesi and set aside 800 hectares as the core conservation area. The ranch which also encompasses part of Mukogodo forest is a critical area for the migration of wildlife between the northern National Reserves of Samburu and Buffalo Springs to Il Ngwesi group ranch and Lewa Wildlife Conservancy in the south. Through the Managing Director of Borana Ranch; a donor who sponsored the designing and construction of Tassia eco-lodge was sourced. With the assistance from Borana Ranch, the process culminated with the construction of a 24 bed Tassia (Bandas) eco-lodges in 2001. Though the construction work was given to a private company, members of the local community provided labour. The Managing Director remained an active partner in the affairs of Lekurruki CBET, such as booking guests and marketing the lodge as an eco-tourist destination. He engaged in this work for seven years when the lodge was leased to a private investor. FGDs and interviews with key informants indicated that

Tassia lodges were leased to an outsider since members felt that they lacked the capacity to effectively market the facilities. The lack of capacity was attributed to the withdrawal of Borana Ranch making lease agreement an attractive alternative.

From the above findings, the study sought to determine the key players involved in influencing of the venture (Figure 4.4). From the analysis, three principal players were identified, namely, donors (55.2%), local community (47.5%) and elders (9.9%). The variations in the results of the analysis were attributed to a number of factors. For instance, over the generations, the Maasai people have traditionally shared the rangelands with wildlife where they had evolved a way of life that is compatible with the fragile nature of these regions. In the process, they have devised ways of co-existing with the wildlife in the context of conflict and competition over the rangeland resources. Therefore, the introduction of wildlife conservation where traditional land was surrendered in return for community benefit could only have been externally influenced. It was for this reason that a large number of respondents associated the introduction of CBET with donors *('Wazungu'* - White men*)* who were already in the business of conservation and tourism. It was the same donors who were associated with organizing trips for local community representatives to other CBET projects as a way of sensitizing them to embrace the practice. The identification of donors in initiating the process of CBET in the study area is consistent with NRT (undated) and Lewa (2001) where the presence of Lewa Wildlife Conservancy and Borana Ranch is mentioned.

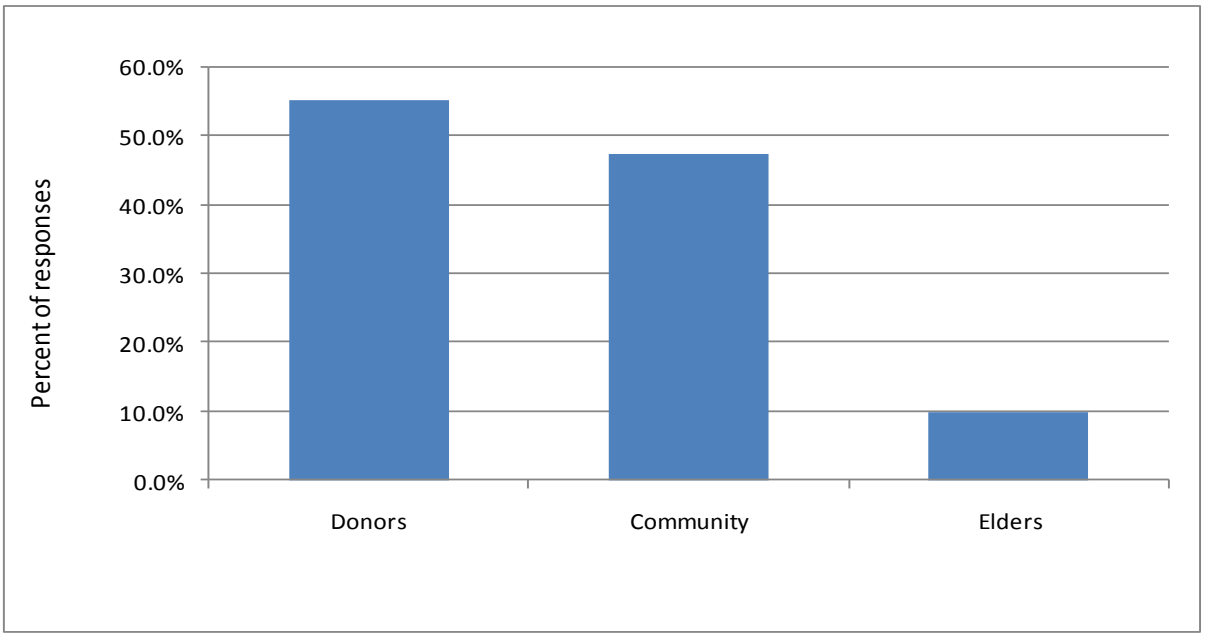


Figure-4.4: Players behind Introduction of CBET in the Study Area

(Source: Field Data)

On the other hand, the role of local community in the introduction of CBET in the study area was hinged on participation of group ranch members in forums where the idea was ratified and adopted. They felt that, it was also in such forums that the community granted consent for the introduction of CBET without which the process would not have been introduced and sustained thus far.

The importance of elders among the principal players was linked to the position in the community and on role played. The elders controlled access to and use of resources in the group ranches, and they remain a symbol of unity, leadership and authority. The elders were also the avenues through which the donors reached the community having been convinced on the importance of introducing wildlife conservation and tourism in their land. It was also the elders who participated in the organized trips to other CBET projects to witness the opportunities of the practice which they later communicated to the

larger community. Therefore, it is through their influence in the community and their contacts with the donors that CBET was introduced among other traditional land uses in the group ranches.

4.6 CBET and Resource Utilization and Management in Il Ngwesi and Lekurruki Group Ranches

As a resource utilization and management strategy in Il Ngwesi and Lekurruki group ranches, CBET was analysed under various subtitles. This study sought to establish the magnitude with which respondents linked CBET to the resources they identified in the group ranches and the nature and level of community involvement. Various resources were identified as important elements in CBET activities. Figure 4.6 presents these resources as identified by respondents.

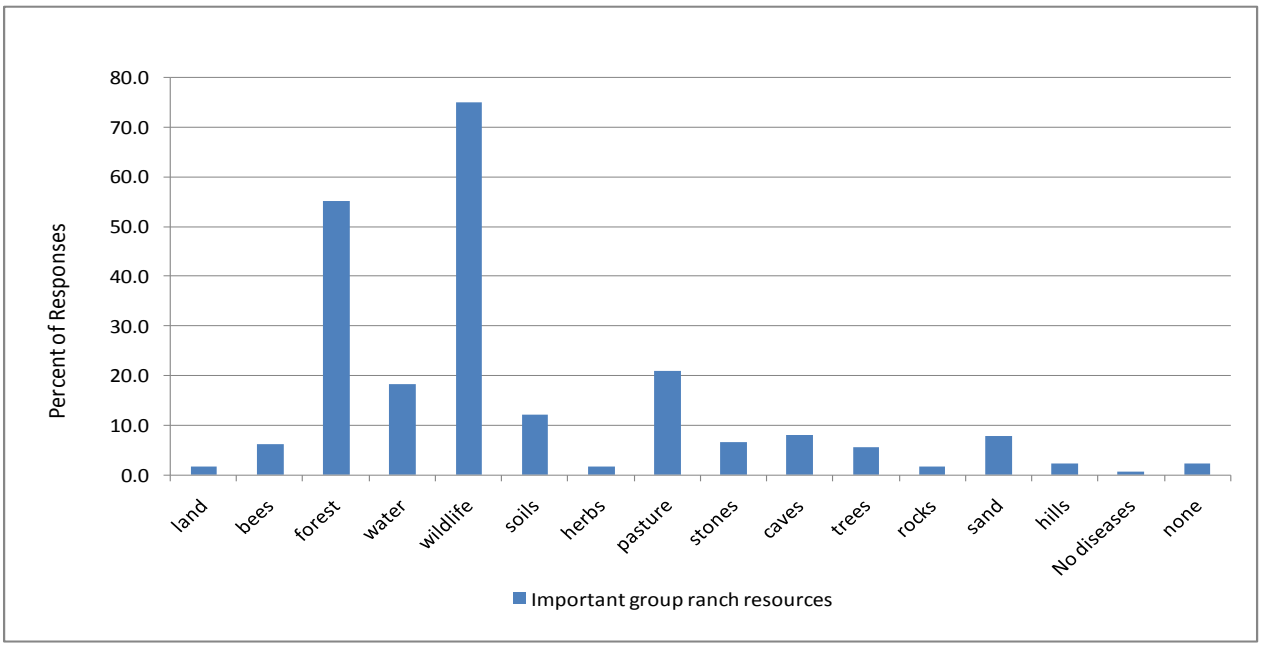


Figure 4.5: Group Ranch Resources and CBET in Il Ngwesi and Lekurruki Group Ranches
Source: Field Data, 2010

CBET activities emanate from the need to conserve the natural resources in the group ranches for the purposes of local community wellbeing. When CBET was analysed, it emerged that there were some forms of correlation with the resources in the group ranches. For instance, respondents who identified

wildlife as resource also considered ecotourism as a land use. When the two variables were crosstabulated, 75.1% of the respondents identified the two together. This finding demonstrates that the local community has a clear understanding of the importance of wildlife in CBET.

When forests were crosstabulated with ecotourism, 55.2% of the respondents were found to identify them together. In such instances, forests were described as habitats for wildlife hence, they were necessary for ecotourism activities apart from being dry season grazing areas. Other resources listed together with ecotourism after a crosstabulation were water (18.2%), pasture (21%), and soil (12.2%) among others. Arguably, CBET as a land use requires all the resources in the group ranches. Hence, it may be described as an important strategy in resource utilization and management in the rangelands.

4.7 Community Participation in CBET

Though the presence of donors seem to be dominating in the process of initiating CBET activities in the study area, the role of the local community was quite significant, since donors initiatives could only succeed if in agreement with the community interests. In investigation of community involvement in the introduction of CBET in the study area (Figure 4.6), 79.6% considered giving space as one of the major ways of participation among other ways such as the election of officials (53.6%), providing labour (42%), funding (23%), offering security (0.6) and looking for donors (1.7%).

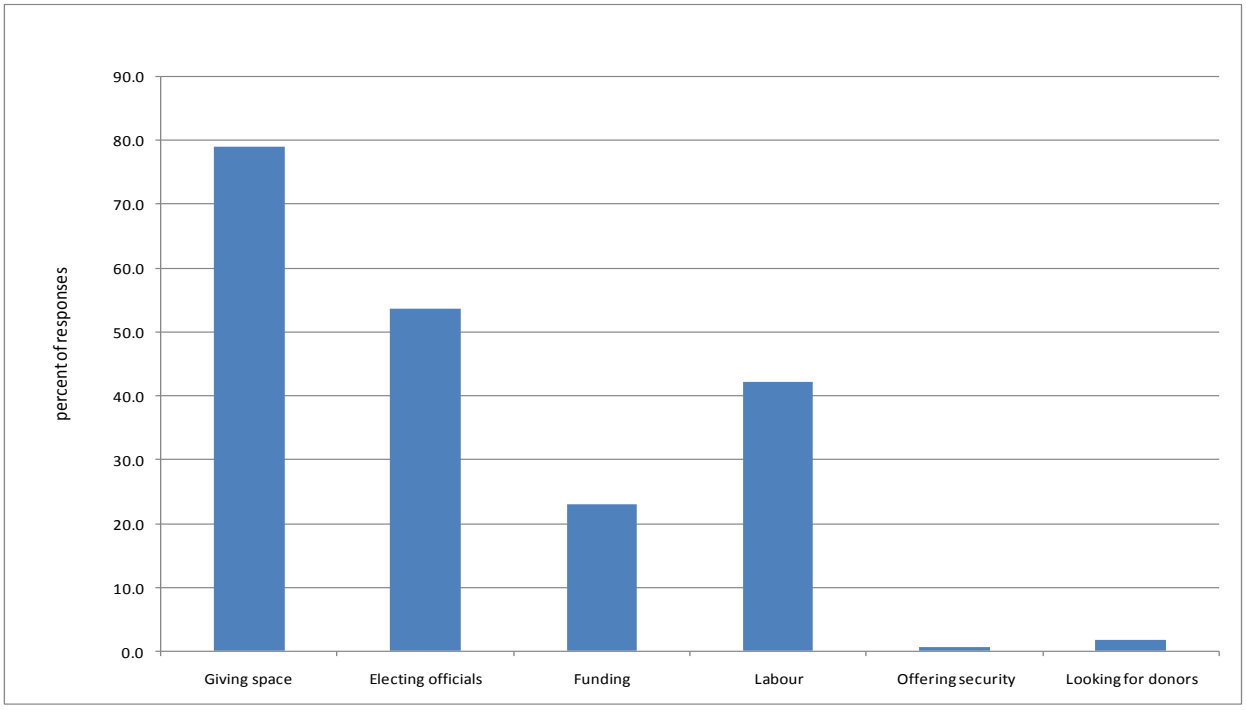


Figure 4.6: Nature of community involvement in the introduction of CBET in the Study Area

(Source: Field Data)

When CBET was introduced in the study area, there were major land use changes in the group ranches with the creation of conservation areas: where wildlife freely roams, feeds and breeds, and the eco-lodges constructed. For instance, Il Ngwesi group ranch members surrendered 8,675 hectares i.e. 80% of their land for wildlife conservation area and another 500 hectares i.e. 4.6% as the core conservation area where the eco-lodge and a rhino sanctuary are situated. Lekurruki group ranch members on the other hand surrendered 800 hectares i.e. 4.9% of their land as core conservation area.

In both instances, grazing in these conservation areas which were previously available for use is restricted and only open to members during drought. However, grazing in the core conservation areas is prohibited even in times of devastating drought. It is for this reason that surrendering of expansive

dispersal area for wildlife conservation was found to be a major way in which the community participated in the introduction of CBET (Figure 4.6).

Another form of community participation was in the election of officials (Figure 4.6). The election of officials determined the representation of members in the affairs of the group ranches and was therefore considered as an important community undertaking. On the other hand, provision of labour and contribution of funds were considered important (Figure 4.6). Specifically, members of the community provided casual and unskilled labour during the construction of eco-lodges and participated in clearing access roads across the rugged terrain to the lodges and within the wildlife dispersal areas. Funds were said to have been sourced from members to meet expenditure, particularly to pay for labour where members were required to make a contribution of Kshs 3000.00 or equivalent.

A further analysis was conducted to compare the magnitude of the different ways of community participation across the two group ranches (Figure 4.7). Over 75% of the respondents from both Il Ngwesi (79.9%) and Lekurruki (75.5%) group ranches indicated that surrendering space for conservation and CBET activities was the most prevalent way the community was involved. Other forms of participation: namely election of officials, funding and provision of labour were reported (Figure 4.7). Community involvement in the introduction of ecotourism therefore connects properly with the principles of CBET that underpin the importance of local community ownership of and participation in the process (Stronza, 2000; WWF, 2001; Fennell, 2003; Diamantis, 2004; Kibicho, 2004).

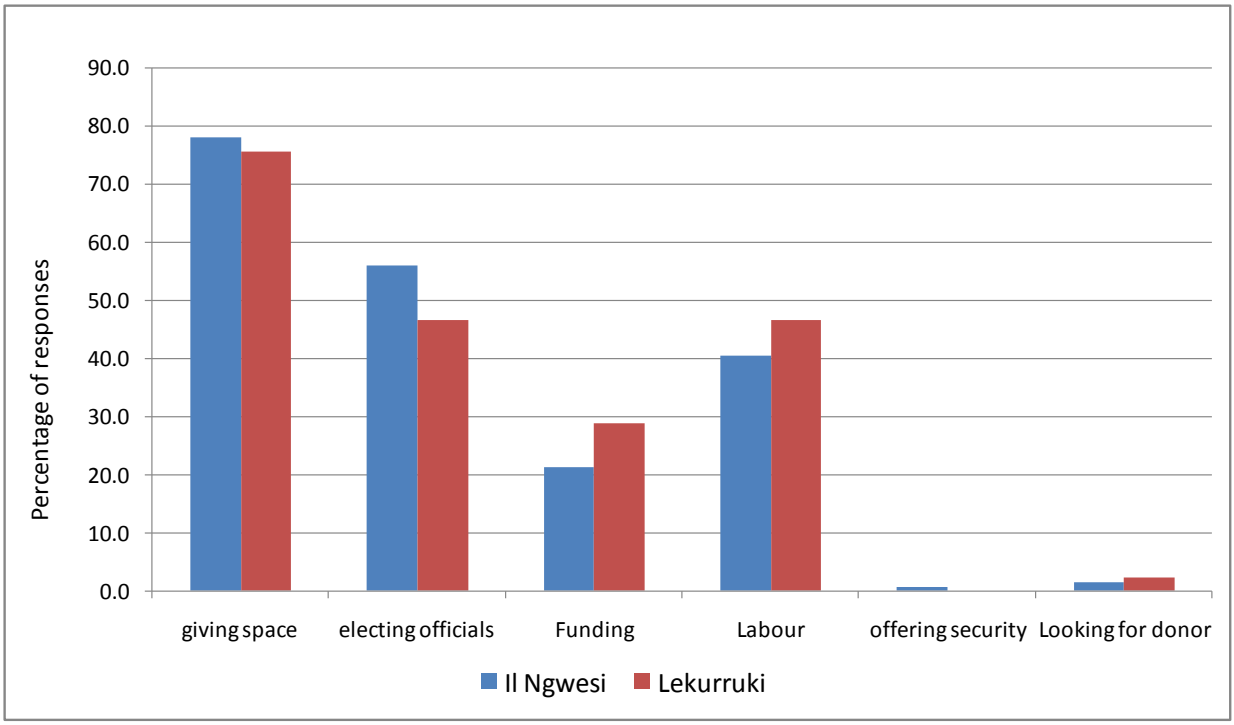


Figure 4.7: Nature of community involvement in CBET Il Ngwesi and Lekurruki Group Ranches

(Source: Field Data)

4.8 Households' participation in CBET activities in Il Ngwesi and Lekurruki Group Ranches

Households were considered the primary stakeholders whose wellbeing was fundamental in determining the effects of CBET activities on livelihoods and on sustainable resource management and utilization. The importance of the household as the unit of analysis was based on the premise that group ranch membership was associated with native occupation of the region that could be traced to the family unit. It was by belonging to a family and therefore to a household by birth, marriage or by other forms of associations that an individual was recognised as a member of the group ranch.

CBET as a land use and as a livelihood intervention initiative was analysed to determine how it affected the households in the study area. To determine the nature and level of households' participation, the

study sought to establish whether they were involved at the time CBET was introduced in the group ranches or not. In response, 74.6% were in the affirmation, while 25.4% were not. From the analysis, it was noted that slightly over a quarter of the households were not involved. The lack of involvement was analysed to determine the reasons (Figure 4.8).

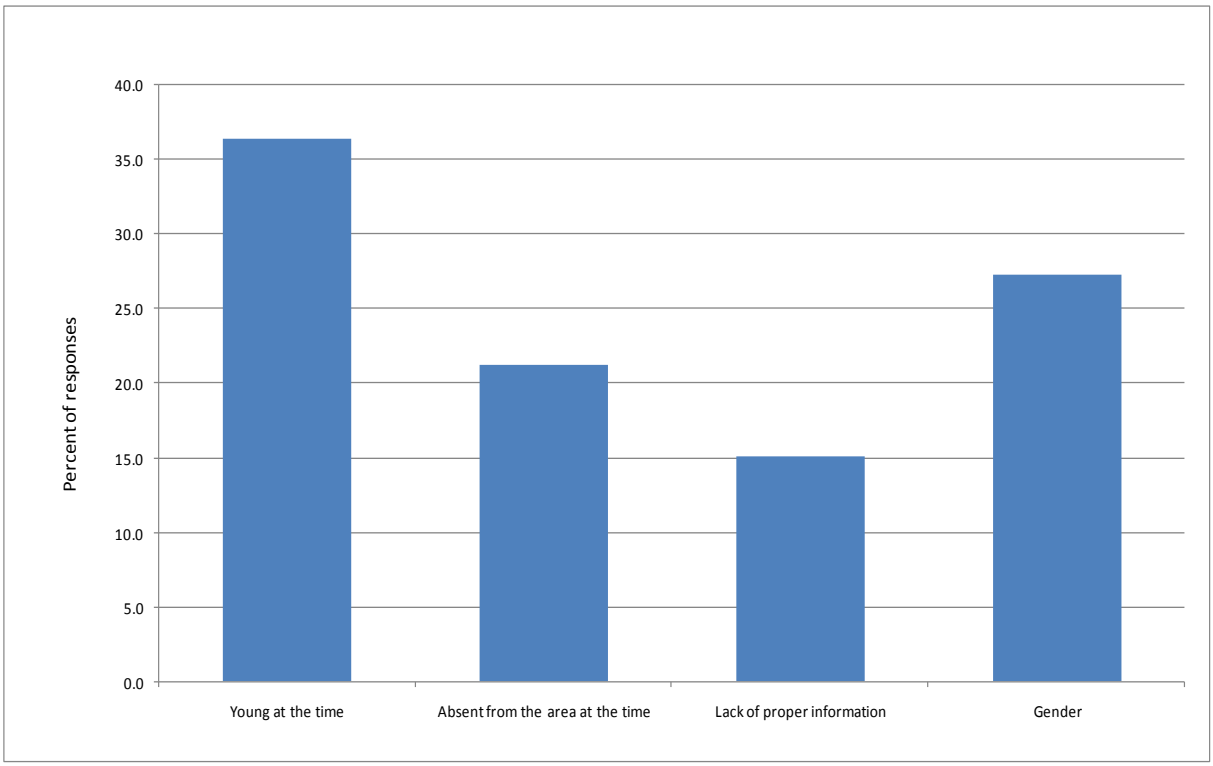


Figure 4.8: Reasons for Non Involvement in CBET

(Source: Field Data, 2010)

The reasons why the households were not involved in CBET process were either the respondents were too young (36.4%), or were away from the area (21.2%), or there was lack of proper information on the development (15.1%) or were discriminated on gender basis (27.3%). Traditionally, participation of women in decision making was not considered important among the Maasai people (Maasai Association, Undated. Age as a factor for exclusion confirms the importance with which elderly people

are held in the community. The elderly people play an important role in making decisions on matters affecting the community while the youthful people are expected to bind by such decisions accordingly. Those who attributed the lack of participation to absence from the area indicated that they were either living or working elsewhere at the time when CBET was introduced. While those whose reason was lack of proper information suggested that the idea was not clearly communicated to them. On gender, it was reported that at the time, women were not allowed to participate in the forums where group ranch and/or community decisions were made.

For those who were involved in the process of initiating CBET, an analysis was conducted on the stage at which they were involved (Figure 4.9). The findings were classified into four broad categories of: conception (79%), planning and design (39.8%), implementation (21%) and management (28.2%).

The conception stage included the various activities and forums where members met and received the idea of introducing CBET in the group ranches. It was the stage where the discussions were conducted, decisions made, ratified and adopted. Planning/design stage covered the process of identifying how the group ranches would be organized to accommodate CBET among the other land uses. The implementation stage addressed activities that put in place decisions reached at conception stage and actualized plans and designs that were agreed upon. Finally, management stage covered the process of overseeing the operation of CBET as a business venture and as a land use activity that would bring benefits to members.

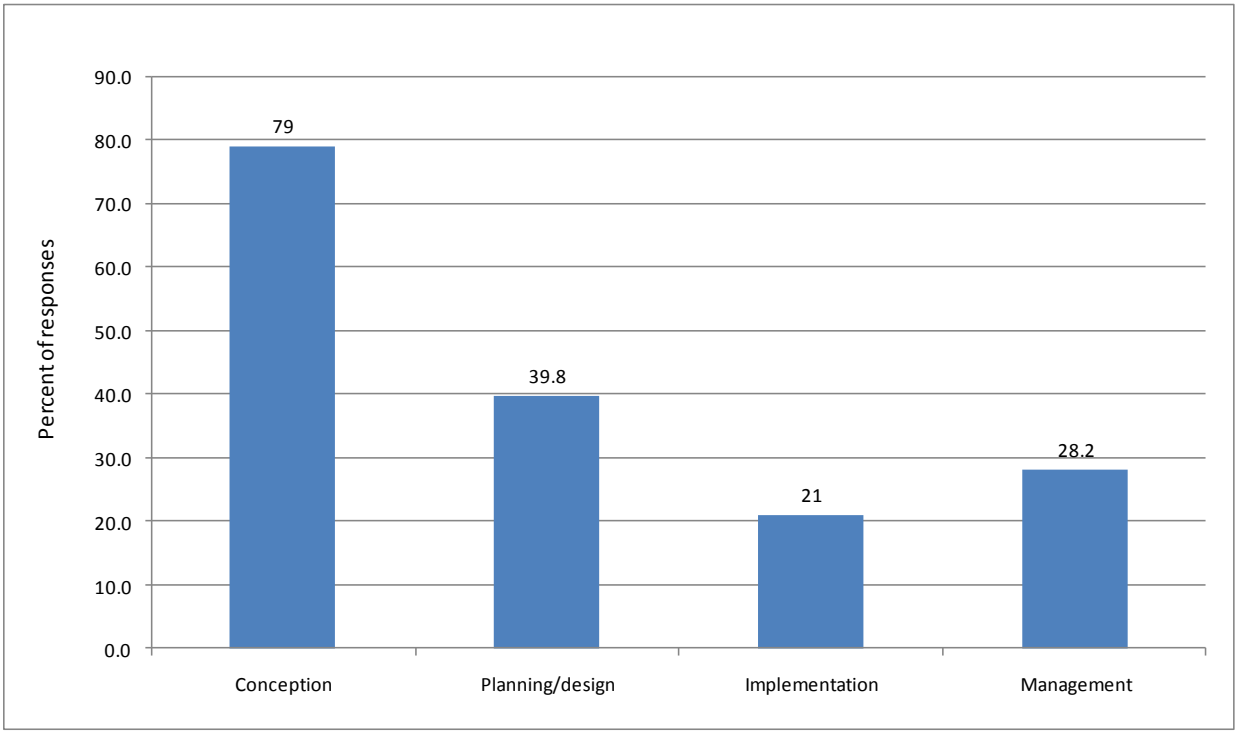


Figure 4.9 Stages of households' involvement in CBET in Il Ngwesi and Lekurruki group ranches
Source: Field data 2010

The study sought to determine the specific roles that households were engaged in (Table 4.1). From the analysis, 48.6% participated by attending meetings, particularly AGM. On the other hand, only 9.4% contributed money and/or livestock items as a form of participation to meet financial obligations particularly towards paying for labour. Further, 24.9% considered accepting the incorporation of CBET in the group ranches as an important households' role that was also fundamental in mandating the activity. In addition, 12.2% considered surrendering of grazing area for conservation by households among the important roles they played. Further, 28.7% pointed out that a member of the household was an official in one or more of the group ranch management units. Another 18.8% pointed out that, some members of the households provided labour during the construction and the eventual operation of CBET: labour was particularly provided in the building of access roads within the conservation areas. Other roles that households were involved in included: participation in constitution and proposal writing

(12.7%) and mobilizing of the community in accepting CBET among the other land uses in the study area.

Table 4.1 Nature of households' participation in CBET in Il Ngwesi and Lekurruki group ranches

Household Role in Introduction of Ecotourism	F	%
Attended meeting	88	48.6
Contributed money/livestock	17	9.4
Gave mandate for the plan to take place	45	24.9
Family member was an official	52	28.7
Provided unskilled labour	34	18.8
Mobilized community	16	8.8
Participated in constitution and proposal writing	23	12.7
Elected officials	4	2.2
Gave up grazing area for conservation	22	12.2
Volunteer service	1	0.6
Nothing	43	23.7

Source: Field data 2010

A further analysis of households' involvement in CBET considered the nature and the stages of households' participation (Table 4.2). The purpose of this exercise was to establish how the specific households' activities identified were linked to the different categories of stages households were involved. For instance, when conception stage was crosstabulated with the different activities that households were engaged in, 26% indicated attendance of meetings where decisions were made. Intuitively, it was during such meetings that the idea of introducing conservation in the group ranches was communicated and adopted. Among the cell generated from the crosstabulation, the interaction between conception and attending meetings recorded the highest score. This implies that households participated in forums where resolutions to integrate CBET were adopted

.

Table 4.2 Nature and stage of households' participation in CBET

	Stages of Households' Participation in CBET			
Nature of Households' Participation CBET	Conception	Planning/design	Implementation	Management
Attended meeting	26.0	13.3	3.3	6.1
Contributed money/livestock	7.1	1.1	0.6	0.6
Gave mandate for the plan to take place	9.4	7.7	2,8	5
Family member was an official	7.7	6.1	6.1	8.8
Provided unskilled labour	7.7	4.4	2.8	3.9
Mobilized community	2.8	2.2	2.2	1.7
Participated in constitution and proposal writing	5.5	3.9	2.2	1.1
Elected officials	1.1	0.0	0.6	0.6
Gave up grazing area for conservation	9.9	1.1	0.6	0.6
Volunteer service	0.6	0.0	0.0	0.0

(Source: Field Data, 2010)

Further, 13.3% linked attending of meetings to the planning and designing stage. Though planning and designing would appear complicated and therefore requiring inputs from experts, the indigenous people in the study area have inherent knowledge of the region that was valuable in suggesting appropriate land demarcations and selection of sites for different land uses. For instance, they were particularly equipped with information related to sites such as saltlicks making such shared information invaluable in locating infrastructure. With such knowledge, households played an important role of consulting at the level of planning and designing land uses in the group ranches. At implementation and management stages, there were reports where respondents indicated that family members were officials in committees at 6.1% and 8.8% respectively. This observation was in comparison with the next most reported households' role of attending meeting at 3.3% and 6.1% associated with the implementation and management respectively.

4.9 Summary

The introduction of CBET in Il Ngwesi and Lekurruki Group Ranches is founded on the diversity of natural resource base and social fabrics that bind the communities. The communal ownership of the group ranches and the inherent authority based on traditional governance played an important role in the introduction of CBET. The role of the elders is underscored as the link between the group ranch members and other players in the sectors. Equally important is the knowledge of the local community on the diverse resource base and associated land uses particularly CBET.

Most important to this discussion however, is the analysis of the involvement of local communities in CBET. Their participation is evident at the inception where their presence is underscored among the players behind the introduction of CBET. By discussing the nature and stages of involvement in CBET, this study is able to illustrate the importance of households as the principal stakeholders whose benefits and/or losses are discussed in the following chapters.

It is noteworthy that the introduction of CBET in the study area was hinged on perceived benefits that the local community held at its inception. Indeed, the acceptance of CBET among other land uses has been illustrated by the high percentage with which wildlife was identified among the leading resources in the group ranches (Figure 4.1), and ecotourism listed as the leading land use in the group ranches (Figure 4.2). The introduction and growth of CBET in the study area was consistent with the principles of community ownership and participation. The underscored principles of CBET were illustrated in the different stages and roles that households participated in (Table 4.1). Most importantly, the local community was found to participate in the introduction of CBET by attending meetings where

resolutions were passed and adopted. They participated in electing officials who run the affairs of the group ranches while some households' members occupied positions of leadership among other roles.

CHAPTER FIVE: SOCIO-ECONOMIC BENEFITS OF CBET IN IL NGWESI AND LEKURRUKI GROUP RANCHES

5.1 Introduction

This chapter examines group ranch members' entitlements from CBET and the effects of socio-economic benefits on households' livelihoods. The discussion is founded on the premise that the livelihood of a person or a group or a class is a function of endowment and entitlement sets that are linked through entitlement mapping (Osmani, 1993). The endowment set comprises all resources legally owned in the context of established social norms and practices while the entitlement set includes all possible combination of goods and services that can legally be obtained by using the resources of the endowment set. The chapter identifies the range of goods and services that members lay claim on as a result of converting their material and cultural endowments into CBET as an exchange entitlement and as stimulus for endorsing the land use system. In addition, the chapter presents findings on socio-economic benefits and their effects on households'.

5.2 Households' entitlement in CBET on Il Ngwesi and Lekurruki group ranches

Entitlement is perceived as a function of common property regimes where group ranch members invest their asset base of material, human, cultural and financial resources in CBET. Sustainability of CBET under the common property is therefore an output of in-built systems that bind the players in a partnership that is focused on common benefits. It is the ensuing benefits that define members' rights over the venture and therefore underscore their command over the commodity bundles. Subsequently, the findings on group ranch members' entitlements on CBET are based on the analysis of the commodity bundles (Devereux, 2001) that members command.

Among the commands bestowed upon the members (Appendix 5) was the right to attend and participate in group ranch forums, particularly the Annual General Meetings (AGMs). The AGM as the supreme organ in the management of the group ranches was considered critical since it offered members the opportunity to participate in shaping the direction of the joint venture and in making decisions touching on the group ranch matters. At the forum, group ranch management proposals are presented for discussion, ratification and adoption, and resolutions made. In addition, the AGM is a forum where members' register is updated, new members admitted and the deceased identified and their names deleted. In the process of updating the register, males born to a community member are entitled to full membership on attaining the age of eighteen years. Similarly, women are also entitled to full membership when widowed or when they are considered to be past the age of marriage. In addition, males born of such (unmarried) women are entitled to full membership on attaining 18 years of age.

Attendance and participation at the AGMs bestows upon members the right to information. At the AGMs held in the month of November at Sang'a for Il Ngwesi and Nanduguro for Lekurruki information pertinent to the activities taking place in the group ranches is communicated. For instance, members are informed about matters touching on finances, such as distribution of benefits, and allocations of community projects to be supported, partnerships, regulatory requirements, and litigation and/or mitigation incidences. In the management of the group ranches, the AGM is at the top of the hierarchy and below are committees (Group Ranch Management Committee, Board of Trustees and Board of Directors) whose membership is open to all through an election process. It was found that members were entitled to participate in the election of officials to these committees charged with responsibility of managing the affairs of the group ranches. In addition, members were free to contest in the various positions whenever an election was called.

Other commodity bundles that group ranch members command include the right to employment in the ranch. Since the introduction of CBET in the group ranches, new opportunities hitherto unavailable to members were established. The initiative brought with it demand for workers in various sectors, such as guards to protect the eco-lodges and the conservation areas against attacks and poaching, housekeepers, as well as entertainment troupes at the eco-lodges and cultural villages. In Il Ngwesi Group Ranch, employment opportunities were also available at the Nanyuki Town liaison office that links the group ranch with partners and friends. Employment opportunities were also available for drivers and tour guides who are responsible for ranch vehicles and in assisting guests touring the conservation areas. Access to the accruing employment opportunities was therefore considered as an entitlement for the members. Consequently, Il Ngwesi offers directly employed 30 people of whom 27 are locals and Lekurruki employs 25 people.

Among other entitlements was access to education for members' children through the construction of schools within or near their villages of residence as well as bursary support from CBET proceeds. Further, access to range resources particularly pasture during times of drought was underscored as an entitlement for the members. It was expected that, proceeds from CBET would also be used to initiate and support activities such as water projects, access roads, security, and health facilities and for acquiring properties particularly land, to which members would be entitled to access.

5.3 Households' Socio-Economic benefits from CBET in Il Ngwesi and Lekurruki Group Ranches

To establish the contribution of CBET as a livelihood strategy, analysis was conducted on socio-economic benefits received from the venture (Table 5.1).

Table 5.1: Households socio-economic benefits from CBET

Households' received benefits	F	%
Income	39	21.4
Employment	80	44.0
Security	86	47.3
Reduced human-wildlife conflict	28	15.4
Water projects	20	11.0
Bursary	17	6.3
School construction	57	31.3
Transport from ranch vehicles	64	35.2
Road upgrading	47	25.8
Buying land from ranch proceeds	24	13.2
Business opportunity	29	15.9
Health centre	15	8.2
Pasture	1	0.5
Civic education	1	0.5
Market for livestock and farm produce	11	6.0
Veterinary services	1	0.5

Source: Field data (2010)

44.0% of the respondents identified employment among the benefits that were received. It was observed that the introduction and subsequent development of CBET in the study area created employment opportunities for the local community in various areas. In Il Ngwesi Group Ranch, there were thirty individuals who are employed to attend to the day-to-day running of the ranch. Some of these individuals are employed in the lodges as housekeepers, cooks, managers, and as members of the entertainment troupes in the lodges and in the cultural villages. Others work as tour guides, scouts and reservist who were armed to protect the conservation areas and the lodges.

Another 21.4% of the respondents identified income as the benefit that members received. For instance, elderly people who were over 65 years in Lekurruki group ranch were entitled to an annual stipend

whose amount was determined at the AGM. Business opportunities in curios shops and in sale of artefacts in the lodges were reported by 15.9% of the respondents while another 6.0% identified market for products particularly livestock and groceries to the lodges as economic benefits (Table 5.1).

On community welfare, improved security was identified by 47.3% of the respondents who attributed it to the recruitment and deployment of armed scouts and guards who patrolled the conservation areas and who helped to ward off intruders, wildlife poachers and cattle rustlers. In addition, the presence of the scouts and guards together with the isolation of conservation areas from daily local community operations helped to reduce human-wildlife conflict which was reported as a benefit by 15.4% of the respondents. Other welfare benefits included transport with group ranch vehicles (35.2%), and acquisition of land in other locations (13.2%) to settle members who surrendered space to conservation. For instance, from CBET proceeds, Il Ngwesi Group Ranch has acquired land measuring 20.23 hectares at Chumvi, and 38.04 hectares at Ethi and a commercial plot measuring 0.202 in Timau Township. Other infrastructural developments that benefited ranch members were water projects (11.0%), road upgrading (25.8%) and construction of health centres (8.3%). Finally on education, it was reported that members gained from the construction of schools (31.3%), and bursaries (6.4%) which were supported with proceeds from CBET.

In furtherance of the analysis of socio-economic benefits received from CBET, the study sought to determine the specific experiences respondent associated with the benefit (Table 5.2). The analysis revealed that, in the social context, there was a variety of effect that showed that the local community regarded CBET as a land use that influenced their day-to-day life. Specifically, 39.8% of the

respondents identified reduction of stock theft as a benefit resulting from enhanced security since the inception of CBET.

Table 5.2: Effects of CBET on households' livelihoods in Il Ngwesi and Lekurruki Group Ranches

Response	*f*	**%**
Income from sales of artefacts	10	5.5
Employment for household members	65	30.9
Security, no stock theft	72	39.8
Piped water within the vicinity	15	8.3
Transport from ranch vehicles	50	27.6
Road upgrading	28	15.5
Business opportunity from sales of artefacts	20	11.0
Construction of schools and nurseries	40	22.1
Bursaries	27	14.9
Land bought in Chumvi and Ethi	20	11.0
Civic education and training on environmental conservation	6	3.3
Reduced crop destruction by wildlife	3	1.7
Access to pasture during drought	1	0.6
Construction of Lekusero health centre	5	2.8
Veterinary services/cattle dip	1	1.1
Market for livestock	5	2.8

Source: Field data (2010)

It was observed that, since the introduction of CBET in the study area and the deployment of armed scouts; security had improved. There were eight and ten Kenya Police Reservists (KPR) in Il Ngwesi and Lekurruki group ranches respectively, who conduct patrol duties and security follow-ups. Their activities are supported by KWS personnel who work closely with all players involved in wildlife conservation including Lewa conservancy and Borana Ranch. Lewa Conservancy and Borana Ranch work closely with Il Ngwesi and Lekurruki Group Ranches as neighbours who share cross boundary resources manifested by the migratory behaviour of wildlife and the movement of visitors in the circuit. The entities are also members of (NRT) which brings together individuals and corporate players in conservation in the region. Security was also enhanced through communication across the region by use

of high frequency radio system in every village and vehicles found in both the private and the group ranches which were used to transport the security teams.

Another 12.2% of the respondents indicated that there was reduced human-wildlife conflict since the introduction of CBET. This observation was attributed to the isolation of wildlife conservation area from most human settlements where villages were located; and the restriction of human activities in the conservation areas. In addition, the deployment of the armed scouts and the support from the KWS personnel and the private ranchers helps to drive back wildlife that strayed outside the conservancies and to the villages where people resided.

Another household effect tied to community welfare theme was the use of ranch vehicles to ferry members (27.6%). The vehicles were available to transport the sick people to hospital at a fee and also assisted travellers along the way. Another 11.0% reported that proceeds from CBET were used to buy land elsewhere. For instance, Il Ngwesi group ranch had acquired parcels of land measuring 20.23 hectares at Chumvi, 38.04 hectares at Ethi and a commercial plot at Timau Township along the Nanyuki-Meru-Isiolo road. The land at Chumvi is set aside for settlement of member and for grazing. At Ethi, 8.09 hectares (20 acres) of the land are leased out to members for cultivation at the rate of Kenya shilling one thousand (Kshs. 1000/=) per year realizing a revenue of Kenya shillings. The remaining portion is parcel used for settlement and grazing. Meanwhile, the parcel at Timau is yet to be developed.

On infrastructure development, there was improvement in movement within the area due to upgrading of road network (15.5%), (Table 5.2). Since the conservation areas in the group ranches are located in the dispersal area neighbouring Samburu and Isiolo Counties, access for both visitors and workers required

an upgraded road network. Though the road conditions in the region require further improvement, the introduction of CBET led to a positive externality where the local community enjoys benefits associated with improved road network. Some of the notable roads developed to serve CBET activities included the roads linking Nanduguro and Tassia lodge; Sang'a and Il Ngwesi and Leparua and Il Ngwesi lodge. The roads through Sang'a and Nanduguro meet at Loiragai camp to Ethi through Borana Ranch and eventually Timau. The Leparua road, on the other hand, is connected to Meru-Isiolo road through Lewa conservancy and the Wamba-Isiolo road on the eastern part of the ranch. Some notable road upgrading initiative to and within Il Ngwesi Group Ranch measure to a total of forty kilometres: namely the nineteen kilometres road from Loragai to the Il Ngwesi lodges, a nine kilometres road from the lodges to the border with Lekurruki Group Ranch, another seven kilometres road from the lodge to the cultural village and a six kilometres road to Ngare Ndare River.

Other effects associated with benefits received and in relation to infrastructure development were the provision of piped water within their vicinity (8.3%). Such developments were observed at Sang'a where a water tank has been constructed to serve as a reservoir from where the neighbouring homesteads fetch water. There was also piped water in Lekusero village drawn from a borehole developed with some proceeds from CBET in Il Ngwesi. Some examples of water projects initiated and developed by group ranch members include the laying of pipes along an eight kilometres stretch from Sang'a springs next to Borana Ranch to the reservoir in Sang'a village and to Sang'a primary school. Another development was the eleven kilometres water pipeline project from Ngare Ndare River to Il Ngwesi lodges developed in partnership with NRT, Ministry of water through its Water Resource Management Authority (WRMA) programmed. During this project, WRMA conducted the survey work, NRT contributed funds to meet the labour cost while the local community supplied the pipes. An additional

project is the five (5) kilometres water network from the Mukogodo escarpment to Il Ngwesi lodges that was fully financed by the local community. The project serves as an alternative supply system to the Ngare Ndare River project especially during the rainy seasons when the river becomes mucky with sediments.

Another experience was the construction of a health centre (2.8%). This was done in Lokusero village where CBET proceeds from Il Ngwesi Group Ranch were used to. Though the health centre was initiated by the local community, the government has supported the process and posted a nurse and a public health officer to run it.

Effect on education was reported through construction of schools (22.1%), bursaries (14.9%) and civic education (3.3%). Through education projects, schools were constructed in different villages, making schooling available to the members. Among the schools reported to have benefited at Il Ngwesi included Sang'a primary school where four class rooms were constructed; Lokusero and Chumvi primary schools where a classroom was constructed in each. In Lekurruki group ranch, Nanduguro nursery school was initiated from CBET proceeds and has benefited from a donation of a water tank from Laikipia County government and an additional classroom from Laikipia East Constituency Development Fund. Other schools that have been supported by proceeds from Lekurruki CBET include Sieku and Ntrimni primary schools where two class rooms were constructed in each.

The construction of Nanduguro and Sang'a nursery and primary schools in particular was a relief for pupils who would otherwise walk through Mukogodo forest to Lekusero primary school situated more than ten kilometres away. Apart from the long distance, Mukogodo forest is a habitat for wildlife

particularly elephants and therefore dangerous to school pupils and the community at large. For instance, during a FGD with elders at Nanduguro, it was reported that on many occasions, pupils missed school whenever elephants blocked the only route through the forest that connects the two villages.

It was also pointed out that proceeds from CBET were used to hire additional primary and nursery school teachers to recoup apparent shortages. Information from the Laikipia North District Education office indicates there was understaffing in schools; a situation that warranted intervention by parents. Table 5.3 shows the pupils' population, facilities available and teaching staff and their deficit that is catered for by parents with proceeds from CBET among other sources.

From the matrix, there is understaffing in all the selected schools given that each class is expected to be allocated a teacher. To mitigate the shortages, parents recruited teachers using proceeds from CBET among other sources. For instance, there were three teachers in Sieku and Nanduguro nursery schools and two in Sieku Primary School employed by Lekurruki Group Ranch from CBET proceeds. In Il Ngwesi, there were two teachers in Sang'a and one in Lokusero whose wages were paid with proceeds from the group ranch

Table 5.3: Pupils and staffing in selected schools in Il Ngwesi and Lekurruki Group Ranches

School	Pupils (2010)		Pupils (2011)		No. Classrooms	Government Teachers		Deficit
	Male	Female	Male	Female		Male	Female	
Chumvi	394	335	420	388	21	10	4	7
Lokusero	116	107	96	103	8	5	1	2
Sang'a	28	24	34	31	4	3	0	1
Sieku	48	46	64	66	4	0	1	3

(Source: Field Data, 2011)

Another effect associated with education was award of bursaries (Table 5.2). Bursary support was an entitlement for all secondary and university/college students. In Il Ngwesi group ranch, all secondary school students were granted a bursary of six thousand shillings (Kshs. 6,000/=) per student, per year; while a university/college student received sixty thousand shillings (Kshs. 60,000/=) per year. At the time of this study, there were ninety four students in secondary school and four in the university under the programme. In Lekurruki group ranch, there were six students in secondary schools and one in the university under the bursary programme, with an allocation of four thousand shillings (Kshs. 4000.00) and eighty thousand shillings (Kshs. 80,000.00) per year respectively.

The community development programmes initiated through CBET have attracted the support of volunteers and friends. For instance, on education, support comes through linkages with friends and neighbouring establishments. For example, Lewa conservancy supported education in both Il Ngwesi and Lekurruki group ranches through Lewa Education Programme (LEP). The programme supports top three Kenya Certificate of Primary Education (KCPE) candidates with full scholarship for secondary school education. Under a similar programme, the Laikipia Wildlife Forum (LWF) through linkages with Chumvi and Lekusero primary schools awards the top two KCPE candidates full secondary school education scholarship and a third one if it is a girl. Borana Ranch through its Borana Education Support Programme (BESP) has supported education in the Lokusero, Ethi and Chumvi primary schools in addition to thirty children on full scholarships in secondary and tertiary levels of schooling. In Lokusero primary school for instance, Borana Ranch has supported the construction of three classrooms, a library, staff houses, fencing of school grounds and cooking of school meals through eco stoves. In Ethi School the ranch supported the construction of a new kitchen, three classrooms, administrative office, toilets, school equipment, paying two teachers' salaries, supplying books, fencing of the school grounds and

cooking facilities by supplying of eco stoves. Similarly at Chumvi Borana Ranched helped in fencing of school grounds and supports school feed programme (BESP, 2009). The Golden Mary Farm at Timau through its links with Chumvi primary school has sponsored the top two KCPE candidates for secondary school education every year.

Linkages with the friends and neighbours such as Golden Mary Farm helped to facilitate survey work for a water project from Mt. Kenya to Chumvi village and supported the laying of pipes and installation of water tanks. Other benefits through such linkages were in health matters. According to a liaison officer at the Nanyuki office, Il Ngwesi group ranch received Kshs. 23 million in three tranches (2004, 2005 and 2006) in support of HIV-AIDS projects under a programme dubbed Il Ngwesi APHIA II. The project has been coordinated through an exchange programme with a Canadian youth group for the last fifteen (15) years. Through the programme, contacts and services have been extended to other neighbouring group ranches. Among the priority projects covered under the exchange programme is in Voluntary Counselling and Testing (VCT) services, awareness and education. Through linkages with government departments and Caritas Kenya (a catholic church based charitable forum), the programme has mobilized funds to enhance leadership and capacity building. As a result, forty peer educators have been trained across the region. This has the effect of reducing HIV/AIDS in the study area.

5.4 Summary

An examination of the socio-economic benefits of CBET depicted livelihood opportunities group ranch members associated with land use diversification through wildlife conservation and tourist related ventures. The act of embracing CBET in the group ranches marked a radical departure from traditional livelihoods of pastoralism which is the principle way of life of the local communities in the study area.

To perform a holistic analysis of socio-economic benefits of CBET, an investigation was conducted on entitlements that members commanded. It was found that group ranch members played a vital role in the entire CBET process. They participated in AGM which was the supreme organ in the management of group ranches where they were involved in decision making on all matters affecting the group ranches; in election of official who were tasked with the day-to-day running of group ranch activities as members of GRMC, BOT and BOG. In addition, members were entitled to information at the AGM pertaining to finances, community projects, and litigation and mitigation matters. On the other hand, since CBET was a business venture, it was felt that there were employment opportunities that local people were to secure among other economic benefits such as revenue, business opportunities and markets for local products. Other entitlements included educational support through construction of schools and granting of bursaries.

From the entitlements, the study sought to establish the socio-economic benefits of CBET. It was found out that majority of the respondents identified improvement in security since the inception of CBET which was marked by elimination stock theft. This development was linked to the recruitment and deployment of guards in the conservation areas and enhanced radio communication between villages in time of distress. Closely linked to security were reduced incidences of human-wildlife conflict since the conservation areas were located away from the human residential areas while any straying animals outside the conservancies were driven back by the guards. Another benefit was in the field of education where learning infrastructure were constructed in different villages and bursaries given to secondary and tertiary education level students. In addition, members benefited from improved movement on upgraded roads connect villages and conservation areas and using group ranch vehicles to transport the sick and to move to various destinations. Other benefits included employment opportunities where local people

were engaged directly in the conservation areas and at the lodges; acquisition of land by Il Ngwesi in Chumvi and Ethi to settle members who gave out space for conservation and to graze. Further, through associations, there has been external support for the local community development where players; particularly the private ranches such as Lewa and Borana become actively involved in improving livelihood opportunities through the support in projects touching on education, health and security. The outputs of CBET in the group ranches have enhanced the visibility of the region by attracting the attention of the state particularly in the education sector, health and wildlife conservation.

CHAPTER SIX: CBET AND ENVIRONMENTAL MANAGEMENT IN IL NGWESI AND LEKURRUKI GROUP RANCHES

6.1 Introduction

This chapter presents the findings of the analysis of the effects of CBET on environmental management. The concept of environmental management focused on how CBET affected access to and use of rangeland resources while protecting conservation areas. The findings were based on the analysis of the effect of CBET on resources such of water, pasture, and wildlife, herbs, soil and forest which were considered as fundamental for rangeland livelihoods. In addition, the chapter presents the results of temporal analysis of land cover changes in the area derived from a step-by-step classification of vegetation cover obtained from satellite imageries. The results of land cover changes presented types of vegetation in the study area and demonstrates how specific type changed over time as a result of changes in land use practices.

6.2 Effect of CBET on Rangeland Resources in Il Ngwesi and Lekurruki Group Ranches

While CBET focuses on the wellbeing of the local community, it is also considered as an alternative strategy for the management of environmental resources. The importance of the environmental resources in CBET revolves around the attractions that eco-tourists seek from nature and from the indigenous cultural heritage of the local communities. To determine the importance of CBET as an environmental resource management strategy in the study area, it was necessary to understand its effect on the rangelands resources of water, pasture, forests, herbs, soils and wildlife.

The findings revealed that although the introduction of CBET helped to improve the conditions of the resources and enhanced availability, it also CBET adversely affected the resources and impeded availability and access. In other instances, there was lack of knowledge of the effects (Figure 6.1).

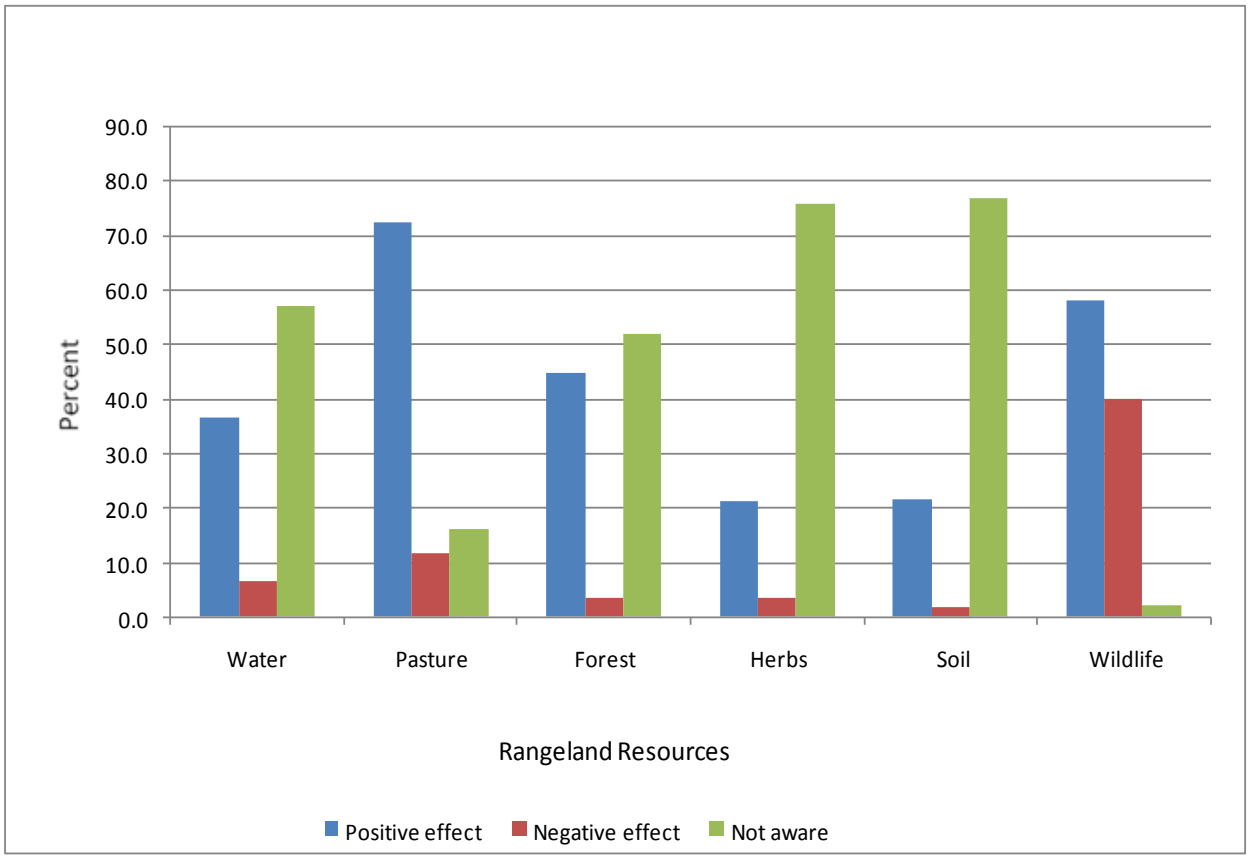


Figure 6.1 Effects of CBET on rangeland resources

Source: Field data (2010)

Results were presented based on analysis of the effect on each individual resource. The results indicated positive effect on water (36.5%), pasture (72.4%), forest (44.8%), herbs (21%), soil (21.5%) and wildlife (58%). However, while wildlife and pasture had the highest score of positive effects, wildlife recorded the highest score of negative effect (39.8%), followed by pasture (11.6%). The high percentages of negative effects were attributed to perceived danger of increased wildlife population and associated competition over grazing areas hence compromising the accessibility and use of traditional resources. The findings indicated the importance of pasture to the local community and the perceived competition associated with the introduction of wildlife conservancy in the group ranches. However, the high score

on positive effect on pasture (72.4) compared to the score of negative effects (16.0) was attributed to the fact that the conservation areas were considered to be important pasture reserves during drought.

CBET was found to positively affect forest resources (44.8%) in the area compared to 3.3% of negative effects. The study area has two forest reserves, namely, Mukogodo and Ngare Ndare forests that serve as important catchments, dry season grazing areas, cultural sites and wildlife habitat. The continued protection of the forests and surrendering of space to conservation contributed to increased vegetation cover as more trees grew in the forests and shrub vegetation regenerated in the conservation areas. However, the score of negative effect was attributed to the restriction of human activities particularly in harvesting of forest products and the increase in wildlife population especially elephants as the habits became safer for them. The increase in wildlife population led to competition over pasture in the hitherto dry season grazing areas, while exposing both humans and livestock to attacks.

On the other hand, the lack of awareness of the effects CBET on forest resources was attributed to the location of the forest in relation to the location of the villages where majority of respondents resided. Since most of the villages were located far from the forests and the conservation areas, most respondents did not directly link their daily access and use of some resources to the CBET. This explains why 56.9% of the respondents could not link the water resource available to them in the villages to CBET. A similar reason can explain why 51.9% of the respondents could not link forest resource to CBET. Therefore, the two forest areas were mostly important to those who had direct contacts, and therefore had a clear picture of the effects of CBET on the resource. On the other hand, 75.7% of respondents were unaware of the effect of CBET on herbs and this was attributed to the availability of herbal plants everywhere such that there was no lack of the same whenever in need or that improved access to modern medicine

has reduced the usage of herbs. The 76.8% of respondents unaware of the effect of CBET on soils may be attributed to the low importance with which the resource was held. Though the resource was important medium for life, it was not strongly linked to CBET. This could be explain by the fact that majority of the respondents practiced pastoralism; a livelihood that was rarely linked to quality of soils.

6.2.1 Positive Effects of CBET on Rangeland Resources in Il Ngwesi and Lekurruki Group Ranches

Figure 6.2 presents the results for positive effects of CBET on the rangeland resources in the study area. The findings showed that pasture and wildlife were weighted highly. When respondents were asked to explain on pasture, 20.4% felt that there was an increase in this resource since the introduction of CBET, while 44.8% felt that controlled grazing was an important system that helped to make pasture available especially during drought. While the conservation areas were reserved for wildlife and tourism activities, some sections were open for livestock grazing during drought. This access was however exempted in the core conservation areas around the lodges even in times of severe drought.

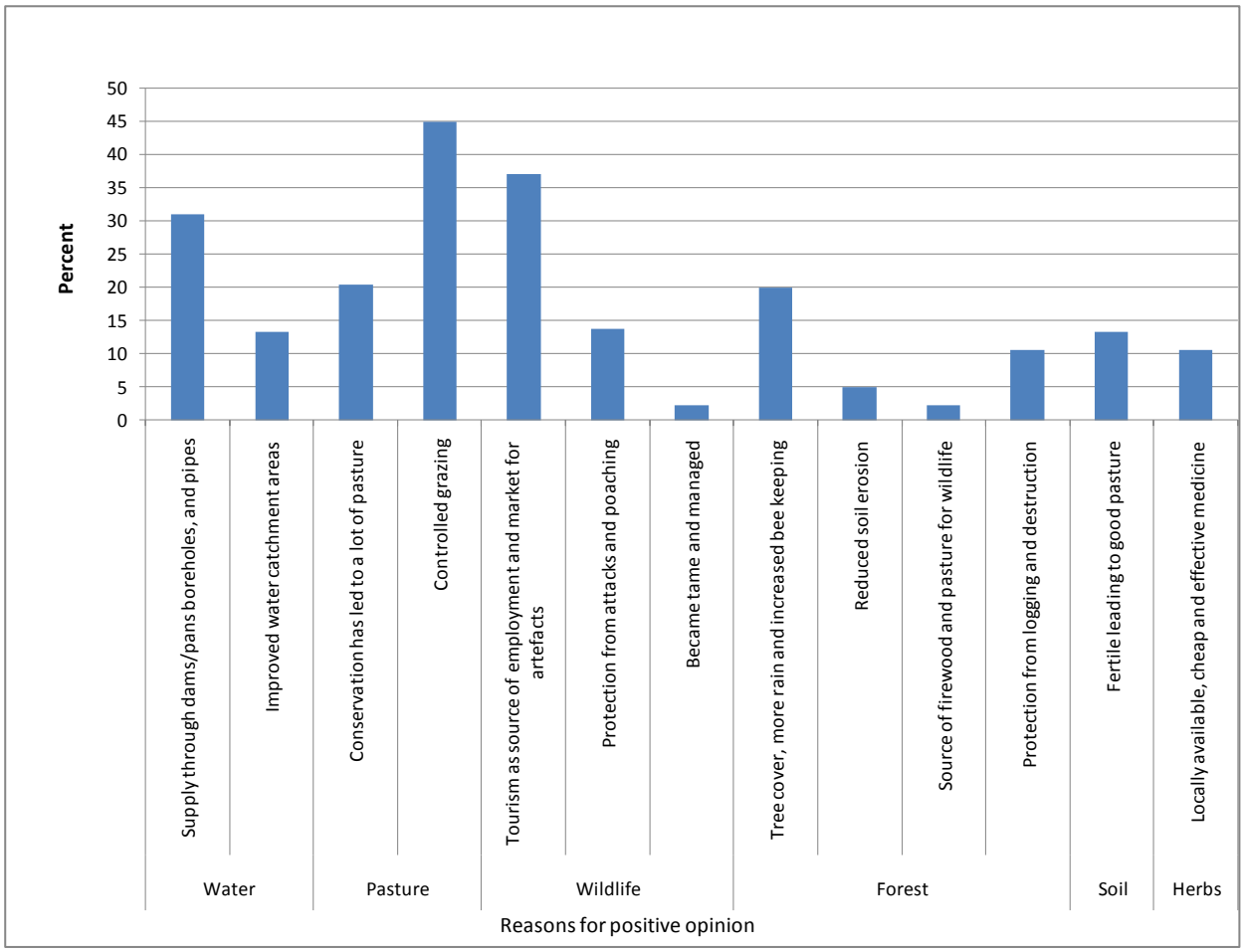


Figure 6.2: Reasons for positive opinion on the effects of CBET on environmental resource management

Source: Field data (2010)

Conservation areas were considered as reservoirs for pasture whose access was controlled by the group ranch management committee. In conjunction with LWF, a 'holistic management grazing system' was introduced. The system involved demarcating the conservation area into paddocks whenever the area was opened for grazing. Each paddock was optimally grazed and later secured to regenerate as another section was opened. The system sought to check on unplanned use of the resource while conserving the same for wildlife.

On wildlife, 13.8% of the respondents indicated that animals were protected against poaching and other forms of attacks owing to the recruitment and deployment of armed guards through CBET initiatives. Such initiatives had made wildlife safer in the conservancies and helped boost tourism activities. Consequently, 37.0% felt that wildlife as a resource was a useful source of livelihoods opportunity for members who benefited through employment opportunities and businesses particularly in the sale of artefacts to guests.

Water was also considered among the important rangeland resources that were affected positively by the introduction of CBET. Firstly, 30.9% of the respondents pointed out that, there was improved access to and supply of water from dams, boreholes and pipes supported with CBET proceeds. Secondly, 13.3% considered protection and improvement of the catchment areas at Ngare Ndare and Mukogodo forests as important for sustainable water supply. Another 10.5% of the respondents felt that since the introduction of CBET, forest resources at Mukogodo and Ngare Ndare were protected against logging and other forms of destruction. As a result, 19.9% of the respondents felt that there was an increase in the tree cover in the forests as well as in the lowlands where conservancies were located; a factor they attributed to increased rainfall in the area. Increased vegetation cover on the other hand was considered as a factor that helped to boost bee farming. As tree cover improved, there were more flowers which increased nectar necessary for making honey. Increased tree cover also contributed to reduce soil erosion (5%), while 2.2% felt that the forest resources were sources of fire wood and pasture as well as habitat for wildlife.

Forest resources were also linked to the quality of soils. With reduced soil erosion and increased vegetation cover, 13.3% of the respondents felt that the quality of soil had improved as manifested by

the growth of more luxuriant pasture in the conservation areas. Increase in vegetation cover was also considered to have positively affected the regeneration of herbal plants, hence, 10.5% of the respondents felt that herbs were available for extraction, were affordable and were effective in treating both human and livestock diseases.

6.2.2 Households' Benefits from the Positive effects of CBET on Rangeland Resources

Analysis was done on the specific households' benefits attributed to the positive effects of CBET on rangeland resources (Figure 6.3).

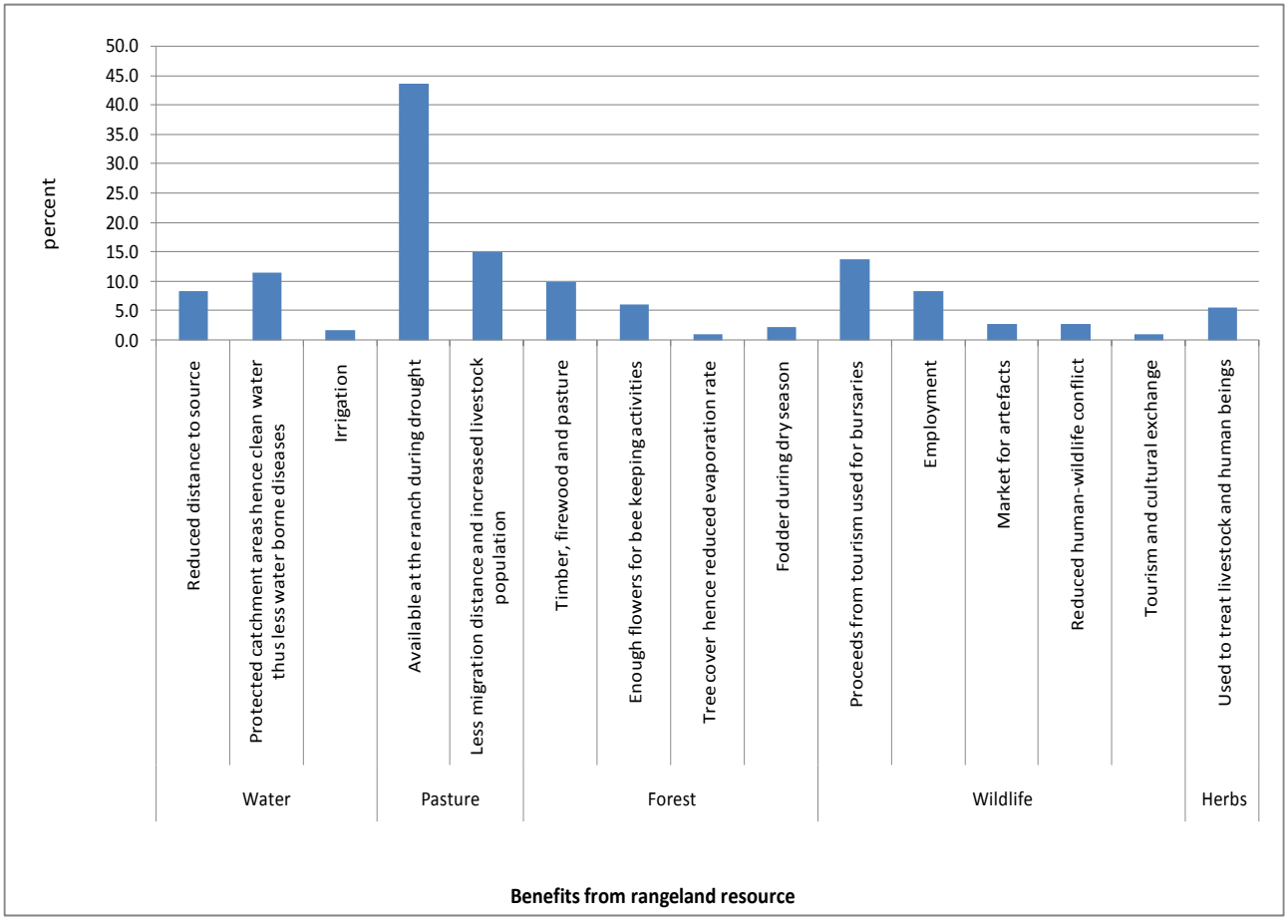


Figure 6.3 Households' benefits from the positive effects of CBET on rangeland resources
(Source: Field data, 2010)

From the analysis, pasture recorded the highest percentage (43.6%) which was associated with guaranteed access to conservation areas for grazing during drought and another 14.9% linked availability of pasture to reduced migration distance. The use of pasture at the conservation area was controlled under the holistic grazing system that sought maximize use of available pasture while leaving enough grazing area for wildlife. On the other hand, reduced migration distance during drought reinforced the premise that conservation areas were considered as reserves for pasture during drought.

Wildlife as a resource was identified as having gained positively from CBET owing to protection provided by the guards. The number and variety of wildlife had increased; such as elephants, grevy zebra, wild dog, giraffe, lions, impala, among others while the introduction of a rhino sanctuary at Il Ngwesi served as evidence of such positive gains. With reference to the specific households' benefits associated with wildlife conservation, 13.8% of respondents identified bursary support from CBET proceeds. Others included employment (8.3%), sale of artefact to tourists (2.8%) and reduced human-wildlife conflict (2.8%).

On the experiences associated with positive effects of CBET on water, there was reduced distance (8.3%) travelled to fetch the commodity as a result of piped water supply, boreholes and construction and rehabilitation of dams. In addition, there was protection of catchment areas (11.5%) hence availability of clean water from the streams and wells, a factor attributed to reduced incidences of waterborne diseases. On the other hand, forest resources were identified as sources of timber, firewood and pasture by (9.9%) of the respondents, while increased tree cover was linked to boosted bee keeping activities (6.1%). On herbs, 5.5% of the respondents indicated that they used the resource to treat both livestock and members of their family.

6.2.3 Negative effects of CBET on rangeland resources in Il Ngwesi and Lekurruki Group Ranches

The study sought to find out the factors underlying the negative effects of CBET on rangeland resources (Figure 6.4).

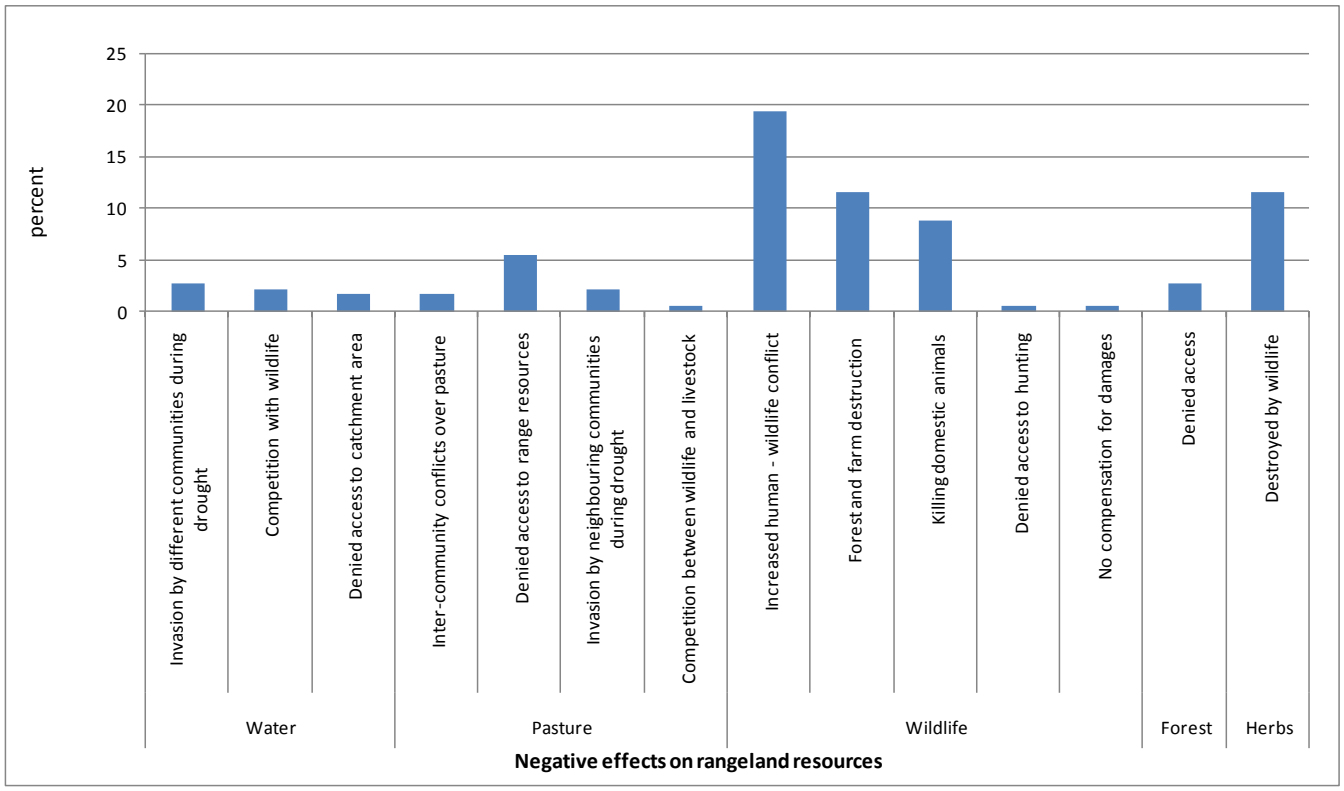


Figure 6.4: Reasons for negative opinion on CBET effects on environmental resource management
Source: Field data (2010)

Among the factors, were incidences of human wildlife conflict (19.3%) attributed to the increase in wildlife population as a result of surrendering vast land for conservation which created a safe habitat for wildlife. The increase in wildlife population also exerted pressure on pasture such that even when the conservation areas were opened for livestock, grazing was restricted under the holistic grazing management system. Another 8.8% of the respondents were concerned with conflict incidences where wildlife particularly wild dogs, leopards and lions attacked livestock. Other areas of conflict identified

included destruction of herbal plants by wildlife (11.6%). This menace was attributed particularly to elephants which destroyed trees as they roamed around the conservancies and in the forests. Another 5.5% of the respondents felt that the introduction of conservation had denied them access to ranch resources.

It was also reported that though conservation served as a way of preserving pasture for use in time of need by the local community, it had become an area of conflict with neighbouring communities who invaded the conservancies and catchment areas during drought. In particular, incidences of conflicts were triggered when the Samburu and Somalia pastoralists from the north invaded the conservancies. Despite the presence of armed guards in the study area, armed conflict between communities living in the northern front are common in time of drought. Indeed, conservancies in the north are occasionally invaded by herders escaping from drought and seeking pasture and water for their livestock.

A further analysis was conducted on the challenges the local community faced in accessing rangeland resources as a result of the introduction of CBET in the area (Figure 6.5). From the analysis, 12.2% felt that they were denied access to pasture in the conservation area; 5.5% felt that they were denied access to herbs as well as forest products which were important for rangelands livelihoods; 4.4% felt that they were exposed to risks of wildlife attacks which further impeded access to resources in the conservation areas.

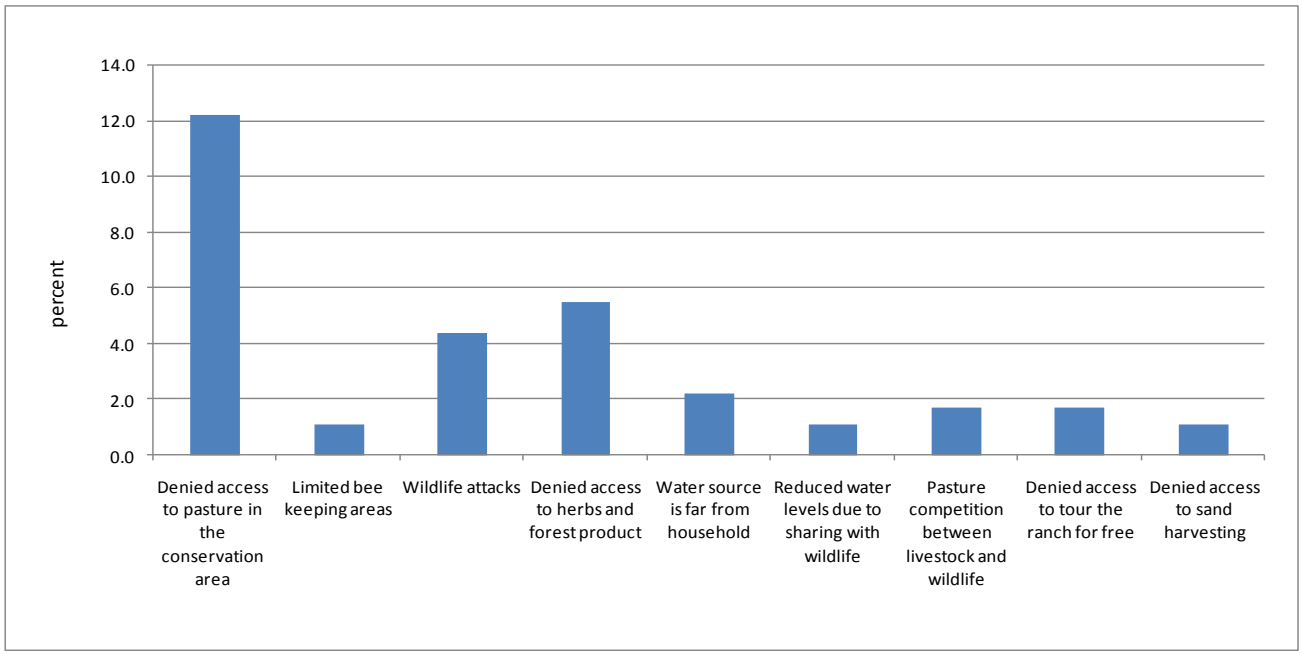


Figure 6.5 Problems facing households in accessing ranch resources as a result of ecotourism
Source: Field data (2010)

6.3 Land Cover Change Analysis

To corroborate findings on the effects of CBET on the environment, the study analysed vegetation cover patterns in the study over a twenty year period. The results of land cover changes obtained from a step-by-step processing and classification of Landsat satellite imagery of various years are presented. Satellite imageries from Landsat Thematic Mapper (1987), Enhanced Thematic Mapper (2000) and Enhanced Thematic Mapper Plus (2007); all obtained in the month of February were analysed.

Plates 6.1 a, 6.1 b and 6.1 c show the geo-referencing of area of interest on Landsat images of 1987, 2000 and 2007 respectively. The purpose for geo-referencing was to show the location of the area of interest in relation to Mt. Kenya (the dark shade in the middle). Mount Kenya was considered a significant landmark and a geographical feature that influenced the characteristics of the area of study. From the images, the area of interest is seen north of Mt. Kenya located on the leeward and Plates 6.2 a,

6.2 b and 6.2c show blown-up Landsat images of the area of interest extracted through the geo-referencing of the imagery.

Plate 6.1 a Geo-referencing of area of interest for 1987

Plate 6.1 b Geo-referencing of area of interest for 2000

Plate 6.1 c Geo-referencing of area of interest for 2007

Source: field data (2010)

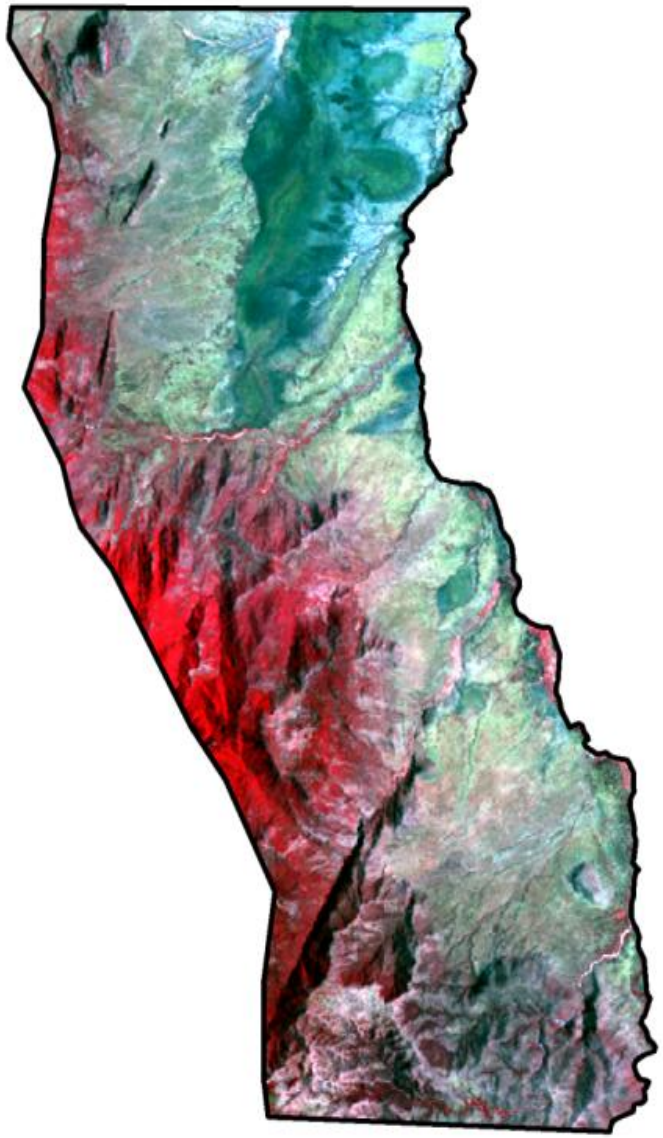


Plate 6.2 a Extract of area of interest for 1987

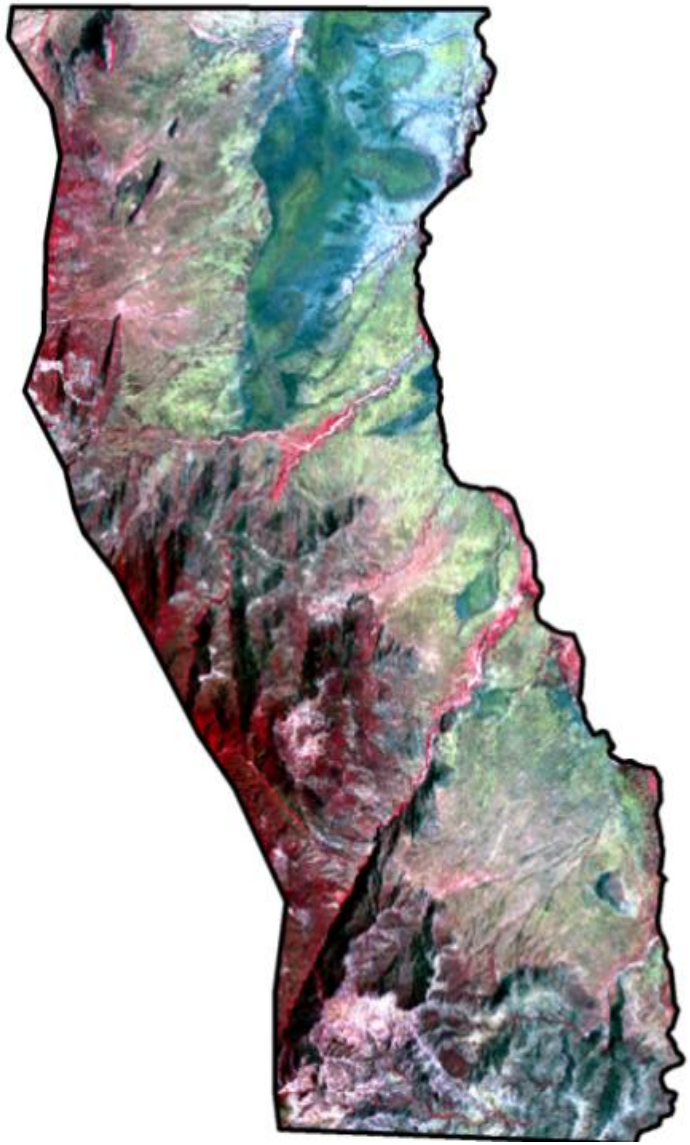


Plate 6.2 b Extract of area of interest for 2000

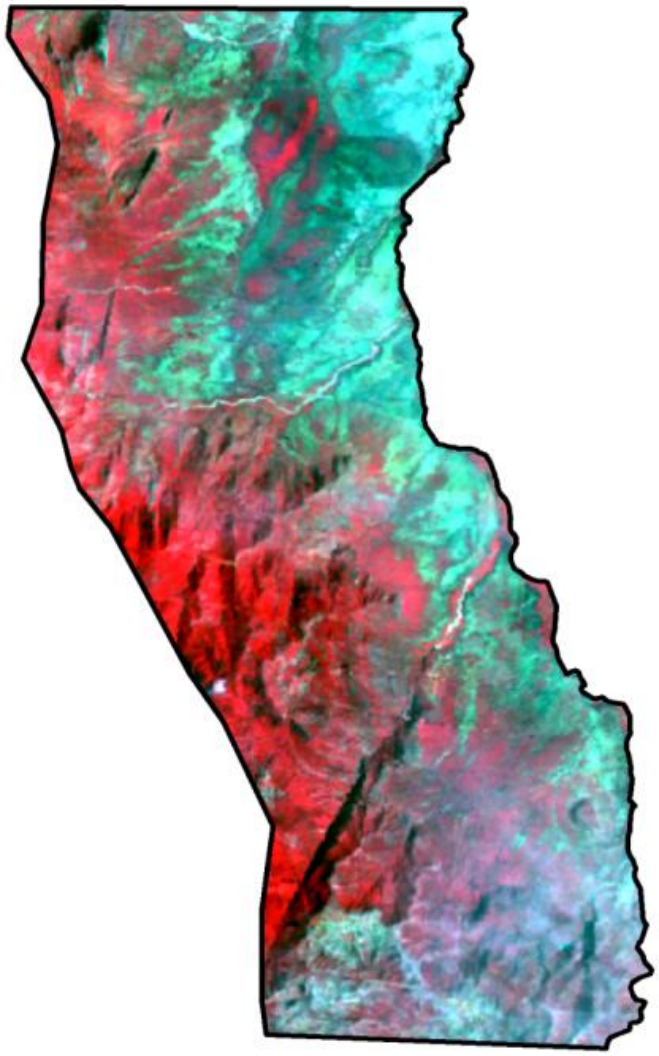


Plate 6.2 c Extract of area of interest for 2007

Source: field data (2010)

6.3.1 Land Cover Changes in Il Ngwesi and Lekurruki Group Ranches

Images from the land cover maps identified seven (7) categories of vegetation types; namely closed forest, open forest, riverine vegetation, and grassland, shrubland and sparse shrubs. From the results, thematic maps were developed (Figure 6.6 a, 6.6 b, 6.6 c) depicting the distribution of the different vegetation types in the study area. From the maps, the study was able to deduce what vegetation type changed to what over the years. Using the Pixel Purity Index (PPI), an overall vegetation cover classification accuracy of 84.00% was achieved with a Kappa coefficient of 0.7973 (Table 6.1).

Table 6.1 Land Cover Classification Accuracy Totals

Class Name	Reference Totals	Classified Totals	Number Correct	Producer Accuracy	Users Accuracy	Kappa
Unclassified	18	20	18	-	-	0.8438
Riverine vegetation	3	3	2	66.67%	66.67%	0.6454
Open forest	5	5	4	80.00%	80.00%	0.7778
Closed forest	8	5	5	62.50%	100.00%	1.0000
Grassland	7	7	6	85.71%	85.71%	0.8339
Sparse shrubs	5	7	4	80.00%	57.14%	0.5238
Shrubland	3	3	3	100.00%	100.00%	1.0000
Totals	49	50	42			

Source: Field Data (2010)

Image classification of the study area

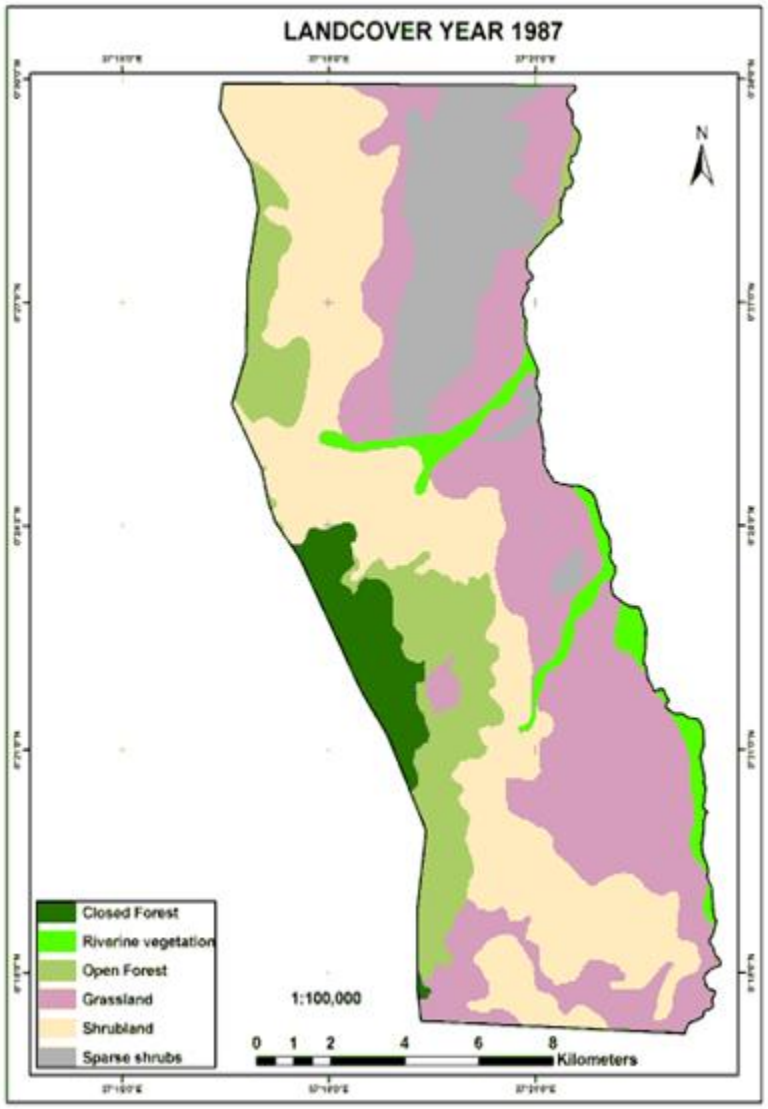


Figure 6.6 a. Land cover map of area of interest for 1987

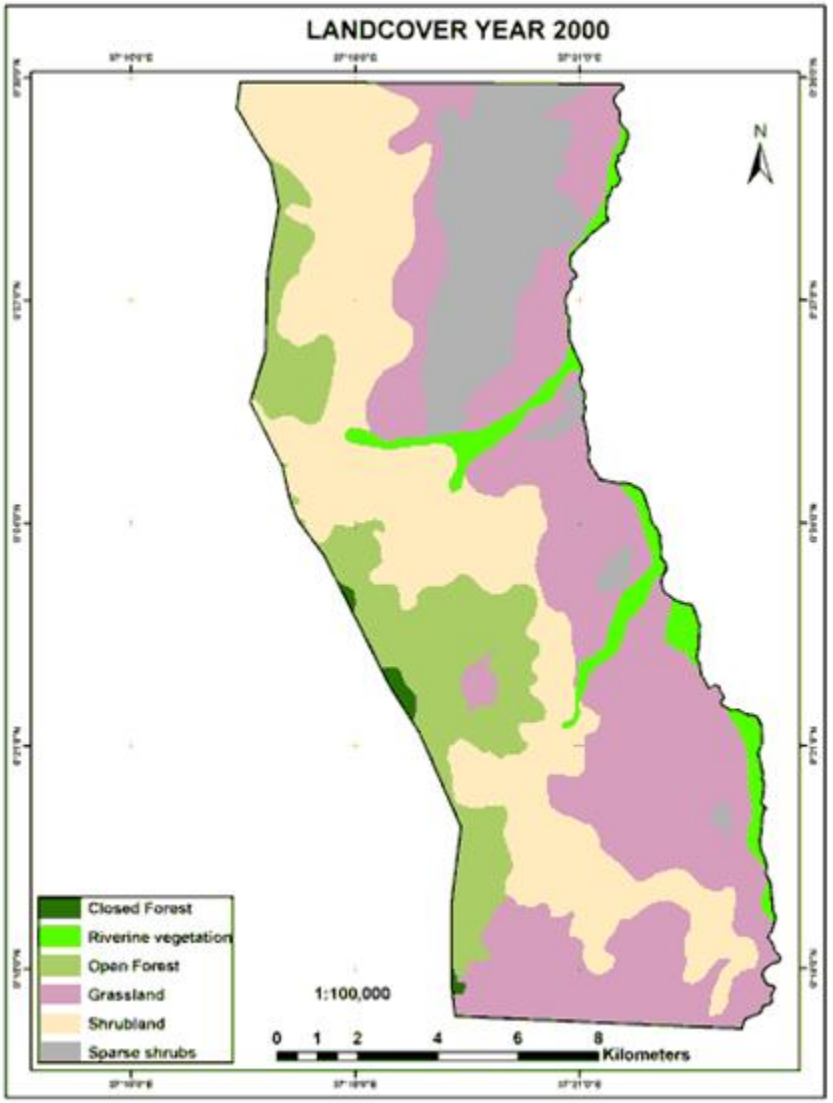


Figure 6.6 b. Land cover map of area of interest for 2000

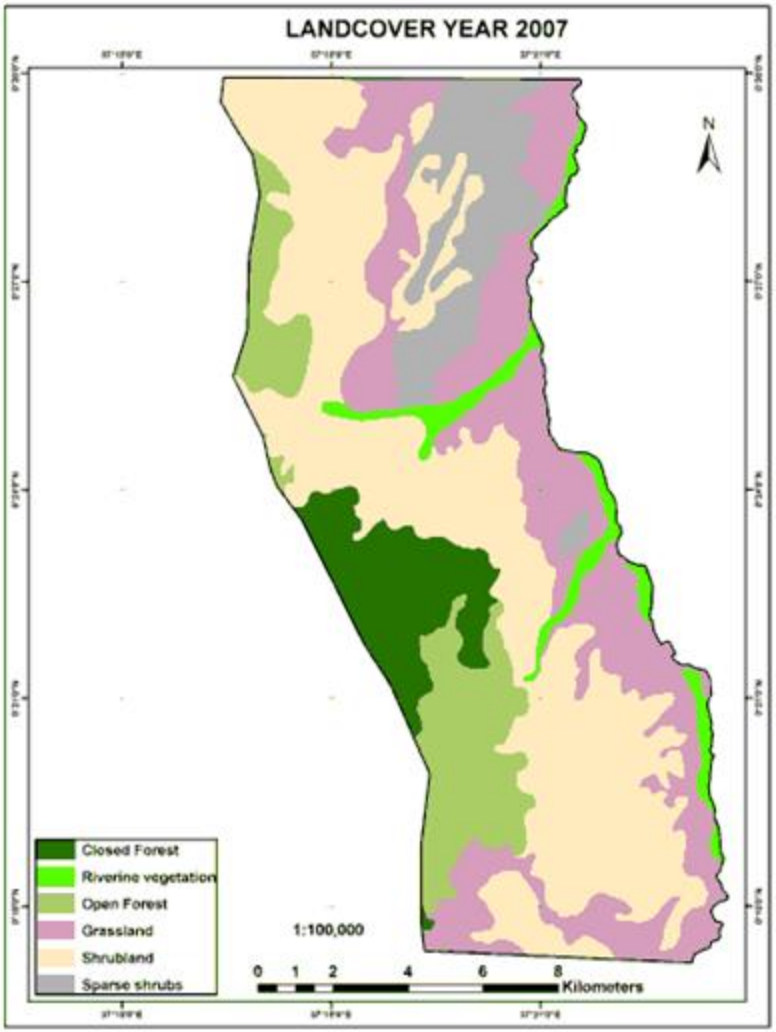


Figure 6.6 c. Land cover map of area of interest for 2007

Source: DRSRS and field data (2010)

The results were tabulated to illustrate the land cover area in hectares for the different vegetation types over the years (Table 6.2). The information contained in the table was derived from the analysis of shape files obtained from the Landsat imageries at the DRSRS laboratories in Nairobi.

Table 6.2 Vegetation type and area in hectares of land area in Il Ngwesi and Lekurruki group ranches

Vegetation type	1987		2000		2007	
	Hectare	%	Hectare	%	Hectare	%
Closed Forest	899.05	4.7	77.4	0.4	1555.31	8.2
Grassland	6445.55	33.9	7045.98	37.0	4902.72	25.8
Open Forest	2261.79	11.9	2669.12	14.0	2261.23	11.9
Riverine vegetation	776.13	4.1	794.35	4.2	709.57	3.7
Shrubland	6337	33.3	6100.67	32.1	7834.33	41.2
Sparse shrubs	2304.5	12.1	2336.48	12.3	1760.85	9.3
Total	**19024.02**	**100.0**	**19024.02**	**100.0**	**19024.02**	**100.0**

Source: Field data (2010)

The analysis indicated that there were different vegetation types found in different parts of the study area. Closed forests were found on the Mukogodo escarpments overlooking the plains that formed the dispersal areas where conservancies are located. As one descended the escarpments, the closed forest vegetation gave way to open forest where the canopy thins out. Further down the slopes, the luxuriant forest cover opened into shrubland and eventually into the grassland and dispersed shrubs on the plains. Riverine vegetation was found along the river valleys from the Mukogodo escarpment into channels on the plain land.

Analyses of vegetation cover in the study area for the 20 year period (1987 to 2007) showed some changes. An assessment of Landsat imageries for 1987 and 2000 (Figure 6.7) showed that grassland vegetation was most dominant.

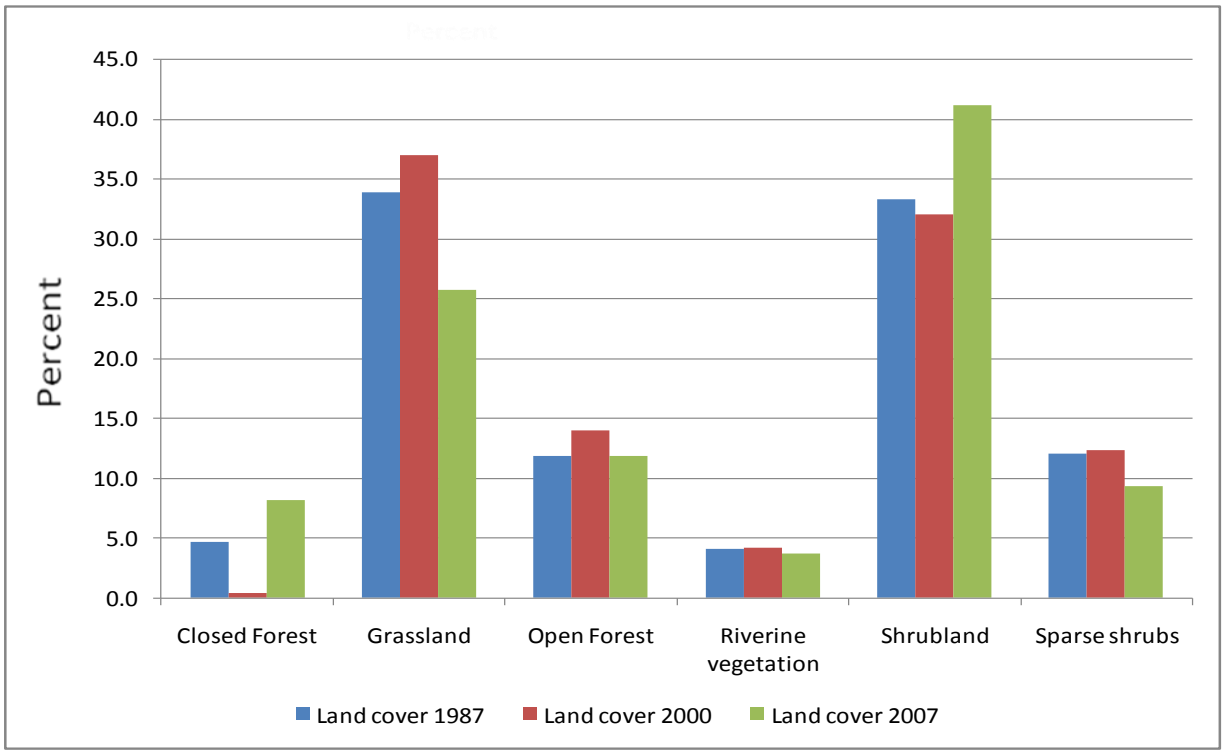


Figure 6.7: Land cover changes in Il Ngwesi and Lekurruki group ranches
Sources: Field data (2010)

In 1987, grassland occupied 33.9% of the land area followed by shrubland (33.3%). Other types included open forest (11.9%), dispersed shrubs (12.1%) closed forest (4.7%) and riverine vegetation (4.1%). In the year 2000, some land cover changes were observed. For instance, grassland increased to 37.0% while shrubland had reduced to 32.1%. Other changes observed were increases in open forest to 14.0%, sparse shrubs to 12.3%, and riverine vegetation to 4.2% while closed forest decreased to 0.4%.

The minor vegetation cover changes that were observed between the year 1987 and the year 2000 may be attributed to the land use practices them. For instance, decrease in the land area under closed forest coincided with a period of marked depletion of forest and other vulnerable forest in Kenya and world at large (Ochego, 2003). Ochego observed that, the area under closed forest had decline in Kenya to 1.4 million hectare (2%) of the county's land area in 2003. This decline was attributed to increased logging

of indigenous trees, illegal charcoal burning, illegal cultivation, grazing and settlement and the lack of adequate commitment by the government to address itself to the deforestation problem. In the study area, the decline of land area under open forest could be attributed to grazing and logging of indigenous Red Cedar tree which is harvested for production of fencing poles and furniture. On the flip side, logging led to an increase in the area under open forest as more trees were removed. On the other hand, the increase in land area under grassland may be attributed to pastoralism which was the dominant land use practice in the area. Pastoralists engaged on clearing and burning of vegetation at the onset of rainy season to help boost pasture regeneration and eliminate pests (Reid, Serneels, Nyabenge, Hansen, 2005). In addition, shrubs and thickets were regularly cleared to remove pasture encroachment while at the same time sourcing materials for shelter construction, fencing of homesteads and building of livestock sheds. Consequently, land area under grass grassland vegetation increased.

The increase in land area under grassland vegetation is evident in the Landsat imagery for 2000. At the onset of CBET in the study area, the local community surrendered land they traditionally occupied to conservation. The act of surrendering space was reinforced by implementing a management system that restricted human activities in the areas resulting in changes in the land cover. The changes in land cover were indications of the impacts that land use practices have on the environment. Results of the analyses of the Landsat imageries revealed land cover differences that were attributed to different land use practices in the area. Arguably, the land use prior to the year 2000 was fundamentally different from that in the post 2000. Before the introduction of CBET the group ranches were available and accessible for traditional land uses, particularly grazing which led to land cover changes as woody vegetation was removed and replaced with open grassland needed for pasture. With the introduction of CBET, vast

sections of the group ranches were surrendered for conservation and grazing restricted. Hence, the land cover in the post CBET portrayed changes that are attributable to the new land use practice.

An observation of Landsat imageries for 1987, 2000 and 2007 (Figure 6.7) depicted considerable land cover changes. CBET introduced in the study area a land use practice that affected the vegetation cover differently from the hitherto traditional land uses. While the traditional land uses may have contributed to the removal and exploited wood vegetation, CBET helped restore the same as it introduced restricted access to and use of the resources in the conservation areas.

Analysis of the 2007 imagery showed changes in land area under the different vegetation types in the study area. Grassland decreased to 25.8% while shrubland increased to 41.2%. Other notable changes were an increase in closed forest cover to 8.2% and reductions in sparse shrubs to 9.3%, open forest to 11.9% and riverine vegetation to 3.7%. These notable changes in the status of closed forest, grassland, shrubland and sparse shrubs are attributed to the land use practice in the post CBET period in the study area. It was considered that, due to restrictions on traditional land use practices in the conservation areas, woody vegetation types regenerated and even encroached into other types. As the area classified as shrubland increased, the area under grassland and sparse shrubs decreased. From this point of view, the restriction of human activities in the conservancies allowed vegetation in the shrubland to regenerate and at the same time it encroached into areas under both grassland and sparse shrubs. A similar explanation may be given in relation to the increase in the area under closed forest. Therefore, as the area under closed forest increased, the area under open forest decreased. This observation was attributed to conservation and preservation efforts on the resource that resulted into conversion of open forest into closed forest as tree cover improved while hitherto destroyed sections of the closed forests regenerated.

6.4 Summary

CBET was analysed as land use system that either impeded or enhanced access to and use of natural resources in Il Ngwesi and Lekurruki group ranches. The exercise sought to determine the effects of CBET in the management of the resources upon which local communities based their livelihoods. Among the resources, this study considered water, pasture, wildlife, herbs, soils and forests as fundamental for livelihoods in the rangelands.

Consequently, the study sought to determine the perception of respondents on the effects of CBET on these resources. Some respondents felt that there were positive effects while others felt the effects were adverse. Among the positive effects identified was that, there was improved water supply through dams, boreholes and piped developed with proceeds from CBET. It was also felt that the restricted consummative use of conservation areas created a reserve for pastures that was used in times of drought and managed through a controlled grazing system. Further, it was felt that through CBET, there was enhanced diversification of natural resource utilization that supported tourism activities which in return offered employment and business opportunities among other benefits. On the flip side, adverse effects of CBET on natural resources included denied access and incidences of human-wildlife conflicts.

A further examination of the effects of CBET on natural resources involved the analysis of land use and land cover changes. It was observed that the study area comprised of six major vegetation types; namely closed forest, open forest, grassland, shrubland, sparse shrubs and riverine vegetation. It was observed that between 1987 and 2000, the land area under closed forest reduced while that under grassland and open forest increased; while areas under the other vegetation types changed marginally.

The trend in the vegetation cover changes was attributed to the land use systems at the time, which included excision of forest land, uncontrolled logging of indigenous trees and grazing. As logging took place, more trees were removed and the land area under closed forest reduced. As this happened, the canopy opened leading to an increase in the land area under open forest. In the meantime, the need to meet pastoralists' livelihoods led to removal of woody vegetation which was considered to encroach on pasture leading to an increase in the land area under grassland. However, this trend changed significantly during the post CBET period. As traditional land use systems were restricted in the conservation areas, vegetation cover changed and some regeneration were observed. The land area under closed forest increased, while land area under grassland and open forest reduced.On the other hand, land area under shrubland increased, while that under sparse shrub reduced.

It can therefore be concluded that, the vegetation cover changes in the post CBET period was a result of land use system that restricted consummative practices and encouraged both preservation and conservation of natural resources. The new land use system allowed regeneration of woody vegetation in most of the parts of the study area. As the forest vegetation regenerated, the land area under closed forest increased while that under open forest reduced. Equally, the shrubland increased and encroached into the grassland. The regeneration of woody vegetation in the sparse shrub further increased land area under shrubland while that under sparse shrub reduced.

CHAPTER SEVEN: RELATIVE SIGNIFICANCE OF CBET ON HOUSEHOLDS' LIVELIHOODS AND ENVIRONMENTAL MANAGEMENT IN IL NGWESI AND LEKURRUKI GROUP RANCHES

7.1 Introduction

To determine the significance of CBET as a households' livelihood and environmental management strategy in the study area, a test of statistical significance and a SWOT analysis was conducted. The test of significance focused on Null Hypotheses (H_{o1}) that; 'there is no significant households' livelihood benefits associated with CBET in Il Ngwesi and Lekurruki group ranches, and H_{o2} that, 'CBET initiatives have not significantly influenced environmental management in the study area'. A SWOT analysis was conducted to determine the feasibility of CBET as a land use and as a livelihood and environmental management strategy.

7.2 The Significance of CBET on Households' Livelihood in Il Ngwesi and Lekurruki Group Ranches

To determine the relationship between CBET and households' livelihoods, analysis of the effect of CBET was conducted in the context of socio-economic benefits received (Table 7.1). The results of the analysis indicated a Pearson x^2 value of 0.115. When the calculated x^2 value was subjected to the decision rule ($\alpha = 0.05$) it was concluded that there was no significance difference between the observed and expected counts and any such difference would only have been by chance. Therefore, the H_{o1} that there are no significant households' livelihood benefits associated with CBET activities in Il Ngwesi and Lekurruki group ranches is no was accepted. From the findings, it was observed that despite a majority of the respondents being aware of CBET among other land uses in the group ranches, the accruing benefits did not significantly affect their livelihoods in general terms.

Table 7.1 a: CBET and households' received gains

CBET		Households' received gains form CBET						
		income	welfare	income, welfare	welfare, infrastructure	income, welfare, infrastructure	none	Total
Yes	Count	21	25	32	16	46	27	167
	Expected Count	22.1	24.9	34.1	14.8	42.4	28.6	167.0
No	Count	3	2	5	0	0	4	14
	Expected Count	1.9	2.1	2.9	1.2	3.6	2.4	14.0
Total	Count	24	27	37	16	46	31	31
	Expected Count	24.0	27.0	37.0	16.0	46.0	31.0	31.0

Source: Field data (2010).

Table 7.1 b: CBET and households' received gains significance test

	Pearson Chi-Square		
CBET	x^2 Value	*df*	Significance level
Households' received gains form CBET	8.857(a)	5	0.115

(Significance $\alpha = 0.05$)

Source: Field data (2010).

However, to interrogate these findings, a further test of the relationship was conducted in relation to the specific socio-economic benefits that were indicated by the respondents. To achieve this, a thematic approach was adopted and the benefits grouped into four broad categories; namely, economic, welfare, and infrastructure development and education. The economic theme entailed all observations that touched on among other elements; income, employment, business opportunities and market for local product. The welfare theme comprised of the elements of security, transport from ranch vehicles, reduced human-wildlife conflict, land acquisition from CBET proceeds, access to pasture and veterinary services; infrastructure development touched on water projects, construction of health centres and upgrading of roads; while education included construction of schools, award of bursaries and civic education. The findings of these tests (Table 7.2) were subjected to the decision rule ($\alpha = 0.05$).

Table 7.2 CBET and households' livelihood themes significance test

Households' livelihood Themes	Pearson Chi-Square		
	x^2 Value	Degrees of freedom	Significance level
Economics	0.268	1	0.876
Welfare	4.403	1	0.036
Infrastructure Development	8.502	1	0.004
Education	4.442	1	0.035

(Significance $\alpha = 0.05$)

Source: Field data (2010)

Subsequently, it was concluded that: firstly, there was no significant relationship between CBET and economic benefits among group ranch members. This finding indicated that respondents did not consider any direct revenue to the households and all the other economic benefits only benefited a small segment of people who were directly engaged in businesses with the wildlife conservation and tourist related undertakings in the group ranches. Secondly, there was a significant relationship between CBET and welfare benefits, thirdly, there was a significant relationship between CBET and infrastructure development and fourthly, there was a significant relationship between CBET and education in Il Ngwesi and Lekurruki group ranches. Therefore, CBET is a significant land use in the rangelands touching on the wellbeing of the local community and is an appropriate intervention initiative that can help to reverse the livelihood challenges associated the region.

Findings on the significance of CBET as a livelihood strategy in the study area compares with the findings by Nelson (2004). Nelson noted that revenue from ecotourism activities in northern Tanzania was investment in education through secondary and university tuition support, development of health facility and for paying wages for individual hired as guards. Similar findings were reported in Shompole Group Ranch in Magadi, Kenya and Buchoma Rest Camp in Bwindi Impenetrable Forest in Uganda by Watkin (2003). In Shompole, there was an agreement that the introduction of wildlife conservation was

not going to hinder access to traditional resources of pasture; therefore, the local community was allowed to graze in the conservancy during times of drought. In addition, revenue from the venture was to benefit the locals by supporting community projects such as schools and clinics at the sub-location levels. In Buchoma Rest Camp, income generated from accommodating visitor, feeding and entertaining them and from the sale of local handcrafts went into supporting community infrastructure project, education activities and community groups engaged in income generating projects. In Namibia, (Arthur, 2010) found out that local community members benefited from CBET through employment to monitor wildlife behaviour on behalf of the conservation management committee. However, Nina (2006) found out that there was minor effect of ecotourism in Taita Hills of Kenya. Specifically, there were insignificant numbers of people who were directly affected by ecotourism; just as it was for those who were directly employed or receiving direct revenue. Nina therefore concluded that, to increase direct benefit of ecotourism, the ventures and their systems need to move closer to the grassroots.

7.3 Significance of CBET on Environmental Management in Il Ngwesi and Lekurruki Group Ranches

The findings on the analysis of the effect of CBET on environmental management were corroborated by testing H_{o2}. The study sought to establish whether relationships between CBET and selected rangeland resources of water, forest, pasture, soil, herbs and wildlife were statistically significance. When independent variable of CBET was crosstabulated with the dependent variables of rangeland resources and subjected to x^2 test there were varied results (Table 7.3).

Table 7.3 Results of CBET and rangeland resource test of significance

Rangeland Resource	Pearson Chi-Square		
	x^2 value	Degrees of freedom	Significance level
Water	0.408	1	0.523
Forest	5.696	1	0.017
Pasture	3.800	1	0.051
Soil	1.862	1	0.172
Herbs	1.755	1	0.185
Wildlife	11.910	1	0.001

(Significance $\alpha = 0.05$)
Source: Field Data (2010)

When the computed values of x^2 were subjected to the decision rule ($\alpha = 0.05$), it was found that water, soil and herbs had greater values while for forest and wildlife had less values (Table 7.3). Hence, it was concluded that, there was no significant relationship between CBET and rangeland resources of water, soil, herbs and pasture in Il Ngwesi and Lekurruki Group Ranches. However, there was significant relationship between CBET and rangeland resource of forest and wildlife in the Group Ranches.

The findings revealed that the effect of CBET on the selected rangeland resources depicts the different perceptions that local community members had on the importance of the venture in environmental management. The significant relationship observed between the independent variable and the dependent variables of forest and wildlife depict the local communities' opinion of the resources most affected by CBET. The findings indicated a symbiotic relationship between CBET and wildlife and forest resources. Wildlife has flourished, and remains a major eco-tourist' attraction while forest resources served as both a habitat for wildlife as well as a source of livelihoods for the local community in terms of bee keeping and cultural heritage, among others.

The lack of significant relationship with the other resources depicted the importance with which the local community associated CBET with their expansion, availability, access and use. Though soils were considered important resources as life supporting agents, they had not significantly benefited from the introduction of CBET. On the other hand herbs were locally available and accessible on demand, meaning that the introduction of CBET had no significant effect on them. In addition, though pasture was an important resource in the area, CBET did not significantly affect its access and use in a positive manner. It was arguable that the introduction of CBET stifled rather than encouraged access and use of pasture in the conservation area, mainly due to controlled grazing regime.

7.4 Viability of CBET on Households' Livelihood and Environmental Management in Il Ngwesi and Lekurruki Group Ranches

With reference to data collected through interviews, questionnaires and FGDs and corroborated through observations by the research team, a SWOT analysis was conduct to determine the viability of the CBET as a households' livelihood and environmental management strategy (Table 7.4).

The analysis sought to determine the positive and negative implications of introducing CBET as a land use systems in the region. It focused on the strengths upon which CBET was based and the opportunities available in the context of apparent weaknesses and threats. As a land use system, CBET was considered to be an alternative rangeland land use strategy targeting households' livelihoods and environmental management. The findings showed that, the study area is endowed with natural resources that represent the strengths upon which CBET is based (Table 7.4). For instance, the region hosts diverse wildlife species such as elephants, Africa wild dogs, the rare grezy zebra, lions, buffalos, warthogs, gazelles and impalas among others in their natural habitat (Frank, Woodroffe, Ogada, 2005) and serene environments that are major ecotourism attractions.

Table 7.4: SWOT analysis of CBET in Il Ngwesi and Lekurruki group ranches

Positive	Negative
Strengths • Diverse species of wildlife in their natural habitat and serene environment. • Vast/dispersal area. • Indigenous knowledge and skills • Cultural heritage and traditional livelihoods attractive to ecotourists. • Neighbouring ranches engaged in conservation and ecotourism. • The authority of the elders. • Conservation area as pasture reserve during drought. • Developed eco-lodges for guest accommodation. • Natural and traditional building materials • Diversification in rangeland resources utilization. • Local community acceptance of CBET. • Sustained group ranch ownership of land.	**Weaknesses** • Poor road network. • Unqualified group ranch management staff. • Inadequate trained and qualified staff needed to run activities associated with CBET. • Low rate of literacy among staff working in the lodges. • Low involvement of women. • Over reliance on international tourists. • Poor marketing of destination to domestic tourists • Over reliance on donors and support other players in tourism sector.
Opportunities • Global demand for ecotourism and visit to natural site among indigenous people. • The Government of Kenya emphases of tourism among the prime movers towards realizing vision 2030. • International emphases on local community participation in and benefit from tourism activities in the local areas. • Investment of CBET proceeds in building internal human resource	**Threats** • Human-wildlife conflicts. • Inter-clan differences and competition. • Frequent and prolonged drought in the area. • Inter-ethnic conflict over pasture and water • Political instabilities and terrorism threats • Poaching • Litigations for injuries. • Cattle rustling • Insecurity • Subdivision of group ranches elsewhere

Source: Field data (2010)

These natural endowments are coupled with vast dispersal areas that are ideal for conservation and nature based tourism. These endowments are sustained through indigenous knowledge systems and skills as well as generational connection between the local people and wilderness. The relationship

between nature and the local community define a complex cultural heritage under the watch and authority of elders. Consequently, there has evolved a resource management system under the common property regime that is necessary for CBET. Evidence of such cultural systems are embedded on traditional activities such as bead works, cultural performances, herb extraction, and bee keeping; which have helped support CBET. Further, CBET in the group ranches is supported by the cordial relationship that exists between the local communities who are the owners of the group ranches and other players in the sector. The presence of neighbouring private ranches involved in conservation and ecotourism activities and the presence of governmental institutions, such as KWS has played an important role in promoting CBET in the group ranches, making them part of the tourists' circuit in the country. Another advantage towards success of CBET was the attitudes of the local community on the conservation areas. The local community considered these areas as reserves for pasture which is accessible during drought; hence, a return for the decision made in surrendering space for conservation. CBET was also promoted through development of eco-lodges in the group ranches. The eco-lodges were important sources of revenue for the local community which supported various welfare initiatives, community development projects; create employment opportunities, as well as businesses and markets for local products. These have in return encouraged local support for CBET.

On the flip side, CBET suffers some weaknesses that would require attention if the tenets of ecotourism were to be guaranteed (Table 7.4). For instance, despite the efforts made to enhance movement to and within the conservancies, the poor road network system remains a major challenge as it makes access to the destinations difficult and expensive. On governance, the group ranch management and staff lacked adequate training and qualification necessary for managing the CBET/group ranches. This can be attributed to the low literacy level among the communities. Another weakness was in gender disparity,

as women were marginally involved in conducting group ranch businesses; a situation that went against the tenets of social capital upon which communal enterprises rely. Finally, continued over reliance on international tourists left the facilities idle during the off seasons slowing down revenue collection and underutilization of the tourism facilities.

However, there were opportunities in CBET that would help reinforce the apparent strengths (Table 7.4). For instance, the global demand for tourism destinations found in natural areas and the importance put on indigenous cultural heritage offered opportunities for enhanced CBET activities. This advantage is reinforced further by the recognition of tourism by the Government of Kenya as an important pillar in the attainment of Vision 2030. Further, the emphases on the importance of local community participation in tourism and on sharing benefit accruing from the activity is an exceptional opportunity that CBET can gain from. In addition, investment of proceeds from CBET in infrastructure development and capacity building offers an opportunity for developing a self-sustained CBET sector that is managed through autonomous human and natural resources.

Given the strengths upon which CBET depends and opportunities on which it may rely, the study identified a number of threats (Table 7.4). For instance, CBET faced the risk of increased human-wildlife conflict. With the inception of CBET, regular human-wildlife contacts had reduced when space was surrendered for conservation giving wildlife a safe haven to roam and breed in their natural habitat. However, there was concern that this seclusion of wildlife made the animals aggressive and bold which exposed people and their property to attacks and destructions. In the same vein, there was threat of wildlife attacks on guests, which may leave the local communities with huge penalties in litigation. For example, a British tourist sued Il Ngwesi company limited for injuries after an elephant attack while

visiting the ranch in 2007 and was awarded Kenya Shillings sixty five million by a Kenyan court as compensation (Dailymail, 2008). Such litigations are indeed a threat to CBET and may lead to uncertainty from which may deter its continued operation. In addition, overstocking of wildlife, particularly the elephants, causes destruction of vegetation cover, on which CBET relies. On leadership and governance, it emerged that despite applying democratic principles in electing leaders and officials, there were inter-clan differences and competitions. There were indications that, the larger clans occupied most positions of leadership; a situation that would work against the principle of CBET. Given the perceived skewed leadership and management style, there was a threat of low involvement of other clan members. Another threat to CBET was drought in the rangelands. Other than making the conservation a difficulty undertaking, the frequency of driving livestock to the conservation area had increased. The situation adversely affected the natural resource base upon which CBET relies. Other threats on CBET were incidences of inter-ethnic conflicts over pasture and water as herders from other communities drove their livestock to the conservation areas and forest to escape drought. Poaching for wildlife for trophies such as ivory, rhino horn, skins and other products was another threat. Paradoxically, poaching does not only destroy wildlife but also expose the tourists and rangers to risks. Finally, tourism thrives in peace times; unfortunately, apparent incidences of political instabilities and risks of terrorism in the country and the world over are major threats to the sector.

From this analysis, CBET is a viable land use system in the study area given its natural endowments and the socialization process of the local community in utilizing and managing the rangeland resources. Further, the hierarchical manner of authority of elders serves as a vital force in influencing binding communal decision which can be traced at the introduction of CBET in the area and in regulating access to and utilization of the resources. On the other hand, it is apparent that efforts are being made to

mitigate on the threats and weaknesses facing CBET. Support in education through construction of schools and granting of scholarships and bursaries will help reduce illiteracy while preparing a pool of qualified local personnel to manage CBET and other group ranch affairs. Efforts to improve accessibility of the destinations areas for guests are notable through continued upgrading of roads and the existence of airstrips at Il Ngwesi and Tassia lodges. On governance, the continued nurturing of democratic principles in electing officials and the exposure of more young people to formal education will hopeful help address the skweness leadership through clans.

7.5 Challenges facing CBET as an Alternative Livelihood Activity in Il Ngwesi and Lekurruki Group Ranches

Despite the benefits and significance of CBET as a households' livelihood and environmental management strategy in Il Ngwesi and Lekurruki group ranches, various challenges were reported. The challenges were seen as impediments to effectiveness and efficiency of CBET as a land use and resource utilization and management strategy in the area. Table 7.5 presents the magnitude with which the various challenges were considered. For instance, human-wildlife conflict presented the biggest challenge (62.4%). Respondents indicated that since the introduction of CBET, and particularly by surrendering space for conservation, wildlife menace had increased. By surrendering space, it became safe for wildlife to graze, breed and roam in the expansive dispersal area as their population increased. The increased wildlife population exerted pressure on pasture and brought competition as they also roamed and grazed outside the conservation areas.

Table 7.5 Challenge facing CBET in Il Ngwesi and Lekurruki Group Ranches

Challenges	*f*	%	Pearson Chi-Square		
			x^2 value	*Df*	Significance level
Mismanagement	73	40.3	2.253	1	0.133
Misappropriation of funds	80	44.2	3.045	1	0.081
Domination of donors/partners	49	27.1	0.473	1	0.491
Low involvement of community	75	41.4	0.082	1	0.881
Threat of accidents on visitors	15	8.3	0.093	1	0.955
Marketing	78	43.1	7.778	1	0.005
Human-wildlife conflict	113	62.4	8.448	1	0.004
Conflict with neighbouring communities	6	3.3	1.709	1	0.191
Water problem during dry season	3	1.7	0.170	1	0.684
Inadequate funds	3	1.7	2.801	1	0.094
Lack of trained manpower	2	1.1	5.062	1	0.024
Poaching	28	15.4	0.906	1	0.636

(Significance α = 0.05)
Source: Field data (2010)

The second most reported challenge was misappropriation of funds (44.2%) by those bestowed with responsibility of managing revenue from CBET (Table 7.5). Respondents felt that by surrendering space for conservation there were supposed to be monetary returns, yet little or no income was received despite the continued flow of guests to the lodges and conservation areas. This made some respondents question financial accountability and transparency. The perceived misappropriation of funds was linked to low community involvement, particularly on financial matters as indicated by 41.4% of the respondents. Another 40.3% of the respondents felt that there was a general mismanagement of CBET despite the laid down governance structure in the group ranches and the democratic process of electing members to the various committees; there was a feeling of domination by certain clans in leadership positions. Such domination was considered detrimental to the management process hence undermining the principles of local community participation in the venture. It emerged that the more populous clans were holding important positions of leadership which led to biases in decision making. Such biases were

expressed in terms of recruitment of labour, distribution of community development initiatives such as schools, health centres and water projects, and in allocating portions of land acquired elsewhere.

Another challenge identified was marketing of the sites as tourists' destinations (43.1%). Since the introduction of CBET in the group ranches, Lewa conservancy and Borana ranch were the leading marketing agents. Respondents therefore felt that the dependence on these private conservancies, which are also engaged in ecotourism, undermined the growth of local community based marketing capacity. The control by the private sector also made the destination mainly available for international arrivals and rarely attracted domestic tourists. It was therefore felt that the concentration on international arrivals left the facilities underutilized during the low tourism season, hence compromising on investment returns.

Further, the relationship between the community and the private ranches was seen as a challenge, where the private ranches were seen as dominating (27.1%). Respondents felt that the relationship between the group and the private ranches left the former as subordinate actors. On some occasions, the private ranches brought their guests for game drive in the group ranches conservation areas at a fee of US $ 20 which was considered low while they (private ranches) kept the larger share paid for accommodation in their lodges.

Another challenge considered a threat to CBET was the risks tourists were exposed to while visiting the conservation areas (Table 7.5). 8.3% of respondents felt that injuries that tourists may suffer while on their property would expose them to the risk of litigation and would attract collective penalties which would expose the entire community to poverty. Other challenges that identified as threats to CBET in the area were conflicts with neighbouring communities (3.3%); shortage of water during drought

(1.7%); inadequate funds (1.7%) and lack of trained manpower (1.1%). On conflicts with neighbouring communities, respondents noted that while they surrendered space for conservation, other communities invaded those areas to graze their livestock compromising their intended purpose of conservation and creating a reserve of pasture for their own use during drought. Such invasions led to conflicts as attempts were made to repel the aggressors. There were also incidences where poachers killed wildlife in the conservation areas for trophies and skins. Water shortages had become frequent forcing people and their livestock to migrate to the forest and conservation areas, thus exposing them to the risk of wildlife attack and other forms of human wildlife conflicts. Further, the funds available and those generated from CBET activities were deemed inadequate to meet all the requirements for effective management while supporting the needs of the community. This led, for instance to scaling down of security agents in Il Ngwesi group ranch from 15 to 8 further comprising security.

7.6 Suggested Solutions to the Challenges Facing CBET in Il Ngwesi and Lekurruki Group Ranches

Having identified the challenges facing CBET in the study area, respondents were asked what the solutions should be (Table 7.6). To curb misappropriation of funds, 46.4% of the respondents suggested an independent auditing system of accounts. Without such a system, financial dealings would be suspect and lacking in transparency. To facilitate etiquette, good business practices and transparency in the distribution of benefits, 28.7 % of the respondents suggested that there was need for equitable sharing of any proceeds among the members and across the villages. It was felt that, through equitable sharing of proceeds, all members will secure their entitlements regardless of their status and/or kinship. Closely tied to equitable sharing of proceeds, 43.6% of the respondents expressed the need to enhance community partnership so as to address the domination of the larger clans. In addition, enhanced

community partnership would help introduce affirmative action where the interest of every member would be addressed.

Table 7.6 Solutions to Challenges Facing CBET in Il Ngwesi and Lekurruki Group Ranches

Solutions to problems facing CBET	*f*	*%*	x^2 value	*df*	Significance level
Independent auditing of accounts	84	46.4	6.296	1	0.012
Policy formulation on donor community partnership	82	45.3	1.402	1	0.236
Community partnership	76	41.9	0.079	1	0.779
More home-guards to contain human wildlife conflict	79	43.6	4.956	1	0.026
Compensation of wildlife inflicted harm	79	43.6	7.564	1	0.006
Tourism industry to support marketing	98	54.1	12.832	1	0.000
Equitable sharing of proceeds	52	28.7	6.117	1	0.013
Punish poachers	53	29.2	3.453	1	0.063

Source: Field data 2010

On marketing, respondents felt that there was need for more aggressive strategies to showcase the attractions to both international and domestic markets. To reach this feat, 54.1% of the respondents suggested that the government be more involved through the Ministry of Tourism in showcasing the initiatives for example, through 'Brand Kenya' programmes and exhibitions organized locally and internationally. Further, 45.3% of the respondents felt that as stakeholders in the sector, there was need to formulate and develop policies to regulate the donor-community relationships. Such policies would mitigate domination of donors and the subordinate feelings the local community had as players in the sector.

On human-wildlife conflict, 43.6% of the respondents felt that there was need to recruit and deploy more armed guards and scouts to help contain wildlife menace. As the wildlife population increased there were reported incidence of animal roaming and grazing outside the conservation areas, hence exposing the local community and their livestock and property to danger. It was therefore felt that by deploying

more guards, it would help control wildlife movement in human inhabited areas. In addition, another 43.6% of the respondents felt that there was need to compensate the local people for any harm or destruction of property caused by wildlife. This was necessary factor for sustenance CBET in the area. It was also seen as a point of departure from the current process of compensation which was tedious, low in return and one that only addressed cases of human death. It was felt that compensating victims promptly and adequately would not only cushion them against total loss but also help inculcate a positive attitude towards wildlife.

Despite the dangers that wildlife pose to the local community, it was still considered as a resource that deserved protection. Consequently, 29.2% of the respondents felt that to ward off the activities that posed harm to wildlife, there was need to formulate stiff penalties against poachers and those in possession of wildlife products.

7.7 Summary

The need to determine the relative significance of CBET on households' livelihoods and environmental management was necessitated by the principle elements of CBET. The tenets of CBET emphasizes on enhanced environmental conservation and the promotion of the welfare of the host communities. Using x^2 test to determine the significance of CBET on households' livelihood in the study area, it was generally found that there was no significant relationship (Table 7.1 b). However, when specific themes were identified and significance of CBET tested (Table 7.2), it was found that there was statistical significance on local community welfare, infrastructure development and education. Therefore, it was concluded that CBET is a relevant initiative that can be enhanced to promote livelihoods in the rangelands.

When a similar test was conducted in relation to environmental management (Table 7.3), it was found that, there were statistical significance relationship between CBET and rangeland resources of forests and wildlife. There was no significant relationship between CBET and other rangeland resources of water, pasture, herbs and soils. These findings were attributed to the attitudes local people had on the different resources. For instance, forests and wildlife were associated closely to CBET, while little connection was seen between CBET and other rangeland resources. Ironically, CBET was at times perceived as an impediment to traditional land uses.

To determine the viability of CBET as a land use and rangelands resource management strategy, a SWOT analysis was conducted (Table 7.4). The variants of the analysis represented both human and natural factors that CBET in the study area depends on. From the findings, it was concluded that the strengths and opportunities that were identified represent a viable basis for promoting CBET in the study area. However, there is a risk of not achieving the purpose of the initiative if the weaknesses and threats identified were not addressed.

However, the challenges facing the management and development of CBET in the study area (Table 7.5) were found to emerge from both human and natural causes. Lack of a trained and efficient management team and the perceived poor financial management were considered critical factors that may undermine the intended purpose of land use diversification. The failure to invest in good business practices and etiquette, risk undoing a process that has not only helped conserve the rangelands but also helped improve the livelihoods of local communities. It is apparent that the local community has a clear purpose and goodwill towards rangeland resources. Therefore, if the utilization of these resources was

sustainably and transparently managed, it would help transform the regions into development zones. In addition, through CBET, the region would be opened to the outside world in return for cultural exchange and revenue. It is also noteworthy that the involvement of the local community is considered a panacea for the success of CBET while the lack of it would be detrimental to potential growth.

CHAPTER EIGHT: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This chapter presents the summary of findings and conclusions of the study. It highlights emerging issues in the context of CBET as a land use and a resource utilization and management strategy in Il Ngwesi and Lekurruki group ranches. It also identifies areas of pertinent concerns for CBET among the marginalized communities, while addressing the importance of sustainable environmental management. The chapter also outlines several recommendations, and suggests areas for further.

8.2 Summary of Findings

The main objective of this study was to establish the effects of CBET on households' livelihoods and environmental management in Il Ngwesi and Lekurruki group ranches in Laikipia North District, Laikipia County, Kenya. The study focused on how resources in the area were utilized and managed under CBET initiatives and the resulting effects. CBET was considered as a land use and resource management strategy that the local communities introduced among the traditional land uses in the group ranches. As a joint venture, CBET was based on the social capital tenets through which the local communities evolved organizational structures for utilizing and managing resources under common property regime.

To address the aforesaid, the study focused on five specific objectives. Firstly, the study sought to find out the stage and nature of household involvement in CBET: secondly, to find out households' entitlements in CBET; thirdly, to find out the effects of CBET on households' livelihoods; fourthly, to determine the effects of CBET in the management of rangelands resources and fifthly, to identify the

challenges facing CBET in Il Ngwesi and Lekurruki group ranches and recommend possible interventions.

It was found that the introduction of CBET in the group ranches was earmarked by the establishment of conservancies that support tourism activities. Consequently, the study sought to determine, among others, the nature and level of households' participation, their entitlements and effects on livelihoods and management of rangeland resources. It was found that Il Ngwesi and Lekurruki Group Ranches were endowed with rich natural resources which included forests, wildlife, water, pasture, herbs, soils and rocks (Figure 4.1). It was also found that, prior to the introduction of CBET in the group ranches; there were predominant land uses among them, grazing, bee keeping and herb extraction (Figure 4.2). However, with the introduction of CBET, wildlife was considered a leading resource (Figure 4.1) while ecotourism emerged as the most important land use (Figure 4.3).

CBET was introduced in the group ranches through consensus and on the basis of expected benefits. It was also found out that the introduction of CBET was embedded on the inherent relationship the local community had with wildlife. Prior to the introduction CBET, the local communities engaged in the traditional livelihoods in the wildlife infested region. This enabled them to evolve a relationship with nature over the generations. This relationship was evident by the names the local communities were identified with. For instance, Il Ngwesi means people of wild animals, while Lekurruki is the local name for the crow. Other factors attributed to the introduction of CBET in the group ranches included sensitization of the local community on the economic value of wildlife and lobbying by community elders and external interest groups, and institutions such as Lewa Conservancy and Borana Ranch (Figure 4.4).

The study also found out that, the anticipated benefits held by the group ranch members played a role in motivating the incorporation of CBET among other land uses (Table 5.1). For instance, a greater proportion of members anticipated that CBET would create employment opportunities, be a source revenues, through dividends and incomes from associated business, promote security from guards recruited and deployed to protect the conservation areas and related installation, support community development projects through construction of schools and health facilities; initiating and develop water supply projects and improve movement through upgrading of roads among other benefits.

On the nature and level of households' participation, it was found that the Local community was involved in various ways (Figure 4.7). Specifically, the community surrendered space for conservation. It is in this land that conservation areas were established and tourism activities introduced while wildlife had a safe habitat to roam; feed and breed. Community was also involved in electing officials and members of the various committees who were involved in the management of group ranch affairs. Other forms of participation included provision of labour required for the construction of eco-lodges, clearing of bushes and grading of roads to the lodges and to the various attractions in the conservation areas; and modest proportion of members contributed funds or livestock as equivalents to meet the various costs.

When results on entitlements on CBET delivered from FGDs and interviews with key informants were examined, various commodity bundles were identified. For instance, members were found to command the right to attending meetings, making decisions and be informed on all group ranch activities at the AGM and any other forum pertinent to the affairs of the group ranches. They were also entitled to petition on conflicts and infringement of their rights. Equally important, the local community was

entitled to membership in the group ranches by birth, marriage and/or inheritance. They were also entitled to ownership rights of all group ranch property, which made them shareholders of all investments and any returns emanating from CBET proceeds. Other entitlements included the right to elect officials and members of the various committees, seek elective positions in the committees, seek employment in the various sectors in the ranches, and to benefit from development activities initiated and/or supported through CBET proceeds. They were also entitled to business opportunities associated with CBET as well as access to and use of pasture in the conservation areas during drought.

In relation to households' livelihoods benefits from CBET (Table 5.2), there was enhanced security attributed to recruitment and deployment of armed scouts and whose operation was reinforced with high frequency radios in every village and patrol vehicles. There was also employment of local community members in the various positions in associated CBET in the grouch ranches. Among the employment opportunities were guards, tour guides, lodge workers, and liaison officers. There was also improved movement across the region as travellers sort assistance from the ranch vehicles. In addition, there was community development projects supported financially with proceeds from CBET such as, construction of schools in different villages, health centres, up grading of roads, as well as acquisition of land to settle members who had surrendered space for conservation.

On environmental management, the effects of CBET were noted on rangeland resources such as water, pasture, wildlife, forest, soils and herbs (Figure 6.1). Respondents indicated that there were positive effects on pasture and wildlife. For instance, pasture had increased in the conservation areas and was available for grazing during drought. On the other hand, wildlife was considered as an important input in the introduction of tourism activities which offered employment opportunities and a market for local

produces. There was also some improvement in the forest cover which helped protect water catchment areas, and enhanced bee keeping activities due to increased flowering trees. In addition, there was improved water supply through dams, boreholes, and pipes that were supported with proceeds from CBET.

From the analysis of satellite images (Landsat, 1987, ETM 2000 and ETM+ 2007) to determine vegetation cover changes in the study area, it was found out that grassland was most dominant (Figure 6.7). However, area under closed forest and shrubland increased while grassland and sparse shrub reduced in 2007. The change in the land cover was attributed to the nature of land use in the conservation areas. The isolation of the conservation areas, and the controlled access to the resources and the limited traditional land uses therein gave time for vegetation to regenerate. Consequently, sections of the degraded closed forest regenerated while parts of the open forest grew into closed forest status. In addition, the area under shrubland increased as woody vegetation regenerated and grew into both the sparse shrubs and the grassland.

To determine the significance of CBET on households' livelihoods and environmental management and its viability as a resource utilization and management strategy, it was found that there was x^2 statistical significance between CBET and local community welfare, infrastructure development and education and none with income (Table 7.*2*). On environmental management, there was x^2 statistical significance between CBET and forest resource and wildlife and none with water pasture, soil and herbs (Table7.3). SWOT analysis on the other hand, revealed numerous strengths and opportunities that CBET in the area can invest in for sustainable management and development despite the weakness and threats that may impede the process.

From the analysis of challenges facing CBET (Table 7.5) and their solutions (Table 7.6), it was found that most of the problems bordered on governance of the group ranches; such as mismanagement, misappropriation of funds and low involvement of community members. Other challenges included skewed relationship with other players whereby the local community lamented the domination of the private enterprises in the sector. Another area of concern was on marketing of the destination. It was also felt that the creation of conservancies compromised human-wildlife relationship in the area. Since the conservancies created safe habitat for wildlife, the increase in their numbers was considered a menace and a cause for human-wildlife conflict. In addition, wildlife has become aggressive and therefore dangerous as they also roamed outside the conservation areas further threaten the safety of the locals and their property.

To solve the aforesaid challenges, there were various suggested solutions (Table 7.6). For instance, to enhance governance and prudent financial dealings, there was suggested the need for involving independent auditors to help expose and ward off malpractices. On another hand, to address the relationship between the various stakeholders in the sector, it was suggested a need for policy formulation in order to secure an appropriate donor-community partnership. To enhanced community partnership and equal representation in governance, it was suggested that affirmative action be observed to safe guard the interest of the minority and women. Further, the support of the relevant government departments was proposed as an avenue for marketing of the destinations in both domestic and international markets. In addition, to address the challenges of human-wildlife conflict, it was suggested that more home guards be recruited and equipped while victim of wildlife attacks and property destruction be adequately and efficiently compensated.

8.3 Conclusion

The conclusion of this study is embedded in two broad statements; firstly, CBET is a viable strategy in the rangelands' management and second, CBET is beneficial to households and the environment. This conclusion is based on observations that CBET is a land use diversification strategy in Kenya offering land use diversification opportunities in a declining traditional livelihood in the rangelands. As a land use system in Il Ngwesi and Lekurruki group ranch, CBET addressed local community wellbeing and environmental conservation, with its sustainability hinged on the tenets of social capital. CBET in the study area underpinned the involvement of the local community as the principal stakeholders and recipient of emerging consequences. As stakeholders, the local community participated in various ways and at different levels, hence meeting the threshold that local community must actively be involved in tourism project (Kibicho, 2008). As a land use diversification strategy therefore, CBET was found to be an alternative opportunity with associated benefits depicting opportunities for local community who would otherwise live in a situation of declining opportunities as a result of unsustainable resource utilization and management strategies (Saville, 2002). In the study area, the predominant traditional land use of pastoralism is faced with declining opportunities as a result of frequent and pro-longed drought, making CBET an alternative land use system. The benefits that were identified represent output of environmental conservation efforts embraced by the local communities. The symbiotic relationship between environmental conservation and community welfare has helped to address concerns by Radeny, Isabelle, Ogutu and Patricia, (2009) where the relationship between environmental service of wildlife and people's livelihood in the rangelands of Kenya was not apparent. This study has been able to show that households' livelihoods in Il Ngwesi and Lekurruki group ranches are linked to environmental conservation. The study was also able to link clearly the nature of welfare benefits that Nelson (2004)

did not show in a study of CBET in Tanzania. In addition, despite the challenges facing the CBET in the study area, it is an opportunity for resource utilization and management in the context of common property regime under the ownership of local communities. It provides a window for local communities to expand their gains from the natural resource base while creating an avenue for socio-economic benefits emanating from marketing of cultural heritage as tourist attractions. It is also an opportunity for the local community to contribute to humanity through sustainable management of the environment. Most important, through CBET, the exclusive nature of tourism is reversed and opened to the ownership and management by the local people.

Further, the apparent changes in the vegetation cover in the study area depict the effect of land use practice on the environment. Considering the tenets of ecotourism, the introduction of CBET in the study area is consistent with environmental conservation and preservation making the habitat a sustainable destination for ecotourists. The study also concludes that the local communities have taken up CBET as a land use diversification strategy given the positive effect it has on the resources (Figure 6.2). The introduction of CBET has contributed to benefits to the communities (Figure 6.3). The benefits identified are deduced from positive opinions held towards CBET. However, there were adverse effects associated with CBET with regard to access and utilization of the resources (Figure 6.4); while CBET was considered as an impediment to accessing rangeland resources (Figure 6.5). Despite the varied perception and reasons affiliated with the same, CBET has generally contributed to positive environmental effect as demonstrated by the trends in vegetation cover changes in the study area.

8.4 Recommendation

1. There is need to build capacity among the local communities in order to empower them for the day-to-day management of the ventures. Given the high illiteracy level in the study area, it is recommended that the group ranch management and associated partners invest more in formal education and training to help promote improved CBET management and marketing skills. In addition, through capacity building programmes, it would be possible to promote good governance of the group ranches.
2. To make CBET a sustainable investment, it is important that the local communities' attitude towards wildlife as the most central component be enhanced by avoiding situations that may undermine the co-existence between humans and wildlife. It is therefore recommended urgent policy review be undertaken to promptly and adequately compensate for any damage caused by wildlife. This will hopeful help enhance the positive attitude towards wildlife while promoting its value among local communities.
3. For sustainable management of resources pertinent in CBET, it is recommended that both wildlife and the conservation areas be protected. There is need to invest more on security in order to protect wildlife from poachers. Further, through enhanced security, conservation areas will be protected from the activity of herders especially during the dry season.
4. Further research is study recommended; firstly, on gender representation and involvement in the management of CBET in the rangelands; secondly, on the types and numbers of wildlife species that have been affected either positively or negatively by the initiates, and thirdly, a similar study be conducted in the high potential areas where ecotourism activities have been introduced among communities neighbouring gazetted forests under the Community Forest Associations (CFA) within the auspices of Kenya Forests Act of 2005 (Republic of Kenya 2005).

REFERENCES

Akama, J. (1999) *The evolution of tourism in Kenya,* Journal of Sustainable Tourism, Vol. 7, No. 1

Aldridge, S., Halpern, D., and Fitzpatrick, S. (2002) Social Capital: A Discussion Paper, London, England: Performance and Innovation Unit

Anderson D. M. and Vigdis B. D. (1999) (ed), *The Poor are not us: Poverty and Pastroralism in Eastern Africa,* Nairobi, Oxford Press.

Arefi, M. (2003) Revisiting the Los Angeles Neighbourhood Initiative (LANI) Lesson for Planners. Retrieved from http://en.wikipedia.org (21/8/2008)

Arthur, H. F. (2010), Place-Power-Prognosis: Community Based Conservation, Partnership and Ecotourism Enterprise in Namibia, International Journal of the Commons, Vol. 4, No. 1, February 2010, pp 78-99. Retrieved from http://thecommonsjournal.org (12/7/2011)

Babar, J. T. and Khanal, B. R. (2007) *Community Based Ecotourism for Sustainable Tourism Development in Mekong Region: A Policy Brief.* Retrieved from http://www.cuts.international.org (29/8/2008)

Bandy, J (1996), *Managing the Other of Nature: Sustainability, Spectacle and Global Regimes of Capital in ecotourism,* Public Culture 8 (3): 539-566

Barsi, J.A. Schott J.R. Palluconi, F.D. Helder D.L, Hook, S.J. Markham, B.L. Chander, G. and O'Donnel, E.M. (2003), *Landsat TM and ETM+ Thermal band calibration*, Canadian Journal of Remote Sensing, Vol. 29, No. 2, pp 141-153. Retrieved from http://ritdoul.rit.edu (7/8/2008)

Belsky, J. M. (1999) Misrepresenting Communities: The Politics of Community-Based Rural Ecotourism in Gales Point Manatee, Belize. Rural Sociology 64(4): 641-666.

BESP, (2009), Borana Education Support Programme. Retrieved from http://www.borana.co.ke (12/7/2010)

Bichaka, F. Christian, N. Bedassa, T. (2007), The Impact of Tourism on Economic Growth and Development in Africa. Retrieved from http://ideas.repec.org (17/8/2008)

Bless, C. Higson-Smith, C. and Kagee, A. (2006), Fundamentals of Social Research Methods: An African Perspective, (4th Ed), Cape Town, Juta and Co. Ltd

Boonzaaier, C. and Philip, L. (2007) *Community Based Ecotourism and its Potential to Improving Living Conditions Among the Hananwa of Blouberg (Limpopo Province), with Particular Reference to Catering services During Winter,* Tydskrif vir Gesinsekologie en verbruikerswetenskappe, Vol. 35

Chapman, A. (2006) SWOT Analysis, Retrieved from www.businessballs.com (15/7/2009)

Coleman, J. (1988) *Social Capital in the Creation of Human Capital,* '*The America Journal of Sociology* 94: S95

Commonwealth of Australia (2009) NRM MERI Framework: Australian Government Natural Resource Management, Monitoring, Evaluation, Reporting and Improvement Framework. Retrieved from http://nrmonline.nrm.gov.au (12/9/2011)

Congalton, R.G. (1991) *A Review of Assessing the Accuracy of Classification of Remotely Sensed Data*, Remote Sensing of Environment 37 (1): pp. 35-46

Craig E. (2006) Ecotourism for Sustainable Development: Highlighting Setbacks of Community-based Ecotourism

CREST, (2009) Responsible Travel: Global Trends and Statistics. Retrieved from http://www.responsibletravel.org (14/10/2009)

Dailymail (2008) British woman is awarded damage after elephant attack. Retrieved from http://www.dailymail.co.uk (13/7/2010)

Darkoh M. B. K. (1990) Towards Sustainable Development of Kenya's Arid and Semi-Arid Lands (ASALs), Nairobi, Kenyatta University

Davis, D. and Tisdell, C. (1995) "Recreational Scuba-diving and carrying capacity in marine protected areas", Ocean and Coastal Management, 26 (1): 19-40.

Devereux, S. (2001), *Sen's Entitlement Approach: Critiques and Counter-Critiques*, Oxford Development Studies, Vol. 29 No. 3, 2001. Retrieved from http://www.sos.upenn.edu (12/5/2006)

Diamantis, D and Westlake, J. (1997), *Environmental Auditing: An Approach towards Monitoring the Environmental Impact in Tourism Destinations with reference to the Case of Molyvon.* International Journal of Tourism Research, Vol. 3 Issue No. 1 (pg, 3-15)

Diamantis, D. (2004), Ecotourism: Management and assessment, Cengage Learning. Retrieved from http://books.google.co.ke (15/5/2009)

DFID, (2002), *Sustainable Livelihoods Guidance Sheets*, DFID, London, U.K.

Drakopoulou, A. (Undated) Tourism certification and Community-based ecotourism as tools for promoting sustainability in the Greek tourism sector - the example of Zagori. Retrieved from www.wwf.gr (15/7/2010)

Eriksen S. Ouko E. and Marekia N. (1996), Land Tenure and Wildlife Conservation in Calestous J. and Ojwang J. B. (ed) *In Land We Trust: Environment, Private Property and Constitutional Changes* (pg. 199 - 227), Nairobi, Initiative Publishers.

Eco-Resorts, (2002) Ecotourism in Kenya: Leading Africa's Green Revolution. Retrieved from (http://www.eco-resorts.com (19/8/2008)

Ecotourism Kenya, (2005), *National Inventory of Ecotourism Projects in Kenya*, Nairobi, Kenya

Fennell, D. (2003), *Ecotourism*, (2nd Ed). Routledge, London

Frank, G. L., Woodroffe, R., Ogada, M. O. (2005). People and Predators in Laikipia District, Kenya

Frederico N. (2002). Sustainable Tourism, Environmental Problems, and Natural Resource Management: Paradise on Earth*?* DESA Discussion Paper Series United Nations, Retrieved from http://www.un.org/esa/papers.htm (19/8/2008)

_____, (2003). A New Approach to Sustainable Tourism Development: Moving Beyond Environmental Protection, DESA Discussion Paper Series, United Nation. Retrieved from http://www.un.org/esa/papers.htm (19/8/2008)

Gakahu, C.G. (1992*). Participation of Local Communities' In Ecotourism: Rights, Roles and Socio-economic Benefits.* In C.G. Gakahu and B.E. Goode (eds.)*Ecotourism and Sustainable Development in Kenya* (pp.117-123) Wildlife Conservation International: Nairobi.

Goodwin, H. and Ashley, C. (2006) Making Tourism Count for the Local Economy in the Caribbean: Guidelines for Good Practice, Retrieved from http://www.propoortourism.org.uk (19/8/2008)

Goodwin, H (2006). Measuring and reporting the impact of tourism on poverty, International Centre for Responsible Tourism, University of Greenwich

Gullette, G.S. (2001). "*The Multivocality of Ecotourism: Complications in Defining, Implementing, and Evaluating.*" Retrieved from http://www.planeta.com/planeta/01/0104ecotourism.html (16/8/2008)

Hall, C. M. and Page, S. J. (2001) *The geography of tourism and recreation: environment, place and space*, (2nd Ed), Routledge, London.

Homewood, K. (2009). Policy and Practice in Kenya Rangelands: Impacts of Livelihoods and Wildlife, in Homewood, K. et al (2009) (Eds), *Staying Maasai? Livelihood, Conservation and Development in East African Rangelands,* Retrieved from http://www.springerlinks.com (12/6/2010)

IFAD, (2007a) Rural Poverty in Kenya, Retrieved from http://www.ruralpovertyportal.org (15/8/2008)

_____, (2007b) The Sustainable Livelihood Approach. Retrieved from http://www.ifad.org (15/8/2008)

Ikiara, M and Okech, C (2002) Impact of Tourism on Environment in Kenya: Status and Policy, Kenya Institute for Public Policy and Analysis (KIPPRA Retrieved from http://www.kippra.org (16/8/2008)

Il Ngwesi (2010). *Integrating Community Development and Sustainable Environmental Management*, (unpublished), Il Ngwesi Group Ranch Strategic Plan 2010-2014

Jaetzold, R and Schmidt, H. (1983). Farm Management Handbook of Kenya vol II, Ministry of Agriculture, Nairobi

Kathiw'a, J. K. (2004). Socio-economic and ecological attributes of ecotourism: a comparison between two group ranches in Laikipia District of Kenya. Retrieved from http://erepository.uonbi.ac.ke (18/10/2011)

Kibicho, W. (2004) Community Tourism: A Lesson from Kenya's Coastal Region, Journal of Vacation Marketing, 2004 10: 33. Retrieved from http://jvm.sagepub.com (15/8/2008)

_____, (2008) Community Based Ecotourism: A Factor-Cluster Segmentation Approach, Journal of Sustainable Tourism, Vol. 16 No. 2.

Kiss, A. (2004). Is Community Based Ecotourism a Good Use of Biodiversity? Elsevier Trends in Ecology and Evolution, Vol. 19 No. 5 may 2004. Retrieved from www.sciencedirect.com

Krueger, R. A. (1994). Focus Group: A Practical Guide for Applied Research, Sage Publications, London.

Lalnunmawia, H. (2010). Impact of tourism in India. Retrieved from http://www.trocollege.net (18/10/2011)

Lenaola, I., Jenner, H. H. and Wichert T. (1996) Land Tenure in Pastoral Lands, in Calestous J. and Ojwang J. B. (ed) *In Land We Trust: Environment, Private Property and Constitutional Change* (Pg. 231-251), Nairobi, Initiatives Publishers.

Lewa (2001) *Lewa Wildlife Conservancy*. Haymarket Magazines, UK

Lucenaka, F. W. (1996) Group ranch subdivision and household socio-economic performance in Kajiado District, Leiden Ministry of Planning and National Development and A.S.C.

Maasai Association, (Undated) Maasai ceremonies and rituals. Retrieved from www.maasai-association.org (18/10/2011)

Melanie, L. and Dwyer C. (2001), (Eds), Qualitative Methodologies for Geographers: issues and Debates, Arnold, London.

Mitcheu, J. (1994) *"Legacy at risk"*. National Geographic, October 20-50.

Nelson, F. (2004) *The Evolution and Impact of Community Based Ecotourism in Northern Tanzania,* Sand Country Foundation Community Based Conservation Network. Retrieved from http://www.iied.org (15/8/2008)

Nina H. (2006) *Community-Based Ecotourism as a Sustainable Development Option in the Taita Hills, Kenya,* Master's Thesis, University of Helsinki.

Njogu, J. (2004). *Community Based Conservation in an Entitlement Perspective: Wildlife and Forest Biodiversity Conservation in Taita, Kenya*. African Studies Centre, Leiden.

NRT (undated), About the Northern Rangelands Trust, Retrieved from http://www.nrt-kenya.org (15/8/2008)

Ochego, H. (2003), *Application of Remote Sensing in Deforestation Monitoring: A Case Study of the Aberdare (Kenya),* 2nd FIG Regional Conference, Marrakech, Morocco, online at http://www.fig.net (19/9/2010)

Okazaki, E (2008), *A Community Based Tourism Model: Its conception and Use,* Journal of Sustainable Tourism (pg 511-525).

Okungu, S.C. (2001), *"Kenya's, Strategy/Programmes for the Development and Management of Eco-Tourism in National Parks and Protected Areas".* Paper Presented on the Seminar on Planning, Development and Management of Ecotourism in Africa Regional Preparatory Meeting for the International Year of Ecotourism, 2002 (Maputo, Mozambique, 5-6 March 2001)

Okwi, P., Arunga, M., Kariuki, P., Kristjanson, P., Ndeng'e, G., Notenbaert, A. and Omolo. A. (2006). *Poverty Among Livestock Keepers in Kenya: Are Special Factors Important?* International Livestock Research Institute working paper, Nairobi, Kenya, Retrieved from http://www.ilri.org (12/10/2009)

O'Neill, E. (2008). *Earth-Saving Tips: Community Based Ecotourism,* Christian Science Monitor, Vol. 100 Issue 192, Academic Source Premier (27/8/2008)

Osmani, S.R. (1993). *The Entitlement Approach to Famine: An Assessment,* UNU World Institute for Development Economic Research (UNU/WIDER), Helsinki, Finland.

Portes, A. (1998). *Social Capital: Its Origin and Application in Modern Sociology,* Annual Review of sociology 22: 1-25

Portes, A. and Landolt, P (1996) *The Downside of Social Capital,* The American Prospect 26: 18-23

Priscilla, A. G. (2005). Fundamentals of Survey Methodology, MITRE Washington C3 Centre, McLean Survey, Virginia.

_____, (2000*). "Social Capital: Promise and Pitfalls of its Role in Development"* Journal of Latin American Studies 32: 529

Putnam, R (1995). "Bowling Alone: America's Declining Social Capital" *Journal of Democracy* 6 (1): 65-78

_____, (2000), Bowling Alone: The Collapse and Revival of American Community, New York, Simon and Schuster.

Quinn, M. P. (1990). Qualitative Evaluation and Research Methods, 2nd Ed, Sage Publications, London.

Radeny, M., Isabelle, B., Ogutu, J and Patricia, K (2009). *Livestock Mapping and Poverty Correlation at a Meso-Level in Kenya*. Retrieved from http://www.ilri.org 14/5/2010)

Reid, R. S., Serneels, S., Nyabenge, M., Hanso,. J. (2005). The changing face of pastoral systems in grass dominated ecosystem of Eastern Africa. In Suttie, J. M., Raynolds, S. G., Batello,. C (eds), *Grasslands of the World*, FAO, Rome. Retrieved from www.fao.org/docrep (14/5/2010)

Republic of Kenya, (1996) *Reality of the Wildlife Human Conflict in Kenya*, Retrieved from http://www.safariweb.com/safarimate (7/4/2007)

_____, (1997). Laikipia District Development Plan, 1997-2002, Government Printers, Nairobi

_____, (2001). Laikipia District PRSP Consultation Report for the Period 2001-2004, Ministry of Finance and Planning, Government Printers, Nairobi

_____, (2002) Laikipia District Development Plan 2002-2008, Government Printers, Nairobi National

_____, (2005) Forest Act 2005, Government Printers, Nairobi

_____, (2007) Facts and Figures for 2007, Retrieved from http://www.tourism.go.ke/ministry (15/8/2008)

_____, (2008) Vision 2030, Government Printers, Nairobi

_____, (2010a) Tourism Performance Overview 2010, Retrieved from http://www.tourism.go.ke/ministry (26/2/2011)

_____, (2010b). The Constitution of Kenya, Government Printers, Nairobi

_____, (2010c). 2009 Population and Housing Census, Government Printers, Nairobi

Rutten, M. (1992) Selling Wealth to Buy Poverty; The process of Individualization of Land Ownership among the Maasai Pastoralist of Kajiado District, Kenya, 1890-199, Saarbucken: Verlag Breitenback.

_____, (2002). 'Parks Beyond Parks', Genuine Community Based Ecotourism or Just Another Loss of Land for Maasai Pastoralists in Kenya? International Institute for Environment and Development, London.

_____, (2004). Partnerships in Community Based Ecotourism Projects: Experience from the Maasai Region, Kenya, African Studies Centre, Leiden. Retrieved from http://asc.fsw.leidenuniv.nl (16/8/2008)

Saville, N.M. (2002). 'Sustainable Ecotourism and eco-enterprise opportunities in the Gulf of Mannar, Tamil Nadu, India', Report of a study conducted 5-20 February 2002 on behalf of M.S. Swaminathan Research Foundation.

Schaller, D. (1995). *Indigenous Ecotourism and Sustainable Development: The Case of Rio Blanco, Ecuador*. Available at http://www.eduweb.com (14/5/2008)

Simonseen, S. H. (2007). What is Resilience? Retrieved from http://www.stochholmresilience.org (16/8/2008)

Sindiga, I. (1999). "Alternative Tourism and Sustainable Development in Kenya", *Journal of Sustainable Tourism*, (1999) Vol. No. 2 1999.

Sherbinin, A. (2002). A CIESIN Thematic Guide to Land-Use and Land-Cover Changes (LUCC), Colombia, USA. Retrieved from http://sedac.ciesin.columbia.edu (16/5/2009)

Solomon B., de Leeuw P. N., Grandin, B. E., Neate, P. J. H (eds) (1991). Maasai Herding: An analysis of livestock production system of Maasai pastoralists in Eastern Kajiado District, Kenya, ILCA Systems Study 4, Addis Ababa, Ethiopia. Retrieved from www.fao.org (15/5/2008)

Stronza, A. L (2000). *'Because it is ours', Community Based Ecotourism in Peruvian Amazon,* a PhD Dissertation, University of Florida.

Susannah, M. S. Chasca, T. Stringer, L. C. (2010). Resilience or Vulnerability Livelihoods?: Assessing Livelihood Dynamics and Trajectories in Rural Botswana. Retrieved from http://www.ecologysociety.org (12/6/2011)

UNDP, (1997). Human Development Report 1997, New York, Oxford University Press.

UNDP, (2000). Millennium Development Goals, Retrieved from http://www.undp.org (2/8/2008)

UNEP, (2001). Environmental Impact of Tourism, Retrieved from http://www.gdrc.org (2/8/2008)

_____, (2000). Millennium Development Goals, Retrieved from http://www.undp.org/mdg/basics.shtml (2/8/2008)

UNEP, (2002), The Belize Ecotourism Association (BETA). Retrieved from http://www.world.tourism.org (15/8/2008)

UNEP and WTO, (2002). Quebec Declaration on Ecotourism. Retrieved from http://www.gdrc.org/uem/eco-tour/quebec-declaration.pdf (17/8/2008)

UNF (2010). Promoting Sustainable Tourism. Retrieved from http://www,unfoundation.org (11/5/2011)

Van Damme, K., Casteleyn, L., Manno, M. (2004a). 'Ethical considerations on the planning, assessment and management of biological monitoring data'. Retrieved from http://lirias.kuleuven.be (4/6/2010)

_____, (2004b). Ethical considerations on the planning, assessment and management of biological monitoring data. Retrieved from www.nchi.nim.nib.gov/pubmed (25/4/2010)

Vieta, F.E. (1999). *"Ecotourism propels development: But social acceptance depends on economic opportunities for local communities."* Retrieved from www.africarecovery.org (14/3/2007)

Wallace, M. G., Cortner, H. J., Moote, M. A., Burke, S. (1996). Moving Toward Ecosystem Management: Examining a Change in Philosophy for Resource Management. Retrieved from http://jpe.library.arizona.edu (26/8/2010)

Watkin, J. R., (2003). The Evolution of Ecotourism in East Africa: From an Idea to an Industry. Wildlife and Development Series No. 15 June 2003, IIED. Retrieved from www.iied.org (26/9/2011)

Wen, J. J. and Tisdell, C.A. (2001). Tourism and China's Development: Policies, Regional Economic Growth and Ecotourism.

Williams, A. (2003). *Tourism Geography*, Routledge: New York.

Winifred, B., Kessler, H. S., Charles, W., Cartwright Jr and James, A. C (1992). New Perspective for Sustainable Natural Resource Management, Ecological Application 2 (3) 1992, pp 221-225, The Ecology Society of America.

WWF, (2001). Guidelines for community based ecotourism development. Retrieved from http://www.panda.org (16/8/2008).

WTO, (2004a). Tourism 2020 Vision. Retrieved from http://www.unwto.org (16/8/2008)

WTO, (2004b). Tourism 2020 Vision (Vol. 3): East Asia and Pacific. Retrieved from www.world-tpurism.org (16/8/2008)

Yordanov, I. (2008). Alternative vs. Mass Tourism. Retrieved from http://www.ezilon.com (26/7/2009)

APPENDICES

Appendix 1: Questionnaire for household heads

1. Name of respondent (optional) _____

2. Sex of respondent

1	Male	
2	Female	

3. Age of respondent

1	15-20	
2	20-25	
3	25-30	
4	30-35	
5	35-40	
6	40-45	
7	45-50	
8	50-55	
9	55-60	
10	60+	

4. Marital statues

1	Single	
2	Married	
3	Widowed	
4	Widower	
5	Divorced	

5. Level of literacy

1	Non	
2	Primary	
3	Secondary	
4	Tertiary	
5	University	

6. Name of the group ranch that you belong.

1	Il Ngwesi	
2	Lekurruki	

7. How did your become a member of the group ranch?

1	Birth	
2	Inheritance	
3	Marriage	
4	Bought	

8. Name of the village

1	Ethi	
2	Sang'a	
3	Chumvi	
4	Ngare Ndare	
5	Nandunguro	
6	Lakusero	
7	Leparua	
8	Sieku	

9. Duration of residence

1	1-5 years	
2	5-10	
3	10-15	
4	15-20	
5	20-30	
6	30-40	
7	40+	

10. What tenure of land are you holding in the village?

1	Private	
2	Communal	
3	Squatter	
4	Tenant	

11. How did you acquire the land you occupy in the village?

1	Bought	
2	Inherited	
3	Squatting	
4	Group ranch funding	
5	Tenant	
6	Group ranch membership	

12. What is the size of land in acreage that is available to you?

1	1-5 acres	
2	5-10	
3	10-15	
4	15+	
5	Open	

13. How is your household involved in the management of the group ranch resources?

1	Attend meetings	
2	Elect officials	
3	Member of committee	
4	Employee	
5	Elder	

14. Was the local community involved in any way in starting of ecotourism project?

1	Yes	
2	No	

15. If yes, in which ways?

1	Giving space	
2	Electing officials	
3	Funding	
4	Labour	

16. How is your household involved in these activities?

1	Giving space	
2	Electing officials	
3	Funding	
4	Labour	
5	Employee	
6	Official	
7	Committee member	

17. What gains were expected from the ecotourism projects?

1	Income	
2	Employment	
3	Security	
4	Reduced human-wildlife conflict	

18. Have the expectations been met?

1	Yes	
2	No	

19. If yes, which ones?

1	Receive dividends	
2	Employment	
3	Improved security	
4	Reduced human-wildlife conflict	

20. Are there other benefits that your household has gained form the projects?

1	Yes	
2	No	

21. If yes, which ones?

1	Water projects	
2	School building	
3	Health centres	
4	Transport from ranch vehicles	
5	Roads graded	
6	Bought land from ranch support	
7	Business opportunity	
8	Market for farm/livestock produce	

22. How does your household access the benefits?

1	Water is available	
2	Children attend schools supported	
3	Medical services close by	
4	Ranch vehicles assist at time of distress	
5	Roads have made movement easier	
6	Have acquired land through ranch support	
7	Operate curio	
8	Supply lodge with farm produce	

23. Are there any negative effects on the resources in the group ranch since the introduction of ecotourism?

1	Yes	
2	No	

24. If yes, which ones?

1	Increased number of wildlife a menace to vegetation	
2	Exclusion of grazing has led to shrub encroachment	
3	Wildlife has become more fierce	
4	Increased number of visitors exposing community to new challenges and competitions	
5	Donors' control of community resources	

25. Positive effects on the resources

1	Increased wildlife	
2	Reduced overgrazing	
3	Reduced soil erosion	
4	Increased vegetation cover	
5	Conservation of herbal plants	

26. Does your household experience any difficulties is accessing the range resources due to ecotourism activities?

1	Yes	
2	No	

27. If yes, what are the problems?

1	Reduced pasture	
2	Increase human-wildlife conflict	
3	Exclusion from accessing herbs	
4	Inaccessibility to watering points	
5	Inaccessibility to wood fuel	
6	Inaccessibility to bee farming sites	

28. What are the problems facing ecotourism activities in the ranch?

1	Mismanagement	
2	Misappropriation of funds	
3	Domination by donors/partners	
4	Low involvement of community	
5	Threat of accidents on visitors	
6	Marketing of the projects	
7	Human-wildlife conflict	
8	Poaching	

29. How do you think the problems can be solves?

1	Independent auditing of accounts	
2	Policy formulation on donor/community partnership	
3	Community participation paramount	
4	Equitable sharing of proceeds	
5	More home guards to contain human-wildlife conflict	
6	Compensation of wildlife inflicted harm	
7	Punish poachers	
8	Tourism ministry to supporting marketing	

The End, Thank You.

Appendix 2: Interview Schedule for Key Informants

1. Name of respondent (optional) _____
2. Age of respondent
3. Sex of respondent
4. Level of literacy
5. Name of group ranch
6. Position in the management
7. Length of time in management
8. How are members enrolled in the group ranch?
9. How many members are currently enrolled?
10. Resources considered important in the ranch
11. Ecotourism activities in the ranch
12. When was ecotourism started?
13. How was it started?
14. What role did the local community play in starting ecotourism?
15. What are the local community entitlements in the activities?
16. Which projects has ecotourism helped develop?
17. Which benefits have been enjoyed here from ecotourism?
18. How has ecotourism helped manage the environment in the ranch?
19. What are the problems faced management of ecotourism activities?
20. How are the problems solved?

Appendix 3: Focus Group Discussion Schedule

1. Name of group ranch
2. How are members enrolled in the group ranch?
3. Resources considered important in the ranch
4. Ecotourism activities in the ranch
5. When was ecotourism started?
6. How was it started?
7. What role did the local community play in starting ecotourism?
8. What are the local community entitlements in the activities?
9. Which projects has ecotourism helped develop?
10. Which benefits have been enjoyed here from ecotourism?
11. How has ecotourism helped manage the environment in the ranch?
12. What are the problems faced management of ecotourism activities?
13. How are the problems solved?

Appendix 4: Important Resource and Land Uses in Il Ngwesi and Lekurruki Group Ranches

Group ranch important resources	Land uses															
	Grazing		Cultivation		Ecotourism		Bee keeping		Herb extraction		Recreation		Traditional rites		Residence	
	f	%	f	%	f	%	f	%	f	%	f	%		%	f	%
Land	4	2.2	2	1.1	3	1.7	1	0.6	1	0.6	-	-	1	0.6	-	-
Bees	10	5.5	4	2.2	11	6.1	7	3.9	4	2.1	1	0,6	3	1.7	-	-
Forest	93	51.4	40	22.1	100	55.3	38	21.0	25	13.8	22	12.2	30	16.6	-	-
Water	53	29.3	23	12.7	53	29.3	39	21.6	17	9.4	15	8.3	10	5.5	-	-
Wildlife	130	71,8	49	27.1	136	75.1	39	21.6	25	13.8	29	16.0	36	19.9	1	0.55
Soils	22	12.2	13	7.2	22	12,2	15	8.3	6	3.3	4	2.2	6	3.3	1	0.55
Herbs	4	2.2	1	0.6	3	1.7	2	1.1	4	2.2	-	-	-	-	-	-
Pasture	44	24.3	17	9.4	38	21.0	13	7.2	9	4.9	10	5.5	3	1.7	-	-
Stones	13	7.2	9	5.0	11	6.1	11	6.1	1	0.6	1	0.6	5	2.8	-	-
Caves	9	5.0	10	5.5	15	8.3	14	7.7	6	3.3	3	1.7	3	1.7	1	0.6
Trees	11	6.1	4	2.2	10	5.5	5	2.8	2	1.0	1	0.6	2	1.1	1	0.6
No Diseases	1	0.6	-	-	1	0.6	-	-	-	-	-	-	-	-	-	-
Rocks	3	1.7	2	1.1	3	1.7	1	0.6	-	-	1	0.6	1	0.6	-	-
Sand	9	5.0	12	6.6	14	7.7	12	6.6	4	2.2	3	1.7	5	2.8	1	0.6
Hills	5	2.8	8	4.1	7	3.8	10	5.5	6	3.3	5	2.8	2	1.0	1	0.6
None	3	1.7	-	-	4	2.2	-	-	1	0.6	-	-	1	0.6	-	-

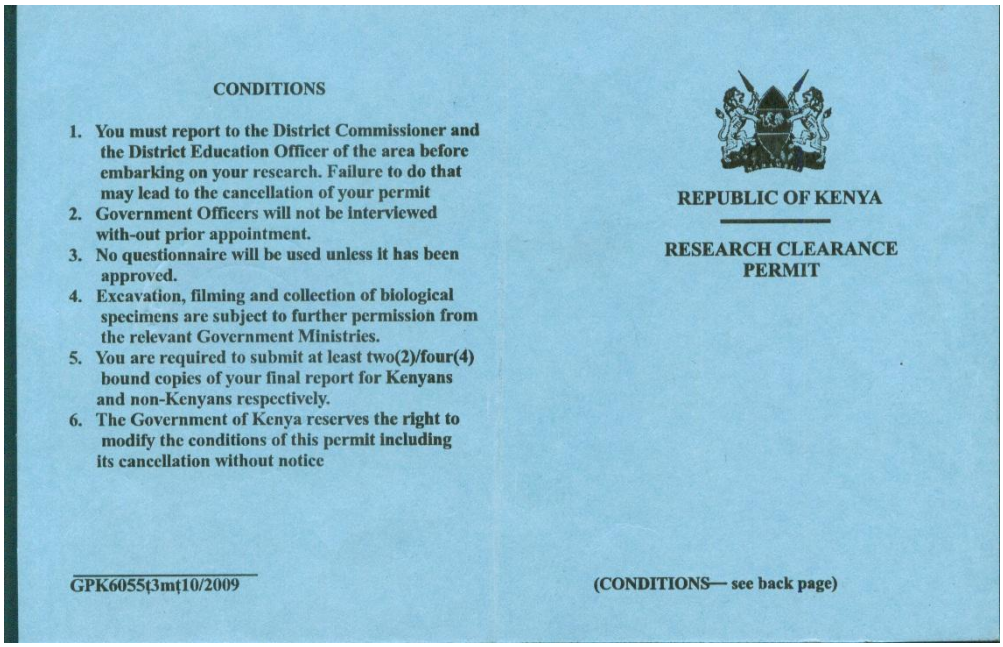
(Source: Field Data)

Appendix 5: CBET Entitlements in CBET in Il Ngwesi and Lekurruki group ranches

- Election of officials of the various committees mandated with responsibilities of managing group ranch activities, hence the right to hire or fires the management staff.
- Seek elective positions in the committees.
- Employment in vacancies such as housekeeping at the lodge, drivers, scouts, tour guides, lodge managers, liaison officers, and members of entertainment troupes at the cultural villages.
- School construction, bursaries and hiring of teachers.
- Decision making at the AGM and in the various committees particularly on the projects to be supported with proceeds from the group ranch activities.
- Business opportunities such as sale of curios and other cultural artefacts.
- Membership to the group ranch and ownership of the resources.
- Shareholding and sharing of dividends through projects initiated from activities in the group ranch.
- Pasture in the conservation area during drought.
- To be informed at the AGM.
- Access to resources in the ranch.
- Petitioning at the AGM on matters of conflict and infringement of ones' rights.
- Attending meeting particularly the AGM and of the committees where one is a member.
- Monitoring and guarding the ranch resources from intruders seeking pasture and other resources.
- Information on the activities and the performance of the same.
- Development projects supported with proceeds from group ranch activities.
- Receiving cash payment if visitors ventured outside the conservation areas within the group ranch (Lekurruki).
- Terminate eco-lodge management lease (Lekurruki).
- Monitor lodge and the conservation area (Lekurruki).

Source: Field data (2010)

Appendix 6: Research Clearance Permit



CONDITIONS

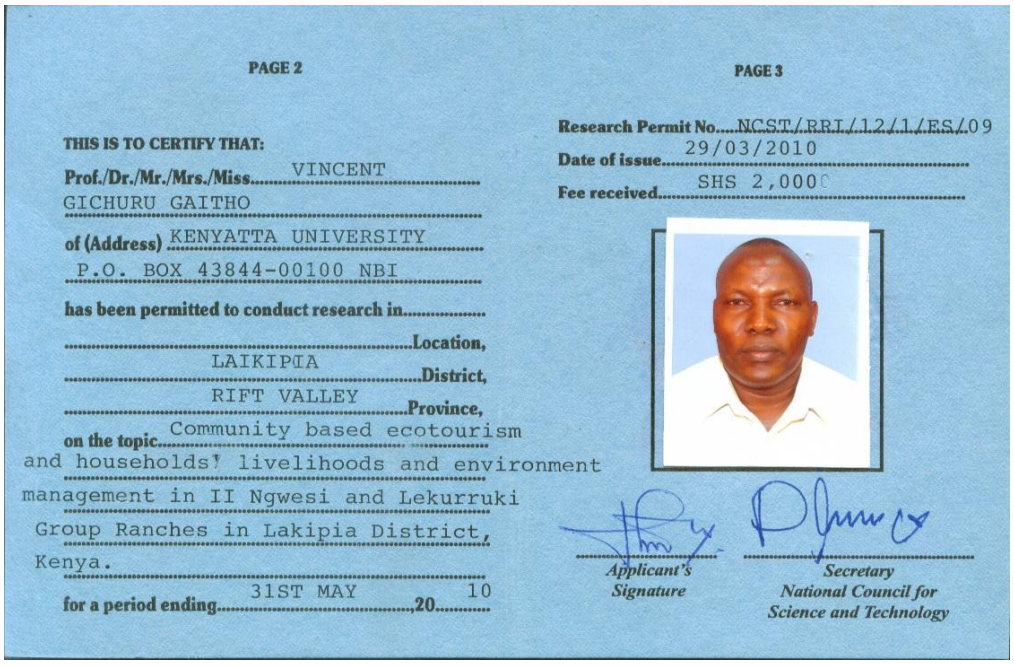
1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed with-out prior appointment.
3. No questionnaire will be used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

GPK6055(3m(10/2009

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

(CONDITIONS— see back page)



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THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss..... VINCENT GICHURU GAITHO

of (Address) KENYATTA UNIVERSITY P.O. BOX 43844-00100 NBI

has been permitted to conduct research in.....

.....Location,

LAIKIPIA

.....District,

RIFT VALLEY

.....Province,

on the topic..... Community based ecotourism and households' livelihoods and environment management in II Ngwesi and Lekurruki Group Ranches in Lakipia District, Kenya.

for a period ending..... 31ST MAY **,20.....** 10

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Research Permit No..... NCST/RRI/12/1/ES/09

Date of issue..... 29/03/2010

Fee received..... SHS 2,000

Applicant's Signature

Secretary National Council for Science and Technology

Appendix 7: A Research Assistant Administering a Questionnaire to a Respondent at Sang'a

Source: Field data (2010)

Appendix 8: A Focused Group Discussion Session at Sang'a

Source: Field data (2010)

Appendix 9: Signage to Il Ngwesi at Loiragai Centre

Source: Field data (2010)

Appendix 10: Part of Il Ngwesi Dispersal Conservation Area

Source: Field data (2010)

Appendix 11: Group Photo of Research Assistants on the Il Ngwesi-Wamba-Isiolo Road

Source: Field Data (2010)

Appendix 12: Sang'a Primary School Constructed with Il Ngwesi CBET Proceeds

Source: Field data (2010)

Appendix 13: An Eroded Section of Il Ngwesi Group Ranch as Leparua

Source Field data (2010)

Appendix 14: Research Team in a Data Collating and Cleaning Session

Source: Field data (2010)