**LIVELIHOODS, NATURAL RESOURCE ENTITLEMENTS AND PROTECTED AREAS: THE CASE OF MT. ELGON FOREST IN KENYA.**

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## 1. INTRODUCTION

The management of protected areas has been based on the idea that the protected areas are of primary importance to a nation; and, that they must be protected and shielded from people living adjacent to them. This is often achieved through the strict enforcement of rules to prevent illegal activities. Attempts to protect forest reserves and national parks through exclusion have often led to local people developing hostile attitudes towards forests and wildlife. In some cases open conflicts have occurred which have resulted into losses of life and property.

Kenya's indigenous forests are home to many communities whose livelihoods depend on the natural resource. Approximately 2.9 million people live adjacent to forests in Kenya. This is over a tenth of the total population (Wass, 1995). Population growth in Kenya as in most parts of Africa has been claimed to be a major driving force behind environmental degradation. This claim has been supported by the fact that the livelihoods of the majority of the population in such countries are linked to agricultural production at subsistence level. Therefore, with the growing population, expansion of agriculture has been achieved at the expense of the natural resource base (Kamugisha et al, 1997).

'Livelihood' refers to the access that individuals or households have to different types of capital (natural, physical, human, financial and social), opportunities and services (Ellis, 2000). The rules and social norms that determine the ability of people to own, control or claim these resources further control access to them. Several factors influence the extent to which a household depends on a forest resource. Such factors include distance, infrastructure, wealth, household size, and level of education of members of household. Distance from the forest will mainly dictate whether a household depend almost fully on the forest or not for its needs. Some research findings had shown that poorer households depend totally on forest products due to limited access to alternative sources of income, while the more wealthy households mainly use the forest for larger commercial activities (Wass, 1995). The degree to which such levels of dependence on the forest resource, results in its degradation, is still debatable.

The history of control of forests by the government for conservation purposes in Kenya dates as far back as the colonial period. By 1908, the colonial government had put all the major forest areas in the country under the control of the government. By 1932 a total of 43 forests were defined as government forests. The colonial government emphasized that "the public good was best served through the protection of forests and water resources, even if this meant the displacement of the local communities." ( Kamugisha et al, 1997). But at the time, the population was still small and competition for land resources had not been predicted. By 1990 the total forest areas gazetted was about 1 930 000ha and the process of gazettement still continues (Wass, 1995).

The management of forest resources in Kenya is guided by the National Forest Policy supported by the Forest Act (Wass, 1995). The Forest Department under the Ministry of Environment and Natural Resources is responsible for all the gazetted forests. The main activities of the Forest Department include active management of plantations, law enforcement to control illegal extraction, licensing of extraction of forest products and fire protection. The Kenya Wildlife Service (KWS) was created as a parastatal in 1990 to control national parks countrywide. In many developing countries, the creation of national parks and protected areas to enhance conservation are common (Ghai, 1994; Salafsky and Wollenberg, 2000; Kamugisha et al, 1997). KWS works closely with the Forest Department and aims at conserving the natural environment and its flora and fauna for future generations. The organization also aims at using wildlife resources of Kenya sustainably for the economic development of the nation and for the benefit of the people living in wildlife areas. Finally, it aims at protecting people and property from injury or damage caused by wildlife. KWS operates as a commercial entity and tourism provides a major source of revenue. A large part of the KWS strategy is to share proceeds from tourism with the local communities inconvenienced by the presence of the wild animals or creation of the parks.

Since the historic times, competition for natural resources has been a major cause of conflicts between different groups, classes and nations (Hardin?). There are existing conflicts between the objectives of the conservation programmes and those of the local communities (Ghai, 1994; Salafsky and Wollenberg, 2000). The sense of traditional ownership, responsibility and control of forests and their benefits by local communities have largely been ignored. Most communities therefore view government control and management negatively thus making them indifferent to conservation initiatives led by the government. The government also lacks financial and personnel resources to sustainably manage the forests. As population grows, the pressures on the forests are increased and this has exacerbated the conflict between the local communities and the government. The conflict between 'resource users' and 'resource conservers' has been the biggest hindrance in conservation efforts (Scott, 1998).

In Kenya, the conflict between the Kenya Forest Department and the forest dwellers has increased since the creation of the Forest Reserves, which began during the colonial periods. Recent conflicts have been recorded in Mau forests (?), Mt. Elgon forest (?) and Mt. Kenya forest (?) Although there are many people who have encroached on the forests in search of land for cultivation, there is a clear distinction between those who are the original forest dwellers and those who encroach (Wass, 1995). The presence of the traditional hunters and gatherers has always been overlooked or just ignored since their presence does not conform to the rules of the forest department. There is also the case of the 'squatters' who were originally brought in to the forests through the 'shamba'[1] system who also claim ownership. The increase in population has led to further encroachment into forest reserves.

It is now internationally recognized that greater community participation in forest management can contribute to reduce the over-exploitation of forest resources. Conservation of environmental resources can only succeed if the social factors, which influence people's interaction with the environment, are addressed. These include access to the natural resources, the level of decision making processes and empowerment (Ghai, 1994). These will make communities to consider forests as belonging to them. In Kenya, there are some levels of community involvement in forest management such as revenue sharing in national parks (but only operational in a few parks), permitted use under government control (such as the forest reserves) and consultation over government planned initiatives etc.

The Mt. Elgon ecosystem is a unique case where, a forest reserve and a national park extend and border with the local communities. The people who live adjacent to the forest depend on the forest for their livelihood. The forest provides most of the goods and services, which form the basis of their subsistence. Though the forest adjacent communities view the forest as a reservoir of goods and services, some parts of the forest have been opened up for cultivation under the Taungya system. There are conflicts, which have arisen from the use of forestland for cultivation both within the forest and along the forest boundaries. The forest department looks upon the cultivators to contribute to development of the forest, while the cultivators would like the forestland to continue being the source of the forests crop products.

The main objectives of this paper are therefore to investigate the links between forests and livelihoods in the agriculturally rich Mt. Elgon community. The extent to which the linkages are enshrined in the forest governance structures and how such linkages impact on the management of protected forests and the game reserve.

## 2. DESCRIPTION OF THE STUDY AREA

Mount Elgon is the fourth highest mountain in Africa with a peak of 4320 m.a.s.l. It is located on the North Western Kenya and Eastern Uganda international boundaries. It covers two administrative districts and provinces -Mt. Elgon district in Western province and Trans Nzoia district in Rift Valley province. It is a large extinct volcano of tertiary origin with an altitudinal range of between 2030 and 4320 m.a.s.l. It lies at latitude 1° 08' N and 34°45'E and receives an annual precipitation of 1280 mm and minimum and maximum temperatures of 9°c and 22°c respectively. The soils are poorly drained dark peaty loams, ranging in colour from reddish brown to black. They are shallow with rock outcrops

[1] This is a system whereby members of community are 'given' portions of land within the forest to cultivate in while at the same time planting trees which later become established as plantations.

above 3000 m. On the mountain footsteps covering most of the forest is mostly well-drained humid friable clay with dark red subsoil derived from volcanic rocks.

Mt. Elgon vegetation can be zoned into four, that is open woodland, tropical moist forest, bamboo and afro-alpine zone that is above the bamboo zone. *Juniperus procera, Hagenia abyssinica, Olea welwitschii, O.hotstetteri, Prunus africana, Podocarpus falcatus* and *P. latifolia* dominate the moist tropical forest. Moorlands, swamps and rocks form a major part of the afro-alpine zone.

Mount Elgon forest was gazetted as a government forest reserve in 1932. It currently covers an area of about 49,382.9 ha. The forest is divided into three management units namely the natural forest reserve, the commercial exotic plantations and the national park. These are named Kimothon forest, Mt. Elgon and Chorlem forest blocks respectively. The national park was gazetted in 1968 and covers an area of 16 900 ha while the plantations of cypress, pines cover an estimated area of 4,500 ha. The Forest Department manages the forest reserve while the Kenya Wildlife Service manages the National Park. The density of the vegetation and the species diversity of the Mt. Elgon forest are about normal for this ecological zone. However the commercial and the subsistence values of the forest is regarded as below normal. Over the past 5 years, the density of trees have decreased due to clearing and over-exploitation of some species. Forest fires have also destroyed some trees, causing overgrowth of non-palatable species. The destruction caused on trees by medicine harvesters, and big animals have also contributed to decrease in tree species and density.

The study was done in two settlements which border Mt. Elgon forest. These are Matumbei and Chepkengen. The settlements are adjacent to each other across the Matumbei river valley.
While Matumbei settlemet borders the national park, Chepkengen settlement borders the forest reserve. The population density is high and multi-ethnic. Most of the inhabitants have migrated from far away places. The immigrants have influenced the local communities who were primarily livestock herders to be agriculturists. This change in the lifestyle of the people has led to encroachment of the forest for cultivation and exploitation of the forest products.

The forest has been subjected to over-exploitation of high value commercial tree species such as Elgon teak (*Olea welwitschii*) especially in the natural forest. Over the past 5 years, the forest cover and the tree density has decreased due to extensive clear felling of plantations without re-planting by large timber processing companies. There is also uncontrolled utilisation of forest by residents such as illegal harvesting of high value trees and increase in number of forest users over time.

**2.1 Chorlem site background**

Chorlem site is a part of the Mt. Elgon National Park. It is accessed through the Kitale- Suam road branching at Endebbes. The site is composed of natural forest only with some areas extending to the nature reserve. The park occupies a total of 169 square km, which is officially owned by KWS on behalf of the Kenyan government (IFRI/CRC-K site report no. 1, 1997). The surrounding soils are rich volcanic ash black loams with potential for growing coffee. The forest topography is comprised of rolling terrain with some steep portions and is managed as one block (National Park). The settlement that borders the national park is called Matumbei while the Chepkengen settlement borders the forest reserve. The largest ethnic community in the area is the Sabaots. There are six churches and six primary schools but there is no secondary school in the whole location. There are two non-governmental organizations namely IUCN and VI that operate in the area and are involved in the promotion of sustainable natural resource utilisation and conservation.

The farms in the area are sub-divided into small units of about 2 hectares. The main crops grown are maize and beans. Livestock are few despite the history of the pastoral Sabaot herdsmen whose main economic activity is livestock grazing. Insecurity in the area in the form of cattle rustling and land clashes were common in the recent past but these have subsided due to improved security measures.

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**3. METHODS USED**

The team used parts of the IFRI research instruments ( Ostrom and Wertime 1995 ) to asses the claims by the local forest adjacent communities had on the forest and how such claims impacted on the conservation level of the forest. The method used involves mainly the collection of biophysical data on the forest and the sociological data on the forest adjacent communities.

**3.1 Socio -economic data:**

Participatory Rapid Appraisal methods (PRA) were used to collect socio-economic data. These included field observations, general and focus group discussions with members of the community to obtain information on specific topics. Discussions were also held with some key informants such as the chief, elders and different gender groups to obtain detailed information on certain topics. A meeting was set up with the chief and forest officers and discussions focused on general information regarding the settlement such as demography, administration, infrastructure, occupational structure, socio-economic issues and how the residents use and perceive the forest resource. The relationships between the forest and the residents were also documented. Members of the community expressed their socio-economic and general environmental management needs during the meeting. They also discussed how they access and use the forest.

**3.2 Biophysical data:**

Sampling for this site primarily covered the national park (Chorlem block). Thirty plots were randomly selected using four figure random numbers generated by a calculator. To locate the random plots on the map, the UTM grid co-ordinates were used and the last four figures of the Eastings and Northings used to locate the approximate position of the plots on the map. On the ground a starting point was located next to the gate of the National Park since it is easily visible on the map. Using a compass, the plots were located on the ground using the gate as the reference point and bearings and distances to the plots calculated using a protractor and a ruler on the map. This was done until all the 30 plots were located on the ground. Appendix 1 shows the coordinates of the 30 plots.

Inside the forest, thirty circular plots were established at random from the natural forests, plantations, bushes and cultivated areas. Each circular plot consisted of three circular plots of 1m radius (3.14 $m^2$), 3 m radius (28.26 $m^2$) and 10 m radius (314 $m^2$) (Fig. 2). Within the 3.14 $m^2$, all woody seedlings and the herbaceous plants were recorded and the percentage of ground cover was noted. These were defined as young trees, shrubs, or woody climbers within stem diameters less than 2.5 cm or a height less than 1 m. Any species covering less than 1 percent of the cover within 1 m radius circle was recorded as 0.5 per cent. In the 28.26 $m^2$ circle, all the shrubs, saplings and woody climbers with diameter at breast height ranging between 2.5 to 10 cm were sampled. The diameter was measured for all but height was estimated for shrubs and saplings only. In the 314-m2 circle, the diameters and heights of all trees with a diameter at breast height of more than 10 cm were measured. The sampling method was aimed at documenting the biophysical conditions of the forest, plant diversity and their uses.

# 4. RESULTS AND DISCUSSIONS

About 5000 people living near the national park, 1-5 km, depend on the Chorlem block (National Park) for subsistence. Most people depend on the forest mainly for subsistence products such as firewood, poles and posts, water, game meat, medicinal plants. These are obtained from the forest illegally. There is potential for economic activities to be derived from the forest if forest if proper institutional arrangements which recognize the right of the communities to exploit the forest are put in place.

Results from this study show that the local communities often conflict with the managers of protected areas where forest rules do not favour them. In the case of Mt. Elgon, the institutions responsible for the management of the protected areas did not consider the traditional and long-term de facto rights by the local communities to exploit goods and services from the protected forests. While the local communities considered their dependence on the forest as their entitlement, the forest managers considered that it was their legal rights. In area where the government started a project aimed at involving local communities in forest management, this continued conflict contributed to the misunderstanding of the roles of the different organisations, which were working in the area at the time when the study was done.

### 4.1 Socio-economic background of the community:

During the first visit in 1997, Matumbei settlement had a population of about 27 000 individuals from 2 000 households. In the year 2001, 5 years after the initial visit, the population of the settlement was 25 000 individuals from 1 732 households. This shows a marked reduction in the population within the last 5 years possibly due to death and insecurities motivated by cattle rustling activities which caused a number of families to move away to more secure areas. Some politically motivated land clashes due to greed for land and power also led to deaths and more movements.

The residents derive most of their basic income through subsistence farming. The major crops grown are maize and beans mostly for home consumption but the surplus is sold. The community depends highly on the neighbouring forest for fuelwood, timber, medicinal herbs, posts and poles and for grazing their animals. An area of the forest has also been set aside for them to cultivate on although they have to pay some duty to the Forest Department each year for this service. Since their land sizes are small, this service has improved their harvests tremendously.

The community's definition of wealth is based on *ownership* of about 2 hectares of land, a house, more than 4 heads of cattle and the ability to have food security all through the year. On the other hand, those who do not own land, a house and lack food security throughout the year are considered poor. None of the households were ranked as being wealthy or very poor since there weren't major discrepancies between the members of this community. Most members own agricultural land but no household sells surplus food because the household consumes all the harvested food (most households consume their own crops for 8 months in a year). Farming (especially maize and beans) and livestock rearing are the most common occupations Firewood harvested from the forest is main source of energy for cooking.

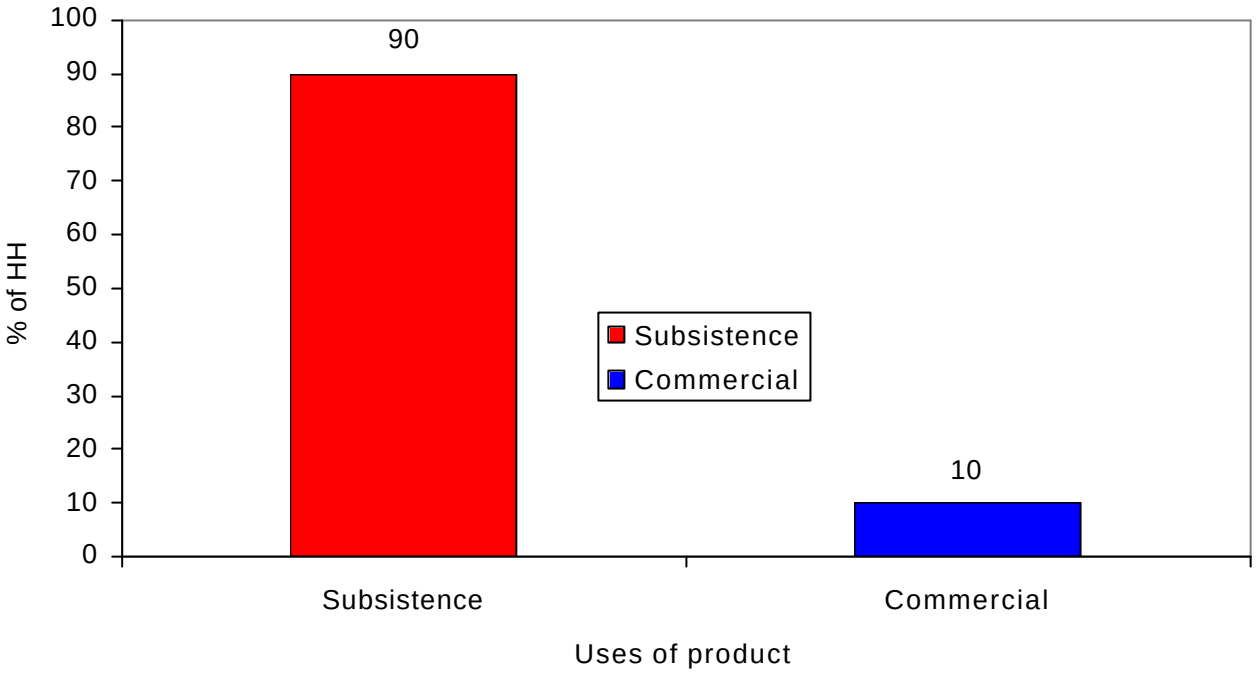
Four main groups were identified as the major user groups. These were the firewood collectors, herbalists, posts and poles collectors and hunters. The term 'user group' refers to a group of people who harvest from, use and/or maintain a forest and share the same rights and duties to products from a forest even though they may not be formally organized (IFRI-K Site Report no.7).

### 4.2 Fuelwood collectors

The firewood collectors collect firewood from the forest. All the members are adult females and only one of them works outside the settlement on a full time job. This further shows the dependence the people have on the forest for their sustenance. On average all individuals of the user groups live between 5 and 10 km from this forest. Conflicts therefore arise between the user groups who are predominantly female and the Forest Department and KWS whose main goals are to conserve the forest. The KWS advocates for a total ban against using any of the forest products. The Forest Department allows the firewood collectors access to the forest with conditions such as payment of a certain amount of money, the quantity of firewood to be harvested, the type of transport to be used to

carry the product for example, they are not allowed to use vehicles to transport the fuelwood but they can use donkey carts and wheelbarrows (to avoid selling the firewood). The communities living adjacent to this forest depend entirely on fuelwood from the forest for energy for cooking (fig 1).

Fig 1: Chemkengen firewood collectors




Although they are only allowed to collect a limited amount for domestic purposes to avoid exploiting the forest, about 10% of all the collectors harvest the fuelwood for sale. This brings more conflict between the authorities and the community.

Although the idea of paying to harvest from the forest sounds plausible theoretically, it is not very practical. Sometimes members of certain households lack enough cash to buy the receipt that allows them to have access to the forest. They believe they have a right to the forest and it is common for members to harvest as much as possible with no regards for the authorities. All the rule breakers are caught and reprimanded and this further intensifies the conflict.

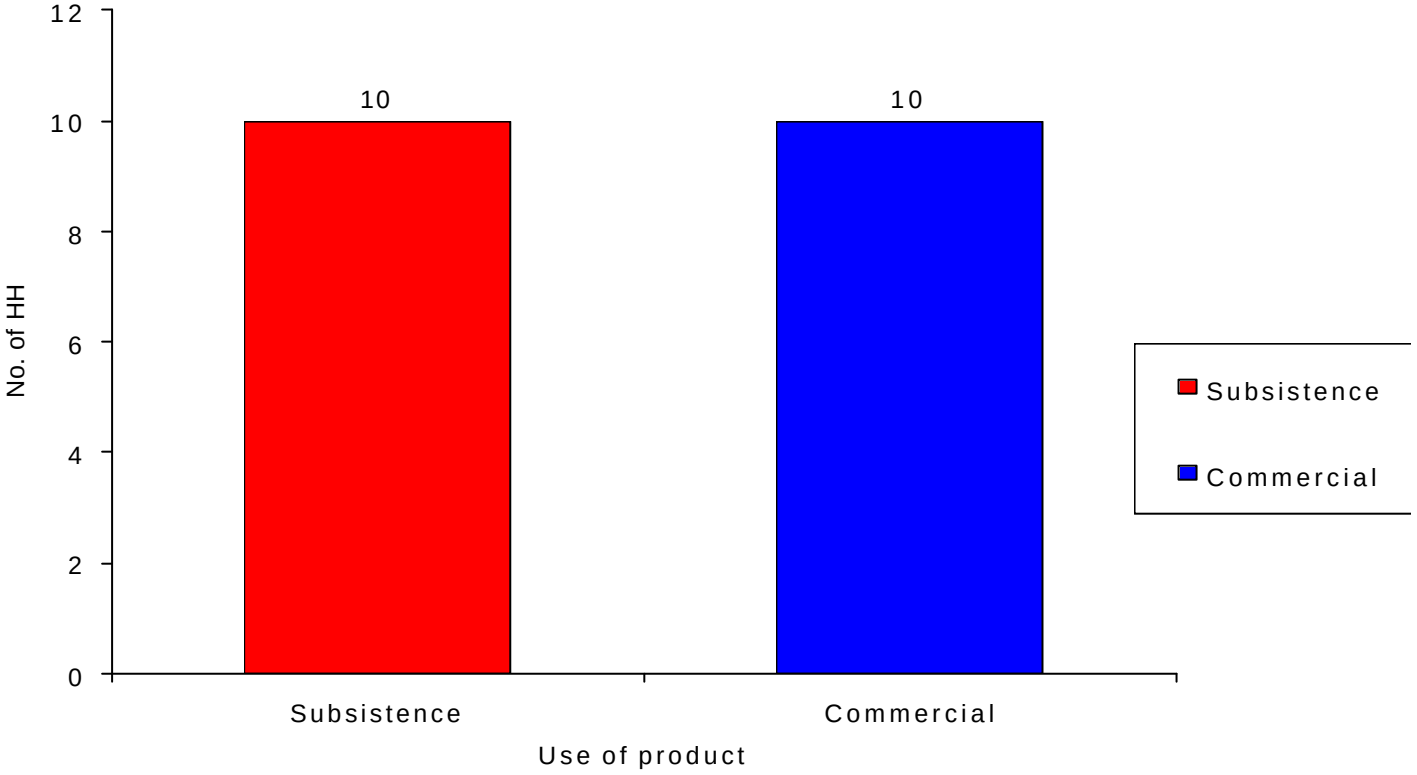
The KWS advocates for a total ban against using any of the forest products. The members of the community are therefore expected to walk very long distances to other forest in search of the firewood so as to conserve the Chorlem Block. This creates a lot of tension between the members of the community and the KWS since the community expects to derive their livelihood from the forest.

KWS and the Forest Department have banned charcoal burning but the activity is still on-going. There are a number of kilns that are found deep in the forest which proves that the members of the community are burning charcoal secretly. From data collected, about 10 households admitted to burning charcoal secretly both for domestic purposes and commercial purposes (fig 2). Anyone found burning charcoal is arrested and punished by either paying a heavy fine or serving a jail term. This has led to further mistrust and antagonism from members of the community who prefer to hide the identity of the culprits.

**4.3 Herbalists**

This is an informal group made up of about 50 households in Chemkengen (Kimothon Forest) and 30

Fig 2: Chemkengen charcoal burners




in Matumbei (Chorlem Forest) (fig 3). The most important product to this user group is herbal medicine used primarily by the family to treat human and livestock ailments. The quantity varies greatly from season to season during the year. The closest substitute for herbal medicine is conventional medicine which is available in local and external markets. Despite the easy access to conventional medicine, very few members of the group can afford it.

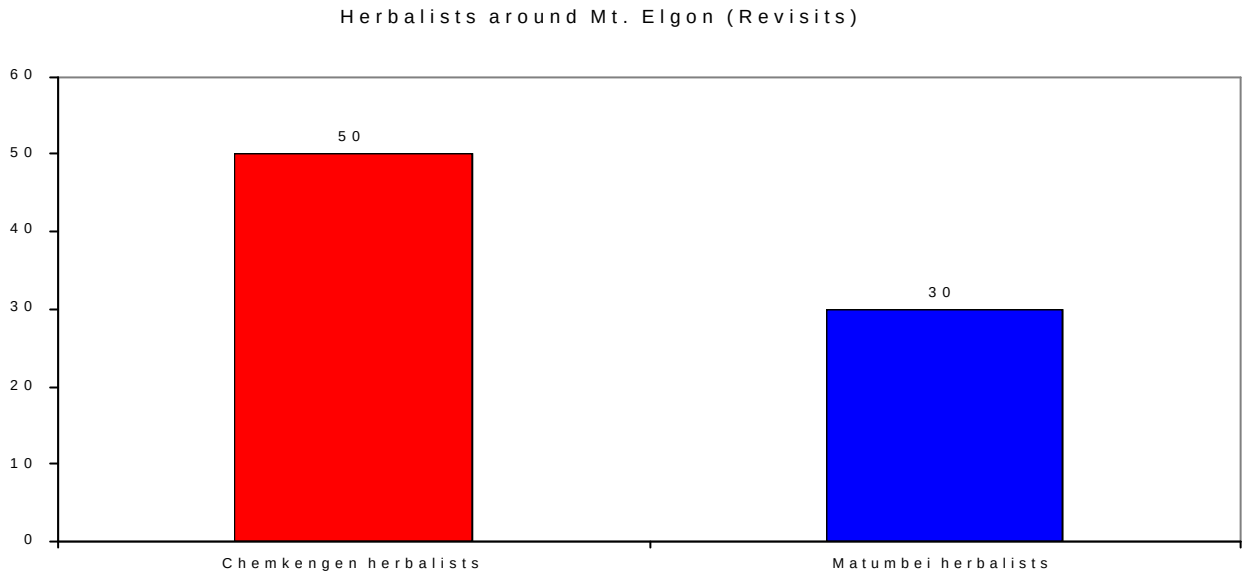
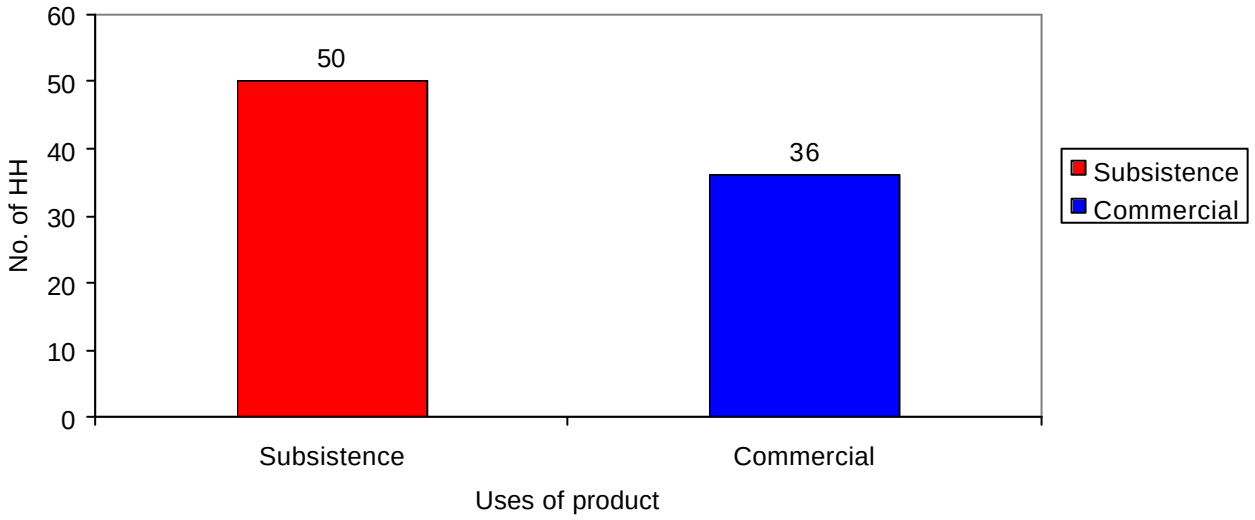



Fig 3: Chemkengen herbalists




The Forest Department allows the user group to harvest a limited amount of the product from the forest. They are discouraged from using the product for commercial purposes. Out of the 50 households that practice herbal medicine, 36 use the product for commercial purposes. They therefore expected to harvest a small amount at a time for using on a particular ailment. The location of harvesting also matters since the user groups are not allowed to harvest from particular areas. They are also expected to only use their hands, machetes and sticks to harvest. The can harvest any time but they should not cut down a tree to get medicine or dig the roots too deep to affect the life of the tree. They are not allowed to transport a large amount of medicinal products from the forest.

The KWS does not allow the herbalists to harvest from the Chorlem Forest block but members of the community do so illegally. Culprits who are found breaking the rule are punished.

### 4.4 Hunters

This is an informal group made up of about 50 households. All members are adult males. There are no female hunters. The most important product to this user group is Wild game, which provide both income and food. The forest is the major source of protein for the community. Although there are other sources of protein such as meat from licensed butchers, only a small percentage of the community can afford to buy it and only on irregular basis.

It is illegal to hunt game meat and KWS has the mandate to ensure that the community follows this law. This has caused a lot of conflict between members of the community and the organization because they believe they have a right to the game meat. There are often ill feelings against the government because the community misinterprets conservation strategies to mean that the government has more concern for animals than human beings.

### 4.5 Pole and posts collectors

This is an informal group made up of about 74 individuals from 70 households. Sixty-four of the members are adult males while 10 are adult females. The most important products to this user group are posts and poles for building houses and fencing. They have no formal right to harvest these poles and posts from the forest. The closest substitutes for this product are metal posts, stone blocks for fencing cement for building and rafters for the roof. The rafters are available in government forests and through agroforestry production while the other products are available in the local and external markets. Despite the easy access to the substitutes, very few members of the group can afford it. They therefore depend totally on the forest for the poles and posts. The technologies used by most individuals to harvest include machetes, axes and saws. One major problem that was constantly experienced by members of the community in this area is cattle rustling. The user groups however noted that conflicts in the area between the community and cattle rustlers from neighbouring Ugandan communities have decreased due to increased security in the area. The General Service Unit (GSU) of the Police Force has posted officers to strengthen the security.

Members of the community do not participate in rule making regarding forest use. The rules and regulations are made and enforced by KWS (Chorlem) and the Forest Department (Kimothon). Since the Kenya Wildlife Service (KWS) and the Forest Department do not allow the harvesting of any product in the forest, the members of the user group harvest illegally.

## 5 CONCLUSION

Mt. Elgon forest was once visualised as belonging to the local people but once institutionalised by the government, the views changed. The local communities had a negative attitude towards conservation strategies by the government. To the community, the protected areas represent the perfect facilities to provide grazing grounds, water sources, fertile land for cultivation, food, fuelwood and charcoal, poles and posts for building among others. This has resulted in continued encroachment and exploitation of the forest, which has intensified the conflict between the two groups.

Several factors including distance from the forest, wealth and gender determine the extent of forest use by communities that live adjacent to forests. The 'cat and mouse' game between the forest authorities and members of the community has resulted in degradation of the natural resource. As is common in most African communities, women are directly and indirectly involved in natural resource management. The degradation of the natural resource therefore affects them directly. Declining agricultural and livestock yields and increased workloads in fetching water and firewood are major examples.

The government can only succeed in conservation efforts if the local communities are enlightened on the dangers of continued exploitation. There is need for the two groups to work together towards sustainable management of the forest. The government should allow limited access to the forest

resources and the community should take part in forest development activities such as creation of nurseries and plantations to limit deforestation. It is also imperative that the community shares in the economic benefits that accrue from the forest resource such tourist proceeds (in the case of national parks) and employment in the forest and the parks to give them a reason to collaborate in the conservation efforts. They should also be provided with different alternatives such as agricultural and social services, which would enable the communities to respect, the forest boundaries. The introduction of agroforetsry technologies to improve agricultural output and to provide tree services within the domestic setting may also reduce exploitation of Mt. Elgon forest.

Based on the findings from this study, it is apparent that key to the improvement of forest based livelihoods lie in the institutional environment; and, particularly, the relationship between and within forest governance. Of great importance is the contribution forests can make in the diversification of the livelihoods of forest adjacent communities and forest users. The degree to which forest governance structures recognize the entitlement of forest adjacent communities and the forest users to the forest and forest products will eventually improve the conservation status of natural forests such as the Mt. Elgon forest.

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