

**DRAFT REPORT**



**THE SOCIO-ECONOMIC BASELINE ASSESSMENT FOR ENDUIMET WILDLIFE  
MANAGEMENT AREA IN TANZANIA**

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### EXECUTIVE SUMMARY

AWF, in collaboration with Longido District Game Office, conducted a socioeconomic baseline assessment for the villages forming the Enduimet Wildlife Management Area (EWMA) in mid February 2009. The objectives of the exercise were: to provide a clearer understanding of the socioeconomic status of local population living around the WMA; examine local perceptions regarding the WMA so as to guide implementation of activities; and finally, generate baseline information for the future monitoring of the impacts of the WMA. Data collection was undertaken via household surveys and focus group discussions. The household survey covered 240 randomly selected households, 30 from each of the eight villages of the Enduimet WMA. Information was collected on household characteristics, livelihood activities and issues related to tourism and human wildlife conflicts. It examined the local communities's capacities and understanding of the WMA process and harvesting of biodiversity resources. Additionally, three focus groups, drawn against gender and location, were conducted to provide in-depth examination of issues emerging from the household survey.

The findings reveal that livelihood activities in the villages are dominated by extensive pastoralism and crop production. The majority of the households (83%) were involved in livestock keeping, using herd mobility as the main coping strategy to lessen the effects of unpredictable rainfall patterns. Livestock ownership was generally skewed with the poor having few or no livestock. Farming was mainly for subsistence and it engaged nearly three-quarters (72.2%) of households covered in the survey. The rise in proportion of those involved in crop cultivation over the years despite the area's semi-arid nature may be a cause of concern for other alternative land uses including wildlife conservation.

Beyond farming and livestock keeping, there is little diversification with alternative sources of income such as small businesses, charcoal sales, seasonal labor and bee keeping, engaging relatively fewer households. The poor tended to engage in unskilled and low status activities such as casual labor which are unsteady and offer low returns. The limited livelihoods base was associated with poor access to markets and the remoteness of the villages. A key finding is that there is limited diversification into natural-resource based enterprises such as bee keeping and others that utilize wildlife resources. Honey production was among the least widespread economic activities despite its huge income potential. Activities such as silkworm farming and eco-tourism remain largely untapped. Non-farm alternatives were also few and inaccessible.

The perceptions regarding the creation of the WMA were generally positive (64% percent). The residents felt that they had been dully consulted and that the WMA would ensure protection of the environment and wildlife, spur community development projects, and create employment opportunities for the youth, among others. Causes of discontent were that the creation of the WMA would lead to decreased access to grazing land and escalation of cases of human wildlife conflicts. Consultations also revealed general disquiet with the channeling of the revenue from the proposed community-based tourism venture through the district council. This, it was felt, would erode much of the benefits to the community. The general perception was that the community based organization in charge of the WMA was capable of handling these tasks.

Opinions regarding wildlife conservation were rather evenly split. Those who were in agreement with the idea (42%) perceived wildlife as a resource capable of increasing foreign exchange earnings. Increased vulnerability to attacks by wildlife, losses due to increased incidences of diseases spread by wildlife and crop destruction were the main reasons given for opposing the idea. While, Enduimet communities are generally conversant with the activities not allowed in the conservation area, cases of non-compliance with the regulations were

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reported. Some households were still involved in illegal activities such as cutting down of trees, charcoal burning and consumption of bushmeat. The other biodiversity resources sourced from the WMA were firewood, grass, medicinal herbs and water.

Cases of human wildlife conflicts were widespread in Enduimet. Nearly 73.5% of respondents reported experiencing cases of crop damages in the past two years. Likewise, 65% of those consulted reported cases of livestock predation over the same period with significant economic losses. That there are currently no compensation schemes for such losses drew negative reactions from the community about wildlife conservation. Amicable solutions that actively involve local stakeholders need to be sought to ensure that wildlife conservation is effectively integrated within the local livelihoods.

In general, Enduimet communities have very high expectations of the WMA. These range from increased household incomes from natural resource-based enterprises, employment creation, community development projects to improvement in livestock production.

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### List of Abbreviations

TNRF	Tanzania Natural Resource Forum
AWF	African Wildlife Foundation
EWMA	Enduimet Wildlife Management Area
TLUs	Tropical Livestock Units
PEDP	Primary Education Development Plan (PEDP)

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### 1.0 INTRODUCTION

Tanzania's overall framework for environment and natural resource management has changed from centralist and protectionism to that aiming at devolving management from central government authorities to local communities. Local communities, often the people living alongside the natural resources on which wildlife and tourism thrive, have not been major participants in or beneficiaries yet bore the brunt of conservation. It was recognized that if tourism was to continue growing and be an effective poverty reduction tool, then this had to change, and local opportunities and benefits had to also grow substantially. The Tanzania Wildlife Policy (1998) explicitly called for "the creation of a new kind of protected area to be known as a Wildlife Management Area for the purposes of effecting community conservation" (TMNRT, 1998). A key underpinning of this policy was the recognition that the wildlife endowment of the country is a unique resource with great potential to contribute to the economic growth and development of the rural areas.

The Wildlife Policy's WMA clauses provided for user-rights to local communities to engage actively in wildlife conservation and entrepreneurship while ensuring protection and conservation of the resources for their own benefits. It was envisaged that the WMAs would effect and encourage community-based conservation through involvement of rural communities and other stakeholders in taking joint responsibility for and investing in the sustainable management of wildlife and other natural resources. Additionally, the wildlife management area would devolve user rights for wildlife resource to local communities so that they can capture the economic benefits such as revenues from tourist related investments, tourist hunting, meat sales, and subsistence hunting, among others. The Wildlife Management Area Regulations of 2002 further provided the formal framework for the creation of the WMAs by laying out a series of mandatory steps to achieve the designation of Authorized Associations (AA) and to attain full user-rights. An AA functions as the incorporated community-based entity which is responsible for the management of a given WMA.

African Wildlife Foundation (AWF) has supported the development and implementation of Wildlife Management Area (WMA) policy in Tanzania since its introduction in 1998. In January, 2003, AWF was appointed by the Tanzanian Wildlife Division (TWD) to serve as the lead facilitator of the proposed Enduimet WMA in Longido District, among other WMAs, in accordance with the new WMA regulations passed in the Wildlife Management Areas Regulatory Act 16 (2) of 2002. With the support of donors such as USAID and collaborators such as the Monduli district councils, AWF has successfully guided the Enduimet WMA through establishment and registration process as Authorized Associations (AAs). Enduimet achieved its registration in August 2007. As part of the registration process, the WMA has also been facilitated and now have a Resource Management Zone Plans (RMZP) which recognizes the value of wildlife and natural resources within the WMA and potential for the conservation area to catalyze a percentage of per capita income for its community membership. AWF recently initiated and brokered a deal between Enduimet community and a private sector partner for the establishment of a community-based tourism venture in the WMA.

This report describes the socioeconomic baseline survey that was conducted for Enduimet WMA in mid February 2009 with the specific objectives of:

- Developing a clearer understanding of the livelihoods and socioeconomic status of communities living around the WMA
- Examining local perceptions regarding the establishment of the WMA so as to guide and strengthen its initiatives

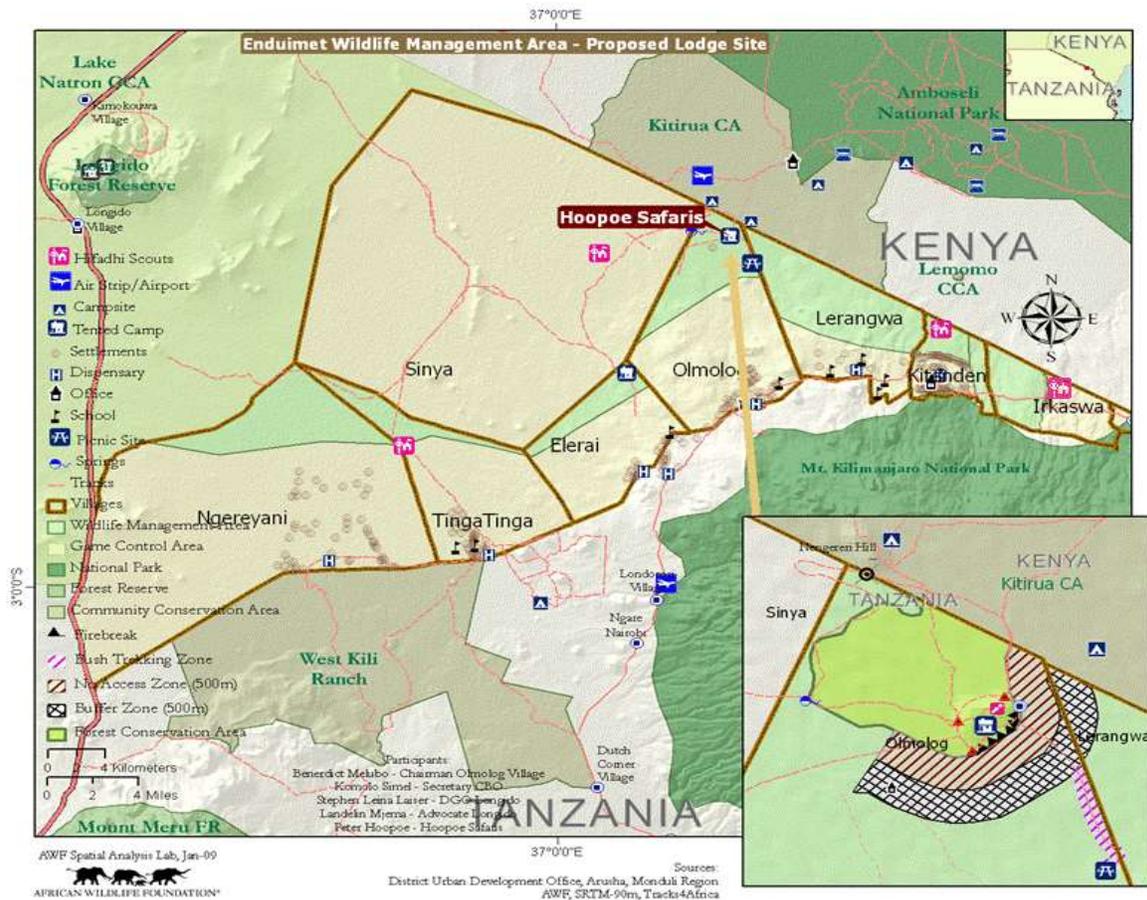
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- Generating baseline information for the future monitoring of the impacts of the WMA on the livelihoods of the local communities

## 1.1 The study area (Enduimet WMA villages)

Enduimet WMA lies in Ol molog and Tinga Tinga Wards in the West Kilimanjaro Basin of Longido District. The Enduimet WMA, located in Longido district, was authorized in June 2007, and represents the villages of Ngereyani, Tingatinga, Elerai, Olmolog, Lerangwa, Kitenden, Irkaswaa, and Kamwanga (figure 1). Enduimet was originally conceived as an area needing formal protection in 1997 following a wildlife survey conducted by AWF elephant researchers, national and district wildlife authorities. Enduimet covers an area of 128,179ha of which 86% has been set aside as a wildlife management area. The remaining 14 percent of the land is still under individual village jurisdiction. The area has a tourist hunting block. Other existing activities include photographic and walking safaris, two community-based campgrounds, and specialized bird watching. The WMA is governed by an eight-member board; three of whom are women.

Figure 1: The map of the Enduimet area, showing the WMA and the study villages



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## 2.0 METHODOLOGY

The section describes the sampling procedures, range of quantitative and qualitative techniques and parameters assessed in the survey. The main components of the assessment were: a community meeting, a household survey and focus group discussions.

### 2.1 Community meeting

The community meeting was conducted earlier in the exercise to introduce and familiarise the community with the concept of participatory indicator development and impact monitoring. It also served as a useful forum to discuss the objectives of the baseline survey and engage the community to come up with some priority indicators (see appendix 2). Information seeking baseline values for some of these indicators were then incorporated in the household surveys and further consultations made in the focus groups.

### 2.2 The focus group discussions

The focus groups were conducted to gather information on local specific issues and explain some observations at the household level. Gender and locality (village) formed the key criteria for selection of participants in the groups. A check list was prepared in advance and used to guide the focus groups.

### 2.3 Household survey

This component targeted sampled households for collection of data ranging from household profiles, livelihoods to their perceptions regarding the establishment of the WMA and conservation initiatives, using a semi-structured questionnaire.

#### 2.3.1 Sampling

Lists of all households residing in each of the eight Enduimet villages were first drawn with the aid of key informants. This was followed by wealth ranking exercises to categorize the households into four wealth groups i.e rich, medium, poor and very poor using locally perceived criteria. The wealth ranking exercise was undertaken to facilitate in-depth analysis of kind of livelihoods pursued and other information across wealth groups. Using the lists generated, proportions of each of the wealth category was computed for each village. Finally, a systematic sampling procedure was employed to arrive at proportionate number of households in each wealth group as in the total population of each village, making a total sample of 30 households. A total of 240 households were selected for participation in the household interviews. Table 1 shows the populations of the study villages and sampling. The lists are by no means comprehensive of all households living in each village.

**Table 1: Study villages showing the populations and households sampled**

Village	No of households	Number sampled	% sampled
Lerangwa	485	30	6%
Irkaswa	320	30	9.3%
Olmolog	334	32	9.5%
Elerai	252	30	12%
Kitenden	165	30	18.5%
Tinga Tinga	562	30	5.3%
Ngereyani	800	30	3.75%
Kamwanga	668	30	4.5%

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### 2.4 Data collection

Data collection for this exercise was conducted in mid February 2009 for a period of two weeks. The socioeconomic data was gathered via focus groups and household interviews. Information was collected using a range of quantitative and qualitative techniques such as household questionnaires, pairwise matrix ranking; seasonal calendar and key informants interview. Local enumerators (with at least O' level of education) were recruited and trained on the household questionnaire for two days, with the second day involving role play and a pre-test exercise, to enable them familiarize themselves with the tool. The questionnaire was translated into *Swahili* to ease implementation and aid collection of uniform and consistent data. Focus group discussions were conducted with the help of a community development officer from the social department of Longido district.

### 2.5 Data analysis and presentation

The information from the questionnaires was coded and entered into a SPSS template to allow easy analysis. It was then cleaned and analyzed across study villages, wealth categories and gender, among other factors. The analysis generated mainly descriptive statistics such as percentages, frequencies and means that have been presented in tabular and graphical forms in the report. Chi-square tests (Pearson's) were conducted to test for independence of some parameters thought to be related. Difference in mean tests was also conducted for quantitative variables using Spearson's correlation analysis. However, the text has only discussed significant tests (i.e  $p < 0.05$ , 95% confidence level). Data obtained from the focus groups and key informants was analyzed and presented together with the quantitative statistics to inform key interpretations from the latter.

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### 3.0 RESULTS AND DISCUSSIONS

This chapter presents and discusses the findings of the socioeconomic baseline exercise. The results are also compared with secondary literature where it exists or relevant. It first profiles the villages by the general characteristics of the households, followed by descriptions of various livelihoods activities and strategies employed. Aspects regarding the WMA and the human wildlife conflicts are discussed at the end of the section.

#### 3.1 General household characteristics

##### a. Household size and composition

The average number of dependants per household was 7.3 and ranged from 5.9 in Ngereyani village to 9.8 in Kamwanga ( $F=3.33$ ,  $p<0.002$ ). Whereas this compares favourably with other studies undertaken in the region (such as Yande and Madulu, 2003), large family size is one of the main reasons cited for increased strain on the already scarce natural resources in these semi-arid areas. In terms of composition, the sampled households are evenly split by gender although few (14.5 percent) are headed by women. Tanzania is a patriarchal society where males dominate issues such as politics and economy and customary laws still prevail.

**Table 2: Household size and composition by study village**

Village	% female-headed	Mean household size	Mean no of males	Mean no of female	% members who are females
Lerangwa	10	6.3 (2.6)	3.3 (1.6)	3.1 (2.0)	48
Irkaswa	6.7	7.5 (3.1)	4.1 (2.1)	3.4 (1.8)	45.1
Olmolog	9.3	5.7 (1.6)	2.8 (1.0)	3.0 (1.2)	51.9
Elerai	10	6.7 (4.0)	3.5 (1.9)	3.3 (2.8)	47.5
Kitenden	6.7	8.1 (4.4)	3.9 (2.0)	4.3 (2.7)	53.1
Tinga Tinga	24.1	8.2 (5.5)	4.3 (3.1)	4.0 (3.0)	49.4
Ngereyani	20	5.9 (3.1)	2.9 (1.7)	3.1 (1.6)	50.8
Kamwanga	30	9.8 (6.9)	4.9 (3.6)	4.9 (3.9)	49.5
All	14.5	7.3 (4.3)	3.7 (2.3)	3.6 (2.5)	49.5

\*Figures in parentheses are the standard deviations

##### b. Age structure

A population's age structure can provide useful information on important socioeconomic issues such as its life expectancy, labour availability, unemployment and dependency ratios. Mean age of household heads was 45.5 years (village differences insignificant) and ranged from 19 to 100 years. The household heads had resided in the area for close to 31.1 years with the oldest having been there for the past 100 years. Generally, the area is characterized by a youthful population. This is consistent with available regional and national statistics (CIA, 2008; Yande and Madulu, 2003). The dependency ratio is high as 53 percent of the household members fall below 15 years of age. This age category is known to make minimal contribution towards households' economic activities, leaving the bulk of the burden to those falling in the subsequent category (15-64yrs). The dominance by the former suggests need for further investments in educational infrastructure. Those with above 64 years of age comprise only 2 percent of the sampled population while comparative national statistics puts this figure at 2.8 percent (CIA, Ibid).

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**Table 3: Age structure by village**

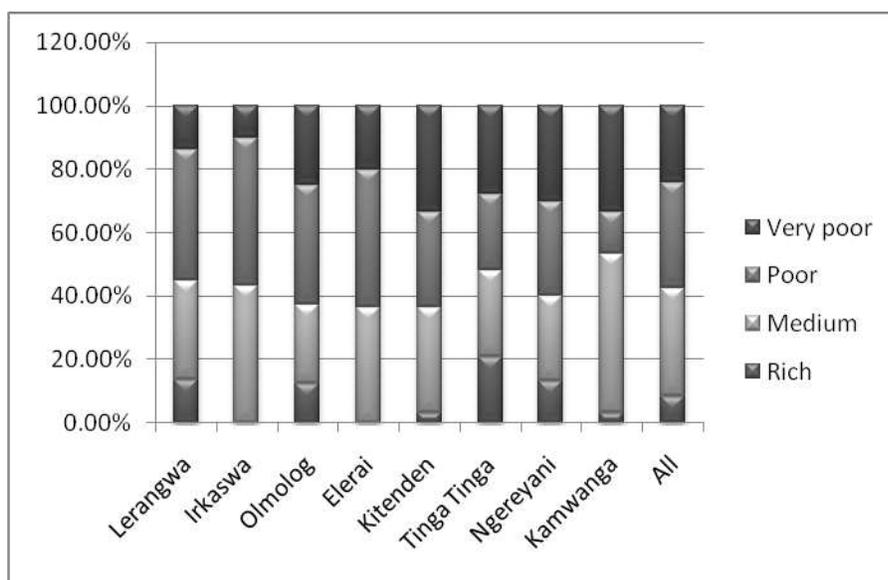
Village	Age of head	Number of years lived in area	Below 5 yrs	5 to less than 15 yrs	15-64 yrs	>64 yrs of age
Lerangwa	44.9 (16.5)	33.9 (19.2)	1.7 (28.0)	1.8 (29.5)	2.4 (37.9)	0.3 (4.2)
Irkaswa	47.6 (14.4)	13.9 (11.8)	1.9 (25.9)	2.5 (33.4)	2.9 (39.3)	0.1 (1.3)
Olmolog	41.3 (8.9)	37.1 (11.9)	1.1 (19.6)	2.4 (42.0)	2.2 (38.5)	0 (0)
Elerai	49.4 (14.1)	38.9 (20.7)	2.0 (29.5)	2.0 (30.5)	2.5 (38)	0.13 (2)
Kitenden	46.9 (18.4)	29.9 (19.1)	2.2 (27.2)	2.8 (35.0)	2.9 (35.8)	0.2 (2)
Tinga Tinga	49.0 (17.1)	41.5 (20.1)	0.9 (10.5)	2.8 (34.2)	4.3 (52.3)	0.3 (3.4)
Ngereyani	32.7 (10.1)	27.7 (14.5)	1.5 (26.0)	2.0 (34.5)	2.3 (39.5)	0 (0)
Kamwanga	53.1 (14.6)	27.4 (18.3)	1.4 (14.6)	3.1 (31.8)	5.0 (51.2)	0.2 (1.7)
All	45.5 (15.48)	31.3 (18.8)	1.6 (22.1)	2.4 (33.7)	3.1 (42.2)	0.13 (1.9)

\*Figures in parenthesis are the percentages of household members who fall under the age categories

### c. Wealth structure

According to the wealth ranking exercise, an estimated 58.5 percent of the sample population is poor. While pervasive, the phenomenon appears to be more widespread in Elerai, Kitenden and Olmolog, with prevalence rates of 63.3%, 63.3% and 62.5%, respectively. Destitution in the study villages is mainly attributed to persistent droughts, poor access to infrastructure, poor access to markets, high incidences of livestock diseases and high levels of illiteracy. Wealth is generally unevenly distributed in the region (see also Homewood, 2006; Ashley *et al.*, 2002).

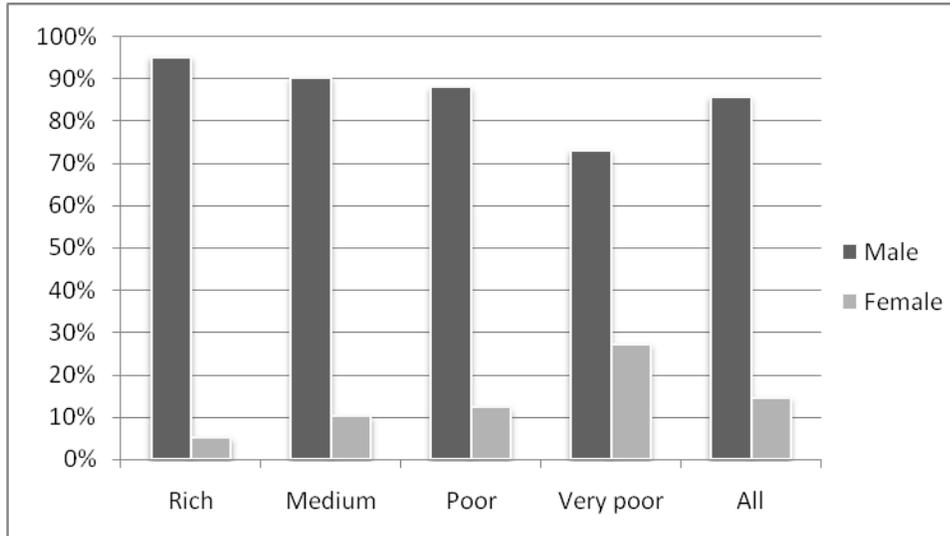
**Figure 2: Wealth structure by village (%)**



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Figure 3 illustrates the distribution of the gender of the households' heads by wealth status. As expected, households headed by females are more likely to be poor as compared to male-headed households. This appears to stem from women's disproportionate less access to productive resources such as land and livestock, thus limiting pathways out of poverty (also see table 1).

**Figure 3: Wealth status by sex of household head (%)**



### d. Main occupation of sampled households

Majority of the households in the survey are semi-pastoralists (51%) who rely on livestock and migrate in search of pastures during the dry seasons (table 4). Traditionally pastoralist communities, a seemingly higher proportion (40%) of them are now carrying out crop cultivation as their main activity. The rise in this practise has closely been linked with the need to protect against having to sell livestock to meet short-term household needs (O'Malley, 2003). Across the villages, there are higher proportions involved in livestock production in Ngereyani, Tinga Tinga, Elerai and Lerangwa as compared to the other villages ( $X=18.3$ ,  $p<0.01$ ).

There appears to be a clear distinction between the main economic activities carried out by the wealthy and the poor (also see Homewood *et al.*, 2006; Ashley *et al.*, 2002). Majority of the wealthy (85%) engage in livestock production as compared to just 28% of the poor. Again the proportion of those engaging in livestock production declines as one moves to the poorest categories. There is also increased reliance on unsteady livelihood sources such as casual labour in the lower wealth groups.

**Table 4: Main occupation verses wealth category**

	Farmer	Pastoralist	Casual labourer	Businessman	Civil servant	Carpentry
Rich	15 (15)	85 (41)	0 (0)	0(0)	0(0)	0(0)
Medium	45 (36)	51.3 (41)	0 (0)	1.3 (1)	1.3 (1)	1.3 (1)
Poor	46.3 (38)	45.1(37)	6.1(5)	2.4 (2)	0(0)	0(0)
Very poor	33.9 (20)	47.5 (28)	18.6 (11)	0(0)	0(0)	0(0)
All	40.2 (97)	51.0 (123)	6.6 (16)	1.2 (3)	0.4 (1)	0.4 (1)

\*In brackets are the actual counts of households in each category.

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### e. Human capital

Education is often regarded as critical in enabling people in different kinds of environments to effectively respond to various development challenges. Generally, illiteracy is prevalent in the research villages (48.5 percent). While this is much higher than the national average estimated at 31.6 percent (UNDP, 2007), it can be partly attributed to slow acceptance of modern education among the pastoral communities. This trend has been observed across the border among the Maasai communities in Kenya (Kituyi, 1990). Perhaps of more significance is that just 5 percent of the heads covered in the surveys have secondary and above level of education. Comparison of education level verses wealth status did not yield any variation. Education level has been found to be a less significant determinant of income among pastoral communities (Ashley *et al.*, 2002). This may, in part, explain limited ability to take up more rewarding livelihood activities outside the traditional livestock sector.

**Table 5: Distribution of households by the heads level of education (%)**

Village	No formal Education	Attended Primary	Completed primary	attended secondary	Completed secondary	Beyond secondary
Lerangwa	33.3	26.7	33.3	3.3	3.3	0
Irkaswa	53.3	23.3	23.3	0	0	0
Olmolog	18.8	12.5	53.1	9.4	6.3	0
Elerai	66.7	6.7	20	3.3	3.3	0
Kitenden	60	6.7	33.3	0	0	0
Tinga Tinga	58.6	10.3	31	0	0	0
Ngereyani	46.7	0	53.3	0	0	0
Kamwanga	53.3	26.7	10	3.3	3.3	3.3
Total	48.5	14.1	32.4	2.5	2.1	0.4

On the other hand, when all the household members are considered, there appears to be improvement in education status though slightly over a quarter of the households' still lack any member with formal education (table 6). Still, fractions of those with secondary and above level of education are low suggesting need for further investments to expand educational facilities and enhance attendance of schools among the pastoral community. Already, the government of Tanzania has initiated programs such as Primary Education Development Plan (PEDP) that will go along way in enhancing access to education (Riddell, 2003).

**Table 6: Distribution of households (%) by the highest level of education attained**

Village	No formal Education	Attended Primary	Completed primary	attended secondary	Completed secondary	Beyond secondary
Lerangwa	27.6	31	34.5	3.4	3.4	0
Irkaswa	10	43.3	36.7	10	0	0
Olmolog	15.6	15.6	40.6	12.5	15.6	0
Elerai	46.7	23.3	20	6.7	3.3	0
Kitenden	13.3	36.7	30	13.3	3.3	3.3
Tinga Tinga	41.4	6.9	44.8	3.4	3.4	0
Ngereyani	30.0	6.7	53.3	6.7	3.3	0.0
Kamwanga	27.6	48.3	10.3	6.9	3.4	3.4
All	26.4	26.4	33.9	7.9	4.6	0.8

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### f. Household structures

The pre-dominant dwelling structure in Enduimet is grass-thatched mud-walled house (51 percent). Most of these traditional houses are clustered around each other in circle. However, there is considerable transition to modern housing with a good proportion of households (21.2%) investing and living in permanent houses with corrugated iron sheet roofs. About one-tenth (12%) of the communities were residing in corrugated iron houses with mud walls. Majority of these modern housing structures were isolated and commonly fenced off, further diminishing land available for pastures and wildlife use.

**Table 7: Housing structures owned**

Structures owned	Percentage of households
Iron sheet roofed permanent houses	21.2 (51)
Iron sheet roofed semi-permanent houses	12 (29)
Mud-walled and grass thatched traditional houses	51 (123)
Others	15.8 (38)

### g. Land and livestock ownership

All land in Tanzania is held in trust by the President on behalf of all Tanzanians and is therefore public property. However, following villagization in 1970s, all land inside the boundaries of villages falls under the jurisdiction of the Village councils and assemblies. These local authorities have the power, through the Village Land Act, to oversee the distribution and management of village land. Land is communally owned and is allotted to members of the community through decisions by the elders. While most grazing land is open to all, portions such as the area around the WMA are reserved only for dry season grazing. The mean landholding size in Enduimet was 4.6 acres but ranged from 0.25 acres to 30 acres. Data show unequal distribution (table 8), with the relatively wealthy groups owning more land than the poor categories ( $F=6.6$ ,  $p<0.01$ ). Similar observations have been made in nearby areas such as Longido district, previously thought to have relatively egalitarian pastoral communities (Ashley *et al.*, 2002; Homewood *et al.*, 2006). Across the villages, Lerangwa had the highest landholding size (7.2 acres) followed by Kamwanga (5.1) while the least were Tinga Tinga and Ngerayani villages which are much closer to urban centres (table 8). Cases of landlessness were found among 7 percent of the sampled households.

**Table 8: Mean land and livestock ownership by wealth status**

Wealth group	N	Land Ownership (acres)	Livestock Ownership (TLUs)
Rich	19	5.6 (4.2)*	65.1 (50.1)
Medium	80	6.0 (5.9)	18.5 (26)
Poor	68	4.0 (3.7)	5.18 (3.9)
Very poor	49	2.8 (1.5)	2.8 (2.8)
Total	216	4.6 (4.5)	14.9 (27.5)

\*Figures in parentheses are the standard deviations

To facilitate comparison and synthesis of results, livestock are converted into tropical livestock units (TLUs)<sup>1</sup>. While the mean livestock ownership for Enduimet was 14.9 TLUs, the distribution across villages and wealth groups varied widely. The wealthy, comprising only a meagre 8.3% of the sample households, owned 41% of

<sup>1</sup> Tropical livestock units (TLUs) computed as follows: Cows=0.7 TLUs; Sheep/Goats = 0.1 TLUs (Dzowela, 1990)

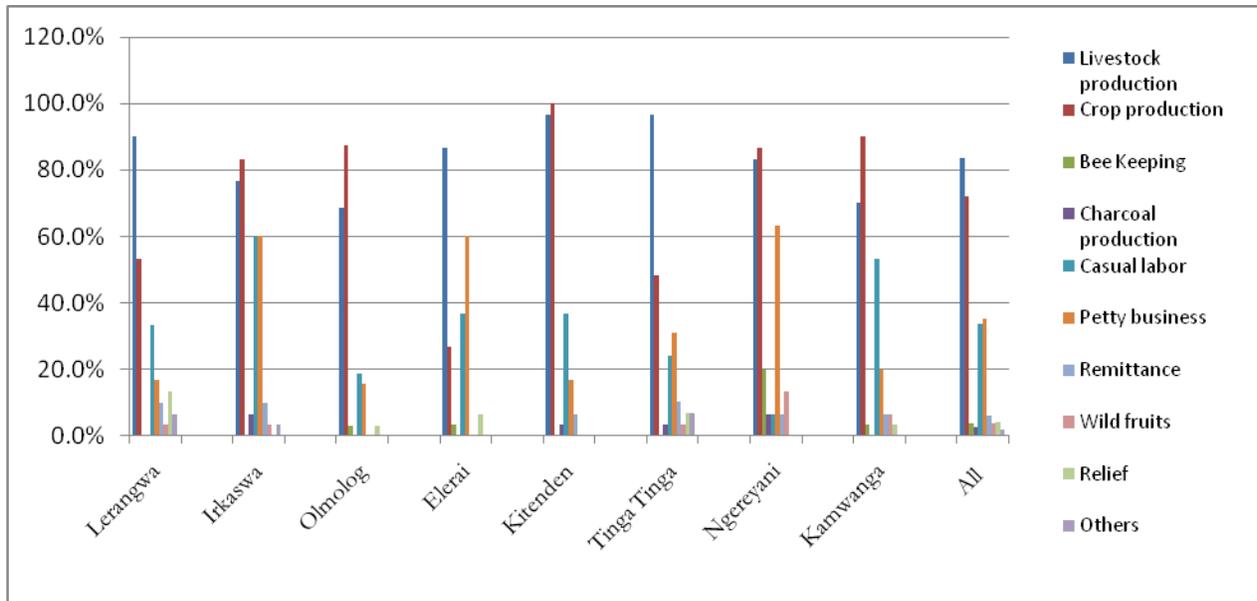
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the total livestock. Taken together with the medium wealth groups, these groups owned more than 85% of livestock (Homewood *et al.*, 2006). The latter disclosed mean livestock ownership of 18 TLUs in Longido district with 7% of households owning more than half of the livestock. Across the villages, Tinga Tinga, Kitenden, Ngereyani and Elerai recorded the highest mean livestock ownership. The least were Irkaswa and Kamwanga, which were dominated by crop production. About 10% of surveyed households did not own any livestock. Generally, with the dwindling landsize due to increased population, environmental degradation and persistent droughts, the numbers of livestock owned have greatly reduced. While owning livestock is a more secure livelihood, it appears that it is increasingly becoming expensive for a large portion of the community who need to supplement their income with crops (Homewood *et al.*, 2006).

### 3.2 Livelihood activities

In the following section, list of the entire livelihood activities in the area was first compiled with the help of key resource persons. The respondents were then asked to provide information on all livelihood activities engaged in by all household members in the past one year. Figure 4 shows the distribution of the households in each village according to the structure of livelihood activities pursued. Those activities listed under the other component were salaried employment and carpentry.

**Figure 4: Distribution of households (%) according to livelihood activities**



Apart from the traditional livestock sector and crop farming, livelihoods are less diversified in the study villages (also see Ashley *et al.*, 2002; Yanda and Madulu, 2003; Homewood *et al.*, 2006). About 59.8% are involved in livestock and crop production while one-fifth (17.4%) engage in only one economic activity. Limited diversification in these pastoral communities has closely been linked with few opportunities due to remoteness of the regions (Homewood *et al.*, 2006). Evidently this inability to secure non-farm alternative income sources against a background of dwindling farm opportunities should be a major concern for the rural development policy as increasingly high numbers are becoming reliant on relief (4.2%).

#### a) Livestock production

This has traditionally been the mainstay of the economy of the research communities. According to the findings, this is still the predominant livelihood activity practiced by over 83.4 percent of the sampled households. Available literature estimates that between 95-99% of the households engaged in extensive pastoralism (Ashley *et al.*, 2002). Livestock has also remained their most trusted and the most consistently sought after land use in the rangelands (Homewood *et al.*, 2009). However, it livelihood strategy is beset by persistent droughts, water shortage, livestock diseases mainly anthrax and Foot and Mouth Disease, predation by wildlife and poor breeding. Herd mobility is the most prominent strategy used by these communities to cope with and mitigate the effects of patchy and highly erratic rains (Homewood, *et al.*, 2006).

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### **b) Crop production**

Crop cultivation is widespread in Enduimet (72.2% of households) despite its semi-arid characteristics. According to key informants, production patterns in the study villages oscillate dramatically, depending on the prevailing weather conditions in a given harvest year. In the past three years, for instance, rains have been quite erratic leading to low or harvest failures. The most commonly cultivated crops are maize and beans, mainly for home consumption of 3.9 acres. Others are wheat, potatoes, tomatoes and oats. The main challenges facing crop production were listed as: unreliable rainfall, destruction by wildlife, pests, lack of farm inputs and credit facilities.

Cultivation has risen sharply in the rangelands over the recent years (Homewood *et al.*, 2009). Increased crop production in the previously pastoralist communities is partly to be blamed for increased vulnerability of the latter (Yanda and Madulu, 2003). This land use practice is also a source of significant and serious local pressure on wildlife population (Rodgers *et al.*, 2003). For instance, conversion of land to agriculture has consumed a substantial portion of the Kitenden Corridor, the only last wildlife route connecting Mt. Kilimanjaro and the Amboseli National Park in Kenya. The wildlife corridor shrunk from 21 km<sup>2</sup> in 1952 to 5 km<sup>2</sup> in 2001 (Noe, 2003).

On the other hand, increased farming in the semi-arid areas has been associated with livestock losses due to drought and diseases, alongside government policies (Homewood *et al.*, 2006; Bishop 2007) and in-migration from agricultural areas. Villagers have also been observed to use cultivation as a tenure strategy to guard against losing land to outside investors or organizations through deals negotiated directly with the state (Igoe, 2007). The presence of cultivated field marks at least a tentative claim to the land. Elsewhere, rise in farming has been attributed to over-expansion of the protected areas and conservation-related limitations on land use (Sacchedina, 2008). Generally, the tendency is for the pastoralists to seek more ways to expand crop production rather than stop it (Mdoe *et al.*, 2001).

### **c) Casual labour**

Seasonal labor activities are mostly pursued by the poor households (33%) due to paucity of non-farm alternatives. Consultations during the survey revealed limited available opportunities for casual labor which were mainly associated with crop cultivation (field preparations, planting, weeding, spraying, and harvesting) and livestock production. Notably, the activities are seasonal and not enough for those who need it. Coupled with low pay and inadequate access to health care services, there is limited share of this activity in household income except for the poor wage earners who dominate this unskilled labor sector (Homewood *et al.*, 2006).

### **d) Petty businesses**

Quite a number of households are involved in this activity. The kinds of businesses carried out around the area are: selling of crop products, selling of livestock, operating small shops, selling of local brew and done occasionally. The local commerce has long centred on livestock, with proximity to the border creating price gradient profitable to traders (Trench *et al.*, undisclosed). Lack of capital, inadequate access to market due to poor infrastructure and inadequate storage facilities, inadequate business skills were some of the challenges cited with regard to this income source.

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### e) Bee keeping

The livelihood patterns in Enduimet show limited diversification into natural-resource based enterprises. Bee keeping is among the least widespread economic activities in Enduimet despite its huge potential (see Enduimet Resource Management Zone Plan, 2005). Less than five percent (3.7%) of people are involved in the activity. Those consulted in the communities indicated that the activity was common in Irkaswa and Lerang'wa villages. Among the key challenges faced with bee keeping in Enduimet were: limited knowledge on apiary, drought, inadequate access to markets and lack of bee hives. Others factors are inadequate knowledge on appropriate harvesting techniques and kits and use of chemicals for crop production. Similarly, other nature-based activities with huge potential such as silkworm farming and eco-tourism remain largely unexploited.

### h) Constraints to livelihood expansion in the area

Table 9 presents the constraints mentioned by sampled households as limiting expansion of livelihood strategies in the study villages. Frequent and recurrent droughts emerged as the most important factor affecting pursuit of various livelihood strategies, followed by livestock diseases such as anthrax and wildlife menace, in that order. Other factors mentioned were poor infrastructure, inadequate access to financial services and inadequate access to water resources. Time taken to water points varied widely across the seasons, increasing from just below an hour (45 mins) in wet season to nearly 4 hrs in dry seasons. Apart from the road bisecting the villages from Ngare Nairobi, all-weather roads are few with little and unreliable road transport. Dwindling farm sizes due to rising population was also cited as a key factor with some of households reporting landlessness.

**Table 9: Constraints to enhancing livelihoods in Enduimet**

<b>Problems</b>	<b>No of times mentioned</b>	<b>Rank</b>	<b>% of household mentioning reason</b>
Drought	197	1	81.7
Livestock diseases	97	2	40.2
Wild animals menace	74	3	30.7
Poor infrastructure	39	6	16.2
Inadequate access to financial services	36	7	14.9
Inadequate access to water resources	29	4	12.0
Poverty	28	5	11.6
Small farm sizes	26	8	10.7
Crop diseases	18	9	7.5
Unemployment	16	11	
Poor access to livestock markets	14	10	
Human diseases	10	12	
Low literacy levels	6	13	

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### 3.3 Harvesting and use of biodiversity resources from the EWMA

The Enduimet Resource Management Zone Plan completed in 2005 stipulates the desired future state of the EWMA as agreed among the various key stakeholders consulted during its preparation. The plan derives from the analysis of the outstanding resource values, issues and the purposes and significance of the WMA. Subsequently, this section sought to examine the communities' use of natural resources from the WMA as well as their knowledge and understanding of activities that are not allowed in the WMA to examine compliance with the proposed resource management plans.

#### a) Firewood

This is the predominant source of energy for the villages (96.7% of households). On average, each household used 3.3 bundles of firewood per week and this was mainly sourced (65% of households) from the forest and the WMA. Collection of dead wood for firewood is one of the activities provided for in the plan. Women are also allowed by forest authorities to enter the forests and collect firewood. Kerosene and charcoal were the other sources of energy used by the households. However, those deriving energy from these sources were few. For instance, only three households reported using charcoal as their main source of energy.

#### b) Timber

About 16.2 percent of surveyed households sourced timber from the WMA. The number of lumbering and building poles harvested per year within the WMA was estimated at 18.2 (statistics computed only for those reporting harvesting of this resources). This was reportedly used in building and construction work at home and rarely for sale. Still, it is conceivable that some of the respondents may have knowingly provided wrong information leading to understimation as tree cutting is prohibited.

#### c) Grazing in the WMA

Over half (55.6%) of the households reported grazing their livestock in the WMA especially during the dry seasons. This is duly provided for in the resource use guidelines but only for a certain period of the year for a specific number of livestock. Grazing may also serve as fire control since it reduces fuel load (Kajembe *et al.*, undislosed). However, livestock grazing in the forest is not allowed yet the herders could be seen to move their livestock towards the forest late in the evening in anticipation of grazing in the forest at night away from the scrutiny of the forest guards. This behaviour was confirmed by key informants consulted in the survey.

#### d) Consumption of bushmeat

Just 2 percent of people interviewed in the study admitted to having killed wild animals that transgressed to their farm in the past two years. Again, fear of reprimand and jail could be one the reasons for limited positive response on this question. When asked about consumption of game meat, only 3.9% of the respondent households admitted to having consumed bushmeat in the past one year. According to key informants, this is not a common practice in the area but is attributed to the influx of the *non-Maasai* in the study villages. Again, only 3.7% of those interviewed indicated that their neighbours hunted for wildlife in the WMA. Considering the illegality of bushmeat (except where licences are granted), these figures are likely to be underestimates (Arnold, 2001) as cited by Ashley *et al.*, 2002). The former reported that between 20 to 25% of total meat consumed across Tanzania is game meat. The Tanzanian Wildlife Act provides for consumptive use of wildlife but only upon granting of a hunting licence. Restricted hunting is also provided for in some

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areas of the WMA under the resource management zone plan. Other non-timber products harvested were medicinal herbs, ropes and fruits.

### e. Community knowledge of activities not allowed in the WMA

The Enduimet communities are generally knowledgeable on the activities that are not permitted inside the wildlife management areas (89.5%). Table 10 shows the distribution of the responses on the illegal activities in the WMA. Cutting down of trees was the most mentioned activity cited by the respondents. This was followed closely by hunting of wild animals and poaching with charcoal burning coming in a distant third. Enhance awareness on the various illegal activities is necessary as people often find it difficult to comply with imposed institutional set-ups. These are possible areas of conflicts with community members since game scouts employed come from same community and may have to take action against friends or family members (FAO, 1999).

**Table 10: Households (%) knowledge of illegal activities in the WMA**

Activity	Frequency of mentioning	Percent
Cutting of trees	86	35.7
Poaching/hunting	84	34.9
Grazing animal	6	2.5
Charcoal burning	40	16.6

### 3.4 Community attitudes and perceived benefits from the WMA

The section discusses the perceptions of the Enduimet communities towards the WMA and wildlife conservation initiatives. Also examined in this segment are the communities concerns about the creation of the WMA, their involvement in the process and its perceived benefits.

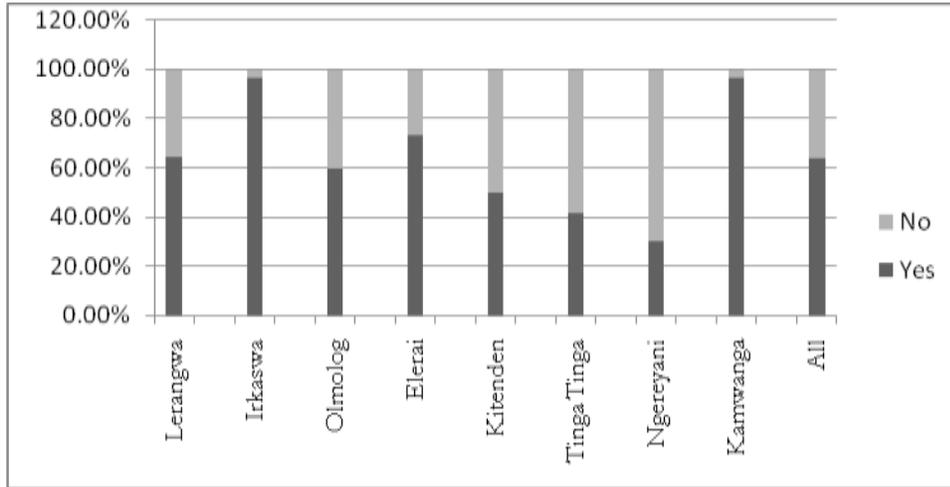
#### a) Whether the creation of the WMA is a good idea

Figure 5 shows the distribution of households' perceptions on the creation of the wildlife conservation area. Opinions were generally split across the eight survey villages ( $X=52.5$ ,  $p<0.000$ ). Over 63% were of the opinion that creation of the WMA was a great idea for the community while the rest felt it was not. Additionally, the members felt that they have been adequately consulted in the setting up of the WMA as required (see FAO, 1999). However, there were concerns that the signing of the agreement and institutionalization had taken too long. The establishment of a WMA is often cumbersome and costly. This may not only discourage local communities but also seem highly unsuccessful without significant external support (IRA, 2008; FAO, 1999). The reasons given for the support of the initiative are presented in table 11.

By contrast, the causes for discontent were that creation of the WMA would result in increase wildlife populations leading to increased conflicts such as crop destruction and livestock losses (9%) for which there is no compensation under the Tanzanian Wildlife Act. Others (4.1%) felt that creation of the WMA had decreased access to grazing land as the private investor would most likely limit their access to the WMA. Some women consulted felt that the creation of the WMA had decreased access to potential land for crop farming. Still, there was feeling that wildlife, mainly elephants, destroyed community infrastructure (water pipes) leading to unnecessary costs.

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**Figure 5: Household perceptions (%) on whether the creation of the WMA is a good idea**



**Table 11: Reasons why WMA is a good idea**

Protect natural resources	24.1
Will spur local development	25.3
Increase in wild animals	4.6
Employment	5.0
Educate on benefits	5.4
Give out loans	2.5

Other concerns emanating from the focus groups were that: the benefits from the WMA (intended tourism enterprise) would not come directly to the community. As per the Tanzania tourism law, the investors are required to pay the government (via the district councils) and then the government returns some percentage of the benefits to the community. These concerns are real as not much revenue survives the bureaucratic attrition at the district council level to find its way back to the community (Mabugu and Mugoya, 2000). Reversing this policy will provide the WMA communities with opportunity to fully manage the resources with potentially huge returns (Nelson, 2007). A number of win-win revenue sharing schemes have been proposed which can effectively incorporate the local interests (see Mabugu and Mugoya, 2000).

The issue of insecurity in rights over the wildlife resources also emerged from discussions with the communities in Enduimet. Indeed with the current contradictions in the government laws and policies, there is sometimes confusion over the rights, responsibilities and benefits that may discourage community-based conservation (FAO, 1999; Rodgers *et al.*, 2003). Changes are likely to occur in ways that may be arbitrary or central to the spirit of conservation. While the WMA act provides for this, the community members felt that it is precarious and that they constantly needed to monitor the changes to the regulations.

Retrospectively, sufficient local institutional capacity is lacking with the newly formed Community Based Organization to successfully run the operations of the WMA (Walsh, 2003; Akunaay, 2003; Nelson, 2007). The local institutions often lack access to market information, knowledge of contracts and other business deals, resulting in less fair return on the value of tourism products found on their land. Poor governance with little transparency and accountability is the order of the day for most of the village councils and Authorized

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Associations (IRA, 2008). Strengthening the management capacity of the CBO in terms of access to information, skills in tourism business management and devolution of rights over the management of wildlife resources can enable them engage effectively with the private sector and exploit commercial opportunities (Akunaay, 2003). Equally vital are the internalization of credible benefit sharing mechanisms that will ensure that earnings equitably reach all members of the community regardless of their socioeconomic status.

### **b) Perceived benefits from the WMA**

It is generally argued that local communities should derive benefits from wildlife conservation on village lands in order to have incentives for conservation (Nelson, 2003; Rodger *et al.*, 2003). This is often a function of wildlife's inability to compete with other forms of land uses such as livestock and agriculture as an option for the conservation communities. In the current survey, about 15% of the respondents felt that their households had benefitted from tourist activities in the past. These benefits were associated with employment as scouts (1.7%). At the community level, 25.9% of the respondents felt that the community had benefitted from tourism mainly through local community development projects such as building of schools (1.2%), water projects (1.3%). However, only the benefits derived from the community projects could be confirmed with the focus groups at the time of the assessment.

The community has a host of expectations of the upcoming tourism enterprise. Generally, the community felt that setting up of the community-based tourism venture in the WMA would spur local community development and encourage the protection and conservation of wildlife resources within the community areas (also see Nelson, 2003). The Enduimet communities are already aware of the potential benefits in terms of increased range of services (dispensaries, schools, boreholes) made available to them at no extra costs from the community-based tourism venture. Again, wildlife role is perceived more as a trajectory to community income rather than local economic stimulus and household-level opportunities (Ashley *et al.*, 2002; Kajembe *et al.*, undisclosed). Contribution towards poverty reduction via income earned through natural resource based activities was ranked first as a key expectation of the community. Enhanced access to water resources for both domestic and livestock use emerged second in ranking according to the community members. The water problem was noted to be severe in Lerang'wa and Irikaswa villages. Other community developments expected with the project are: enhance access to education through increased enrollment in schools and creation of employment for the youth (see full list of ranked expectations in appendix 3).

### **c) Cultural importance of the Forest/WMA**

The forest has in the past been culturally important to the Maasai communities. In the current survey, two-thirds (68.6%) indicated that the forest/WMA is still of cultural importance to them. The main cultural importance was that it served as a retreat for the morans during the annual *meat eating ceremony* for the *morans*. Other key informants acknowledged the beautiful scenery as one of the WMA's main attraction. While opinions were generally split on whether the cultural importance of the forest had waned or increased, majority (58.5%) felt that the traditional value of the WMA had decreased over the years. About 23.7 percent felt that it had stayed the same while just 15.4% stated that the cultural importance had increased.

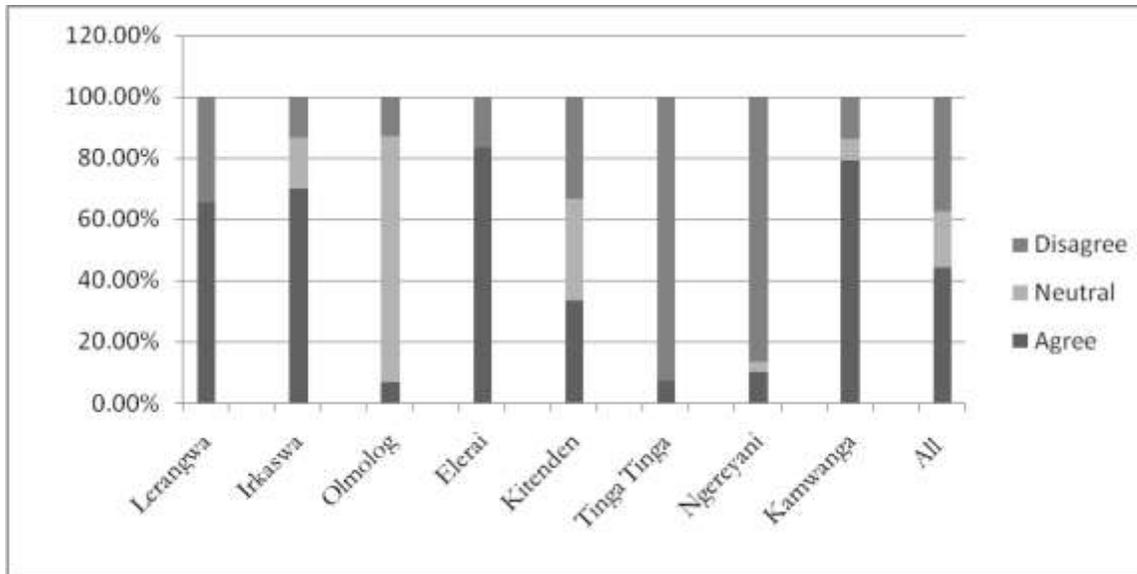
### **d) Whether conservation of wild animals is a good idea**

Sentiments of community members towards wildlife conservation were largely split. About 38% felt that conservation of wildlife was not a good idea to the community due to vulnerability to attacks by wildlife, spread of zoonoses, crop damages, among others. The majority (42%) felt that conservation of wild animals

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was good while 20% were neutral. Reasons cited for support of conservation of wildlife were that: it earns foreign exchange, for cultural and customary reasons, among others.

**Figure 6: Whether conservation of wildlife is a good idea**



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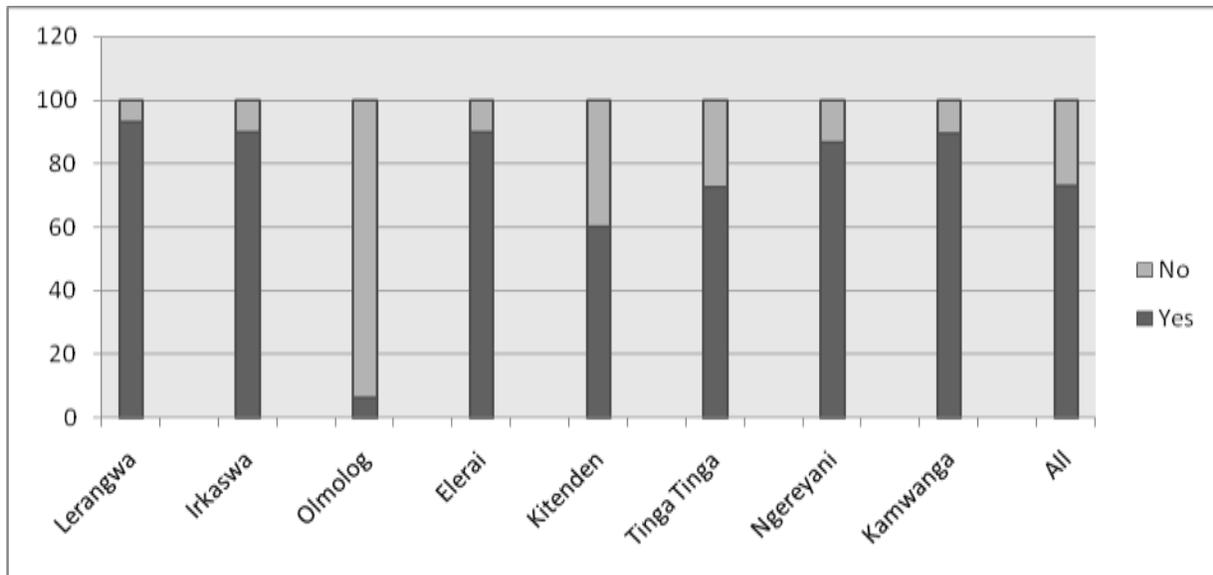
### 3.5 Human Wildlife Conflicts

Conflicts between wildlife and people, especially those who share immediate boundaries with protected areas, are common occurrences universally. On one hand, dwindling of wildlife resources has been linked to human actions through habitat destruction and pollution while on the other, local people look at wildlife as a liability and have defended themselves and their property from them. This is because wildlife can pose serious problems when their activities intersect with those of humans. Such problems include attacks by wildlife, crop destruction, livestock depredation and transmission of diseases, among others. In the current study, cases of human wildlife conflicts were widespread among the villages (73%).

#### a) Crop damages

Crop damages are common in Enduimet. About three-quarters (73%) indicated having experienced at least an incident of crop destruction in the last one year. The incidences were rampant in Kamwanga, Irikaswa and Lerangwa areas where most people engage in crop production. According to key informants, elephants, eland and monkeys were the most notorious as far crop damage was concerned in that order. Escalating cases of human wildlife conflicts among the pastoral communities have been attributed to increased crop farming (Yanda and Madulu, 2003).

**Figure 7: Percentage of households experiencing crop damages in the last one year**



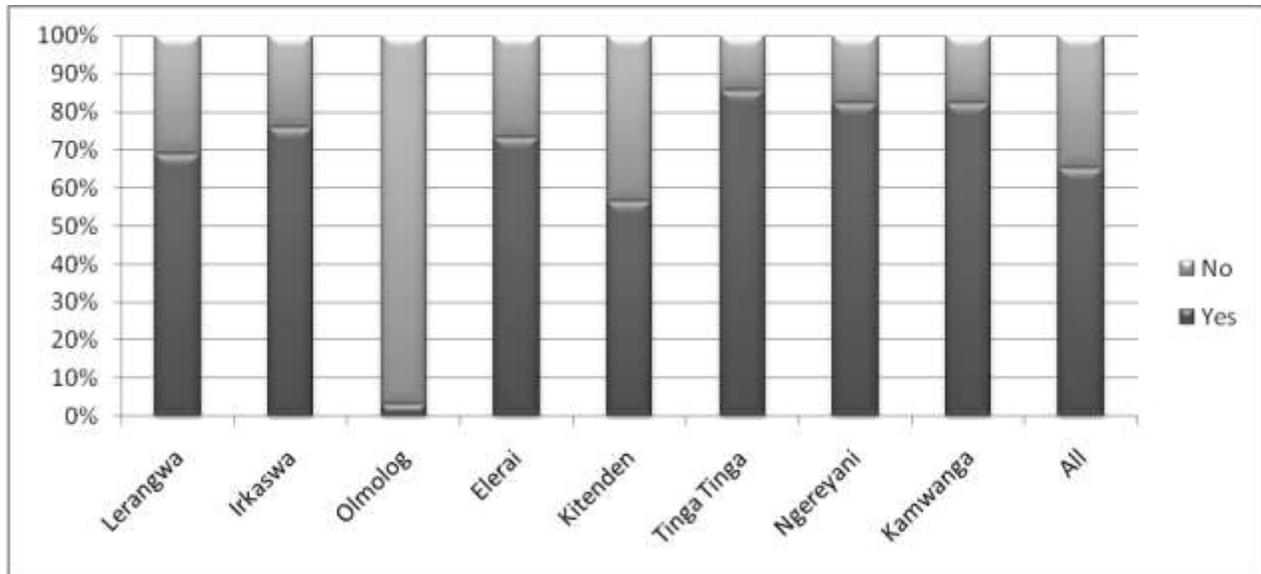
#### b) Livestock predation

With the exception of Olmolog, again cases of livestock predation were also prevalent in research villages. Over two-thirds (65%) of sampled households stated having experienced livestock loss due to predation by wildlife in the last two years (figure 8). Total costs associated with livestock losses were estimated at Tshs. 96,614,200 (Kshs. 6,038,388) with an average of Tshs. 690,101 (Kshs. 43,131) for those households experiencing such cases (table 15 in the appendix). Furthermore, 57.7% noted that the incidences have increased in recent years. The main wild animals involved were hyenas (47%), leopards (34.4%), and lions (14.1%). Amicable interventions such as compensation for losses incurred that actively involve local

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stakeholders must be sought without which community hostility can mount and destroy biodiversity resources (Treves *et al.*, 2006; Muruthi, 2005).

**Figure 8: Households (%) reporting cases of livestock predation in the past year**



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### 4.0 CONCLUSION AND RECOMMENDATIONS

#### 4.1 Conclusion

The Tanzania government, through its national wildlife policies has focused on giving local communities responsibility for wildlife management outside the protected areas. Creation of the wildlife management areas envisages local communities taking greater responsibility for the management and utilization of wildlife resource in village lands with the end goal of maintaining viable populations for years to come. This write-up has discussed the socioeconomic baseline assessment undertaken for eight villages surrounding the Enduimet Wildlife Management Area. The aims of the exercise were: First, to generate information to improve understanding of the local livelihoods so as to effectively guide WMA activities; and secondly to obtain baseline information for future monitoring of the livelihoods impacts of the WMA initiatives.

The study finds that livelihoods activities in the villages are dominated by extensive pastoralism and crop production. The majority of the households (83%) are involved in livestock keeping, using herd mobility as the main coping strategy to mitigate the effects of unpredictable climatic patterns. Livestock ownership is generally unevenly distributed with the poor having few or no livestock. Farming is carried out mainly for subsistence and a considerable proportion of people (72.2%) are now engaged in the activity. Rise in crop cultivation over the years in the area with such semi-arid characteristic may threaten alternative land use practices such as livestock production and wildlife conservation.

Beyond farming and livestock keeping, there is little income diversification opportunities and poverty is rife. Other sources of income in the villages were small businesses, seasonal labor and bee keeping. Limited diversification was associated with the remoteness of the villages. The livelihood patterns also show limited participation in natural-resource based enterprises such as bee keeping and other that utilize wildlife resources. Honey production was among the least widespread economic activities despite its huge potential. Likewise, activities such as silkworm farming and eco-tourism remain largely untapped. Non-farm alternatives are also not accessible.

The perceptions regarding the creation of the WMA are generally positive. Most of those consulted felt that they have been dully consulted and that the WMA would ensure protection of the environment and wildlife, spur community development projects, and create employment opportunities for the youth, among others. The major causes of discontent were that the creation of the WMA would lead to decreased access to grazing land and escalation of cases of human wildlife conflicts. There was also general disquiet that revenue from the proposed tourism venture would be channeled through the district council. This, it was felt, would erode much of the benefits to the community. The general feeling was that the community based organization in charge of the WMA was capable of handling these tasks.

Opinions regarding wildlife conservation were rather evenly split. Again, disagreement with the idea was as a result of perceived increased vulnerability to attacks by wildlife, spread of diseases and crop destruction. The Enduimet communities are generally conversant with the activities not allowed in the conservation area. A few were still involved in illegal activities such cutting of trees, charcoal burning and consumption of bushmeat. The other biodiversity resources sourced from the WMA were firewood, grass, medicinal herbs and water.

Cases of human wildlife conflicts are widespread in Enduimet. Numerous cases of crop damages, livestock predation and spread of livestock diseases were reported with substantial economic losses. That there are currently no compensation schemes for such losses drew negative feelings from the community about

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wildlife. Amicable solutions that actively involve local stakeholders need to be sought to ensure that conservation is effectively integrated within the local livelihoods.

### 4.2 Recommendations

- Provide support for enhanced market linkages to improve accessibility to markets for livestock and other products to improve household earnings
- The livelihood pattern show limited diversification into nature-based enterprises such as those that utilize wildlife. There is need to establish and promote viable nature-based enterprises such as bee-keeping to augment household incomes.
- Need to prioritize dealing with the negative impacts of wildlife conservation such as crop damages and livestock predation which are widespread in the area. Appropriate mitigation strategies should be pursued and monitoring undertaken to examine the impacts of those strategies.
- The WMA faces challenges with several key competencies which may limit its prospects of being a self-sustaining entity capable of making significant contribution to poverty reduction in Enduimet. There is need to strengthen the management capacity of the CBO responsible for the wildlife management area in terms of governance, contracting and entrepreneurial skills, business planning and development and conflict management which are evidently lacking.
- Continuous performance monitoring and evaluation efforts will be critical to the success of the WMA. There is need to further build the capacity of the CBO and the communities in participatory monitoring and evaluation so that they can take up the monitoring and evaluation exercise. This exercise attempted to do so by guiding them to develop some indicators for continuous tracking under the WMA (See appendix 2).

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### 5.0 APPENDICES

#### Appendix 1: Other tables of analysis

**Table 12: Main occupation of head by study villages (%)**

Village	Farmer	Pastoralist	Casual labourer	Businessman	Civil servant	Carpentry
Lerangwa	33.3	60	3.3	0	3.3	0
Irkaswa	63.3	20	6.7	6.7	0	3.3
Olmolog	50	46.9	3.1	0	0	0
Elerai	20	73.3	6.7	0	0	0
Kitenden	50	50	0	0	0	0
Tinga Tinga	13.8	79.3	6.9	0	0	0
Ngereyani	26.7	70	3.3	0	0	0
Kamwanga	63.3	10	23.3	3.3	0	0
Total	40.2	51	6.6	1.2	0.4	0.4

**Table 13: Livestock ownership (TLUs) by study village**

Village	Wealth category	N	Mean	Std. Deviation	Sum
Lerangwa	Rich	3	45.7	37.63	137
	Medium	8	7.9	5.44	63.2
	Poor	12	5.6	4.75	67.7
	Very poor	4	5.5	4.53	21.9
	Total	27	10.7	16.98	289.8
Irkaswa	Medium	13	3.4	2.24	43.8
	Poor	13	1.8	1.89	23.3
	Very poor	3	0.7	0.74	2.3
	Total	29	2.4	2.15	69.4
Olmolog	Rich	4	49.3	42.02	197.3
	Medium	7	13	11.62	91
	Poor	5	5.46	2.22	27.3
	Very poor	7	3.6	2.56	25.1
	Total	23	14.86	23.62	340.7
Elerai	Medium	11	40.46	36.14	444.9
	Poor	13	6.4	3.20	83.8
	Very poor	4	5.0	2.64	20.1
	Total	28	19.6	27.94	548.8
Kitenden	Rich	1	79		79
	Medium	10	50.03	42.87	500.3
	Poor	9	6.5	3.69	58.5
	Very poor	9	2.2	3.178	20.1

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	Total	29	22.7	34.6	657.9
Tinga	Rich	6	91.85	69.4	551.1
Tinga	Medium	8	16.65	7.67	133.2
	Poor	7	7.64	5.71	53.5
	Very poor	7	2.7	2.95	18.9
	Total	28	27.0	46.18	756.7
Ngereyani	Rich	4	62	39.45	248
	Medium	8	11.9	8.67	95.7
	Poor	6	4.6	1.57	27.9
	Very poor	6	2.27	2.32	13.6
	Total	24	16.05	26.16	385.2
Kamwanga	Rich	1	24.5		24.5
	Medium	15	7.61	4.87	114.1
	Poor	3	3.5	1.93	10.5
	Very poor	9	1.7	1.48	15.6
	Total	28	5.9	5.84	164.7
Total	Rich	19	65.1	50.1	1236.9
	Medium	80	18.6	26.0	1486.2
	Poor	68	5.2	3.86	352.5
	Very poor	49	2.8	2.81	137.6
	Total	216	14.9	27.49	3213.2

**Table 14: Wealth structure of study villages**

	Rich	Medium	Poor	Very poor
Lerangwa	13.8	31.0	41.4	13.8
Irkaswa	0.0	43.3	46.7	10.0
Olmolog	12.5	25.0	37.5	25.0
Elerai	0.0	36.7	43.3	20.0
Kitenden	3.3	33.3	30.0	33.3
Tinga Tinga	20.7	27.6	24.1	27.6
Ngereyani	13.3	26.7	30.0	30.0
Kamwanga	3.3	50.0	13.3	33.3
All	8.3	34.2	33.3	24.2

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**Table 15: Mean livestock losses due to predation in the last two years**

	Number of animals	Total value in Tshs
Lerangwa	7.7 (4.9)	917295 (1416512)
Irkaswa	11.6 (16.0)	618682 (851911)
Olmolog	1.0	500000
Elerai	7.5 (6.0)	1322952.4 (1332066)
Kitenden	10.8 (15.0)	767412 (1165249)
Tinga Tinga	5.3 (5.9)	262956.5 (249154)
Ngereyani	14.0 (12.4)	558865 (599266.5)
Kamwanga	12.1 (10.2)	381500 (411584)
Total	9.7 (10.9)	690101.4 (993014.6)

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### **Appendix 2: Results of the community meetings and focus groups**

#### **Indicator Development**

After explaining the purpose of the exercise, the community members were engaged to discuss their experiences with the setting up of the WMA. They stated that they had been fully involved in the setting up of the WMA but were concerned that the signing of the agreement between private investor, government and community had taken rather long. Concerns were also expressed that the benefits from the proposed lodge will have to be channeled through the district council. There are also fears that the government will nationalize all conservation areas hence the community will lose ownership of the intended lodge and the rights associated with wildlife.

#### **The participatory indicator development**

The meeting was reminded of the purpose of the exercise and taken through the five critical questions that inform monitoring and evaluation exercise (IUCN, 1999). The meeting was inspired by a set of questions that communities needed to ask themselves every time they start a project.

- Where are we now?
- Where do we want to go?
- How do we get there?
- How do we know we are getting there?
- How do we know we have arrived there?

#### **Community expectations of the WMA**

- Contribute towards reduction of poverty through use of available natural resources
- Enhance access to education-increase in enrollment in schools, school bursaries
- Enhance access to health services
- Assistance of the helpless and voiceless in the society
- Employment for the youth
- Offer assistance for HIV/AIDs related projects and cases
- Enhance access to water for domestic and animal use-ease/quality
- Enhanced transportation network
- Enhanced access to electricity
- Enhanced communication
- Enhanced livestock development
- Enhance crop cultivation

#### **Fears/losses associated with WMA**

- Increased incidences of poaching
- Decreased access to grazing land
- Cultural erosion due to tourism activities
- Increased crop destruction

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- Killing or maiming of people
- Livestock depredation
- Destruction of infrastructure-(water pipes, dams, e.t.c
- Increased disease transmission to livestock-losses/cost of treatments

### **Pairwise matrix ranking of the community expectations of the WMA**

- Contribute to poverty reduction-increased incomes from natural resources based enterprises
- Increased access to water for domestic and livestock use-Problem severe in Irikaswa/Lerangwa-distance to water sources/quality of water used
- Increased enrollment in schools-increased enrollment in schools; number of children completing form four education.
- Enhanced access to health services- distance to health centre
- Enhanced employment for the youth-number of youth employed in conservation related activities
- Assistance for the needy and helpless in the society
- Enhanced livestock production-enhanced access to markets, better breeds,
- Enhanced crop production
- Enhanced assistance to HIV/AIDs cases
- Enhanced transportation network
- Enhanced access to electricity

### **Pairwise ranking of fears of the project**

- Decreased access to grazing land-Increased cases of conflict with private enterprenuer
- Killing or maiming of people-number of people killed or maimed (scouts)
- Crop destruction-no of incidences and damages cost
- Destruction of water pipes/forests-
- Livestock depredation-Number and type of livestock killed and value of livestock killed (scouts)
- Increased poaching incidences-number of poaching incidences recorded (scouts)

### **Focus group I**

Composition: two men, two women and one youth from Kamwanga, Irikaswa, and Kitenden.

Livelihood activities pursued

- Livestock production
- Crop production
- Small businesses-dealing in cereals; livestock; shop keeping; kiosks; open market selling-chang'aa.
- Casual labour
- Permanent employment
- Bee keeping-Irikaswa/Kamwanga/Kitenden

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### Problems experienced in livestock production

- Droughts especially in the last three years-the rains have been inadequate! Coping strategy out-migration in search of pastures; selling at throw away price and buy later when conditions improve!
- Water shortage:
- Livestock diseases-mainly anthrax-Eland, scabies; FMD; Worms; Nagana-Wildebeast,
- Predation by wildlife-Hyenas, leopard; simba; snakes, buffaloes, elephants
- Inadequate access to better breeds

### Crop production

- Unreliable rainfall
- Pests
- Destruction by wild animals
- Lack of farm inputs-fertilizers; pumps; ploughs; better varieties
- Lack of credit facilities

### Small businesses

- Lack of capital
- Inadequate access to markets
- Lack of storage facilities

### Casual labour

- Seasonality
- Lack of enough opportunities

### Bee Keeping

- Inadequate knowledge on bee keeping
- limited access to markets
- Lack of beehives
- Inadequate knowledge on appropriate harvesting techniques and kits

### Seasonal Calender (Kamwanga, Kitenden and Irikaswa)

Month	Activity	Person involved	Problems	Remedies
January	-Wet season herding -Outmigration to look for salt lick in Amboseli -Spraying of crop -Weeding and planting of maize	-Men and youth  Men and youth	- FMD/Nagana - Crop destruction by wild animals -Pests	-vaccination -Treatments -fencing/ guarding farms -Use of pesticides/
February	-Dipping/spraying -Deworming -Herding	-men -Men -Men	Same problems	Same remedies

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	-Harvesting of maize/potatoes	-both men and women		
<b>March</b>	-Honey harvesting -Hedding of livestock -Maize harvesting	Men Men	Same problems	Same remedies
<b>April</b>	-Land preparation for 2 <sup>nd</sup> season planting -Planting of beans/potatoes -Herding	Men  -Both -Men	-Cold season -Unreliable rains -Wild animals causing crop destruction	-Spraying using chemicals that prevent frosting -Tree planting -Water harvesting
<b>May</b>	-Crop spraying -Weeding -Herding	Men -Both -Men	-Pests -wild animals -Cold -Human diseases -crop diseases	
<b>June</b>	-Herding -Weeding/clearing of weeds	Men -Both	Decreased grazing -crop destruction- high season -cold season	-Intense guarding of farms -
<b>July</b>	-Harvesting beans, viazi, maize -Herding	Both  Men	-HWCs -Cold -Decreased grass	
<b>August</b>	-Herding -Harvesting maize		Decreased access to grass Decreased access to water	
<b>September</b>	-Land preparation -Out migration for grass -Honey harvesting -Clearing the shamba	Men Men Men Both	-HWCs -Drought -Forest Fires	
<b>October</b>	-Land preparations -out-migration with livestock Land clearing	-Men -Men  -Both	-Strong winds -Droughts -Water problems -Fires	
<b>November</b>	-Land preparations -out-migration with livestock Land clearing Planting		In-migration with livestock rains	In-migration with livestock
<b>December</b>	-Planting/weeding -Herding			

### Natural resources owned by the community

- Land –used for crop production; building; livestock production; mining/lack of individual ownership (all land belongs to the government)

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- Water sources-inadequate accesses in dry seasons-Under ownership/management of KANAPA hence have to grant access.
- Forest-Source of wood; firewood, wild animals, rains
- Wild animals-tourist attraction; beautiful scenery; food
- Building stones-concrete e.t.c
- Sand-for building
- Tombs-tourists attraction; shelter for morans during meat season
- Mountains
- Rivers-mchanga,water, stones for building
- Limestone-magadi for food; salt for livestock
- Grass for N'gombe

### **Benefits of WMA**

- Result in increased incomes/earnings opportunities
- Employment for the community members
- Encourage tourism
- Infrastructural development
- Enhanced access to educational facilities
- Enhanced capacity of stakeholders to take care of the environment
- Enhanced access to water resources

### **Costs/Fears**

- Increases cases of HWCs-crop destruction; killing of people; livestock; diseases transmission
- Decreased access to land for agriculture
- Increased conflicts between WMA and community
- Destruction of infrastructure
- Inability to meet expectation of the community members

### **2<sup>nd</sup> Focus Group**

#### **Lerang'wa, Olmolog and elerai**

#### **Economic activities**

- Livestock production
- Crop production
- Petty businesses-trading in livestock, changaa, skins and hides, selling beads, kiosks
- Casual labor-herding livestock, farm work-weeding/, building, taking livestock to market
- Carpentry
- Bee keeping-mainly Lerang'wa

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### **Problems associated with the livelihoods sources**

#### **Livestock production**

- Livestock diseases-FMD, ticks, anthrax, scabies
- Lack of water-Sept-Nov
- Inadequate pasture
- Predation by wildlife-Hyena, jackal, leopard, simba
- Livestock thefts-not rustling
- Unpredictable markets-price fluctuations

#### **Crop production**

- Unreliable rainfall/lack of rains
- Crop diseases
- Pests
- Crop destruction-tembo, zebra, Eland, dik dik, monkeys,
- Lack of capital to purchase farm inputs
- Lack of storage facilities
- Poor access to markets

#### **Casual labor**

- Seasonality
- Inadequate opportunities
- Low pay
- Ill health

#### **Petty businesses**

- Lack of capital
- Poor access to markets-far and bad roads
- Seasonality
- Inadequate business skills
- Unpredictable prices

#### **Bee keeping**

- Inadequate skills
- Drought
- Lack of bee-hives
- Lack of markets
- Use of chemical for crops

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### Carpentry

- Lack of equipment
- Inadequate skills and knowledge on carpentry
- Lack of access to markets

### Seasonal Calender

Month	Activity	Person involved	Problems	Remedies
<b>January</b>	Milking Planting- Cleaning cattle sheds	women mostly women	Livestock diseases-FMD Pests Lack of credit	Vaccination Dipping/spraying Fencing/ Guarding farms
	Herding- dipping/spraying/ guarding farms	Men	Crop destruction by wildlife	-Small loans
<b>February</b>	Search for salt lick- Sinya/Amboseli Deworming Cattle branding Feeding livestock Weeding of maize Spraying of crops Harvesting of beans and potatoes	-men  Men Both	Diseases- Wildebeast -Ticks -Livestock predation	Quarantine Dipping and spraying Close herding
<b>March</b>	Herding Selling livestock Harvesting and selling crops	Men Men both	Livesock diseases-nagana -crop price fluctuation -Lack of reliable market for livestock	Vaccination/ Spraying
<b>April</b>	Herding Cleaning sheds Crop sowing and harvesting	Mostly men Women Both	Pests -livestock predation	Crop guarding Spraying of crops -spraying of livestock
<b>May</b>	Herding-Livestock used in marriages, payment of debts, prizes Meat season Weeding Selling of crops	Men  -Both	Livestock thefts Lack of opportunities for casual labor	Kulinda mifugo Search of labor
<b>June</b>	Herding Selling livestock Harvesting of njegere	Men -mostly men	Decreased grazing -Outbreak of livestock diseases e.g anthrax, -crop destruction -pests	Vaccination/dipping - Guarding of farms -spraying of crops -

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<b>July</b>	Herding Dipping Out-migration in search of salt lick Crop harvesting	Men	-Livestock diseases-nagana -Onset of diseases caused by wildebeast -Crop destruction -crop thefts	Dipping of livestock Guarding of farm
<b>August</b>	Herding (livestock back home from Amboseli / Sinya -Crop harvesting and selling	-men  -Both	Livestock diseases Decreased access to water -increasd conflicts betwn livestock keepers and farmers	-Planning for on watering livestock (roster) -Rehabilitation of water points -Putting in place rules for governing land use.
<b>September</b>	-Land preparation -Clearing the shamba -Herding	Men Both Men	-Decreased access to grazing -Drought -Forest Fires	-Policing for those burning the forest -Out-migration of livestock
<b>October</b>	-Land preparations -out-migration with livestock Land clearing House rehabilitation	-Men -Men  -Both Women	Low livestock prices -Water problems -Fires Lack of seedlings	Out-migration Looking for seeds
<b>November</b>	-Herding/outmigration Land preparation	Men Women Men	In-migration with livestock Rains Livestock deaths	In-migration with livestock Searching for seeds
<b>December</b>	-Planting/weeding -Herding/in-migration -casual labor		Increased incidences of worms, Strong winds Crop destruction -poor livestock condition, -Low cattle prices	-Crop guarding and spraying - Deworming

### Natural resources owned by the community

- Wild animals-Still owned by government, government should allow private ownership
- Mapango
- Stones/building materials
- Land
- Forest-men not allowed-only firewood collection allowed
- Mountains-
- Water-destruction of infrastructure by animals

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Land-land still under the government hence afraid to make necessary investments

-Only acquired through inheritance

### **Trends in use of water**

- access has decreased because of increased population of humans
- Extension of agriculture (increased crop production)
- Changing climatic patterns have not received adequate rains in the past three years
- Forest fires
- Increased wild animal populations

### **WMA**

Generally, they felt that the formation of the WMA was a great idea

- Concerned that WMA may not allow livestock access into to the area created for conserving wildlife
- Process is led by outsiders
- Fear that the constructed lodge might be taken up by the government
- Fear that the WMA may only benefit some in the society and not everyone

### **Benefits**

- Employment for the youth
- Increased income for households
- Enhanced development such as water, schooling, hospitals e.t.c
- Environmental conservation
- Increased tourism
- Increased marketing of crops