

Full Length Research Paper

Non-traditional land-use practices in the pastoral Maasai region in Loitokitok district of Kajiado county, Kenya

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In this paper, non-traditional land-use practices were assessed and the extent to which these practices had encroached into the traditional arid and semi-arid grazing areas in Loitokitok district of Kajiado county was established. The main goals of this study were to establish and document land-use changes taking place in the pastoral Maasai region in the wake of sedentary lifestyles promoted by the massive immigration of the non-Maasai people into the area. Also, the study sought to establish and record the perception and response of the Maasai community about these land-use changes. The study employed informal participatory surveys in which extension workers, entrepreneurs and opinion leaders responded. Although, traditionally, pastoral production system had been the predominant way of life in Loitokitok district, the study revealed that 65% of households practiced rain-fed crop farming, 21% cultivated horticulture, 70% kept indigenous poultry, and about 12% reared dairy cattle. The effects of land sub-division and subsequent issuance of land title deeds attracted an influx of land buyers, investors, and exploiters from upcountry who came in with diverse non-traditional land-use activities. The Maasai had incorporated into non-traditional land-use practices as they reverted to sedentary lifestyles greatly dependent on cash economy, a lifestyle that has seen the Maasai work overdrive in order to survive. Non-traditional land-use activities had become an acceptable way of life in Loitokitok district. It therefore appeared necessary for all stakeholders to appreciate this change, and embrace and promote non-traditional land-use practices. Efforts should be directed towards reviewing and formulating policies governing land-use in arid and semi arid lands to incorporate the new land-use practices integrated with traditional land-use practices.

Key words: Land use, non-traditional, pastoralism, Maasai.

INTRODUCTION

The traditional pastoralism is important economic and cultural land-use system, which has been a predominant way of life for about 200 million people living throughout the world and this system covers about 25% of the earth's terrestrial surface (Musimba and Nyariki, 2003). In

sub-Saharan Africa (SSA) about 16% of the population relies on pastoralism, and in some countries, such as Somalia and Mauritania, pastoralists represent a majority of the population (Secretariat of the Convention on Biological Diversity, 2010). Pastoral areas in Kenya cover approximately 80% of the total land area and are home to about 3.5 million pastoralists (Musimba and Nyariki, 2003). Due to high seasonal climatic variability and fragile soil conditions, most arid and semi-arid lands (ASALs)

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are suitable for extensive livestock production in which livestock move from place to place in search of grazing and water which are carried out over large areas (Musimba and Nyariki, 2003). Karue et al. (1989) observed that pastoral areas support about 50% of Kenya's total livestock industry and about 90% of Kenya's wildlife. Traditional land-use system entails exploitation of natural forage and water resources under dry season grazing areas (DSGA) and wet season grazing areas (WSGA) land-use pattern.

Before 1900, most natural pastures in Kenya were used for livestock grazing by various groups of nomadic pastoralists. Over the centuries, these pastoralists had crafted institutions and practices that enabled them to survive in ASALs (Herr, 1992). For instance, the pastoralists managed pastures communally and grazed individually-owned livestock extensively, involving the seasonal movements of people and cattle. These systems were regulated by availability of natural water and good pastures, the presence of diseases along nomadic routes, prevailing security situations, and the timing of important socio-cultural activities (Herr, 1992).

Pastoral areas are known to be ecologically fragile and often devastated by drought effects due to variability and unreliability of rainfall (Ellis and Swift, 1988; Jacobs, 1983). These areas are therefore appropriate for traditional livestock keeping including wildlife. Pastoralists often rely on locally adapted livestock breeds that are able to resist disease outbreaks, drought, and other pressures, including climate change (Hesse and Macgregor, 2011). Locally adapted livestock breeds are capable of trekking long distances and surviving drought, which enables effective management of systems that demand mobility and drought tolerance. In many ASALs, pastoralists are the only groups actively working to maintain the genetic diversity of local breeds (Musimba and Nyariki, 2003).

Pastoral areas, which form most of the Loitokitok district, are experiencing rapid population growth due to migrations and spill-over effects from lands of high potential (Darkoh, 1991; Kirwa, 2009). This has contributed to the shifting of land use practices from traditional livestock keeping to other non-traditional enterprises (Kirwa, 2009). It is however widely established that pastoral livestock production in the ASALs is the most efficient and effective production system and is the most appropriate enterprise under the prevailing climatic and technological conditions (Hesse and Macgregor, 2011). However, the sub-division of land in the early 1980s (Ngethe, 1993) has led to sedentary lifestyles that mainly hinge on cash economy. Further, this land subdivision has enabled intensive negotiations to continue between willing-sellers and willing-buyers of land. This phenomenon has attracted an influx of diverse land investors and settlers from upcountry and other communities. Further, local and other ethnic communities used land title deeds as collateral to acquire development loans, a practice which has led to reduction of the grazing land

(Musimba and Nyariki, 2003).

Trends in natural resources diversity in the pastoral areas has declined over time. Maitima et al. (2009) observed that wildlife diversity in the East African pastoral lands had declined due to expansion of subsistence and commercial agriculture in wetter areas and expansion of settlements and fencing, changes in burning practices, drought, and increased poaching in wet and dry area. Wildlife corridors have been invaded by human-related activities obstructing wildlife movements to watering and grazing points. Overgrazing in some parts of the rangelands has contributed to loss of forage species diversity, mainly because of limited controlled grazing and sedentarized lifestyle. The situation has been exacerbated by the breakdown of the traditional resource management, which ensured organized grazing that involved shifting of livestock from one grazing area to another in order to allow forage recovery from defoliation. The latter was achieved through migration. However, land use changes through settlement and land subdivision has altered the system leading to land degradation and loss of biodiversity.

This study therefore, aimed at closely assessing the current land-use systems taking place in rangelands of Loitokitok district in order to determine the effect of these changes on traditional livestock and wild life production systems. This study recommended the appropriate land use systems in traditionally grazing areas under the prevailing ecological, climatic, and demographic conditions.

MATERIALS AND METHODS

Study site

This study was conducted in Loitokitok district of Kajiado county, located in the ASALs of Kenya. Loitokitok lies on the mountain Kilimanjaro ecological gradient, and covers seven agro-ecological zones: lower highland 2 (LH2), lower highland 3 (LH3), upper medium 3 (UM3), upper medium 4 (UM4), lower medium 5 (LM5), and lower medium 6 (LM6) (Figure 1). The rainfall amounts and reliability vary according to agro-ecological zone, ranging from 450 mm in zone LM6 to 1100 mm in zone LH2 (Jaetzold and Schmidt, 1983). Mean temperatures for the area range from 21 to 24°C in ecological zone LM6 to 15 to 18°C in zone LH2. The areas labeled 'lower highlands' are generally suitable for arable agriculture, whereas the ones labeled 'lower medium' are suitable range livestock and wildlife use. The arable niches of the district could be the reason causing influx by the farming communities from other parts of Kenya.

Data collection methods

Study inquiry was done through the use of participatory discussions, which relied on key informants (KI), focus group discussions (FGD), and anecdotes to gather primary data and associated information. The key informants included extension officers from the ministry of agriculture and livestock development within the district. The focus group discussions included livestock keepers in terms of cattle, sheep, goats, camels, bees, donkeys,

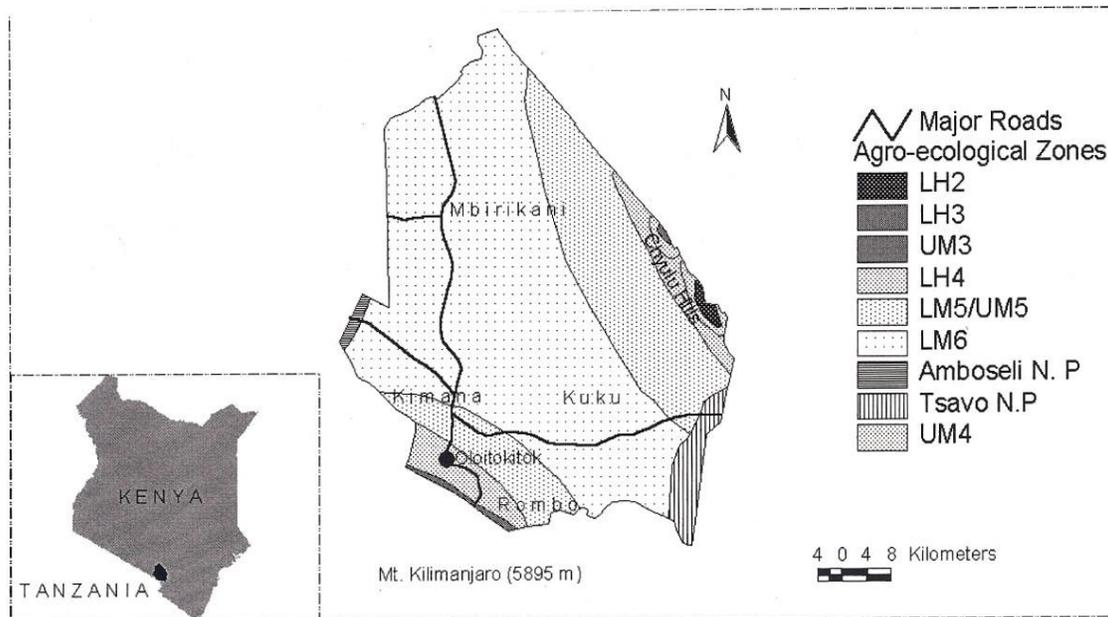


Figure 1. Map of Oloitokitok district, Kajiado county (Wangui, 2003).

pigs, poultry, and fish. They also included crop farmers in terms of cereals, legumes, and horticulture. Anecdotes were obtained from opinion leaders from churches and civil society through informal social contacts and discussions. The inclusion of all players of land-use systems in a focus group discussion forum ensured that relevant data of what was happening in the district was collected. FGD tool does not consider the size of the sample, but the inclusion (to a common sitting) of all land-use players within the district. Secondary data was obtained mainly from Loitokitok district ministry of agriculture and livestock development documentation systems.

Data analysis

Data was organized in tabular forms in order to capture agriculture-related land-use activities and the number of households practicing each activity. Percentages of the practicing households were then calculated based on total number of households in the district. Graphic data presentation was based on non-farm land-use categorical activities such as charcoal making, fire wood collection, eco-tourism, and mining.

RESULTS

The district had a total of 4286 households (HHs) consisting mainly of the Maasai, Kikuyu, and Akamba ethnic communities. Although, the main traditional land-use system was pastoralism, current non-traditional land-use activities have made considerable inroads, particularly in the areas that were traditionally reserved for DSGA. Although, there were exceptional rain-fed crop farming areas, which were started in the 1950s, these other non-traditional land-use activities were started during post-independence era. All the non-traditional current land-use activities include the following farming activities.

Crop farming

Crop farming in Loitokitok district mainly consisted of rain-fed crop, cash crop, and horticulture farming. In order to assess what extent these farming systems are practiced, the number of HHs practicing the systems as compared to the total number of HHs in the district was evaluated. The study showed that 65% of the HHs (2786) in the district practiced rain-fed crop farming (cereals, pulses, and root crops), while about 21 and 5% practiced horticultural crops (onions, tomatoes, and kales) and cash crop (wheat, coffee and sunflower), respectively (Table 1).

Non-traditional livestock keeping

The study indicated that the pastoralists in Loitokitok district had indeed introduced non-traditional livestock keeping. Majority of the HHs (70%) in the district kept indigenous poultry and 12% kept dairy cattle (Table 2). At least 1% of the sampled HHs kept dairy goats. Other emerging livestock found in the study were camels (0.1%), commercial poultry (0.3%), pigs (0.14%), beekeeping (0.9%), and fish rearing (0.09%).

Other non-agricultural land-use practices

Other non-agricultural land use practices found in Loitokitok district included charcoal burning/firewood (3.5%) of the HHs, mining (0.23%), and eco-tourism (0.32%) (Figure 2).

Table 1. Current land resource use activities and the number of households practicing the activities.

Land-use activity	Practicing HHS	Percentage practicing HHS of total district HHS (4286)
Rain-fed crop farming	2786	65.0
Cash crop farming	198	4.6
Horticulture farming	908	21.2
Other farming	394	9.2

Table 2. Current types of livestock kept and the number of HHS keeping them.

Land-use activity	Practicing HHS	Percentage of practicing HHS of total district HHS (4286)
Dairy cattle keeping	500	11.7
Dairy goat keeping	50	1.2
Cross-bred livestock keeping	500	11.7
Camel keeping	4	0.1
Indigenous poultry keeping	3000	70.0
Improved poultry keeping	15	0.3
Pig keeping	6	0.14
Log hive beekeeping	25	0.60
Modern hive beekeeping	13	0.03
Fish farming	4	0.09
Others	189	4.14

Economic appeal and success rate of the non-traditional activities

Economic appeal is a measure or an indicator of the attractiveness of a given agricultural activity to some land type. Respondents in this study indicated that the economic appeal of the listed land-use activities (Table 3) was generally very high with the exception of pig rearing, charcoal burning, and fire wood collection. Similarly, all the respondents agreed that the activities have experienced very high success rates save for pig rearing that appears to have stagnated.

DISCUSSION

Crop farming in Loitokitok division was one of the main non-traditional farming practice that was introduced among the pastoralists. This finding is consistent with the finding of Wangui (2003) that cropped area in pastoral land had expanded at the expense of grazing areas. Apparently, Wangui's findings attributed the expansion of the cropped land to little importance placed on livestock as a food and economic resource, and consequently a need to find alternative sources of food and income. The livestock herds were found to be too few to satisfy either the nutritional or economic requirements of family members. The vegetarian component of the diets was

very important especially during the dry season. Therefore, pastoralists had a choice of growing their own food stuffs on traditional grazing areas through either irrigation or rain-fed approaches. Campbell et al. (2003) observed that the impetus for agricultural practice was attributed to migrations of agriculturalists from elsewhere in Kenya to the ASALs where they practiced farming, and also, the pastoralists' desire to diversify production to include farming. Further, the expansion of agriculture in rangelands has been supported in the government plans through expansion and intensification of irrigation to alleviate food insecurity.

The desire for pastoralists to engage in improved livestock farming was driven by land subdivision and sedentarized life styles, which increased their demands for seeking alternative sources of income to purchase food stuffs and other goods and services.

Introduction of indigenous chicken in Loitokitok district as non-traditional enterprise among the pastoral community was consistent with the findings of Muthiani et al. (2006). This tremendous increase of pastoralists keeping chicken is due to emerging changes in eating habits and diets; and that also, chicken flocks appear to be providing quick and cheap source of income as the flocks are kept on free range with minimal inputs. Improved poultry seemed to be an unpopular practice due to high costs of production among the resource poor pastoralists, while fish farming seems to be a recent

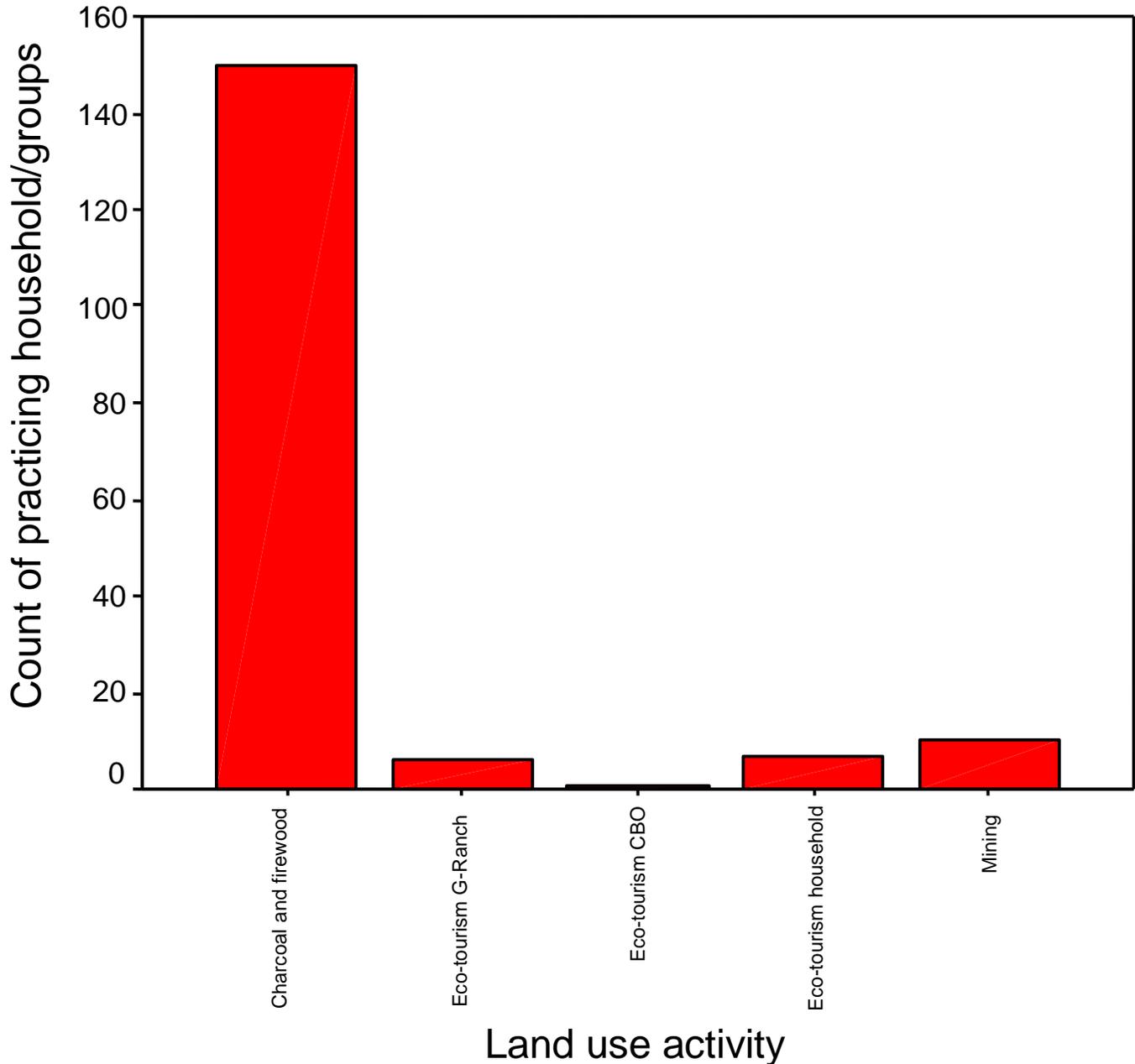


Figure 2. Land use activity-contribution of land subdivision to the current land-use practices.

development among the pastoralists.

Fish pond farming is a recent Kenyan government initiative that is being promoted through the newly introduced economic development stimulus programme. It also emerged in the focused group discussion that the Maasai people have associated camels with droughts, and have therefore never regarded camels as part of their traditional livestock. However, with migrants from other tribes and persistence of droughts in the area in recent times, the belief that camels have not been part of the Maasai culture has been fading away and few Maasai

HHs in Loitokitok district had started keeping camels.

The initial trends of charcoal burning among the pastoralists in Loitokitok district were supported in Munyasi et al. (2011) findings that charcoal production in rural ASAL set-ups has been taken as a source of income and urban areas have been the major markets for the charcoal. Currently, there is no clear government policy on the rural energy sources to reduce pressure on fuel-wood and charcoal burning. Therefore, the Kenya government should commit substantial resources on research so that affordable alternative sources of energy

Table 3. Perceived community success rate and economic appeal of the current land-use practices.

Land-use activity	Practicing households	Community's perceived success rate	Community's economic appeal
Dairy cattle keeping	500	1	1
Dairy goat keeping	50	1	1
Cross-bred livestock keeping	500	1	1
Camel rearing	3	1	1
Indigenous poultry keeping	3000	1	1
Improved poultry keeping	15	1	1
Pig rearing	6	5	5
Log hive beekeeping	25	1	1
Modern hive beekeeping	13	1	1
Fish rearing	4	1	1
Charcoal and fuelwood	150	3	4

Community's perceived success rate: 1 = very successful, 2 = successful rate, 3 = fairly successful, 4 = not quite successful, 5 = least successful.

are developed, which should be accompanied by intensive community training on how to apply the new technologies in view of the high levels of illiteracy. In addition, more efficient charcoal stoves should be developed and provided to local communities at affordable or competitive prices. Efforts by community environment conservation have promoted eco-tourism activities in the pastoral areas leading to generation of income (Munyasi et al., 2011). The study respondents seemed to agree with camel and fish rearing given their very high success rates as well as economic appeal. If respondents were supported in value addition, market connectivity and review of policy issues governing markets, the fish, and camel rearing could experience an up-turn growth in Loitokitok district.

Conclusion

It is noted that this study has established that traditionally grazing areas had changed their uses, periodically, to other uses that embraced new enterprises that were never practiced by pastoralists. This trend in land use change was attributed to population pressure, land subdivision and seeking for alternative foods. Government policy to encourage and support agricultural farming in pastoral areas through irrigation and rain-fed approaches to alleviate food insecurity has contributed to converting traditional grazing areas to crop lands. The study has therefore highlighted that land-use by non-traditional activities has become an acceptable way of life in the traditionally pastoral areas in Loitokitok district of Kenya. It therefore appears necessary for all stakeholders (policy planners, farmers, researchers, educationists, and other partners) to appreciate this seemingly positive change. Additionally, efforts should be directed toward reviewing of policies governing land-use

in the ASALs to incorporate the new land-use practices, and designing research with the aim of determining the suitability and sustainability of the new land practices, while improving on what farmers have already adapted/practiced. Reviewing and appreciating the economic outlook of the ASALs with a view to developing teaching syllabus within learning institutions is necessary and is recommended in order to put such economies in tandem with the rest of Kenya.

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