I F R A

Les Cahiers d'Afrique de l'Est

n° 22

Conflicting land-use : Lake Mburo National Park

Jim Ayorekire*

* The author is an assistant lecturer, Department of Geography, Makerere University. This research paper was among those nominated for the IFRA 2000 award.

Conflicting land-use : Lake Mburo National Park

Jim Ayorekire*

Abstract

The government of Uganda has gazetted a number of large areas as national parks, mainly in an effort to preserve its unique eco-systems and related bio-diversity. However, this has created land-use conflicts especially where these areas contain valuable natural resources, which have been utilised by the local communities for a long time. Wildlife conservation often clashes with traditional land uses such as cultivation and grazing.

In Uganda, the Lake Mburo National Park (LMNP) region has been a centre of land-use conflict between the pastoralists and the government since colonial times. The conflict gained prominence in 1983, when the entire game reserve was declared a national park and the people (mostly pastoralists) were evicted from the gazetted area. Faced with production constraints, pastoralists have little understanding of the value of conservation, particularly when portions of the reserved areas formed part of their traditional grazing area.

The conflict is compounded by conservation authorities that seek to protect the park, disregarding the efforts, interests and influence of the local communities. This increases the resentment of the local people towards wildlife and perpetuates the idea that government places a higher value on animals and plants, than on their well being. The conflict is aggravated when people begin to suffer in favour of wildlife, which is presumably being preserved for the good of the same people. While tourism is an important function of national parks, it is a weak justification for people living around the

* The author is an assistant lecturer, Department of Geography, Makerere University. This research paper was among those nominated for the IFRA 2000 award.

park, if they are not benefiting in any way other than preservation of a resource (Mc Neely, 1989).

Résumé

Le gouvernement de l'Ouganda a déclaré parcs nationaux un certain nombre de larges portions du territoire, principalement dans un effort de préservation d'un écosystème unique en son genre et de la bio-diversité qui lui est associée. Cependant, des conflits fonciers en ont résulté en particulier là où sont localisées des ressources naturelles importantes, exploitées de longue date par les populations locales. La conservation de la vie sauvage rentre souvent en contradiction avec l'utilisation traditionnelle des terres pour l'agriculture et le pâturage.

En Ouganda, la région du Parc National du Lac Mburo est au centre d'un conflit foncier entre les pasteurs et le gouvernement depuis les temps coloniaux. Le conflit a connu son paroxysme en 1983 lorsque toute la réserve de chasse a été déclarée parc national et que les populations (principalement des pasteurs) ont été rejetées de la zone protégée. Face à des contraintes de production, les pasteurs n'ont pas compris l'intérêt de la politique de conservation de la nature, du fait que la zone protégée correspondait en partie à leurs zones traditionnelles de pâturage.

Le conflit est exacerbé par les autorités en charge de la conservation de la nature et de la protection du parc, qui n'a que peu d'égard pour les efforts, les intérêts et l'influence des communautés locales. Cela encourage une attitude négative envers la faune et la flore et perpétue l'idée selon laquelle le gouvernement attribue une plus grande valeur aux animaux sauvages et aux plantes qu'au bien-être des populations. Le conflit est aggravé lorsque la conservation de la nature, pourtant supposée se faire aux bénéfices des communautés locales, se fait au contraire à leurs détriments. Le fait que les parcs nationaux soient essentiels au développement touristique ne suffit pas aux populations vivant en périphérie des parcs, si elles ne bénéficient pas autrement que par la préservation des ressources naturelles.

Study area

The study area, Sanga sub-county is situated on the northern boundary of Lake Mburo National Park in South Central Uganda, 40kms east of Mbarara town in Nyabushozi county, Mbarara district. The area is part of the Karagwe-Ankolean rock system with soils derived from weathered materials of precambrian rocks. These soils have been leached and eroded for many years, hence soil nutrient levels are low and they rapidly declined with soil erosion.

The climate of Lake Mburo National Park and the surroundings can be described as hot and dry for most parts of the year with a mean annual rainfall if 945.5mm and temperatures ranging from 20° C to 28° C in the wet season and 28° C to 30° C in the dry season. As a result, the dominant vegetation type is savannah grassland with scattered trees mainly *Acacia hockii.* However, this vegetation has been significantly modified as a result of grazing, cultivation, settlement, and construction of cattle kraals and mostly by bush burning. Generally the vegetation in Nyabushozi county can be regarded as a fire sub-climax.

The relief of the area consists of undulating to dissected plateaux with uplands interrupted by a series of areas, which have low-lying terrain. Most of the area consists of undulating low rolling hills with fairly wide valley bottoms, some of which are occupied by lakes, for example Mburo, Kazuma, Kigambira, Mutukwa and Bwara. These lakes are associated with swamps though they are becoming less frequent because of changing climate and human influence. Rwizi is the major river flowing into Lake Mburo, but some seasonal streams occur during the wet season. These disappear during the dry season due to high evapotranspiration. Most of the water sources tend to dry up especially in the northern areas of the park where the study area is located, therefore the permanent water sources are in the southern parts of the park. In 1990, 68 animal species were recorded in the park. These include zebra, warthogs, oribi, elands and Uganda's only population of impala–*Acepycents melampus*. However some species (velvet monkey, baboon, topi and buffalo) are declining in number. Others that are extinct include lions, elephants, black rhinoceros and wild dogs.

Research on the land-use conflict was carried out in the areas bordering the northern part of Lake Mburo National Park in the parishes of Akaku, Kanyaryeru, Rwamuranda and Rwabarata, which are mostly occupied by pastoralists. The objectives of the study were mainly:

- To find out the nature of the land-use conflict and its effects on community attitudes towards conservation.
- To analyse the effect of pastoralism on the environment in the park and the surrounding areas.
- Identify the strengths and weaknesses of the efforts to resolve the land-use conflict.

The challenge presented is that wildlife and the eco-system should be protected but at the same time the interests of the landless pastoralists in and around the park need to be considered, since the park covers a large portion of their original grazing land.

Methodology

Research design

The design for this study is multi-faceted with both quantitative and to some extent qualitative and both empirical and perceptual in nature. It should be noted that in this report findings are presented generally, therefore it might be difficult to differentiate where the quantitative or qualitative, empirical or perceptual presentations begin and end.

Colleration design

This study examines the relationship between various dependent and independent variables. Correlation statistical research methods (e.g. Spearman rank correlation co-efficient method) were used to determine the degree of relationship existing between different variables such as land-use, resource use, environmental conservation and people's attitude and perceptions towards conservation.

The sample and sampling method

The target population was pastoralists in the northern parishes, which border with Lake Mburo National Park. The survey was based on a sample from four (4) parishes, which were at a 10-kilometre radius from the park boundary. The parishes selected were Akaku, Kanyaryeru, Rwamuranda and Rwabarata. They were chosen for various reasons including, land-use patterns, extent of pastoral activity, road accessibility and their marked differences in pastoral population density.

The sample consisted of three categories:

- 120 randomly selected pastoralists (carrying out open grazing). Each parish was stratified into two sample areas, one bordering the park at a distance of 0–5 kms and the other at a distance of 5–10 kms from the park. Stratified random sampling was then used to obtain at least 10 respondents from each sample area. Members of this category responded to a questionnaire administered by the researcher.
- Another category consisted of 10 pastoralists of above 50 years of age who were not covered in the first category. They were selected from the population by use of non-probability sampling, mainly for their historical views and perspectives. They responded to interview schedule questions administered by the researcher in a face-to-face interview.
- The last category consisted of village council officials (LCs) religious leaders, park management personnel like the Community Conservation Warden and members of the park management advisory committees, all who did not fall in the two categories above. They were located using non-probability-sampling method mainly for consultative purposes.

Research instruments

The major research instruments used in the study include; Rapid Rural Appraisal (RRA) conducted in the communities; comprehensive land-use survey; questionnaires; interview schedules and consultations by use of checklist questions.

Land-use conflict

Land crisis

The land crisis in Lake Mburo area forms the background of the land-use conflict. In pre-colonial Uganda, most land was held under customary ownership, and with a low population. Land was enough for activities like pastoralism in the Mburo area. However during the colonial period land ownership began to be individualised as a result of the 1901 Ankole Agreement which alienated part of the land as *mailo* land for Ankole chiefs and the rest was termed as Crown land.

In the 1960s, private land ownership was becoming common and communal lands were grabbed by the influential and rich people leaving out the poor who could not afford land especially the pastoralists (Kafureka, 1992). To worsen the situation, a big area was alienated for ranching. This pushed the pastoralists on to the margins of the ranches since they were not considered the kind of people to run ranches. Therefore the pastoralists resorted to occupying the Lake Mburo area which was mainly occupied by wildlife.

In the post-colonial government, in accordance with the Uganda Game Act of 1964, 650 km^2 of the Lake Mburo area was declared a game reserve. Some cultivators and cattle herders living in the area at the time were allowed to remain under agreed conditions and they were given game department permits. After the 1975 land reform decree, there was further grabbing of whatever remained of communal lands. This pushed more people into the game reserve.

Due to increased encroachment on Lake Mburo game reserve and the need to preserve the bio-diversity, in 1983 the government declared the entire game reserve a national park and all previous forms of land tenure, traditional or otherwise, were effectively terminated. Several hundred people were driven from their homes in the process. They were neither consulted nor compensated for the loss of their homes and land. No real attempt was made to explain to them what conservation entailed or what the intention of government was.

Being forced to occupy the margins of the park therefore marginalised the pastoralists, and quite a number ended up as squatters on ranches. In 1985, following the National Resistance Army (NRA) take-over of Mbarara district, the evicted people were allowed to go back into the area. They moved back along with hundreds of newcomers. The number of cattle in the park rapidly

increased from 15,127 in 1986 to 143,966 in 1992 (Malpas 1982). The government realised that the option of re-evicting the people would not be a success. In order to resolve the land crisis the Uganda National Parks in conjunction with the Lake Mburo Task Force (LMTF[1]) degazetted 390 km^2 of the park (approximately 60%) leaving only 260 km^2 with no buffer zone for the park. Some pastoralists were resettled in the newly formed Kanyaryeru Resettlement Scheme as an option for ending the land-use conflict. However, most of them were not considered and therefore remained landless at the margins of the park.

With the limited grazing land outside the park, the pastoralists have had no alternative other than to encroach on the park. Most of them have resorted to grazing on private land (not fenced) which they view as 'free land'. Due to reduced grazing land and inadequate land, areas surrounding the park have suffered environmental degradation, leaving the park as an island of relative green amidst degraded rangeland.

Land tenure

FAO (1971) defines a land tenure system as a systematisation of the rules which function by specifying what different classes of persons may or may not, must or must not do, with reference to the occupancy, acquisition, use, abuse or deposition of land.

In the Mburo area, approximately more than 70% of the land is held under customary private ownership. The basic ownership of land is vested in an individual, normally a family or household head. The field survey revealed that no individual person or household owned land under leasehold (title deed) tenure system, mainly because the surveying process is expensive. It is only institutions for example Lake Mburo Secondary school, which could afford to get a leasehold title.

As a result of lack of legalised ownership of land, there is rampant land tenure insecurity, that is, the people are occupying land but they are not certain

[1] It mainly consisted of local council officials and opinion leaders. The right of occupancy and use is mainly passed on by inheritance. The rest of the land is under communal tenure and it is mostly associated with grazing land including swamps. However due to population pressure and increased cattle numbers, communal land has reduced and become less defined.

that it belongs to them in perpetuity. In the Kanyaryeru resettlement scheme the people have never had their land surveyed in order to acquire a land title. They even consider the land as belonging to the government and not to them.

Outside the resettlement scheme in Rwabarata parish, land tenure insecurity is more rampant. People mainly hold land under the customary land tenure system. After the removal of some of their land during the degazetting of the national park, they no longer feel secure and have lost confidence in the customary land tenure system.

The land tenure insecurity has tended to accelerate land degradation and the land-use conflict. The people lack the incentives to undertake land conservation practices since they are not sure if the land they occupy permanently belongs to them. The community also views the existence of the national park as the cause of this uncertainty, hence they have negative attitudes towards its existence and wildlife conservation in general.

Resource use conflict

The major natural resources in the Lake Mburo area include vegetation (trees and grass), soils, water and wildlife. The resource use conflict has mainly resulted from the fact that some of these resources are located within the park.

The resources utilised by the communities in the park and outside in their areas of occupation include: farming land and pasture; water; timber and firewood; game meat; medicinal plants; fish; thatching grass; papyrus and weaving materials. The resource needs and their utilisation by the people was examined and the findings are indicated on Table 1.

Table 1. Current resource use and desired resources from the park (in percentages)

Resource	Current use	Resource utilised from the park	Use if permitted
Pasture	91	12	32
Water	100	12	30
Building wood	89	2	16
Firewood	99	3	10
Game meat	06	< 1	13
Medicinal plants	80	4	21
Fish	32	5	12
Farming land	87	0	19
Thatching grass	76	< 1	06
Papyrus	20	< 1	10
Weaving material	48	2	05

Source: Fieldwork research, 1997

According to the responses, the most utilised resources are; water (100%) pasture (91%) and farming land (87%). The very low percentages of respondents indicating use of resources from inside the park seem to indicate the occurrence and availability of most of these resources outside the park. However from the researchers' survey, it was realised that the sensitivity of this issue may have resulted in under-reporting since the law prohibits use of resources from the park. Therefore even the percentages of use of water (12%) and pasture (12%) from the park is probably much higher than this.

The highest percentage of respondents indicating interest in access to resources from within the park if permitted, were 32% (for pasture) followed by 30% (for water). However these percentages are still relatively low and do not tally with the information collected from group interviews where the participants expressed strong desire of having access to resources in the park. The respondents therefore might have under-reported for fear of being suspected as encroachers on the park.

The resource use conflict between the park authorities and the local community has mainly been over water and pasture. The pastoralists make seasonal incursions into the park, in search of pasture and water especially in

the dry season when the resources outside the park are either limited or over-utilised. An estimated 50,000 herds of cattle invade the park every dry season (GAF, Consult 1993).

The permanent water sources are located in the park, for instance River Rwizi, Lakes Mburo and Bwara and permanent swamps like Kizimbi. In the dry season, water sources in Sanga sub-county dry up and the quality and quantity of the pasture deteriorates. The situation is further compounded by destruction of the pasture by fire set alight by the people. This leaves the national park as the only area to graze from since it is usually not under intensive grazing and pasture can still be found around the permanent water sources. The pastoralists are therefore forced to shift southwards into the park. This results into conflict between the park authorities and the pastoralists, whose cattle not only consume water but also other resources like pasture, hence exerting a lot of pressure on the resources leading to environmental degradation.

In an effort to resolve this conflict, the park authorities have tried out means of giving the local people (pastoralists) access to the water sources in the park. For instance in Akaku parish, the community was given an access corridor through the park to River Rwizi in March 1996 for a period of one-year ending in March 1997. This was a short-term measure put in place so that the people could find alternative sources of water. The community lobbied for assistance from government for construction of water dams but they got a negative response.

They later got assistance from a non-governmental organisation called Food for the Hungry International, which constructed a dam but it never trapped any water, most probably due to poor site location. This leaves river Rwizi inside the park as the only reliable water source. With no other alternative, the pastoralists were planning to plead with the park authorities to extend the period for the provision of the water access corridor.

However according to the park authorities, they were not willing to do so, since the pastoralists have abused the system. For instance the pastoralists were to only drive their cattle to the river, water them and use the same route back. Instead, the pastoralists after watering their cattle would start grazing in the park contrary to the agreement. The park's efforts to stop this are perceived by the pastoralists as an excuse for the park rangers to harass them and extort money from them. Moreover, the vegetative cover along the access

corridor has been overgrazed, trampled upon, leaving bare ground which has developed gullies as a result of accelerated soil erosion. Park authorities therefore argue that they cannot allow continued access for the local community. However as long as this continues to be the case, the surrounding park is bound to be invaded (Kamugisha and Stahl, 1993). Left with no alternative, the local community illegally enter the park in search of water and pasture. This reveals the intensity and gravity of the resource use conflict in the study area.

The effect of pastoralism on the environment

There is evidence of environmental deterioration in most parts of Lake Mburo area, mainly as a result of the traditional system of livestock keeping which has proved rather conservative. Pastoralists have tended to look at cattle numbers as a measure of economic and social status. This has resulted in overstocking, overgrazing and rampant soil erosion. However, apart from pastoralism other practices like crop cultivation, deforestation and bush burning have contributed to environmental degradation.

Soil erosion

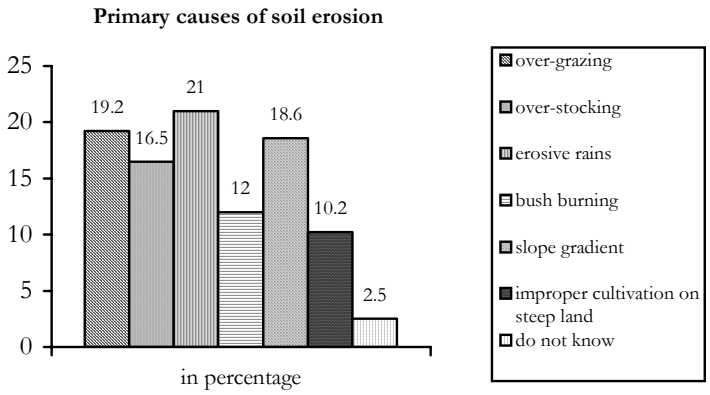
The soils are under serious threat of sheet and gully erosion especially along cattle tracts, hill slopes and around water sources where large numbers of cattle concentrate especially in the dry season. The high stocking density of cattle in these areas is largely responsible for the deteriorating conditions of the environment.

When the respondents were asked about awareness of soil erosion in their area, 68% among them recognised that the area had a soil erosion problem. When asked about the causes of soil erosion they mentioned various causes as summarised in Table 2 and the following graph.

Table 2: Primary causes of soil erosion

Primary cause	Percentage
Overgrazing	19.2
Overstocking	16.5
Erosion rains	21.0
Bush Burning	12.0
Slope gradient	18.6
Improper cultivation on steep land	10.2
Do not know	2.5
TOTAL	100%

Source: Field Research, 1997



The largest number of respondents attributed the primary cause of soil erosion to erosive rains (21%) a factor, which is beyond their control. However, using the Spearman's correlation co-efficient at 0.05 level of significance r_s was equal to 0.8 which confirmed that there was a significant positive correlation between the number of cattle and number of erosion gullies.

The co-efficient of determination calculated shows that the numbers of cattle account for 64% of the number of erosion gullies found in the study area. This is confirmed by the fact that the parishes of Akaku and Rwamuranda, with high cattle stocking rates, have a high density of gullies mainly localised along cattle tracks. The rest of the percentage (36%) is accounted for by other factors like erodibility of the soils, slope gradient and poor crop cultivation methods.

Effect of bush burning on the environment

Bush burning as a traditional method of pasture management is commonly used in the study area. Indeed the vegetation in the whole of Lake Mburo area can be regarded as a fire sub-climax. The majority of the respondents (66%) accepted having noticed burning in their area and in the park. However, a high percentage (81.1%) denied practising burning, probably because of the fear of the law that prohibits bush burning. Asked how the fires started, most of them suggested that fires were mostly accidental. In reality, hunters who poach in the park sometimes set fires, but mostly, it is the pastoralists. This practice is carried out every dry season at least twice a year intended to elicit fresh grass for grazing at the beginning of the wet season.

However there being no local fire policy, fires are set haphazardly burning large areas causing adverse environmental effects. Fire affects the plant biomass structure, nutrient content, plant palatability and availability. In the area, *Cymbopogan nardus* (*omutete*) which is fire resistant grass, is rapidly spreading in the grazing land because of frequent burning. This grass is unpalatable both to wildlife and livestock; therefore grazing land is under threat of being covered by this pasture weed, as burning becomes more frequent, destroying the rest of the other plant species.

As a result of burning, soil erosion has been accelerated in Sanga region. Towards the end of the dry season all the vegetative cover is set alight, leaving the ground bare. When the rains begin the soils are subjected to direct raindrop impact and heavy overland flow leading to increased soil erosion. As a result of burning, grass height has become shorter, number of trees reduced, unpalatable thorny thicket of acacia species are spreading, the amount of bare ground is increasing and the soils are becoming more compact and less permeable, leading to increased soil erosion.

Effect of pastoralism on the park's eco-system

Most of the pastoralists in the study area, especially those living near the park, graze and water their cattle in the park. In the northern part of the park, cattle and some wild animals such as buffaloes and impala interact very closely. However this co-existence has with time led to environmental degradation due to the high and increasing numbers of cattle in the park especially in the dry season. This has resulted in overgrazing, soils erosion and increased bare patches in the park. Grazing as a method of rangeland management in LMNP is considered unsuitable because current park management priorities include eliminating livestock from the park (Muhwezi, 1994).

Moreover, animals like roan antelope (*Hippotragus equinus*) are very sensitive to grazing competition (Monday, 1991). Therefore such animals usually shift from these areas when large numbers of cattle are present. This means that high livestock density affects wild animal distribution and this eventually makes the park less attractive to tourists who are interested in wild game.

Though pastoralists traditionally disdain game meat and do not hunt wild animals, they have made deliberate moves to eliminate some species especially predators like lions, leopards and black jackal. They mostly poison them in order to protect their cattle from being killed and eaten. Most of the carnivorous species, for example lions, are believed to be extinct. This has affected the park eco-system and in the long run will also affect the ecological food chain. This issue calls for further study.

Attitudes and perceptions of the community towards conservation

The communities living around the park have been in continuous resource use conflict and this has had an impact on their attitudes and perceptions towards conservation.

Park–community relationship

The park–community relationship has been poor as a result of the lack of a buffer zone and the use of the traditional approach to conservation, that is through force, police and eviction as a means of resolving conflicts. As earlier noted, the local people were not consulted about the creation of the park or

compensated for the loss of their property and homes nor was any real attempt made to explain to them what conservation is, why the area was important for conservation or what government's intention was. Despite the fact that 60% of the park was degazetted, the community still views the national park as an enemy which has brought a lot of suffering and which should be got rid of.

Although the majority of the local community had a clear and positive perception for the park's purpose, they still indicated that the park had negative effects. They explained that the park deprives people of rights to utilise resources in the area, wild animals are destructive and generally the park was of no use since the people did not benefit from its existence. As a result the relationship between the park management and the local community remains one of conflict and suspicion.

Factors affecting attitude formation

In order to gauge the respondents' attitude towards conservation, an index of attitudes was developed which was then cross tabulated against a series of variables. Among the variables considered was the level of education, which was found to have a significant effect on attitude formation.

Respondents with relatively more education (primary 4 and above) were found to be more supportive of conservation. 89% of these respondents agreed with the conservation attitudes with only 11% having negative attitudes. On the other hand the less educated (below primary 4) the majority (82%) expressed negative attitudes with only 18% with positive attitudes. This reveals that higher levels of education generate positive attitudes as a result of formal education.

It was also observed during group discussions that the older respondents tended to voice more negative attitudes towards wildlife conservation. The younger respondents had more positive attitudes since they were more likely to have had formal education in schools. The older respondents' attitudes are more conservative because of less formal education and they have had a long history of conflict with the park authorities. The above demonstrates that the future of effective conservation lies with the park management working closely with young people in order to capitalise on their apparent positive predisposition towards the park and conservation in general.

Another variable considered as affecting attitudes was the distance from the park. Each parish bordering the park was divided into two. One sample area would border with the park in the first five kilometre range from the park border, while the second sample would not border with the park, within the next five kilometre range. This dichotomy of the samples was mainly to determine if the geographical distance from the park boundary had an effect on attitude formation and intensity of the resource use conflict.

A list of statements was used to develop an index of attitudes. Based on the response, percentages of those who held positive or negative attitudes towards conservation were calculated, as indicated in table 3 below.

Table 3: Effects of distance on attitude towards conservation

Parish	**Conservation index for respondents within 0–5 km range from park boundary**		**Conservation index for respondents in 5–10 km away from the park boundary**	
	Positive	Negative	Positive	Negative
Akaku	13.5%	86%	72%	26%
Rwamuranda	11%	88%	67.5%	32%
Rwabarata	17.5%	82%	64%	35%

Source: Field Research, 1997.

From the results, it was found that the respondents living near the park (0–5 km range) held more negative views about conservation. This was attributed mainly to the fact that they were more exposed to park related problems like harassment by game rangers, crop damage by wildlife animals, disease spread to livestock from wild animals, lack of compensation for property damaged by wild animals and the general restriction of utilising some necessary resources from the park like medicinal plants.

On the other hand, areas not bordering the park had a more positive attitude towards conservation. This is mainly attributed to the fact that the people living a distance from the park boundary are less exposed to park-related problems like crop damage, spread of disease and game ranger harassment. However despite living a distance away from the park, a substantial percentage of responses were negative (Table 2). This is mainly due to the fact that though they live a distance from the park, they still would like to utilise some resources from the park especially pasture and water in the dry season, but they

are denied access into the park. Those who illegally enter the park are arrested, fined or sometimes their cattle are confiscated and the park rangers often beat them. In general, as the distance from the park boundary increases, the attitude of the local people towards conservation becomes more positive. This indicates that the park authorities should strive to closely work with the people along the park boundary to enhance positive attitude change.

Community conservation

Realising the extent of the land-use conflict in Lake Mburo National Park area, the Uganda National Parks, working together with the African Wildlife Foundation (AWF) established a Community Conservation Programme (CCP) in 1989 whose theme was '*Protected areas, Neighbours as Partners*'. The main objectives of the programme were to educate the people, raise their awareness of the values of conservation, involve the people as partners in the conservation process and help build a positive link with the local communities.

The findings of the study indicated that the CCP has closely worked with the people through the local council structures and through the Park Management Advisory Committees (PMAC) which were set up at each parish to act as a link between the local community and the park management authorities. The CCP has mainly used education as a tool to achieve its objectives. The education unit mainly put emphasis on teaching primary school pupils about wildlife conservation and conservation in general in the parishes surrounding the park. Park drives and guided walks have been organised for the pupils and also for the local community so as to give them a practical experience and to widen their knowledge about environmental issues. Additionally, drama has been used as an effective and simple medium of communication to put forward the message to a generally illiterate community who were hitherto not interested in attending education meetings.

The conservation unit has also facilitated some community-initiated projects. For instance in Akaku parish, the CCP contributed money and building materials worth 600,000 Uganda shillings, for the construction of Akaku Primary School. Other primary schools like Rwemikunyu, Nyakahita and Rwakaterera had earlier benefited under this arrangement. However the CCP reiterates that it is not a development project, therefore it cannot fully fund all projects, as demanded by the community.

Despite the above efforts the CCP has failed to completely resolve the land-use conflict and fully improve the park–community relationship. This is mainly attributed to various factors, which include:

- Failure of PMAC's to effectively carry out their duties, for instance they rarely give the people feedback from the park authorities and they are blamed for embezzling funds from the park meant to support the community projects.
- Local people blame the park authorities for employing outsiders and not offering local people jobs as rangers or tour guides.
- Most of the local people do not attend meetings with park officials. Therefore they are not informed of the developments in the park–community relations.

In general to a great extent, the CCP has been successful especially in raising the level of conservation awareness but in most areas this awareness has not yet been translated into positive attitude change towards conservation. With increased interaction and education, the park-community relationship is bound to improve.

Implications and recommendations

Within the study area, there is need to harmonise the land-use, environmental conservation and development of the land resources. This can mainly be done where the inhabitants of the area develop an interest in conservation and development. The implications and recommendations of the study are discussed below:

Land issues

The implication of the land tenure uncertainty is that the local people are unaware of their land rights. They tend to follow practices which accelerate land degradation since they are not sure if the land they occupy is permanently theirs. This also implies that the people cannot undertake basic development of their communities like construction of hospitals, roads or decent housing.

The study recommends that individuals be educated about their constitutional right over the land as stipulated in the 1998 Land Act. They

should be encouraged to apply for Certificates of Customary Ownership and for freehold tenure. This will encourage them to adopt more modern land-use practices taking into account environmental conservation. The setting up of Kanyaryeru resettlement scheme is a step in the right direction towards ending land tenure uncertainty.

Resource use

With increasing population and increased resource use there has been an unsustainable use of resources leading to environmental degradation. This situation has been worsened by poor land management practices, like uncontrolled grazing and bush burning, even inside the park.

The study recommends that policy guidelines be put in place to ensure sustainable resource use in the study area. Landscape ecological surveys are required for determining the appropriate cattle stocking rates for particular land units, basing on the seasonal and locational variations of the quality and quantity of the pasture and water.

This should then be followed by measures to improve the pastures and their management. Tree planting even in form of agro-forestry should be encouraged. This will eventually reduce soil erosion and provide firewood and building wood. More so, systematic mixed farming based on farmland capability assessments should be encouraged. Under such circumstances the number of cattle will start declining. However such a decline should be accompanied by increasing incomes, for it is only through this that the option will be attractive to the herdsmen.

In general, there is need to develop an environmental conservation ethic in which the community acknowledges that the environmental conservation is of enormous importance for the prosperity and ecological stability of the region.

Community conservation

Despite the efforts of the CCP, people have not yet developed a positive change in behaviour and they still encroach on the park. This implies that the community will engage in conservation activities only if they gain from it.

In order to increase community participation in conservation, the study recommends that the following be intensified:

i. Involving the community in planning conservation strategies in order for them to play a custodial role.
ii. Ensure the community gets direct and specific benefits from the existence of the park. For example offering more direct employment in the park and sharing revenue generated.
iii. Setting up of specific policies and guidelines on user rights of resources within the park boundaries.
iv. Enhance community awareness through education.
v. Appropriate pasture management practices like controlled grazing, avoiding overstocking and bush burning should be taught to the people. This ensures availability of resources outside the park, thus the community need not encroach on the park resources.

In a situation where the above is not possible, the study recommends land utilisation guidelines for the co-existence of wildlife and other land-uses, since creation of a buffer zone is not practical due to limited land. For instance an appropriate mix of cattle and a variety of herbivorous wild animals would ensure optimum utilisation of land in and around the park. All this will eventually help improve on the park–community relationship.

Water resources

The study identifies water shortage (especially in the dry season) as the major cause of land-use conflict and general environmental degradation. The area seems to be drier and frequent droughts of a 10-month duration were reported to recur every five years. This has triggered off encroachment on the park, which contains most of the permanent water sources.

The study recommends that suitable sites for construction of valley tanks and dams be identified outside the park to ensure adequate water storage especially in the dry season. Hydro-geological surveys should also be conducted in order to exploit underground water sources by use of boreholes, for example. In all, the provision of more water to the community is not adequate. The people also need to be educated and mobilised for water conservation.

Rural development

Most of the problems faced by the people in Sanga sub-county are as a result of under development. This study recommends that the local community initiative and participation in rural community development projects be encouraged. The government should make an effort to provide a solution to land tenure uncertainty, improve on the transport network and facilitate the marketing system of produce like ghee, milk, meat and crops.

Rural development can be achieved by the mobilisation of the local people though local councils, Park Management Advisory Committees and the District Development Committee (under the decentralisation programme). In this sense, a system of public guidance and support for development should be enhanced.

Conclusion

The land-use practices in Sanga sub-county for example pastoralism and crop cultivation are becoming increasingly difficult to sustain both economically and environmentally. The root cause of this whole situation lies in the rather poor resource use and environmental conservation policies, which have resulted into overstocking, overgrazing, soil erosion, poverty and general poor standards of living. This calls for use of sound approaches such as land-use planning with a bottom-up planning approach.

To enhance systematic and sustainable development in the area, more research is needed in the fields of land capability classification, prospects of game ranching and agro-forestry.

Bibliography

GAF Consult (1993). *The study of water for livestock and domestic use and related socio-economic and environmental issues in Lake Mburo National Park and environs*. Water Development Report. Kampala: Government of Uganda.

Kafureka, B.M. (1992). *The dynamics of the land question and its impact on agricultural productivity in Mbarara District*. Working Paper No. 25. Kampala: CBR Publications.

Kamugisha, J. & Stahl, M. (Ed.) (1993). *Parks and the People. Pastoralists and Wildlife*. Nairobi: SIDA's Regional Conservation Unit (RSCU).

McNeely, J.A. (1989). *Protected areas and human ecology. How national parks can contribute to sustaining societies of the twenty-first century*. New York: Oxford University Press.

Muhwezi, B. (1994). *The Lake Mburo National Park Management Plan*. Kampala: African Wildlife Foundation.