

LAND USE AND LAND DEGRADATION IN KABALE DISTRICT, UGANDA.

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Abstract

Kabale is a mountainous district In this paper, a review is made of land degradation within the district Land degradation is due to population pressure on the land and poor traditional land use practices.

Introduction

Mountain environments are very fragile and delicate ecosystems. Intensification of land use caused by an increase in population can have profound effects on the system by disturbing the ecological balance, thus resulting in environmental degradation. Kabale is a mountainous district and a prime example of a degraded mountain environment. In this paper, land use practices are identified and their impact on the land resources are discussed. There has been growing concern over the human destruction of vegetation in the Kabale highlands, as well as the increased soil erosion hazard caused by current land use practices, which are aggravated by population pressure. In the effort to satisfy their needs for food and fuel, people have stripped the land of trees and shrubs for firewood, cleared steep unstable slopes and reclaimed swamps. As a result, soil erosion has become a major problem in the region and has led to land degradation.

Population growth and high population densities have resulted in a drastic decrease in farm size and more intensive use of the land. Traditional inheritance protocols practiced in Uganda, and specifically in Kabale, have contributed greatly to land fragmentation and degradation. For instance, when the head of a peasant family dies, his land is sub-divided among his sons (Kagamirwe, 1972). This phenomenon of land sub-division continues with each passing generation on the customary freehold lands.

The Study Area

Kabale, a mountainous district, is located in the southwest of Uganda and borders Rwanda (Figure 1). The area is part of the northern slopes of the Mufumbiro Range which encompasses the tallest mountain, Muhavura (4127 m). The highlands of Kabale are composed of the Karagwe - Ankolean rock system which is largely of Precambrian age. The uplift to its present level occurred in association with the formation of the Western Rift Valley in East Africa. The highlands are dominated by steeply sloping ridges, hills and narrow valleys. The dominant soils are latsols and loams (Bagoora, 1988).

The climate of Kabale can be classified as cool and humid which is primarily due to the altitude. The temperatures are moderate with a mean maximum of about 23°C and a mean minimum of about 10°C (GOU, 1967). But, there are reports from the area that show temperatures have risen in recent years. This is possibly attributable to deforestation and extensive swamp reclamation. The region shows a bimodal rainfall pattern with rains coming from March to June and September to December. The rainfall amounts vary a great deal in space and time ranging from annual means of 1000 to 1500 mm.

On vegetation, it is believed that until about 500 years ago, the highlands of Kabale were covered by natural forests and grasses. However, centuries of human occupation have led to the destruction of the vegetation cover, making the soils prone to erosion. At present, there are only gazetted Forest Reserves and National Parks, namely: Bwindi Impenetrable National Park, Echuya Forest and Kirima Forest.

People and Environment

Population Growth

The population increase in the Kabale district is the result of natural increases due to high fertility levels and fairly high annual growth rates. Between the 1980 and 1991 intercensal period, the growth rate was 2.1 % per annum against the national average of 2.5%. The table below shows the trends in the size of the population in the district.

Table 1 - Population Trends:

County	1959	1980	1991
Ndorwa	120,556	154,514	152,200
Rubanda	68,519	106,750	147,400
Rukiga	81,014	67,493	85,200
Total	270,089	328,757	384,800

Source: Census Data

Population Density

There has been a tremendous increase in the districts' population density. According to the 1991 census, the population density for Kabale was 250 persons per sq. kilometer, compared to 199 persons per sq. kilometer in 1980. However, population densities in Kabale are actually higher than the figures quoted above if one considers the population figures and the available arable land. In the AFRENA Report (1988), the rural population density per sq. kilometer. of cultivated land was estimated to be 620 inhabitants.

High densities have resulted in a drastic decrease in farm size, or land per capita, and as a consequence land shortage has resulted.

Table 2 - Land per Capita Over the Census Years

County	Area	Area in Hectares per Person				
		1948	1959	1969	1980	1991
Ndorwa	539	0.53 (1.3)	0.44 (1.1)	0.41 (1.0)	0.32 (0.8)	0.28 (0.7)
Rubanda	474	0.89 (2.2)	0.69 (1.7)	0.53 (1.3)	0.44 (1.1)	0.32 (0.8)
Rukiga	427	0.89 (2.2)	0.77 (1.9)	0.73 (1.8)	0.69 (1.7)	0.49 (1.2)
Total/Average	1,440	0.77 (1.9)	0.64 (1.6)	0.53 (1.3)	0.49 (1.2)	0.36 (0.9)

Computed from various census data. Figures in brackets are acre equivalents.

Population increases over the census periods from 1948 to 1991 show a remarkable drop in the size of land area per person in the Kabale district (table 2). According to the table, as early as 1948 the average land per person was as low as 0.77 hectares (1.9 acres). Whereas this was an average size for the whole district, variations occurred at the county level. According to the table, all counties have continued

to register a declining land size per person.

Land Fragmentation

Because of high population densities, land fragmentation is a common phenomena, and as a result most land holdings are very small in size, as shown in table 2 above. Most of the land in the region is held under customary private ownership; whereby the individual has the right to use or sell the land. The practice among many peasants is to sub-divide land into sections among sons when the head of the family dies.

In the sample survey of 89 farmers (Were 1992), 98 percent of the peasant farmers interviewed claimed they had received their land through traditional inheritance. However, 81 percent of the people had increased the size of their land through purchasing. Furthermore, a few farmers depended entirely on purchased land.

Although the average number of children was six (6), 42 percent had 8 or more children. Moreover, the average number of sons who inherit land according to tradition was three (3). One respondent had fifteen (15) sons and yet he had only 10 plots (or pieces) of land .

The farms or plots, are not only small in size but are scattered on the landscape in valleys, on the slopes of hills, on the top of hills, and in the reclaimed swamps. Some plots are as far as 10 kilometers from the homestead.

Swamp Reclamation

With the increased population pressure on the land, the tendency has been to invade marginal land. For example, swamp reclamation in Kabale started as far back as 1929. Between 1940 and 1950 the District Council encouraged the people to reclaim swamps for cultivation. At present, all of the drainable swamps have been drained and they are either used as pastures for animal grazing or crop farming (Muhwezi 1989).

Of the swamps under cultivation, the major crops grown are Irish potatoes, sweet potatoes and vegetables. Of the swamps being utilized for grazing, it is primarily exotic cattle that are reared on established dairy farms. The reclamation of swamps has given rise to several environmental problems. For instance, frequently the water channels are not properly maintained. That is they are not kept clear of earth and rubbish. As a result, the reclaimed land is usually flooded during the rainy season, the crops are destroyed, and the farmers are always on the losing side. Floods are a major problem in Kabale.

In rural areas people collect water for domestic use from swamps. Therefore when the swamp is reclaimed and the water table drops, the land dries up and people are deprived of their main source of water. Swamp reclamation also leads to the disappearance of certain species of flora and fauna - the loss of habitat. Furthermore, people get some of their building and handicraft material from the swamps. Some of these natural resources are no longer available in abundance to the people of Kabale. Further, the soils of the reclaimed swamplands have become acidic and unsuitable for growing crops. Lastly, there is loss of the moderating effect on the micro-climate. There are claims that in Kabale, average daily temperatures have risen, the rainfall regime has changed, and crop yields have declined.

Land Use Practices

Population pressure is the main variable determining land use practices and land use changes. The land use practices that have been identified are based on intensive farming in the production of annual crops and raising of livestock.

The important crops grown in the highlands of Kabale are sorghum, Irish potatoes, beans, sweet potatoes, field peas, maize, finger millet, wheat, bananas, pumpkins, tobacco and vegetables. Most of these crops are grown mainly for subsistence, and any surplus is sold to generate cash income. Most of

the crops grown are classified as annual crops. However, there is an attempt to introduce perennial crops such as coffee and fruit trees as a conservation measure to protect the soils.

Population growth and the corresponding increase in food demand has led to increased land fragmentation and intensive land use. Cultivation is continuous; that is, season after season and year after year. Due to land use intensification, fallow periods have become too short to allow soil to regenerate. The intensive use of the land is illustrated by the practice of inter-cropping and crop rotation in order to maximize output from the small farms or plots. The following crops are normally inter-cropped: sweet potatoes/maize, beans field peas, maize/beans, and Irish potatoes/beans. Rotational cropping is also a common practice (AFRENA Report, 1988).

In the sample survey, all of the fanners interviewed agreed that crop rotation and inter-cropping were a common practice. However, most farmers experienced decreases in crop yields and they attributed this to decline in soil fertility and bad weather conditions. Only 37 percent of the fanners interviewed produced enough food each year to feed their families; while 63 percent did not produce enough food. Although Kabale district used to be self-sufficient in food, it now imports some of its food from neighboring districts.

Besides growing crops, the peasant farmers of Kabale keep animals. These include cattle, goats, sheep and pigs, of which the population is significant but not great. Most of the cattle are kept by the progressive or big commercial dairy farmers, while most of the goats, sheep and pigs are kept by the small scale farmers. The cattle kept by the small scale farmers are domestic breeds while those kept by the commercial dairy fanners are primarily exotic.

Most small scale cattle fanners herd and graze their cattle on communal marginal hill land, road sides and on inter-seasonal fallow land. The cattle are then corralled at night near the homesteads. However, official sources pointed out that communal grazing is dying out due to land problems and the lack of good pastures. The problem of overgrazing has been observed in some parts of the region, especially in the Kamwezi sub-county.

Tree planting as an aspect of land use is practiced on small scales. The integration of trees with crop production is not practiced in the traditional fanning system. Trees are planted around homesteads and in small household woodlots. The most common type of tree is the eucalyptus. In view of the fact that there is a shortage of agricultural land due to population growth, there is an attempt to introduce agro forestry in Kabale district under the ICRAF program. Agroforestry is the raising of trees and growing of crops together with the rearing of animals on the same plot of land in order to maximize land productivity .

In addition to the land use practices described above, and in an attempt to control soil erosion, fanners apply the following conservation techniques:

- 1) Terracing: the leveling of lands to minimize run-off.
- 2) Bunding: the construction of banks of earth (embankments) and then planted with grass or shrubs. Bunds are constructed across the slope and along the contour line.

However, the use of terraces and bunds has not been rigorously enforced by chiefs and the government. Fanners have become negligent; thereby soil erosion has not been effectively controlled through the use of terraces and bunds.

Conclusion

It is evident that population growth, the traditional land tenure system and land use practices are responsible for land degradation in Kabale district. Population growth and the corresponding increase in food demand has resulted in the following:

- 1) increased land fragmentation and continuous use of the same land without fallow periods.
- 2) bringing of more land under cultivation including swamps and land highly susceptible to soil

degradation.

3) increased cultivation of annual crops necessitating continuous land tillage.

4) mixed cropping in increased intensity.

Soil erosion is taking a heavy toll on the badly cultivated and unprotected patches of land. Furthermore, soil erosion has led to a decline in soil fertility, and the decline in soil fertility has led to poor yields. This in time has led to food shortages and poverty within the region.

It is estimated that up to 70 percent of the swamps in Kabale have been reclaimed. Farmers interviewed admit that periods of dry spells are now longer than they used to be indicating a change in weather conditions (Were, 1992). The extent to which these changes can be attributed to swamp reclamation and deforestation in the region is not known. To a certain degree, the land users themselves are not fully aware as to how land resources are degraded. The government machinery is weak to address itself to the causes and remedies of land degradation. In some cases, it lacks complete awareness of the problem. Land fragmentation, a largely social issue, is not in line with conservation ethics.

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