



*LUCID's Land Use Change Analysis as an Approach
for Investigating Biodiversity Loss and Land Degradation Project*

**Group Ranches Subdivision Study in Loitokitok Division
of Kajiado District, Kenya**

LUCID Working Paper Series Number: 7

by

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February 2002

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I. OBJECTIVE OF THE STUDY

This study was designed to describe some of the important socio-economic and ecological implications of the contemporary process of subdivision of group ranches resulting in a change from communal to individual land tenure in the Loitokitok Division of Kajiado District, Kenya.

II. PROBLEM STATEMENT

The land tenure reform programme implemented in Kajiado District started in 1961 with the demarcation of commercial ranches and group ranches. Its objective was to set the stage for development of what was assessed to be the best sustainable production system in the semi arid and arid rangelands of Kenya, and Kajiado District in particular.

Over the past 25 years there has been considerable tension in the group ranches over the security of land tenure, especially for young people. This has created a demand for sub-division, a process that has now begun on many of these lands. Subdivision is likely to affect all land uses in the area. These include the Maasai pastoral system and the wildlife that depend on availability of large landscapes that allow both livestock and wildlife to access resources that are widely distributed in both time and space. This is happening in a context in which tourist activities as well as agriculture have expanded on the slopes of Mt. Kilimanjaro along rivers and swamps. It is therefore important to understand the sub-division process, how it is controlled and its implication on land uses and livelihood systems.

Land tenure changes in Kajiado District and Loitokitok sub-district in particular have been mostly externally driven, they have undermined the value of traditional natural resource management, that's needs to be put differently – the intentions were good certainly the need to secure land for Maasai was also clear, but it was the lack of real support for their implementation and the– assumption that financial legal and institutional mechanisms needed were in place for the group ranches to work. Have failed to provide positive results and led to the failure of the group ranch system.

Group ranches were formed under the Land (Group Representative) Act of 1968. This an Act of Parliament to provide for the incorporation of representatives of groups who have been recorded as owners as owners of land under the Land Adjudication Act, and for the purpose connected collective pastoral management and resource use. This arrangement can continue to be maintained until the members decide to dissolve the group ranch (The Land Group Representative Act -Cap 287). The group ranch can be dissolved upon a written application to the registrar signed by a majority of the group representative pursuant to a resolution passed by a sixty percent of the group present in person or proxy at a special general meeting convened for that purpose. The affairs of the group shall be wound up in such manner as the registrar may approve.

Under the Land (Group Representative) Act (1968) group ranches were adjudicated with the principal objectives being to:

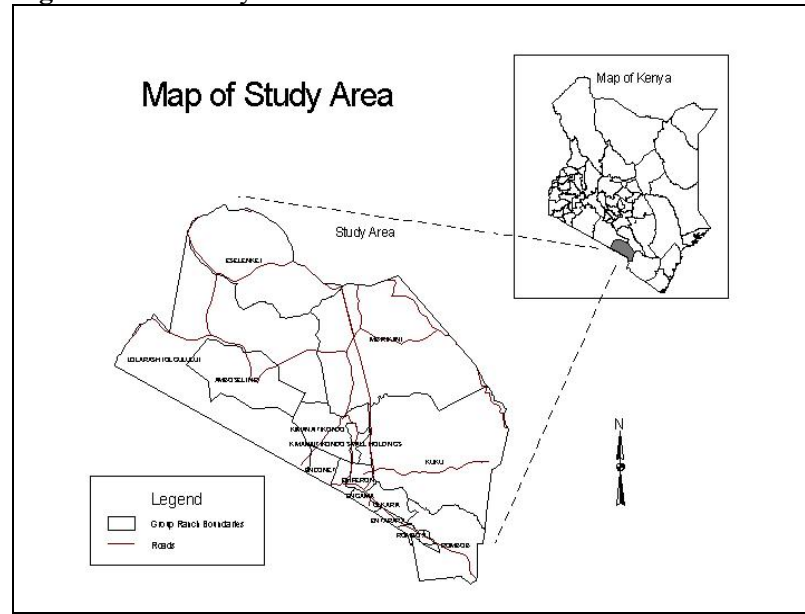
- Increase the productivity of pastoral land by increasing off-take
- Pre-empt landlessness among the Maasai due to allocation of individual ranches to some pastoralists
- Improve the earning capacity of pastoralists
- Reduce environmental degradation from overgrazing on communal lands.

The concept of group ranches was, at first, generally popular among the Maasai pastoralists as it provided security and safeguard against land alienation by non-Maasai people, and annexation as national parks or government forests. But, the failure of the group ranch system to deliver the objectives of improved livelihoods and security of tenure has led to their ongoing dissolution and subsequent subdivision. Sub-division is now inevitable. Subdivision of group ranches becomes a central question as Munei put it that *'It is now clear from the major problems of livestock*

development in Kajiado District are no longer about management of group ranches but those of coping with the breakdown of group ranches. In particular, the sub-division of group ranches, further subdivision of resultant parcels by owners and the eventual sale of land are emerging as more urgent problems' (Munei 1991:2).

III. STUDY AREA DESCRIPTION

Figure 1. The Study Area



III. A. The Physical Environment

Loitokitok sub -district is occupied by one Maasai section, the Ilkisonko, and is commonly referred to as '*Loitokitoki*'. The Loitokitoki name is derived from a spring with a Maasai name '*enkitokitok*' that means a bubbling spring. This spring is about 8kms south east of Loitokitok town and a kilometre from Illasit trading centre.

Loitokitok sub district is located on the southern part of Kajiado District in the Rift Valley Province of Kenya, and is bordered by Tanzania to the southwest, Taita - Taveta district to the southeast, Makueni district to the northeast, the Central Division to the north, and Namanga Division to the northwest. The sub-district administratively has six locations, seventeen sub-locations, and six local authority wards.

The sub-district comprises an area of 6,300km². Its highest point is the slope of Kilimanjaro and the Chyulu Hills and its lowest point is the Amboseli Basin. Kajiado District can be divided into four physiographic sectors and these are:

1. The Rift Valley
2. The Athi-Kapiti Plains
3. The Central Hills
4. Amboseli Plains

The Loitokitok sub-district lies on the Amboseli Plains. The gently undulating plains in the western half are an extension of the Basement System, in the southwest, Quaternary sedimentation can be found near Lake Amboseli, which is mostly dry, and the eastern and the southern part the Amboseli plains are of Quaternary volcanic origin. Towards the south, they are flanked by the snow-capped Mount Kilimanjaro, the highest (Pleistocene volcanic) mountain in

Africa (5894m) at the Tanzania- Kenya border. In the Northeast, the more recent volcanic Chyulu Range forms the border with Makueni District.

There are seven group ranches in this area and these are Rombo, Kuku A, Kuku B, Kimana/Tikondo, Olgulululi/Olalarrashi, Imbirikani and Eselenkei. These group ranches cover an area of 506,329 hectares and comprise 31.8% of the total area of the district. There are also the former 48 individual ranches that have now been mostly converted into crop farming areas. Hundreds of individual holdings ranging from one hectare to hundreds of hectares on the slope of Mt. Kilimanjaro are under crop production, mainly rain fed agriculture.

III. B Rainfall, Evaporation and Temperatures

Rainfall is the single most important factor influencing land use practices whether crop production, livestock production or wildlife conservation. According to Norton- Griffiths (1977: iii) the annual rainfall in Kajiado District is strongly influenced by mountains, hills and the rift valley at large. High rainfall in the Loitokitok sub-district occurs around the slopes of Mt. Kilimanjaro and the Chyulu hills. Other areas, especially the lower rangelands are characterised by lower rainfall. These include the Amboseli basin especially in Imbirikani, Olgulululi/Olalarrashi and Eselenkei group ranches. The lower rainfall is due either to rain-shadow effects from the neighbouring mountains or to divergent wind flow between the Chyulu Hills and Mt. Kilimanjaro.

Loitokitok has a bimodal rainfall pattern. The short rains fall between October and December and the long rains between March and May. The rainfall is strongly influenced by altitude. Loitokitok, which has the highest elevation, has the highest average rainfall of 1,250mm while Lake Amboseli, with the lowest elevation, has the lowest average rainfall of about 500mm. The October-December rainfall accounts for 45% and the March-May for 30% of the total rainfall.

The temperatures in the sub-district also vary with altitude. The hottest temperatures of 30 degrees have been recorded around Lake Amboseli and the lowest mean minimum of 10 degrees centigrade are experienced in Loitokitok on the eastern slopes of Mt. Kilimanjaro. The temperatures vary with seasons. The coolest period is between June-August while the hottest months are from September-February.

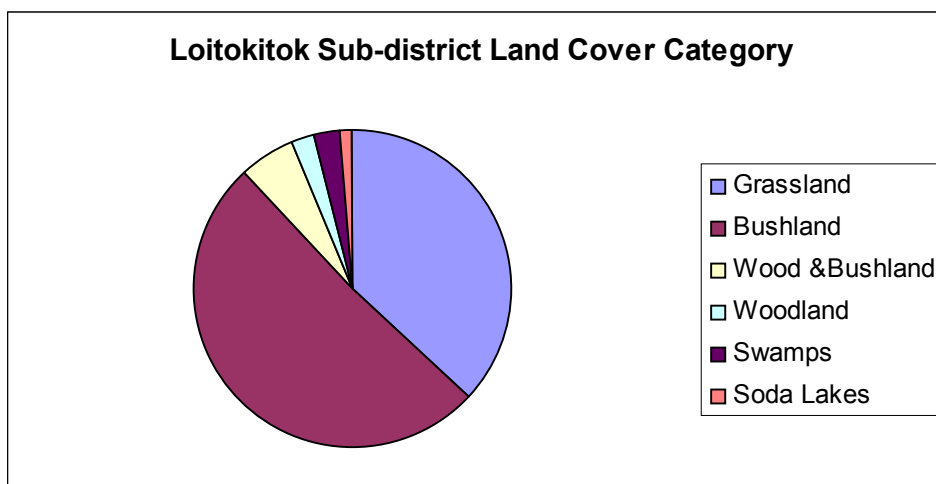
III.C. Vegetation

Vegetation of the Amboseli Plains is dominated by bushland and open grasslands (*Acacia-Commiphora* mosaic). Swamps are found at the base of Mt. Kilimanjaro (Table 1). The vegetation composition has changed significantly in the last decade. Most of the woodland areas have been converted to marginal crop farming areas, the swamps into irrigated land and grassland to bush lands due overgrazing and overstocking.

Table 1. Vegetation of the Amboseli Basin (source: Ecosystems 192)

Category	Amboseli basin (km²)	%percentage
Grassland	2318	37
Wooded & bushed grassland	-	-
Bushland	3196	51
Wood and bushland	376	6
Woodland	125	2
Forest	-	-
Swamps	188	3
Soda lakes	63	1
Total area	6266	100

Figure 2. Loitokitok sub-district land cover category



III.D. Population

There is a general consensus among those interviewed that immigrants from other areas of Kenya and from Tanzania will soon outnumber the Maasai. Since independence, and now with subdivision and subsequent sale of once communally owned land has come rapid immigration of non-pastoral people seeking access to more productive land within Kajiado District and Loitokitok sub-district in particular. The proportion of Maasai since independence has decreased from 78% in 1962 to less than 50% by the 1999 population census, despite the out-migration of more than 20% from the district the proportion of the Maasai continue to decrease. Rutten (1992), ROK (1989).

Several non-Maasai groups, of which the Kikuyu and Kamba are the most numerous, now live in the Loitokitok sub-district. The population of these two groups has increased tremendously since the 1960s, and they have mainly settled in the high agricultural potential areas and the urban centres. These are the areas where the population density has increased significantly. This high increase of human population is demonstrated by an increase in the number of registered group ranch members. The number of registered members has increased between 300% and 1400% over the last fifteen years, and this estimate excludes women and children and to some extent the youths. The following table illustrates that increase.

Table 2. Changes in numbers of registered members in each of the 7 group ranches in Loitokitok division

<i>Group ranch</i>	<i>Number of registered members-1987</i>	<i>Number of registered members-2001</i>	<i>% increase of registered members</i>
<i>Kimana/ Tikondo</i>	167	843	505
<i>Olgulului/olalarrashi</i>	1300	3,418	263
<i>Kuku 'B'</i>	417	5,516	1323
<i>KUKU 'A'</i>	1400	1,996	143
<i>Rombo</i>	366	3,665	1003
<i>Imbirikani</i>	922	4,585	497
<i>Eselenkei</i>	400	1200	300

Source: Author Survey July- October 2001

IV. METHODOLOGY

The methods used during the study are group interviews, meetings with key informants, and discussions with community leaders and development agencies involved in land tenure issues.

The study covers only the Loitokitok sub-district, of Kajiado District, in the on the Southeast of the Republic of Kenya, an area of approximately 630,000 hectares.

More detail on ranches covered by the study some idea of which individuals or groups were interviewed some of the man questions of issues covered n the interview

V. THE PROCESS OF SUBDIVISION

The procedures used in sub-division of the group ranches are characterised by lack of a defined process and therefore are ad-hoc in nature. The process is similar in all the group ranches and land subdivision guidelines are lacking. Table 3 below illustrates on the characteristic of the current sub-division process.

Table 3. The process of sub-division

Process	Rombo GR	Kimana GR	Kuku GR A & B	Olgulului GR	Imbirikani GR	Eselenkei GR
Procedure followed	Ad-hoc	Ad-hoc	Ad-hoc	Ad-hoc	Ad-hoc	No consent for Sub-div
Procedure similar	With Kuku	With Olgulului	With Rombo	With Kimana	Trying a different approach	N/A
Representation	Women/ Youth not involved	Women/ Youth not involved	Women/ youth not involved	Women/ youth not involved	Women/ Youth not involved	N/A
Who is represented	GRC and surveyor	GRC & surveyor	GRC & surveyor	GRC and surveyor	Surveyor, Local leaders	N/A
Control	GRC	GRC & surveyor	GRC	GRC and Opinion leaders	Surveyor & Opinion leaders	N/A
Role of the GVT	LBC Consent & conflict mitigation	Conflict mitigation & LBC	LBC & conflict	LBC & conflict mitigation	LBC & Conflict mitigation	Conflict mitigation Up-dating group ranch register
Status of renters	Pressure to sub-divide	Financing	Financing & influence not to sub-divide	NIL	Influence	N/A

*LBC - Land control Board; GRC- Group ranch Committee

Source : Author Survey: July- October 2001

V.A. Actors and Stakeholders

The Table 3 refers to different actors and stakeholders in the subdivision process. Among the most important are:

- *Youth* - refers here to the young Maasai 'morans' between 15 and 27 years of age. The youth are causing problems, especially in Olgulului /Olalarrashi group ranch, as they pressurise the group ranch committee for them to be registered as members of the group ranch and for land to be allocated to them. Already the Olgulului/Olalarrashi Group Ranch committee has given in to this pressure and the youth are now being registered as members of the group ranch. It was

demonstrated from the study that the youth are actively participating in the sub-division process. In a youth workshop that was attended by 40 youths, they said that they can play a role on creating awareness on the sub-division process and are able to influence procedures once they are made aware of the 'right way to sub-divide' group ranch land. They said that they could use folklore songs and informal meeting to influence the sub-division process. Some of the ways the youths have demonstrated their influence is through election of group ranches secretaries, choosing the morans' leaders and by participating in meetings that discuss settlement issues.

- Recommendation on the Subdivision: In a workshop that was attended over 40 youths from the seven group ranches the following recommendations were made on the sub-division process:
 1. Secret ballots should be used for parcel allocation/distribution
 2. Distribution of parcels should take into consideration the current settlement pattern to minimise conflicts
 3. More representation is required in the land adjudication committee, which should take into consideration issues important to clans, age-sets and women.
 4. Land sub-division should be based on the potential of the land and land-use planning should to be carried out to justify any decision made

Rightful non-registered members should be registered before commencing the sub-division process.

- *Surveyors:* The study showed that surveyors are wielding more power than was anticipated. Because of their technical expertise and the high illiteracy rate among group ranch members, the surveyors are controlling the process of sub-division. The surveyors are exploiting the ignorance of community members and are dividing the group ranch land without considering the land potential the spatial distribution of the resources in the group ranches as well as the slope gradient. The subdivision of group ranch land with no regard to land potential and with no consideration of the slope gradient will affect negatively on land use practices and this is likely to cause soil erosion in future. The group ranch members are not being advised about the relationship between land potential the distribution of resources and lands to equity in determining the size of the land allocated to each individual group ranch member.
- *Women:* Women are not traditionally registered as members of any group ranch except for widows. These important and crucial resource- users, whether registered or not, are not involved in the group ranch sub-division process. Women are both culturally and educationally marginalised and have no role therefore in the sub-division process. When asked whether they know anything about the subdivision process that is going on, they answered without hesitation that 'land is a man's affair and they need not be consulted on the process'. The passivity of Maasai women on the current subdivision of group ranches land is a stumbling block to future access and rights to land for women.
- *The government:* The study showed that the government has a paradoxical role in the sub-division process. Although the stipulated role of government in the governance of GR in the Group Lands Representative act s ----- the government's official judicial role has been reduced to giving consent for sub-division of the group ranch and mitigating conflict arising from sub-division and leadership struggles in the group ranches. The land adjudication department under the Ministry of Land and Settlement is supposedly the legal government arm on issues pertaining to group ranch dissolution. However, their role has been reduced to attending Annual General Meetings. Apart from supervising elections at the Annual General Meeting (AGM) and up dating the group ranch registers, the land adjudication department has no other role in the group ranch sub-division process. On the other hand, information from key informants suggests that the Ministry is perpetuating corruption and poor leadership in the group ranches' administration; hence it has contributed greatly to the failure of the group ranch system in Kenya.

- *Renters:* The renters are playing a crucial role in the group sub-division process. Apart from hastening the sub-division, renters are also co-financing the process. For example in Kimana/ Tikondo Group Ranch, the African Safari Club is leasing the 40km² Kimana Community Wildlife Sanctuary. The rental fee of Kshs. 240,000 per month is financing the sub-division of two - acre cultivation plots for 843 registered members. Individual land renters are also financing the sub-division process in Rombo, Imbirikani and Olgulului/Olalrrashi group ranches. The individual renters are financing the sub-division on condition that once the individual parcel of land is carved out they have first option to buy that land. Whether this is legally binding remains to be seen. In Kuku A Group Ranch, Luca Safaris, that has an exclusive right of managing the ranch's wildlife resource, is influencing members not to sub-divide the group ranch.
- *Local leaders:* It is very interesting to notice that the opinion leaders and the surveyors are controlling the process in sub-division in Imbirikani Group Ranch. In a special General Meeting that was attended by over 300 members, it was resolved that the sub-division process is a member issue, not a group ranch committee issue. The surveyor was mandated to collect the survey fee directly from individual members, and the group ranch committee's role was reduced to monitoring the process and to call for a special general meeting were there any misunderstandings. The members' resolution mandated the surveyor to have absolute powers over the sub-division process. During the time of this study, it was realised through informal interviews that members are to meet again to reverse the surveyors' absolute powers and give the group ranch committee more of a role in monitoring and also supervising the surveyor.

It became clear from the study that the following groups control the sub-division process but the degree of control differs from group ranch to group ranch

- The group ranch committee
- The land adjudication committee
- Surveyors
- Politician and Chiefs

Renters and leasers who are involved by funding the sub-division process do influence the group ranch committee decision on sub-division.

V.B. Locations

All group ranches in the study area, except for Eselenkei and Kuku' A group ranches are under the process of subdivision. Eselenkei group is situated in the Agricultural Ecological Zone V and is not yet prepared to begin sub-division. But influence from the neighbouring former Kaputiei group ranches is changing their attitude towards sub-division. Kuku 'A' is located on a designated conservation area and while conditions allow for members to sub-divide, cultivation is not possible in the area.

At meetings to discuss subdivision, members were asked whether they would like to subdivide the whole group ranch and their preference was to do so using four categories: grazing land, irrigation areas, rain-fed agricultural areas and conservation areas. Table 4 below illustrates these categories and their preferences regarding whether or not to subdivide them:

One major problem identified during the study was the issue of conflicts that are likely to have an effect on the subdivision process. The study revealed that boundary conflict is found in all group ranches in the study area. When the group ranch members were asked whether the existing boundary conflicts are likely to delay the sub-division process, the answer was that they would. The table below illustrates that all group ranches have boundary conflicts either with the government, individual ranches and even from group ranch to group ranch or in some areas trans-provincial boundary conflict.

Table 4. Categories of land and expressed preferences for subdivision

Group Ranch	Irrigated areas	Rain-fed	Conservation	Grazing areas
--------------------	------------------------	-----------------	---------------------	----------------------

Areas to sub-divided		agriculture	areas	
Rombo	Yes	Yes	N/A	Yes
Kuku A&B	Yes	Yes	No	Yes
Kimana/Tikon do	Yes	Yes	No	Yes
Ogulului/Olalarrashi	Yes	Yes	No	No
Imbirikani	Yes	Yes	No	Yes/No
Eselenkei	N/A	N/A	No	Yes/No

Source: Author Survey July - October 2001

It is evident from the study, that all the group ranches have boundary conflicts with either government, individual ranches or with the neighbouring group ranch. Usually boundary conflicts take a long time to resolve and this might delay the sub-division process for a period over one year to indefinitely.

Some of the recommendation to minimise boundary conflicts are:

- The surveyors be left to independently survey and demarcate boundaries
- Corrupting surveyors and administrators be stopped forthwith
- Conflict mitigation strategies should utilise traditional peace and conflict management mechanisms.

V C. Recipients

The study results shows that the principal recipient of the subdivided group ranch land is the registered group ranch member. In the case of a deceased husband, it is the wife or wives in the case of a polygamous husband. These results contradict the Maasai cultural law of inheritance that stipulates that the first-born son is supposed to inherit their father's land or property. Most of the key informants suggested that in cases where there is a complication for the wife to inherit her husband's land, and questionable circumstance exists, then the immediate close family members or the clan elders at large are to be consulted.

Renters have no way to becoming recipients of sub-divided parcels unless they bought from a registered group ranch member and can prove the money has been paid for purchase of land. The general consensus among group ranch members interviewed put the following classes as eligible recipients of sub-divided land:

- Registered group ranch members
- Single mothers
- Widows
- Old men
- Youth

It was a general consensus among group ranch members interviewed that these categories need to be considered for registration and allocation land.

Table 5. Areas with boundary conflicts in the Lototo division

Group Ranch	Boundary conflict
Rombo	Ziwani Ranch since 1996 Marue with Taveta side Njukini Cooperative Coast Provincial boundary & Rift Valley Tsavo West National Park Individual Ranches (Mary Ntiplit & Joshua Parteyie)
Kuku A&B	Tsavo West National Park Individual ranches
Kimana	Olgulului/olalarrashi group ranch Imbirikani Group ranch
Olgulului/olalarrashi	Kimana group ranch Imbirikani group ranch Matapato section Amboseli National park
Imbirikani	Kimana Olgulului/olalarrashi Kuku group ranch Chyullu national park
Eselenkei	Matapato section

V.D. Allocation Of Communal Group Ranch Facilities

The study showed that all group ranches are ill prepared on issues pertaining to group ranches subdivision and issues of rights of access to and control of infrastructure. Important infrastructural facilities include water points (boreholes, dams), eco-tourism facilities, trading centres, and sale yards. Some thought the local Olkejuado County Council could take over some of the facilities, while others suggested the formation of a holding trust or company by each group ranch to manage communally owned resources. They gave examples from elsewhere in Kenya of institutions similar to land and property holding companies e.g. GEMA Holdings, Ngwataniro Holding Company etc. In Kuku Group Ranch for example, they said that places already put aside for conservation will be used for the same purpose as long as their contracts/ agreements are valid. After expiry of these agreements, these sites will be run and managed by the group ranch committee.

But what the group ranches have not thought about or consult about is whether a group ranch committee can continue to have any legal jurisdiction after subdivision is yet to be determined. A majority of the members opined that they may be transformed into public utilities so that all group ranch members may have access to them where possible, or an alternate structure be created to manage public facilities.

Another issue that came up was the legal status of community owned sanctuary or conservation areas. The Kenya Wildlife Act is silent on the issue of private sanctuaries and limits the designated sanctuaries to a land size not exceeding 2000ha. The destiny of the community owned sanctuaries under the changing land tenure are yet to be determined.

V.E. Allocation Of Land

Table 6 demonstrates the distribution of land were there no additional members to be registered. The potential land parcel for each member will be between 9ha in Rombo and 60ha in Eselenkei Group ranch. For example, Eselenkei group ranch committee is considering registering two sons for each registered member. The girl child is still discriminated in the Maasai society. The aridity of land is an important factor in determining the livelihood impact of sub-division of group ranches. The economic potential of each land parcel needs to be assessed depending on agricultural or ecological characteristics of each unit.

The size of units being allocated in most of the study varies depending on resource base, e.g. access to water. For example, most of the land that has been sub-divided or under sub-division is on better-watered areas. In Kimana /group ranch, one particular individual had 105 hectares that he had owned before sub-division.

Responses to interviews indicate that most group ranch members are anticipating that their herding strategy will alter as people start to match their herd to the area allotted to them. Because of small parcel size the herd sizes are going to be smaller and the structure of the herd is likely to change from mixed to a milking herd.

For watering facilities and salt licks, many people will have to rely on communal watering points, as water investment is a very expensive exercise.

Table 6. Potential estimated acreage holding per member in the 5 groups ranches assuming current numbers of registered members remains

Group ranch	Size in hectares	Number of registered members	Anticipated size allocate land for @ member	Total livestock unit
Kimana/ Tikondo	25,120 ha	843	Irrigation - 1 ha 20ha for ranching	CC - 6ha/TLU 3TLU per member
Olgulului/olalarr ashi	147,050 ha	3,418	Farming - 2.5ha 13.2ha	CC- 12.5ha/TLU 1TLU
Kuku 'B'	96,000 ha	5,516	16ha	CC- 8ha/TLU 2TLU
KUKU 'A'	18,712 ha	1,996	9ha	CC- 4.5ha/TLU 2TLU
Rombo	38,000 ha	3,665	9.5ha	6ha/TLU 1.5TLU
Imbirikani	122,893 ha	4,585	26ha	CC- 10ha/TLU 2.6 TLU
Eselenkei	74,794 ha	1200	60ha	CC- 10ha/TLU 6TLU

Source: Author Survey July - October 2001

The mobility of livestock will be limited and in extreme cases they will have to rely on family associates or friends for survival of their livestock.

Land-use practices after subdivision are going to be influenced by the availability of infrastructure. For without infrastructure, settlements are going to be concentrated on specific areas and hence there will be heavy use in those areas leading to land degradation.

According to regulations of the sub-division process that is going in Kimana and Imbirikani group ranches, a registered member is only entitled to 2 hectares of irrigable land. Before subdivision of irrigable land some members of the group ranches had benefited greatly to the detriment of other

members For example, in Kimana group one influential member had 105 acres of irrigated land while other had nothing. This one extreme case illustrates where group ranch land had benefited some few individuals. However, similar incidences have been reported in Olgulului/Olalarrashi, Imbirikani, Rombo and Kuku group ranches. Fair distribution of land is being negotiated in most of the group ranches undergoing subdivision in the study area.

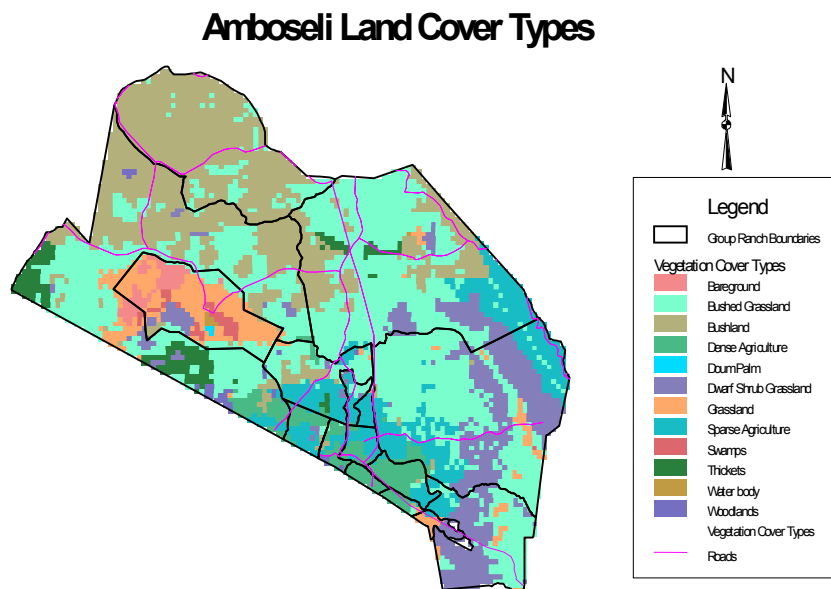
Most of the community members interviewed informally felt that equity n land subdivision would rest equal pieces of land to each member rather than n the incorporate land potential n determination of land size Some of the issues that the land adjudication committee is to consider as reflected in all group ranches include the following:

- Size of parcel for each registered member
- Potentiality of the land
- Access to public utilities
- Access to other resources such as salt licks and water.

There is a general consensus from the groups interviewed that a land potential study ought to be carried out before the sub-division process begins but the possibility of this being done is still not clear. The desire to undertake a land potential study is likely to cause more conflict on land distribution and more land have been subdivided albeit informally. This recommendation has been overtaken by events in some group ranches like Kimana/Tikondo group and Rombo that are further down the road in the subdivision process, albeit informally.

VI. LAND COVER IMPLICATIONS

Figure 3. Amboseli land cover types



Water catchments are also going to be affected as some of the influential individuals could be allocated these important areas. Most of the springs and surrounding catchments are not being conserved and this will result in a decrease in water yield. Forest reserves, as in the case of water catchments, may be allocated to influential individuals and will be cut down for hardwood timber and charcoal. This in essence will increase soil erosion.

Conservation areas will not be affected until the existing lease contracts expire. Because of their current legal status as conservation areas, a few influential individuals could register them as their own. The Group Ranch Act upon dissolution of the group is loose or silent on how communal resources are to be disposed.

VII. SUSTAINABILITY OF LIVELIHOOD SYSTEM

Wealth ranking:

In a youth workshop attended by over 40 participants, the participants were asked to carry out wealth ranking of members in each group ranch in terms of percentage. They came to a consensus that while cultivation is becoming common, most the wealth created is still translated into livestock. In terms of infrastructure such as buildings or plots, the numbers are still too few to warrant inclusion in the ranking. Livestock numbers is still the most valid way of ranking wealth in the study area. They classified wealth into four categories

1. Wealthy- Over 100 cows
2. Average- >60-<100
3. Poor - < 20 -< 60
4. Very poor - < 20

Throughout the discussion it was stated that more and more people are getting into cultivation and more land being converted for this land use. Most of the people who have land in high potential areas are rich and influential individuals who practice both livestock and crop farming.

Table 7. Wealth ranking in group ranches in Lototo Division

Wealth status	Olgulului GR	Kimana GR	KUKU GR	Rombo GR	Imbirikani GR	Eselenkei GR
Wealthy	10%	2%	10%	5%	10%	10%
Average	30%	10%	20%	10%	30%	20%
Poor	40%	40%	40%	50%	40%	50%
Very poor	20%	48%	30%	35%	20%	20%
Total	100%	100%	100%	100%	100%	100%

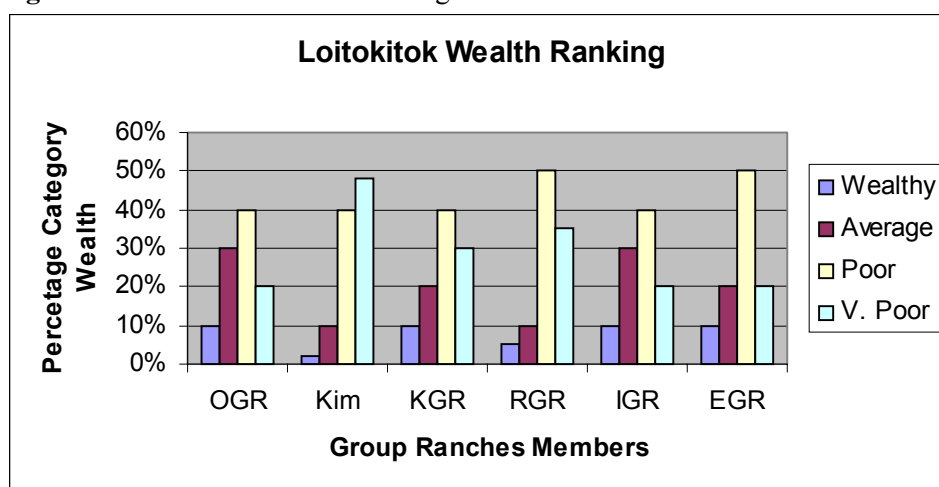
Source: Author survey July - October 2001

In all groups interviewed, there is a general agreement that after subdivision, wealth distribution may alter a little but will not be significant. There will be an opportunity for the poor and very poor category to translate their land into commodities for sale such as holding of grass banks and leasing to those with livestock. There is likelihood of more diversified way of generating income rather than depending solely on livestock production, or pastoralism to be precise.

Figure 5 shows that between 60-85% of the group ranches are in the poor and very poor category. This percentage is higher than the national average where 52% of Kenya's population are currently living below the poverty line. Poor people are more directly dependant on natural resources for daily sustenance thus raising the question of sustainability. A vicious cycle exists between environmental degradation and poverty, yet this link has never been accorded the attention it deserves through strategic government action. It is crucial the new National Poverty Eradication Plan, and National and District Plans, ensure a conducive environment for natural resource management.

Figure 5 shows that the Rombo and Kimana Group ranches have the lowest percentage of their members in the wealthy category. (This has a historical perspective that, it was the poor pastoralists who were the first to move into arable areas to cultivate. Yet it was the very rich and educated that were allocated big pieces of land in these arable areas. Several of the wealthiest Maasai in terms of cattle ownership were found to be the leading pioneers to start crop farming in the more potential areas for agriculture -- Please explain this seems not at all clear what you mean. One main fear from the groups interviewed is that it is this category of the poor to very poor that are likely to sell their land in future. If this becomes rampant going to be rampant as is already happening in the subdivided part of Kimana/Tikondo Group ranch, reliance on food relief is likely to increase. In Kimana/Tikondo group ranch, on the subdivided portion of about 1,000ha over 40% of the members have already sold their land in a period of less than six months after allocation.

Figure 5. Loitokitok Wealth Ranking



Source: Author Survey July - October 2001

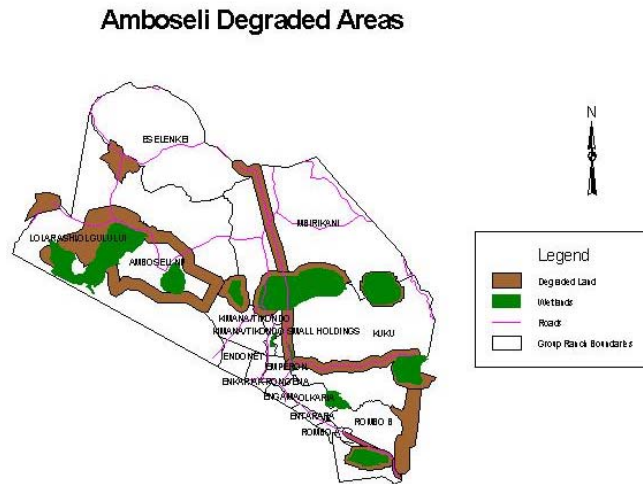
VIII. LAND USE IMPLICATIONS

Subdivision of group ranches will have implications for herding but its impact may not be realised in the first 5-years after subdivision. However, even so before the official sub-division has commenced, illegal subdivision is already going on especially in arable areas either for rain-fed or irrigated agriculture. More and more land is being converted for farming and less and less is available for livestock and wildlife.

For example in Rombo Group Ranch 50% of the 38,000 ha group ranch land has already been sub-divided informally. The rest of the ranch is a bare and highly degraded area. More than 70% of the 18,000 cattle in Rombo Group Ranch are entering Tsavo West National Park year in year out. During the study, in month of September 2001, livestock were already grazing 15km inside Tsavo West National Park. Irrigation is expanding but water will not be adequate to meet the current demand. There are already conflicts between herders and farmers because no water is flowing down stream.

Subdivision of group ranches and subsequent fencing is going to interfere with the wet and dry season traditional grazing regimes for both livestock and wildlife. The study area being dry rangeland lying in agro-ecological zones IV and V is prone to poor rainfall. These dry lands are likely to be affected by subdivision since movement of livestock will be restricted by fencing and boundary limitation. More areas are likely to be degraded. Figure 6 shows areas of less than 30% grass cover as was observed by the author during the study period of July - October 2001.

Figure 6. Amboseli Degraded Area



Subdivision is going to increase permanent settlement along permanent streams and water points. Some of the effects that are visible in the study area include the following

- More emphasis on subsistence agriculture and less on commercial production
- Increasing pressure on resources will increase substantially
- Limited availability of water
- Increase in areas under crops and decrease in areas under livestock production
- Demand for fuel wood will greatly increase
- The social situation will become complex, new comers will tend to stick together and there will be conflict with previous land holders.

The conversion for farming of wetlands and areas with more reliable rainfall has reduced the area available for herding. Wetlands such Isinet-Kimana, Olgarua lenker, Olorika, Olpusare, Moilo and Namelok have been converted to cultivation. These areas were important refuge areas for livestock and wildlife during the dry season. Since these wetlands have subdivided into plots sized between 1-2.5 hectares for irrigation, the owners are able to fence them and therefore they have become completely inaccessible to livestock and wildlife. A 62-kilometer perimeter electric fence in Kimana- Namelok areas, erected by Kenya Wildlife Service to reduce human-wildlife conflict, has reduced the area available for livestock and wildlife significantly. The fence has not solved the human-wildlife conflict but has transferred the problem to other communities living in Loitokitok-Olchorro area and subjected wildlife to poachers from the neighbouring country.

As Table 8 shows, the area set aside for livestock is still very large compared to irrigation, rain-fed cultivation and conservation. The area taken away by irrigation, rain-fed crop farming and conservation were dry season grass banks. The implication is that drought coping forage reserves are no longer available to pastoralists and are now more vulnerable to drought than before.

The livestock population in Loitokitok sub-district is relatively high and their impact on land cover is significant. The sub-district has an estimated number of over 15,000 households with a livestock unit (Cattle, sheep, goats, donkeys).

Table 8. Current land use (estimated acreage)

Land use	Irrigation (ha)	Rain-fed crop	Livestock (ha)	Conservation
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practice	farming (ha)			& Limited livestock grazing (ha)
Rombo GR	1000ha	17,000ha	20,000ha	N/A
Kuku A&B GR	400ha	1000ha	92,000ha	18,000ha
Kimana GR	843ha	N/A	18,000ha	6,000 ha
Olgulului GR	250ha	17,000ha	130,000ha	N/A
Imbirikani GR	500ha	500ha	115,000ha	10,000ha
Eselenkei GR	50ha	N/A	69,000ha	5,000ha
Total acreage	3,043 ha	35,500 ha	444,000 ha	39,000 ha

Source: Author survey July - October 2001

This indicates that the sub-district is already heavily stocked. The demand for water for irrigation has increased and the water flow downstream has been reduced and therefore the dry season grazing become difficult to utilise. The impact will be that livestock are not able to survive the long droughts and the resilience of the herding system will be reduced. This will worsen as water demand increases and investment in irrigation is increases. The poor water management regime has exacerbated the already bad situation and is likely to increase more than twofold.

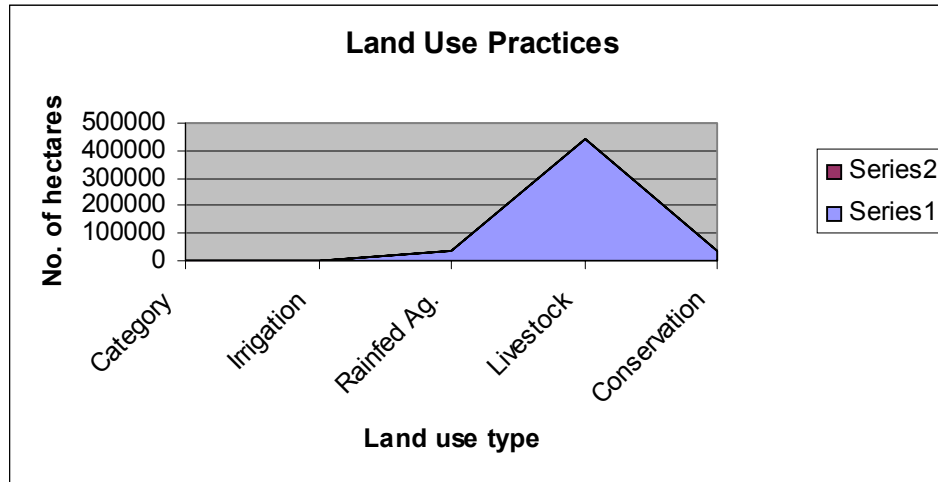
Figure 7. Amboseli Land Use Types



The demand for water has been worsened by the 24-inch diameter water pipeline that drains the Nolturesh River at the spring source. This pipeline cuts through Kuku and Imbirikani group ranches and transverse an area of 200km to supply water to towns near the capital city of Kenya Nairobi namely Machakos, Athi-River and Kajiado. The Nolturesh Pipeline carries a volume of 167 litres/second from a source whose output varies 250- 300 litres/second surpassing by far the 15% limit allowed by the Water Act of Kenya. From the same source, 28-litres/second volume of water was extracted to supply the nearby rural township of Loitokitok, thus leaving the Nolturesh stream less than 50 litres/second to run 150km length to Tsavo National Park. The Nolturesh stream now dries up 33km from the sources at Olorika, leaving the local pastoral people, livestock and wildlife that depends on it s seeking refuge elsewhere. The wetlands (Olgarua Lenkerr and Olgarua Lesoit Pus) that depended on this stream are virtually dry. A decreasing per capita water

supply and a rapidly increasing demand has resulted in the development of a local market for water and also lengthening the watering intervals for crops thus reduction in produce yield per acre.

Figure 8. Land use practices



Source: Author Survey July - October 2001

An interesting scenario that developed after the El Nino rains is that the Kikarakot stream, which had once disappeared, became seasonal because of over-exploitation for irrigation in the Isinet-Kimana area. However, irrigators have seized the opportunity and are now irrigating over 100ha for horticultural production on the former dried wetland (Ongarua Lenkerr swamp).

Since more land along rivers and swamp are being converted to farming. All group ranch members are demanding that in areas where irrigation is possible, registered members shares are limited to one or two and half hectares maximum. This is an indication that higher potential land may be allocated differently from the rest of the group ranch.

Salinization: Most of the irrigated area such as Namelok, Isinet and Ilchallai is starting to shows signs of salinity. It was observed in the study, that most of the farmers are realising a drop in productivity as a result of increased salinity of the soil. These areas are likely to be left desolate in the next 5-10years. This is confirmed by a study of soils on the group ranch around Kimana and Isinet Soil analysis of cultivated land indicates a high Exchangeable Sodium Percentage (ESP) of 'strongly sodic' soils and a sodicity hazard. The swamp acts as a sink for salts (pollutants) washed out of higher elevation soils by rainfall and irrigation water. Despite some outflow from swamps, solutes accumulates in the 'sumps' of the hydrological systems rendering the water, and soils on swamp margin, unsuitable for cultivation (Southgate and Hulme 1996)

Wildlife: In conservation areas, though they are available to livestock on a limited scale, the conflict between tourism and pastoralists is going to increase. For example, in Eselenkei Conservation Area and Kimana Community Wildlife Sanctuary, the conflict between livestock and tourism was so intensive at the time of the study that it was almost resulting in a breach of contract between the investing partner and landowners.

While competition and conflict over land and water between agriculturalists and pastoralists represents a relatively new phenomenon in Loitokitok Division (Campbell et al. 2000), debates about wildlife and other production systems are long-standing (Campbell et al. 1999) and there is an emerging consensus that if wildlife is to survive, it has to pay for its existence. Wildlife for a long time has benefited from this large landscape that has remained accessible to them for generations both for forage and water. However, subsequent to subdivision of group ranches, their

existence, free movement and survival will depend mostly on the cost and benefit ratios to the local landowner.

Since independence, the benefit from wildlife has represented the largest source of foreign exchange with earnings rising from Kenya pounds 27million in 1972 to Kenya pounds 713,000 million by 1992(ROK 1994). Yet the economic value for tourism to local population has diminished over years.

However, recently the group ranches have started to diversify their source of income from depending entirely on livestock and livestock products to include farming and tourism to tap the ever- increasing European market for horticultural products and eco-tourism product worldwide. Horticultural products and eco-tourism are going to compete with livestock for land and water. It is worth noting that the eco-tourism and horticultural markets are very risky, very sensitive to the political environment and are prone to price fluctuation, market availability, access, and structure and can easily change and may be abandoned by proponents of these products. Once abandoned, these areas will be used for subsistence and it would be hard to revert to wildlife conservation.

As described earlier about 7.8% of the group ranch area is under conservation and available for eco-tourism related activities. The area set aside for conservation is still very small compared to the number of wildlife living in the group ranches. During the rainy season (October-May) over 80% of the wildlife in Amboseli National Park moves to the neighbouring group ranches only to return in the beginning of the dry season (June-July). Amboseli National Park is only 392Km² and cannot sustain the large number of wildlife in that small area, and therefore it depends heavily on the neighbouring group ranches to accommodate them.

Once these group ranches are subdivided and fenced, the movement of wildlife is going to be very limited. According to the groups interviewed, once the group ranches are subdivided, there is going to be a loss of the open space necessary for maintaining specific unique wildlife populations. Some of the expected outcomes are:

- Loss of valuable habitat not only for wildlife but also for water conservation and other ecosystem services. Isolated mega- zoos are likely to result from sub-division in the study area
- Loss of opportunities in for wildlife and nature based business opportunities once the land is subdivided into small and uneconomical units that are too small to benefit from the tourism industry. Existing tourism may also be compromised by a decline en the quality of viewing and fragmentation of the ecosystem
- Loss of medicinal plants and traditional cultural sites. During the subdivision of land, the value of medicinal plants and forest are not taken into consideration as they are assumed that land is land. The modest value placed on traditional medicinal plants by competent authorities provides little or no security for medicinal and cultural ritual sites. Forest reserves that are rich in medicinal plants mostly end up in the hands of the few powerful and influential community leaders.
- Increased risk of induced poverty. This may lead to inappropriate land use and land degradation. Already degradation is present along the Nolturesh pipeline because of increased settlement along these permanent water points.
- Incidence of poaching is likely to increase for protein and bush meat markets but this can be altered with benefits availed to members. Incidence of bush meat is increasing as the available protein becomes expensive and a majority are unable to afford. Since bush meat is illegal and the price is low compared to livestock products, many consumers are turning to the illegal bush meat trade.

- Migration routes are going to be closed and dispersal reduced significantly. Most of the cultivation and settlement are concentrated in areas near streams and swamps. These areas along the streams not only provide forage refuge for wildlife and livestock, but also are important components of migratory routes connecting the wildlife reserves and parks.
- Human-wildlife conflicts are likely to increase as more land is going to be put under cultivation or fenced. Livestock predation is a common in the study area. During the time of the study in Eselenkei Group Ranch, one member had lost 45 goats killed by a lion in one night. While this could be an isolated case, there is a tendency for those severe cases to have a long lasting effect on people attitudes towards wildlife.

According to Dr. David Western (pers. comm.) wildlife in the Amboseli basin ranges between 40,000 -50,000 wild ungulates. These wild ungulates constitutes about 25% of the livestock population that ranges between 120,000 - 160,000 depending whether it was a bad or good years. Dr. Western's opined that the number of livestock and wildlife is not an issue but what is crucial is the conservation of areas that are critical for wildlife survival. While this is true from the wildlife conservation point of view, the local people interviewed argued that numbers are important when it comes to competition for forage and water especially during period of scarcity and disease spread between wildlife and livestock and hence an increase in the human -wildlife conflict.

The presence of water pipeline that passes through the Basin and many watering points along the pipeline have allowed wildlife from Amboseli to spread eastward to Imbirikani group ranch and also the creation of Eselenkei community conservation area has attracted wildlife to the north of Amboseli.

The critical season is the dry season when rain surface water has dried up and the only places where water is available are on the permanent streams and swamps. It is during the dry season when there is an increase in the incidence of human –wildlife conflict, as both livestock and wildlife compete for forage and water. If human-wildlife conflicts are to be reduced it is expedient that managers of conflicts should concentrate on how to reduce conflicts that are likely to arise during the critical dry periods. More important may be the ability to thin through the implications and possible strategies for reducing conflict once subdivision is completed

IX. LAND SALES

During the time of the study, threats and fear of actual sale of land is the most debated topic in every discussion and meeting from the groups that were interviewed. Fear seems to be the main driving force in the individualisation of Maasai land, from the formation of group ranches to their subsequent subdivision. Land security has been the main reason for group ranch formation and is still the reason for subdivision. The land disposition euphoria and subsequent grabbing of other communal areas like forests, holding grounds, sale yards, and trading centres' plots have stimulated the need for secure land titles.

According to the Land Control Act, whoever wishes to subdivide, transfer or mortgage land in his or her possession has to obtain consent from the local Land Control Board. The Land Control Boards are purely administrative bodies whose function is to grant or refuse consent of a particular transaction before them. The Land Control Boards cannot and do not have powers over 'the willing seller and willing buyer principle' or the power to alter contracts agreed upon by the two parties.

It is a significant finding of this study that land sales and its' consequences have a direct implication for land use in the study area. Whoever sells or buys and the purpose of purchase or

sale may determine the actual economic activity that the purchased land or unsold land is likely to be utilised for. The intended use of such land will have a direct implication on the land cover. For example, the subdivision of land in Mahiu Mahiu, Kenya, where the buyers' motive and objective was for crop farming, resulted a damaged land cover and unprofitable farming. The people who purchased Mahiu Mahiu land are regularly on food relief. In Olkinos and Kitengela areas in Kajiado North, some buyers acquire plots for strip mining business. The mining practice turned pastureland into wastelands of water filled low depression, dotted by rocky, man-made hills.

This study suggests that age, level of education, wealth, main occupation of the owner, or size of plot are of no significance as far as selling of land is concern. Sellers of land can be found among the young, old, literate, illiterate, rich, poor, male or female alike. What is common among the sellers is the logic behind selling land, acquisition of capital for investment in productive assets, expensive consumer goods, or for sheer subsistence.

For example, In Kimana/Tikondo group ranch where selling of allocated land has already been observed, groups interviewed estimated that over 40% of the members have sold their two acres plots. It was hard to verify this estimate as the local control board have refused to give consent until the subdivision process is completed. However, information from a few land brokers indicates that land transactions have taken place albeit illegally.

The motive and objective behind sale is that most members of the Kimana/Tikondo group ranch were the first to sell land in Loitokitok division. When they received their share of land from the group ranch subdivision they saw it as a boom and bonus that needed to be taken advantage of without hesitation by selling. The reason for sale from those interviewed was for sheer pleasure. The haste and speed of sale of land in Kimana/Tikondo Group is of concern and the spectre of many landless people looms in the near future. While there is a possibility that anyone can sell land, the groups interviewed seemed to reach a consensus that there are certain categories which are more likely to sell than the rest. These are:

- The poor with no other source income for subsistence.
- The drunkards
- Pioneer land sellers, they tend to sell again
- 'Irkirikor' (Maa)- Wanderers/Loiterers
- The Childless
- Sales to raise cash for investment in productive assets
- For loan repayment.

Areas that are likely to be sold are the fertile and those with sufficient water for irrigation, and plots near infrastructure such as roads, schools, hospital and trading centres. The prices for land will vary considerably depending on the distance from this infrastructure. Already in the subdivided portion of the Kimana/Tikondo group ranch, the prices vary between 15,000 - 50,000/= Kenya shillings per acre. The prices at first were very low as supply exceeded by the demand, but the prices are stabilising between Kenya shilling 30,000 -50,000 per acre.

The buyers of these lands are mainly immigrants, renters and the wealthy Maasai. Most of the renters are Kikuyu and Kamba. The feeling among those interviewed is that not many Maasai will buy land. The land so far available for sale is only that suitable for crop farming under irrigation. The demand for water will increase as sale of land around streams and swamps attract new settlers. The impact of these will be to further reduce the numbers of downstream communities that have access to water from Mt. Kilimanjaro. Conflict over availability and access to water will grow.

Once the drier areas are subdivided, more land will be available for sale. These will attract people who are interested in livestock or wildlife ranching. These livestock keepers might need to buy more land for commercial or wildlife conservation and increasing a likelihood of having large landowners emerging (Campbell 1993). Since the dry areas are going to be cheaper, more

immigrants are going to be attracted to these areas. Local land buying co-operatives or companies might start purchasing land for speculative purposes.

X. CULTURAL AND SOCIAL IMPLICATION

The socio-cultural implications of subdivision of group ranch land, like in any pastoral societies, are characterised by immense diversity in cultural, historical roots and economic conditions.

On the group ranches that are subdividing, societies are becoming progressively marginalised in political, cultural and economic terms. Though linked to national economies and the global market network, the impression captured in this study is that the people living in the subdividing group ranches have little control over their destiny.

The move to subdivide group ranches is driven by fear about land security and a general lack of trust in the land policy and land tenure arrangements. It seems that from the onset of group ranch formation, little consideration was given to long-term sustainability of the group ranching system. Group ranch formation seems to have been an interim measure to alleviate the fear of losing land to other landless communities. The rules and regulations were hurriedly formulated without considering the implications for people inhabiting the arid and semi- arid rangeland.

Yet, the influence of the national policies can be dramatic and this is complicated further by the relatively slow speed at which arid lands takes to reveal their responses to policy. For example, the group ranch concept and formation took place from 1960 and, despite early and recurrent warnings in the scientific literature (REFS), it was not until the 1980's that the government realised that the group ranches arrangement was not going to work. Poor policies, inadequate financial resources and lack of political support base led to crumbling of the group ranch system. These have impacted on peoples' livelihood.

The ever -increasing human population in the group ranches and demand for better livelihood are forcing people to subdivide group ranches.

The implication for this on the social and cultural dimensions is twofold. First, the quantity of land available for pastoral farming and people decreases. The reason for this is simple. The land once it is subdivided becomes available and attractive to agricultural settlers. These areas that were keystone-grazing areas are disappearing or becoming unavailable to pastoralists. Loss of access to these keystone grazing areas leads to unaccustomed form of social stress, makes many traditional resource management practices irrelevant, and forces overgrazing in the areas that remain available.

For example, the highly developed dry season and wet season grazing regimes of the Maasai that have been enforced by customary laws and practices will now be thrown into disarray by the subdivision of group ranches. Without any more adherence to regimes, this would likely result in soil, vegetation and pasture degradation.

The pastoral production system and the resource management regime are what help sustain the cultural identity of the Maasai people. The breakdown of group ranches is a result of fear that can be attributed to outside pressures of modernisation and are inclined to individualisation rather than societal ownership of natural resources. This outside pressure and the introduction of new policies to enforce modernisation, frequently undervalue and ignore the existing cultural systems. Like the case of subdivision of group ranches, the state policies dictated that group ranches should be abandoned and are replaced by a more 'civilised' form of individualisation of land ownership. Attempts to achieve this objective without adequate preparation for the people concerned will result in serious ecological degradation and extensive social and economic disruption.

Sub-division of group ranches not only brings about a decentralisation of settlement but also a partial breakdown of the social system based on the implicit co-operation in the use of natural resources. While subdivision is going to enhance the flexibility of an individual using the land for his/her benefit, it will also increase the risk from independence. The ring of interdependency networks, the social capital that binds the social fabric is likely to disintegrate and poverty is likely to be visible in a society where for years it has been concealed. Pooling limited labour together for instance for herding, security and livestock handling is going to be limited and hence tying individuals to their own responsibilities and less time spend for communal assignment.

The sale of land will attract people of different ethnic groups and this is likely to create conflict among different ethnic groups caused by cultural variation and different economic activities, for example creating conflicts between cultivators and herders. Most of the land buyers prefer to cultivate for fear that livestock rustling inhibits them from keeping livestock. In areas where grazing and cultivation are being practised, frictions already exist due to lack access to land and water by herders, and damage to crops of cultivators (Campbell et al. 2000).

However, the major area of conflicts raised during the study, is that newcomers would also like to take over the leadership role from the already marginalized indigenous people. The struggle for control over access to resources will affect the cohesion of different ethnic groups and the decision making process especially when it comes to distribution of water for irrigation already a contentious issue. Struggle for leadership positions by other ethnic groups such as administrative chiefs, county council representatives or a Member of Parliament is already happening (Southgate and Hulme 1996). This has caused contention in the past years and is likely that this may continue in the future. According to those interviewed, there has been a series of ethnic clashes over the past decade, and particularly before the general election in 1997. It is certain that the leadership structure is going to change either in terms of ethnic composition or age set structure.

The other element that selling of land brings about is the family conflicts arising directly from the selling of land. There is going to be conflict at the household level on selling. The wives or children may refuse to give consent to the husband to sell land, or quarrels may arise from misuse of money from the sale of land by the husbands. Legal action and contention at courts challenging land sales is likely to arise the future

The question of inheritance is also likely to arise, many single, divorced or separated Maasai women or the young may be disinherited due to land subdivision which forces them to move to peri-urban slums ending up in unfavourable activities such prostitution or other odd jobs.

XI. THE FUTURE

Subdivision pressure in Loitokitok sub-district is driven more from outside than inside, and group ranches members are ill prepared for it. The group ranch committee and the group ranch members at large are not aware of the consequence of sub-division in general. To be able to address and to prepare group ranch members for sub-division, the study recommends the following:

- A symposium to discuss the sub-division process, develop guidelines and to chart the way forward for the post-group ranch period
- A feasibility study on sub-division on some of the alternative productive systems that could be applied on semi-arid environments, and to carry a socio-economic analysis of the impact of group ranch sub-division such as Landowners Association (Malphine Cattle owners Association), Co-operatives, Family Holdings etc
- An open tendering system for surveyors involved on group ranches sub-division and enlist the use of trustworthy legally registered surveying companies
- Land use plans to provide guidelines for different land capabilities and to prevent land degradation be developed and approved by competent government authorities before consent for sub-division is given by local control boards. Development of land use plans is an integrated process that needs to incorporate different uses and activities that are compatible with sustainability. Effective land use policies can only be formulated after land classification and realistic evaluation of their capability. This is particularly important in areas where there is a high probability of land degradation from the breakdown of the group ranch management system.
- Land valuation guidelines to be incorporated to safeguard cheap land sales at throw away prices and to inform local land control boards
- Group ranch members be exposed to different herding strategies and be encouraged to consider diversification like zero grazing, poultry farming, fish farming, bee-keeping, floriculture and to safeguard land against degradation.
- To support livelihood support systems, water supply systems such as irrigation, there is a need to exploit water-harvesting technology - Dams, Rainwater harvesting. But this should take into consideration the need to safeguard against land degradation resulting from market - induced overstocking or over-cultivation whole paragraph not clear
- A long term Wildlife- Tourism development plan needs to be developed that will reduce the destruction of wetlands, protect community sanctuaries/conservancies, enhance wood lot creation and promote energy conservation investment
- Legal implication of conservation areas (2000ha) need redress as the law is silent community conservancy; An amendment to existing legislation rather than overhauling of wildlife policy may be more applicable than revolutionary changes
- Creation of post- group ranch management structures or management authorities such as Holding Trust/ Company, and the buy out issues to protect community assets from speculative appropriation
- Innovative economic tools such as use of conservation easement, land leases and conservation business ventures can or should be developed to conserve critical bio-diversity areas such as migratory routes, corridors and dispersal areas and protect against land degradation and increase the possibility of achieving sustainable forms of savannah land-use
- To safeguard against unscrupulous land sales instruments such as Joint Titles, Collective Title deeds, Conditional land titles etc. be utilised.

- Land Control Boards are commonly referred to land sale brokers to minimise their roles. Land control boards need to be decentralised and their illegal activities be curbed. Creation of a Technical arm of Sub District Development Committee is a prerequisite before sub-division of group ranches to educate, advise and to oversee the group ranches subdivision process, and to equip and prepare group ranch members for a soft landing to individualisation.
- Boundary conflict is likely to delay the group ranches sub-division for years. To avoid the delays, a special task force needs to be formulated to address land boundary conflicts, and this can also be advisory arm for land control boards.
- The number of landless people and those in poverty is likely to increase after sub-division of group ranches. In order to minimise its impact, the capacity of local control board needs building to address this issue and a poverty eradication strategy needs to be formulated specifically to address it.
- Subdivision of group ranches will attract in-migration and hence new settlers. This will affect the leadership structures and the political terrain will change as well as cultural values system. Conflicts arising from cultural differences and production system preference are likely to emerge. To manage these changes and transition, a leadership structure that can and should accommodate cultural diversity ought to be established.

In conclusion, thus to illustrate the future of group ranches sub-division, three critical government departments are considered and their role in promoting development and as indicated in the KDDP 1997 –2001. These are the land adjudication, agriculture and livestock departments:

Table 9. Government departments and their role

Department	Objective	Target	Impact on Land cover/use?
Agriculture	Rangeland rehabilitation Increase production through irrigation	Train farmers on soil & water conservation Train farmers on on-farm water management	Further alienation of pastoralists 'grass banks'
Land adjudication	Ensure land owners are issues with Title deeds or leases to promote permanent development	Complete sub-division of group ranches	Fragmentation of rangelands
Livestock	Identify farmers constraints & adoption of techniques with a view to increase livestock production	Have extension agent per sub-location and extension agent to reach 8-farmers	Disregard to ecological implication of range lands for intensive farming

It is therefore clear from actions of the government departments that the threats of sub-division of group ranches on ecological stability is not critical and its ecological impact not an issue to be address in the Kajiado District Development Plan. The departments' objectives and targets tend to ignore the three social objectives of economic efficiency, environmental integrity and equity issues. Were an alternative approach adopted and policy incorporated and taken up at the district level, by different stakeholders (national, regional and local governments, international agencies,

non governmental organisation, the private sector and local communities), it can assist in improving savannah land use and meet the needs of local communities.

In conclusion, unless the current sub-division of group ranches in Loitokitok sub-district is designed to take into account the existing cultural and ecological constraints of savannah systems with support from the local communities, this land sub-division process is going to lead to land fragmentation land degradation, less productive land usage, less equitable access to resources especially water and greater conflicts between people and people and wildlife than the group ranch system. Alternative arrangement sought to ensure that the values of land to both people and wildlife are optimised. Land may need to be re consolidated e.g. under family ranching or 'Inkuto' co-operative ranching that can build upon the natural advantages of savannah systems. In taking this path, however, care must be taken to ensure that people involved have a strong interest and dependence upon the resource in question. And to safeguard against divergent objectives, special arrangements through creation of by-laws or sometimes setting conditions needs to be in place in order to retain equity and ensure effective management of land resources

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