



COMMUNITY-BASED Forest Resource Management In East Africa

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PREFACE

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Over the last two decades, global concerns about deforestation, environmental degradation, and the poverty that follow in their wake have encouraged governments and ordinary citizens to rethink the principles which have guided the management of natural resources for at least the last one hundred and fifty years. These principles have proceeded from the assumption that the police power of the State represents the most effective form of protection while interventions based on a scientific understanding of growth and regeneration represents the most efficient and sustainable form of forest management. Based on French and German models these regimes have been applied almost universally around the world, either voluntarily as in the United States, or imposed by colonial regimes in Africa, Asia and Latin America.

While this model of management has proved to be effective in some parts of the world – most notably in central and northern Europe, viewed globally, there is little evidence that forests are being managed sustainably and to the benefit of humanity. It is more common to observe evidence of commercial overexploitation of natural forests often prompted by implicit or explicit incentives and distorted economic policies; conversion of forest land and other natural habitat to agricultural land or pasture; and illegal logging and harvesting for fuel by impoverished communities denied access to the forests. In many developing countries land that is designated on maps as 'Forest' has now been converted to agricultural use or is, in fact, no more than scrub or even degraded and barren wasteland subject to erosion and gullying affecting nearby sources of water and farmland.

Rethinking the principles and assumptions of forest management has meant reconsidering the roles of the different actors involved in making decisions which affect the condition of forest resources. It has meant, in particular, a long overdue recognition of the central importance of what had historically been the most 'invisible' constituency in forest management: the individuals and communities whose livelihoods depend on forest ecosystems. Ignoring forest-dependent communities has excluded those people who are perhaps best-placed to monitor

the use of forest resources. At worst, it has impoverished communities, created tensions and conflicts between them and the forestry administration, and at times it has even undermined state authority.

'Community-Based Natural Resources Management' (CBNRM) has become a widely accepted strategy with calls from international agencies such as the Food and Agriculture Organization (FAO) of the United Nations, the World Bank and others for governments to foster community participation in forest and natural resources management. As with many such newly-minted constructs, however, CBNRM is still more admired as a principle than it is understood and implemented in practice. CBNRM programs in different countries – and even in the same country – can in fact represent very different sets of activities offering vastly different sets of rights and responsibilities to communities with very different concepts of who or what is the community and who represents the community. Some programs seek to improve people's livelihoods by giving them access to the resources and the skills they need to manage them to generate a sustainable source of income for the community and its members. Others are limited to agreements between the state and communities to share a portion of the revenue derived from the forest – and that portion can vary from less than 5% of the income to as much as 80% or more. Some programs are built on a recognition of long-standing community-based institutions which facilitate decision-making and conflict resolution. Others seek to create new institutions specifically for forest management. While it is encouraging to see a widespread commitment to involving communities in forest management, it is disturbing to note that very little, in fact, is known about what kinds of structures and institutions best serve the joint objectives of maintaining the integrity and biodiversity of forests and of asset-building for individuals, households and whole communities.

The studies in this volume describe a concerted effort to build a deeper understanding of the dynamics of communities and the ways in which they utilise forest resources in East Africa. They represent the outcome of some five years of work, initially in Uganda, and more recently in Kenya and Tanzania, carried out by researchers who are committed to contributing to a more informed approach to implementing Community-Based Natural Resources Management in the region. In East Africa, as in many parts of the world, the social sciences have not traditionally played a large part in the training of forestry personnel or in research on forest management. To address this gap, the three institutions whose work is published here, have joined forces with the International Forestry Resources and Institutions (IFRI) program based at the University of Indiana in the USA and its

partners in Bolivia, Madagascar and Nepal, to implement a program of applied research to explore and learn about the complex linkages between forest ecosystems and local communities.

The IFRI program is structured to ensure that analysis of the research is directed towards generating knowledge about informal and formal institutions and how they support or undermine the incentives faced by individuals, groups and communities in making decisions about natural resource management. The objective is to enable all actors in the field of natural resources management to devise community-based institutions which are robust enough to deal with tension and conflict, which have the flexibility to face changing circumstances, and which allow information to flow effectively to inform decisions about management and to monitor the outcomes of those decisions.

The studies in this publication are reports based on research in a number of communities in Uganda, Kenya and Tanzania. They mark an important step in moves towards more just and equitable approaches to managing East Africa's forest resources which are based on working in full partnership with resource-dependant communities. While some of the contributions focus on particular components of a management regime such as tenure or the socio-economic setting of a community, they all contribute to identifying some of the essential building blocks of a viable and effective community-based management system. The description of the efforts of a team of researchers from Makerere University to put these building blocks in place in a community near the Ugandan capital, Kampala, remind us both of the difficulties involved in implementing community-based forest management, and of the necessity of making the effort. It is not too late to ensure that resources such as the Butto-Buvuma forest can flourish and enrich the lives of surrounding farmers, but it is vital to begin to ensure that 'community participation' is real, is informed, and does not only add to the responsibilities of those involved but also brings them tangible and sustainable benefits.

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Chapter One

Basic Concepts for Successful Community Participation in Forest Management

W. S. Gombya-Ssembajjwe

Introduction

For a long time, the management of natural resources in general and forests in particular has been characterized by extensive state control without involvement of the local communities (Gombya-Ssembajjwe *et al.*, 1999). Due to the states' poor management and law enforcement, forest resources have been degraded through unsustainable exploitation and encroachment. Public confidence in governments to own and manage forest resources has consequently diminished. As such, local people are now demanding some stake in the management of forest resources and a share of the accruing benefits.

However, the recent upsurge in initiatives to increase local control and management of forests coincides in time with the growth in strategies to bring about structural adjustment—a reduction in the size and role of government. It appears that the current interest in local forest management derives from the devolution and decentralization strategies through which these new priorities are being pursued. It is also linked to the high priority attached to rural development and participation by rural stakeholders in the decisions and actions affecting them (Arnold, 1999). Several schools of thought have articulated on the management of a resource that is used in common. While some scholars advocate for market mechanisms and other state control, it is important to point out that both the market and the state have failed to improve upon the local people's welfare in some of the domains of modern economic life. This has mainly been due to the fact that it is difficult to establish mechanisms to control shirking and corruption in these two systems. There is thus a need for an effective and efficient system of management of forest resources, especially those that are being used as common pool resources. An alternative way of managing common pool resources has already been suggested (Arnold, 1998; Bromley *et al.*, 1992; Ostrom, 1990). In the case of forest resources, this alternative is commonly known as participatory forest management. This

term has been used to encompass any situation in which a group of local individuals exercise some control in the use of the forests (Arnold, 1993), especially those that are found in their local communities. This entails the sharing of authority, responsibility, revenues, and duties with the established organizations hitherto managing them (Hobley, 1987; Davis-Case *et al.*, 1992).

This strategy is premised on the following assumptions:

- a) most local forest users make rational decisions in relation to production factors (land, labour, capital and knowledge);
- b) people will participate in managing the forests they collectively use only when they clearly envisage the net tangible benefits in terms of income, products, and services (Ostrom, 1990; Ostrom *et al.*, 1993);
- c) people will participate in forest management only when they, in their own opinion, possess the necessary knowledge, competence, and technology (ILEIA, 1989) to carry out management activities; and
- d) there are sufficient guarantees (Bromley, 1992), and non-participants can be restricted from enjoying the benefits (Ostrom *et al.*, 1993).

In many countries such as India, Nepal, South Korea, Thailand, The Philippines, and The Gambia, the policy on environment has changed in favour of devolution of state control over forest reserves to the local communities. However, policy implementation and the necessary legislation have in many cases not always followed suit. Although the lack of enabling legislation might not necessarily impede programmes to support local self-governance of forest resources, without a legal base community-based rights can easily be challenged in terms of national laws (Arnold, 1999). Furthermore, local communities can encounter difficulties in using the formal laws to assert their rights (Seymour & Rutherford, 1990). Without secure legal backing, local people are also left in a weak position to negotiate changes with government and exposed to risks created by government-initiated programmes (Singh, 1986).

In most former British colonies, western tenure systems were introduced and control over land transferred from local institutions to the new political institutions. However, in several countries including Uganda, traditional rights of access to land resources were retained, creating a dual type of tenure system. This caused confusion as in most cases the legal status of land and forest resources was not

clear to the managers and users of these resources. The existence of a dual legal system meant that people could be faced with a difficult situation in settling similar disputes under the two systems (Arnold, 1999). However, community-based legal systems are marginalized both in character and effectiveness, and do therefore not affect or compromise the mainstream policy framework (Ochieng-Odhiambo, 1998). Forest conflicts usually originate from the way the forests are managed and used. The major types of conflicts are thus those relating to utilization and management rights (Gombya-Ssembajjwe, 1998). But there are other conflicts both within and between communities that can be generated by community forestry policy interventions. In most developing countries, for example, there are large sections of the population that depend directly and almost entirely on the forests for their survival. In such situations, any policy changes affecting direct access to forests are likely to trigger sharp conflicts.

Among the most important independent variables that affect the level of consumptive use of the forests in many settings are security of tenure and law enforcement (Banana & Gombya-Ssembajjwe, 1999). Security of tenure is even more important than the type of tenure (Fisher, 1995). This is because where law enforcement is not adequate, there is open access and use of the resource, much to the benefit of those that lack security of tenure (Banana & Gombya-Ssembajjwe, 1999).

Basic Elements of Community Forestry

IFRI studies in Uganda has revealed that for communities to successfully participate in forest management, a number of conditions must be met. These include the following:

- a) adequate land on which to practice community forest management;
- b) the land and tree tenure must be clear and legally recognized, clearly indicating the conditions and procedures for invoking and revoking it;
- c) the legislature must guarantee security of tenure and benefits to participants. It must also be supportive of the policy on community forest management;
- d) forest policies must recognize people's traditional rights and capacity to manage tree/forest resources. Forest administrators must be committed to community forest management; and

- e) the communities must be willing to participate in forest management. The public at large must be sensitized about their roles and responsibilities, as well as the forest conditions. The capacity of the communities to manage must be evaluated in terms of the knowledge and experience they possess, their technical and managerial competence, and the availability of technology. This will help to identify the gaps that should be filled during capacity building which may include training, institutional development, and information generation and dissemination.

Benefits of Community Forest Management

At community level, there is likely to be less state control of access to forest resources and improved social cohesiveness, as members of the community will be working together. There will also be direct benefits in terms of income and raw materials. Forests and tree species of specific value to the communities (spiritual, cultural, etc.) are likely to be better protected. However, there could be loss of benefits to illegal local exploiters, corrupt officials, and legal exploiters of restricted products. Increased marketing of forest products is likely to increase product value to levels unaffordable by the community's low-income earners.

Given the above scenario, some preventive measures must be put in place to protect the community from the negative effects of the new forestry strategies. These measures should include the following:

- a) access to forest resources should be determined by the communities themselves;
- b) community forestry implementation should take into consideration other development opportunities available within the communities;
- c) government and other agents should act as facilitators; and
- d) total involvement of all actors at community level should be ensured.

At the forest level, community forestry can greatly benefit the forest ecosystems although there is a likelihood of concentrated forest exploitation of the products most preferred by the communities. This danger notwithstanding, community forestry can yield a number of benefits. These include increased regeneration, increased biodiversity, improved forest quality leading to aesthetic value

enhancement, and possible expansion of forest cover in a particular area. The benefits of community forestry do not end at the forest and community levels only: the governments stand to reap substantial savings through reduced expenditure on forest management.

Strategies for Community Forestry and Potential Constraints

Whereas the strategies for community forestry may be country or community specific, the following are generally essential prerequisites to successful community management:

- **Establishment of community forestry models:** There is a need to establish models in different contexts (sustainability being one of them), and to develop a legal framework for community forestry based on such models.
- **Creation of awareness:** The public should be made aware of forestry issues, both at policy and grassroots levels. This should be realized through documentation and dissemination of information, networking, and developing and strengthening local capacity.
- **Full participation:** There should be total involvement of all stakeholders throughout the process, and integration of community forestry with other development activities in the areas.
- **Agreements:** Implementation agreements should be made in light of the incentives both to local communities and the governments.

Potential constraints to the project include the following:

- **Lack of legal framework:** Although community forestry is being experimented on in East Africa, there is no legal framework within which to create an enabling environment for its implementation. Logistical difficulties render involvement of local people in the legal formulation process extremely slow.
- **Rural-urban drift:** This phenomenon undermines the availability of labour in the rural areas where community forestry is likely to be implemented.
- **Lack of transparency:** The lack of transparency in governance and public affairs in Africa breeds a lot of mistrust of the governments by the local people.

- **Market:** Failure to market the forest products can be a great constraint to community forestry. At the household level, the presence of markets can act as an incentive for investment in community forestry.
- Other forms of constraints include resistance to change by some government officials, lack of education/awareness among the masses, insecurity of tenure, and poverty.

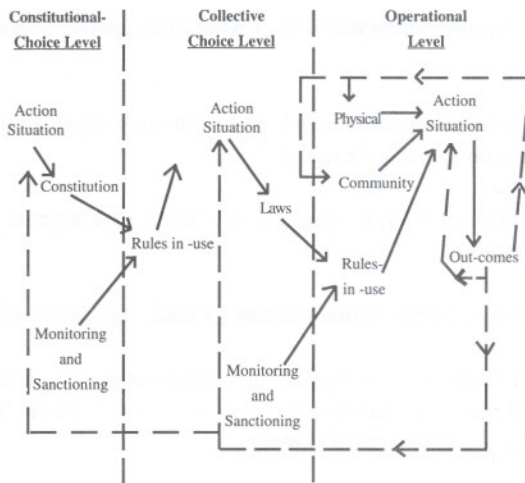
The IFRI Research Programme

The chapters following this introduction draw upon the design, principles, and hypotheses of the International Forestry Resources and Institutions (IFRI) research programme. The IFRI research programme is a multilevel, multi-country, over-time study of forests and institutions that govern, manage, and use them. To explain the phenomena of deforestation and loss of biodiversity, the IFRI research programme on the Institutional Analysis and Development (IAD) framework has been developed and used by researchers associated with the Workshop on Political Theory and Policy Analysis at Indiana University. The IAD has its roots in classic political economy, neoclassical microeconomic theory, institutional economics (Commons, 1957; Coase, 1960), public choice theory (Riker, 1962; Olson, 1965), transaction-cost economics (Williamson, 1975 & 1985; North, 1990), and non-cooperative game theory (Shubik, 1982; Harsanyi & Selten, 1988).

The IAD framework has been used in the analysis of a myriad of issues. For example, it has been applied to the study of metropolitan organisation (Ostrom, Tiebout & Warren, 1961; Ostrom, Bish & Ostrom, 1988), the theory of public goods (Ostrom & Ostrom, 1977), the sustenance of rural infrastructures in developing countries (Ostrom, Schroeder & Wynne, 1993), privatization in developing and developed countries (Oakerson et al., 1990), and macro-political systems (Kaminski, 1992; Ostrom, 1990 & 1992; Thomson, Feeny & Oakerson, 1992). The framework links the characteristics of the physical world (e.g. forests) to those of the general cultural setting (e.g. the villages); the specific situations that affect the incentives individuals face in a particular situation (e.g. how forest products can be harvested, utilized, or the forest maintained); the outcomes of these interactions (regeneration or deforestation); and evaluative criteria applied to these patterns and outcomes (e.g. sustainability) (Gardener, Ostrom & Walker, 1990).

The action situations refer to the social space where individuals interact and, among others, exchange goods and services, engage in appropriation and provision

activities, and solve or create problems. In the IAD framework, all situations are viewed as composed of the same set of elements. For example, while the harvesting and marketing of timber are different in many ways, these two diverse situations can both be described by identifying and analyzing how particular elements constituting them lead to the patterns observed. An action situation is characterized using seven clusters of variables or elements (Ostrom et al., 1993; Ostrom, Gardner & Walker, 1994) at multiple levels (Gibson, Mckean & Ostrom, 1999), which identify participants, their positions, their actions, the information they possess, potential outcomes, the linkage between actions and outcomes, and the costs and benefits.



Source: Ostrom *et al.*, 1993 p. 47.

Fig. 1.1 Linking levels of analysis

It has been argued that in a dynamic setting, human behaviour has got a significant impact on local ecologies which are in turn affected by global and local physical factors (including changing technology) (Gibson, Mckean & Ostrom, 1999). Human incentives and behaviour are affected by socioeconomic and demographic, as well as institutional factors. At the micro level, institutional factors include variables such as:

- specific rules-in-use for each parcel of forest product in a local ecology that differs with regard to who can harvest, when and how; and how much harvesting of different products is authorized or forbidden;
- what types of afforestation or other enhancement or protection activities are encouraged, and by what means;
- what types of subsidies are provided related to the inputs or outputs of a local economy;
- how forest use and investment practices are monitored and sanctioned;
- the level of common understanding of what rules are used, monitored, and enforced;
- whether forest users are organized, and what such organisation means in terms of individual incentives; and
- what representatives of local, regional, or national governments are involved in local activities.
- At the macro level, institutional factors include variables such as:
 - national legislation authorizing diverse types of forests and parks in a country and the restrictions or subsidies involved in the use and administration of each type of forest;
 - types of private and/or communal land, and the authorized tree tenure;
 - personnel rules of national, regional, and local agencies affecting the recruitment, retention, promotion, and discipline of public officials;
 - taxation law on land, extraction rates, and corporate profits; and
 - the availability of courts to resolve disputes over land and/or tree tenure,
 - contracts related to concessions, and disciplinary actions within public agencies.

The major advantage of IAD is that large numbers of nested variables can be included, so it effectively applies to the complexity of the forest-local communities. IFRI seeks input from a wide range of international scholars across the disciplines, particularly biologists, ecologists, resource economists, foresters, anthropologists, lawyers, geographers, demographers, sociologists, and political scientists. IFRI works through a net work of collaborating research centers which collect data using IFRI protocols to test an unlimited number of specific hypotheses. These centres are found in USA, Bolivia, Nepal, Madagascar, Kenya, Tanzania, and Uganda, undertaking systematic, micro-level, comparative studies of the institutions and their impact on the rate of deforestation over time.

This volume represents the East African effort to report on studies conducted in Uganda, Kenya, and Tanzania based on a common framework and using the same research protocols. The IFRI research programme is still nascent, but it is hoped to herald a growing series of publications from East Africa to help policy makers, forest users, and scholars understand the dynamics involved in incorporating local communities in the management of forest resources.

Empirical Chapters

The empirical studies in this volume seek to fill at least three critical gaps. Firstly, the lack of a policy framework to create an enabling environment for the creation, adoption, and implementation of community forestry. Secondly, the shortage of information on the socio-economic impact of community forestry on both the community as a whole and individual households; the sharing of costs and benefits of community forestry; the mechanisms for resolving forest resource-based conflicts; and the costs and benefits of creating alternative sources of wood stocks. Thirdly, the role of local institutions in forest resource management which is hitherto unfamiliar to many stakeholders.

In chapter two, Abwoli Banana underscores the importance of tenure for the successful implementation of community-based forest management. He reviews the different categories of property rights and analyses them in Uganda's context. Using the case study of *Milicia excelsa* in Busoga, eastern Uganda, he finds that the state control of 'reserved' trees and their use has a negative impact on people's perception of the values of trees and is likely to hinder the successful implementation of community forestry in Uganda. His study further reveals the plight the tenant farmers wanting to plant trees of commercial value face, as such trees belong to the land-lords. Banana also points out a number of other social

problems that are associated with tree tenure. He concludes by stressing the importance of secure tenure and responsibilities of participating communities.

In chapter three, Gombya-Ssembajjwe and Abwoli Banana present a successful case of collaborative forest management which involves a study of one of the IFRI sites in Uganda. They examine the current status of Butto-buvuma Forest Reserve and the socio-economic status of communities surrounding that forest. They also review the forest policy and the impact it has on managing the forest reserve in a collaborative manner. They elucidate on the process of involving local communities in the management of forest reserves. This process includes, among other things, stating clearly the objectives of collaborative management, getting right the people's perceptions of community forestry, and analyzing the required institutional changes and constraints to community forestry. Gombya-Ssembajjwe and Banana also consider the impact of community forestry on the conservation and management of forests. The lessons learnt from the Butto-buvuma case are drawn as a way of concluding their chapter.

Vincent Kihyo and George Kajembe, in chapter four, attempt to answer the question "what institutions are effective for community based forest management in Tanzania"? To do so, they relate forest policies in Tanzania to IFRI objectives by examining the different options (state, private, and communal) available for managing the forest resources. In the communal option, they present the *Ujamaa* case and compare the IFRI design principles and the Tanzanian villages. Kihyo and Kajembe conclude by noting that the *Ujamaa* village structure and legal framework, as well as the current forest policy together with IFRI programme can be held to revive the positive relationship between the local people and the forest resources they use.

In chapter five, Paul Ongugo and Jane Njuguna present a case of how the local forest resource users using a state resource under the management of two different state institutions are affected by different sectoral policies. They use Mount Elgon forest which is of local, natural, regional, as well as global importance to their study. The forest has been over-exploited for timber but the local communities still benefit from it through collection of firewood, medicinal plants, water, grazing, and cultivation. The forest is managed by both Kenya Wildlife Service and the Forest Department. While the former does not allow any consumptive use of the forest thereby making harvesting of any product by the community illegal, the latter allows consumptive use of the forest, but only for subsistence. Part of this natural forest was turned into a pure softwood plantation in which the Forest

Department allows the local people to cultivate after harvesting. Ongugo and Njuguna conclude with a focus on the most serious problems affecting the forest resources: the lack of clear policies on resource management and utilization, and conflicting legislative and sectoral arrangements.

By reviewing different areas of forest conflicts, John Kaboggoza analyses the conflicts over the appropriation, management and use of forest resources in chapter six. These areas include Mt. Elgon Forest National Park, Kibale Forest Game Corridor, Mabira Forest Reserve, Namanve Forest Reserve, Mt. Rwenzori Forest Reserve, Mbarara Ranching Belt, and Kiboga Forest Reserve. Kaboggoza analyses the causes of conflicts and the mechanism in place to resolve them, pointing out their strengths and weaknesses. He concludes by presenting a way forward, which highlights the activities to be carried out by Forest, Trees and People Programme (FTPP) in addressing forest conflicts in Uganda.

In chapter seven, Goretti Nabanoga and William Gombya-Ssembajjwe analyze the effect of household endowments and entitlements on the sustainability of forest resources management and use. The analysis, which is based on a study of Butto-buvuma Forest Reserve, focuses on the household production processes such as agriculture, pitsawing, charcoal burning, firewood collection, and collection of non-woody forest products through which the households convert their endowments into entitlements. These production processes can lead to forest degradation depending on access to the resource, ecological conditions, production systems, and any other household activity that involves the use of forest products. They also analyze the constraints to improved household production-and hence welfare-in relation to the condition of the forest. These constraints include land and labour shortages, diseases and pests, poor soil fertility, and lack of capital and inputs. They conclude that household adaptation in settlements surrounding Butto-buvuma Forest Reserve is partly a function of the extent to which resource endowments-land, labour, capital, and forest resources-are accessible for the production of entitlements. About 80% of households in communities around Butto-buvuma depend significantly on the forest for their subsistence needs, while 60% generate their cash income from the forest.

In chapter eight, Athieno Mwebesa and William Gombya-Ssembajjwe analyze the profitability of a different form of community forestry-farm forestry. In a study of profitability of forest tree growing undertaken in the four districts of Kampala, Jinja, Masaka, and Mbarara, the central issue is whether poor farmers can invest in tree growing. The analysis of the socio-economic characteristics of

the tree farmers reveals that the majority are male of middle-income class, who mainly depend on leased land. The profitability analysis reveals that Eucalyptus tree growing is profitable, and that firewood, building poles, and posts are the common products.

In chapter nine, William Gombya-Ssembajjwe analyses the use of indigenous technical knowledge in the conservation of natural resources. Using the case of sacred forests in central Uganda, he analyses the control mechanism, rules and their enforcement, and the roles of traditional institutions in the management of these forests. The conditions of the forests are analyzed in terms of stem count, basal area, heights, species richness, and Shannon Index and the results compared with those of the forests under private and state control. In conclusion, Gombya-Ssembajjwe lists a number of lessons learnt from the study, which include continuous community education of the roles of such forests, involvement of children, well defined property and use rights, regular patrol, graduated system of punishment, and quick, easily affordable conflict resolution mechanisms.

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Chapter Two

Successful Community Forest Management: The Importance of Tenure

A.Y. Banana

Introduction

Tenure consists of a bundle of rights which may be held by different people at different times. Fortmann (1985) identifies four major categories of rights which make up the bundle that comprises land and tree tenure: the right to own or inherit, the right to plant, the right to use, and the right to dispose.

There are four categories of property regimes under which forest resources can be held. These are private property, common property, state property, and open access resources. In many areas of Uganda, customary tenure closely resembles common property regimes. Similarly, community forestry also has a strong relationship to common property regimes. Common property regimes for natural resources may be described as institutional arrangements for the cooperative (shared, joint, collective) use, management, and sometimes ownership of natural resources (Mackean & Ostrom, 1995). For example, an individual's access to and use of land under customary tenure is determined by the customary rules of the tribal or clan group to which the individual belongs.

In many parts of Uganda, tree tenure is closely linked to land ownership. Under the mailo-land tenure system in Buganda, for example, a person who owns a parcel of land also owns the trees on that land. Whoever owns the land has the right to plant, harvest, and dispose of the trees and their products without obtaining permission from the clan leader. In this region, private land ownership is very common. Tenants are not encouraged to plant trees of commercial importance on the land they occupy without the consent of the landlord. However, if consent is sought and permission granted, the tenant may be compensated for the tree(s) he planted upon departure. In the past, if a tenant sold the trees and crops grown, the landlord was entitled to get a share of the proceeds. However, under customary tenure among the Iteso of eastern Uganda, trees remain the property of the individual who planted them even if the land has ceased to belong to him (Opio-Odongo, 1985).

Under the indigenous tree tenure rules, certain tree species and forests were protected by the community. Protected trees included "sacred trees" and "sacred forests" which are used mainly for religious ceremonies (Gombya-Ssembajjwe, 1995). Certain trees which were believed to house evil spirits could also not be cut.

State Control of Trees and their Use

The major characteristics of Uganda's forest policy, like in many other developing countries, have been the strong concentration of state power over forest resources and the corresponding lack of local participation in forest and tree management (McLain, 1991, 1992; Raintree, 1987). Since the establishment of formal forest administration in the country, economic trees have been classified as "reserved trees" and their cutting subjected to the permission of the Forest Department. However, access to forests for other benefits such as recreation and cultural activities has been open to all local users. Under the Forest Act, local communities may enjoy special rights in the use of commercially less important forest products which they may take from reserved or public forest land in reasonable quantities without a permit or payment of fees for their own domestic use.

The reserved tree policy has had a negative impact on peoples perceptions of the value of trees on private and communal land, and has hindered the development of community forestry in Uganda. In areas of the country where this policy was vigorously implemented, studies have shown that farmers cut many seedlings and saplings from their land as a strategy to limit the number of trees on their land before they become visible to the Forest Guards (McLain, 1992). Mature trees are killed or degraded by debarking, burning or inserting nails in the trunk in order to reduce their value (Kyaroki, 1994).

Forest officials believe that permit requirements do not diminish one's control over the trees on his/her land since the cost of the permit is nominal, and only serves to regulate the rate of harvesting of the economically important tree species. However, the transaction cost of obtaining a permit can be considerable since one may have to travel to a far away district forest office several times before securing one. And in many cases, a bribe may have to be paid before obtaining the permit.

The purchase of permits by outsiders to cut reserved trees on the commons has also undermined the authority of local leaders and land owners by barring them from "excluding" the said outsiders, a situation that is very crucial for the management of common property resources. McLain (1992) encountered a similar

experience in Mali where elders complained that in the past, they were able to enforce the rules, the forest belonged to them. Everybody knew that each tree had its owner. Now the wood cutters can show you their cutting permits and can cut anywhere they want on the communal land.

In order to meet local needs for forest products in Uganda, legislation establishing local forest reserves under district administrations was enacted in 1938. However, the Forest Act was amended in 1967 and the administration of the local forest reserves centralized and absorbed into the centrally-organized Forest Department. This move essentially removed local community control and participation in forest management. This change was a part of a general political move towards centralization, a move that is sometimes justified as being a more rational and efficient form of governance (Banana & Ssembajjwe, 1994).

The Need for Community Participation in Forest Management

There is no doubt that state control of forest resources in many countries has been ineffective in solving and halting the rate of deforestation. The financial and human resources available to the forest departments are often inadequate to carry out the task of effective policing of forested areas without the participation of the local communities. Many forest resources are scattered over large areas which makes monitoring and rule enforcement by the state very costly, if not impossible (Ostrom, 1990; Bromley, 1992). However, without a strong and secure land and tree tenure, community forestry is not likely to succeed. The following two case studies help to illustrate the importance of secure land and tree tenure on successful forest management.

Case study I:

The case of *Milicia excelsa* in the Busoga savanna woodlands of eastern Uganda

Busoga region in eastern Uganda is composed of the districts of Kamuli, Iganga, Bugiri, and Jinja. It borders Tororo district in the east, R. Nile in the west, L. Victoria in the south, and L. Kyoga in the north. It covers a total area of approximately 20,000 km² and has a total population of 1.7 million people. The vegetation consists of savanna woodlands and bush thickets with several *Acacia* and *Combretum* species, interspersed with valuable Muvule tree species. The gazetted forest estate comprises only a few thousand hectares of natural tropical high forests along the shores of L. Victoria. The rest of the forest resource is

found in the savanna woodlands on private or communal land, constituting the largest forest ecosystem in the region.

The Muvule trees are widely scattered throughout the region with low stocking levels estimated at three trees per hectare (average volume of 9m³/ ha.). This is the only economically important timber species in the region from which local people earn income. Its wood is very durable and extensively used for construction work, high grade furniture, and panelling. At one point in time, it was the highest priced timber species in both eastern and western Africa. Because of its high economic value, the state classified it as a reserved tree species which could not be harvested without a permit. This was done as an attempt to regulate harvesting and achieve sustainable utilization of the resource.

Management of the woodlands by the Forest Department is limited to the control of selective felling of the Muvule trees and commercial charcoal burning. At the same time, the policy of reserved tree species has acted as a disincentive for the development of sustainable community-based forest management practices in these woodlands. This is illustrated by the dilemma faced by one clan in Bunya county, Iganga district. The clan owns over 500 ha. of savanna woodland under customary land tenure. However, clan members, whose land is rich in valuable tree species, practice subsistence agriculture. There are over 4,500m³ of logs of Muvule trees which the clan elders have tended and protected. In addition, there are a lot of *Acacia* and *Terminalia* tree species which are good for charcoal production.

In 1994, the old men decided to harvest some of the trees to raise funds for the development of the clan. They converted ten Muvule trees into timber worth US\$ 6,000. As soon as the timber merchant arrived to purchase the timber, an official from the Forest Department who had been tipped off about the transaction appeared on the scene, declared the deal illegal, and confiscated the timber. Government trucks ferried the timber away and warned the old men never to cut the Muvule trees without a license or else they would be taken to a court of law. The disappointed clan leaders resolved not to cut any other Muvule tree until they had sorted out the matter with the assistance of the local council officials (political leaders) of the area. In the meanwhile, they decided to plant 10 ha. of maize from which they could obtain money. They cleared the land for cultivation but also converted the *Acacia* and *Terminalia* trees which had been cut into charcoal. Unfortunately, a forest guard intercepted and confiscated the charcoal, accusing the clan elders of producing charcoal without a license. The old men were disgusted and decided to kill all Muvule trees and saplings from their ancestral land.

Case study II:

“I can only plant trees on my land and not on communal land”

Being the most urbanized district in the region, Jinja has experienced massive tree cutting for both timber and charcoal production. Tree cover in the villages has been depleted and soil erosion is now threatening the one-time fertile soils. Food production has gradually declined and shortages of fuelwood are beginning to be felt throughout the district. However, a local nongovernmental organization (NGO) identified the plight of the rural people and tried to implement a Tree Planting Project. They urged people to establish woodlots on their land holdings and a communal plantation on public land which had been recently degraded. Individual land owners planted small Eucalyptus woodlots on their individual holdings without much persuasion from the NGO and the Forest Extension Service staff. However, they were not willing to plant trees on degraded public land on a communal basis. They argued that they could not invest their time and labour in planting trees which they were not sure they had the right to use and dispose of. Because of this insecurity of land and tree tenure therefore, these degraded communal areas have remained without any tree cover.

Tenure Issues for Successful Community Forestry

Community-based forest management can be conceived as a process by which the communities themselves are provided with the opportunity and/or responsibility to manage their own forest resources, define their needs, goals and aspirations, and be able to make decisions affecting their well-being. The key issues in community forestry are the community itself, the forest resource(s), community access and control over resources, proper resource use using suitable technology, and a viable community organization (involvement of local institutions in resource management). All these issues must be delineated and understood by all members of the community.

Individuals or communities can opt to derive maximum benefit from forest resources within a short term without regard for environmental consequences of their actions. On the other hand, the community may decide that future needs and benefits are their overriding principle for managing and utilizing the available forest resources. The latter is the essence of successful community-based forest management. The community must be guaranteed of long term access to resources and benefits.

The need to derive maximum benefit within the short term by either the individuals or the community is sometimes caused by tenure insecurity. Community forestry requires greater autonomy and control of forest resources on a long term basis. Successful community forestry requires collective decision-making at the lowest level possible.

Implementation of Community Forestry: Some Bottlenecks

Although increased tree tenure is desirable for local participation in the management of forest resources, the following social problems may nevertheless arise, and should therefore be taken into serious consideration:

- Because trees can be used to establish rights to land, it is necessary to monitor who is planting trees and where in order to avoid the escalation of land disputes.
- The ability to exclude others from the use of trees or tree products is essential if the community or individuals are to reap benefits of their investment. However, in many communities, it may be customarily or religiously wrong to exclude others from the use of the trees (Bennett, 1988).
- In many regions, community or village boundaries are often not well demarcated and community membership not well defined.
- Because communities are often heterogenous, certain categories of users may be unable to benefit from the resource (Bruce, 1989). The poor, women, and politically weak individuals may not have equal access to the trees in the commons and may not have land to plant their own trees.
- Emphasis on forest management for the production of timber, for example, may destroy rights to other uses of the land such as grazing, cultivation, and gathering.
- It would be naive to assume that all communities are capable of managing their resources more sustainably than the state (MacLain, 1992). Therefore, there is a need to develop a monitoring mechanism and an institution that will monitor the performance of the different communities.

Conclusion

In order to reduce the rate of forest degradation in Uganda and in many other developing countries, it is necessary to provide incentives for individuals and communities to plant, manage and conserve trees. And in order for community forestry to succeed, individuals must be assured of both short and long term tangible benefits. Benefits must accrue only to those members of the community participating in the projects. The rights and responsibilities of the participating communities must be secure and well understood by all participating individuals. Trees should be the property of the participating communities. Most importantly, the relationships among all stakeholders must be clear so that conflicts are minimized.

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Chapter Three

Collaborative Forest Management in Uganda: The Case of Butto-buvuma Forest Reserve

W.S. Gombya-Ssembajjwe & A.Y. Banana

Introduction

There has been a change in forest policy in Uganda, allowing for the participation of local communities in the management of forest reserves. The Forest Department has institutionalized community forestry within its operations at all levels. Staff capacity at all levels is being strengthened to implement community forestry. To help local communities take effective management, the Forest Department is giving back 40% of the revenue collected from the forest resources within a sub-county (Local Council 111) to the community as incentives.

The 1995 constitution has granted local administrations the right and responsibility of managing forest resources for the benefit of the local people. The 1998 Local Government Act gives legal authority to local governments to establish and manage small forests on public land to meet the local needs of the people. The same Act establishes local committees/councils to govern natural resources. The local councils have the power and authority to plan and manage the local natural resources in their areas. To implement these measures, government is in the process of recruiting university graduate officers at sub-county levels.

The 1998 Land Act stipulates that where any group of persons holds land communally, the land may be held on behalf of the group by a trustee chosen by the group, according to the customs of such a community. This provision facilitates the registration of communal land and the management of forest resources as a common property regime.

In Uganda, community forestry takes place in the following forms:

- a) local authorities establishing and managing local forest reserves for local benefits;
- b) collaborative forest management of state forest reserves;
- c) private farmers growing and managing trees and/or forests on either private or hired public land; and
- d) local communities managing small local forests of historical and/or cultural value.

This chapter bases on the experiences gained through implementation of a collaborative forest management type of community forestry in a tropical high forest.

Butto-buvuma Forest Reserve

Butto-buvuma Forest Reserve is a natural moist forest about 1096 ha in size. It is found in the sub-counties of Muduuma (Kisamula-Lugyo, Malube-Nalubugo, Naziri-Buyala) and Kiringente (Kagezi, Luvumbula, Mabuye, Kaggaba, Ssekiwunga, Galatiya, and Nsujjropolwe) in Mawokota county, Mpigi district (See Figure 1.1). The forest has a legal status of a nature reserve and is located only 25 km west of Kampala city. It is locally classified as medium-altitude *Piptadeniastrum-Albizia-Celtis*, the three genera being the most dominant (Howard, 1991).

However, this composition was modified through the enrichment of planting treatment in the 1950s. During this treatment the forest was planted with both indigenous species such as *Maesopsis eminii* and exotic ones such as *Burtdavya nyaska*, *Cedrela odorata* and *Terminalia ivorensis*. Yet, despite its status as a nature reserve, Butto-buvuma forest has been illegally over-harvested for timber, charcoal, and commercial firewood. The forest has also been encroached upon by cultivators growing vegetables and sugarcane for cash income. Currently, about 50% of the forest is severely degraded by these illegal activities.

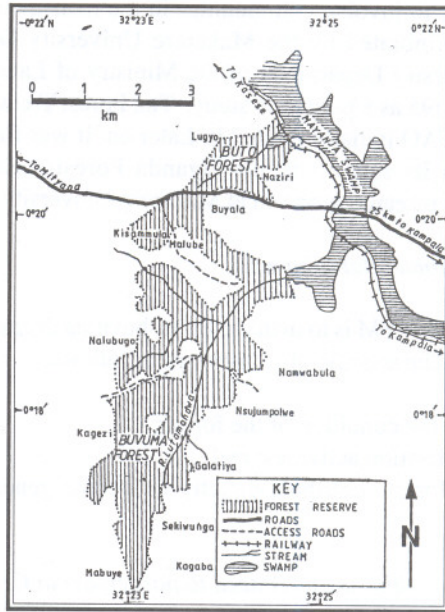


Figure 1.2: Map of Butto-buvuma Forest Reserve showing the surrounding settlements.

Economic status of communities around Butto-buvuma

The communities surrounding Butto-buvuma are basically peasant, growing coffee and bananas as cash and food crops respectively. However, the soils are poor and crop yields low, rendering crop farming no longer financially viable. As a result, tree harvesting has become the most attractive economic activity in the area. Currently, Butto-buvuma forest provides goods and services for both monetary and subsistence use by the communities. However, its contribution to the communities' economy is only more pronounced in the non-monetary sector. For example, the entire population depends on this forest for energy requirements.

The forest also contributes substantially to these rural communities by providing a wide range of non-wood forest products which include roofing materials, natural fibres, medicine, water, and food. It also houses several historical and cultural sites for Baganda ethnic group.

The current activities to involve communities in the management of Butto-buvuma forest were initiated by the Makerere University Department of Forestry and the Forestry Department of the Ministry of Lands, Water and Environment in 1994/95 as a pilot case study. The Forest Trees and People's Program (FTPP) of FAO initially funded it. Later on, it was funded by Ford Foundation through its support to the Uganda Forestry Resources and Institutions (UFRIC) research program at Makerere University.

Objectives of CFM around Butto-buvuma

The overall objective of CFM is to manage Butto-buvuma Forest Reserve in a sustainable manner. The specific objectives are as follows:

- a) to improve on the condition of the forest;
- b) to regulate utilization activities; and
- c) to enable the forest contribute directly to income generation for the communities.

Justification by communities for their need to participate in CFM

Local communities and their leaders were concerned about the condition of their forest. The local people were concerned, among other things, about the following:

- a) Mismanagement of the forest;
- b) High level corruption among forest managers;
- c) Outsiders' being given preferential access to the resource in relation to the locals; and
- d) Lack of direct financial benefits to the local people.

The process of involving local communities around Butto-buvuma in CFM

The process of involving local communities around Butto-buvuma forest in its management started with organizing a series of local workshops within the communities to create awareness for the local people, forest staff, and local government officials. In addition, nineteen representatives of the various stakeholders were selected by the communities to visit Babati in Arusha, Tanzania, to study how local communities get involved in the management of the forests they use. This team consisted of one representative from each of

the two sub-counties, elders, district local councilors, women, youth, and chairpersons of sub-county councils. Upon their return, the members formed a committee to cover the two sub-counties and three sub-committees (one in each zone) to educate the local people and patrol the forest. The committee solicited for ideas from the communities which were used to draft the forest bye-laws and memorandum of understanding. The draft memorandum of understanding was presented to the Commissioner of Forestry for consideration. The committee members met with the Commissioner of Forestry and his staff for face to face negotiations of the draft memorandum of understanding.

Community leaders selected eight people from each zone who undertook a three-week course in basic forest management principles, including boundary demarcation and maintenance, basic forest mensuration, and forest management plan writing. Knowledge of these principles enables the local people to be effective village forest managers as they are able to draw up their own management plans and work implementation plans.

In order to reduce the dependence of the local communities on the forest resource, initiatives to start other economic activities in the area were started. Four representatives from each zone visited Mukono district to study how formally forest dependant local communities have started income generating projects outside the forest area. Projects which have been started or are in the process of starting include eco-tourism, mushroom and orchid growing, and goat rearing.

Tangible results

Although CFM in Butto-buvuma is still nascent, there are some tangible results to show. These include the following:

- ***Formation of local forest committees:*** Local forest management committees have been formed and are involved in managing the forest resources, as well as collaborating with local forest rangers and local administrative units. There has been a marked improvement in the relationship between forest officials and the local communities.
- ***Memorandum of Understanding:*** A Memorandum of Understanding between the communities and the Forestry Department has been prepared. It includes the bye-laws to regulate forest harvesting activities and a forest management plan for the next five years (see Annex I).

- **Training of village forest technicians:** Twenty four village technicians have been trained to assist the forest rangers to manage the forest resource. Knowledge of basic forest management techniques empowers the community to regulate the harvesting activities more effectively.
- **Reduced illegal harvesting:** The local people in communities surrounding Butto-buvuma are currently involved in patrolling the forest in order to check on illegal activities. As a result, there has been a decrease in illegal pitsawing and commercial firewood harvesting.
- **Establishment of income generating activities:** Three recreation sites within the forests have been established and improved upon. A two-week course on mushroom and orchid growing has been under-taken for the communities around the forest.
- **Creation of awareness:** As a result of CFM project in Butto-buvuma, the community in the study area now realizes the need to supplement the existing natural forests with planted ones if the supply of wood products is to be sustained. As a result, marginal agricultural land is being turned into woodlots.
- **Increased participation of women:** Initially, women were not keen to participate in CFM possibly because of lack of direct financial benefits to them. However, over time women participation in forest committee and patrolling activities have increased as a result of increased awareness.

Observed Constraints to Community Forestry

Conflicts over the appropriation, management, and use of forest resources still pose significant constraints to sustainable community-based forest management. There are long-standing conflicts between user-groups and other stakeholders such as the central and local governments and local communities over forest resources, their use and control.

The major constraints to community forestry in Uganda have been identified and include the following:

- **Legal frameworks:** Although the Forest Department has institutionalized community forestry, there is no legal framework supporting collaborative management of forest reserves. The Forest Act must clearly state the role of communities in the management of the forest estate in Uganda.

- **Tenure:** Local communities involved CFM would like to own these forest resources contrary to the government policy of just transferring management responsibilities to them.
- **Conflicting policies:** In many cases government sectoral policies are not in harmony. For example, the economic liberalization policy encourages increased agricultural output. But in the absence of fertilizers, it means more forested land has to be cleared for agriculture.
- **Lack of alternative sources of income:** There are almost no opportunities for the poor members of the communities to engage in income generating activities apart from harvesting forest resources. This makes yield regulation to sustainable levels difficult, if not impossible.
- **Conservative traditional foresters:** Most of the Forest Department staff were trained in traditional forestry and have not yet fully appreciated the new approach to forest management. Therefore, technical expertise for community forestry is still lacking in the country.
- **Lack of meaningful benefits:** Participating communities and individuals have not benefitted much especially due to the fact that most of the forest resources transferred to communities to manage are severely degraded. At present, there is no meaningful revenue being generated from these resources for the community to share. Moreover, the benefits in CFM are supposed to be for all stakeholders. However, only a few individuals within the community are meeting the costs. This encourages free-riding and rent seeking (bribery).
- **Political interference:** There is strong interference with forest management committees by the politically powerful individuals in the community. In addition, there is interference from other government institutions such as the police and the army.

Recommendations for the Promotion of Community Forestry

From this chapter, a number of lessons have been learnt on which we base to recommend as follows:

- a) Increased incentives are essential for the success of community forestry. Communities tend to prefer monetary incentives rather than increased availability of forest products for subsistence use.
- b) There is a need to increase community responsibility and authority to

- exclude 'outsiders'. Although the local communities can make rules and regulations regarding the use of the forest resources, they often do not have the capacity to enforce these rules and regulations. The elite, politically powerful individuals from government institutions such as the army or forest department do not comply with the rules enacted by the local forest management committees. This may be due to lack of legal recognition of the committees and nesting of them in local administrative structures.
- c) There is a need for secure ownership. Once these rights are given to local people, then the stakeholders can be assured of continuity of their rights through generations
 - d) Communities are complex and in most cases react negatively to government driven forest policies. Therefore, different user-groups should be identified so as to deal with groups instead of entire communities. It has been observed that within user-groups conflicts over forest resources are limited. And although there exists traditional institutions and rich indigenous knowledge about forest/tree management within communities, for a long time these have not been used in forest management. Consequently, they have over a period of time become weak, mainly due to changes in value perceptions and/or marginalization by the state. Addressing the needs of particular user-groups and strengthening the traditional institutions might ensure controlled harvesting at local levels.
 - e) Political support is needed at the local level for mobilization of resources as well as for amending legal frameworks.

Conclusion

The lessons so far learnt can be used to promote community forestry. In order to promote these lessons, however, public awareness has to be created and the local people (user-groups) involved at all stages of community forestry development. The local institutions need to be strengthened, for example, through legal recognition by the state. For this to succeed, local politicians and local political organizations must also be fully involved in community forestry development activities. We believe these strategies are universal and can easily work in any African country.

The following elements have been identified as absolutely necessary in the creation of an enabling environment for community forestry:

- a) Institutional legal framework reform to ensure security of tenure and compliance to rules. Communities should be fully empowered (given full authority and responsibility) to manage the forests in their areas.
- b) Secure markets for forest products.
- c) Involvement of school children in community forestry.

Achievements have been registered in the area of creation of awareness in communities and bringing the Forest Department and community into a cordial working relationship.

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Chapter Four

The Tanzanian Ujamaa Policy: Its Impact on Community-based Forest Management

Vincent B.M.S. Kihyo & George C. Kajembe

Introduction

The IFRI research program envisages an understanding of the role of institutional dynamics in environmental change. It seeks to elucidate how ecological and social dynamics influence the forest resource management activities of diverse groups of people, and how these activities in turn help to produce and shape particular kinds of environment. The issues of institutions and institutional change are therefore central in this study. Different kinds of both formal and informal institutions are important in mediating access and control of forest resources. Formal property rights such as permits to gather non-timber forest products, which are issued by the Forestry and Bee-keeping Division and legitimized by the state could in principle be defended in courts of law. On the other hand, however, there are informal or customary property rights that are legitimate in the eyes of those local resource claimants who regard government reserved forests as ancestral farmland, but illegitimate in the eyes of the government officials. Entitlement to forest resources is therefore influenced by the interplay of formal and informal institutions, including the gender division of labour, co-operative work groups and trading networks (Leach, Mearns & Scoones, 1997). This chapter explores the question of what institutions are effective for community-based forest management in Tanzania.

Past and Current Forest Policies in Tanzania

Since 1891 when Tanganyika (now Tanzania mainland) became a German colony, the forest policies formulated have been against maintaining and encouraging local institutions to manage forest resources. Under colonialism, "local African institutions for controlling access [to forests] would not be recognized-and thus rights soon came to be seen (by foresters) as government granted privileges" (Neumann, 1997). It was assumed that bureaucratic control of forests was the most economically efficient way of exploiting timber resources while at the same time protecting land from degradation. As the colonial state built roads, surveyed forests, and constructed field stations, their control over the citizens increased. In

the same way, African societies' relationship with forests were fundamentally altered (ibid). New rules were instituted and the Germans favoured "a system that was sharply discontinuous with pre-colonial economic patterns." Contravention of the rules was met with heavy fines or corporal punishment and chains (Schabel, 1990).

The forest policy did not change much after independence in 1961. In fact, the forest policy document of 1953 continued to be in use until 1998. Although the practice of the forest policy changed due to the numerous macro policy changes, the issue of alienation of citizens from forest resources was not addressed in the view of restoring the broken relationship during colonial domination.

In 1998, the government published a new forest policy (URT, 1998 a). Among other things, this policy recognized the limited capacity of the government to manage forest resources on its own, and the need to restore the relationship between government and the people in the management and ownership of forest resources. Some of the policy statements which pertain to this argument are as follows:

- a) central government forest reserves will be managed by one or several specialized executive agencies;
- b) to enable participation of all stakeholders in forest management and conservation, joint management agreements will be established between the central government, specialized executive agencies, the private sector, and organized local communities;
- c) forests on public lands and their management will be allocated to villages, private individuals, or the government;
- d) central, local, and village governments may demarcate and establish forest reserves; and
- e) village forest reserves will be managed by the village governments or other entities designed by village governments for this purpose.

IFRI efforts can provide information and data in support of implementation of these policies.

Options in Managing Natural Resources

In the literature, there are no answers to the problem of management of natural resources among two competing systems: public and private (Ostrom, 1990). Both the socialist (public) and capitalist (private) systems have produced good results in one instance and poor ones in another in the management of natural resources. These systems are reviewed below.

Government management

Many scientists think that the revelation of the tragedy of the commons implies that the only viable management of natural resources is by the state. Hardin (1968) argues that we do not know a political system that will function well in the protection of the environment. He therefore recommends the adoption of either private capital or socialism if we are to avoid ruin. In other words, force outside the community should be brought to bear for better conservation and utilization of natural resources.

Tanzanians have a vast experience with public or government control of the economy, including natural resources. For the past thirty years, we have experimented with public control of the economy and the experiment has landed us in a near economic collapse. Economic ruin and environmental degradation are some of the outcomes of the socialist experiment.

Public control could work well, except for the problems of accuracy of information, monitoring capabilities, sanctions, and costs of administration (Ostrom, 1990). One of the problems which frustrated the socialist experiment in Tanzania is what Professor Goran Hyden called the "economy of affection" (Hyden, 1980). In this type of economy, public property is used by those given the mandate to manage them as private property. It is used to assist members of the clan and extended family. The bond between clan and family members is stronger than it is to the state. The manager of a parastatal feels it is all right to use public property in this way. Offenders are protected by the same system such that it is difficult to punish them. As such, to monitor and take action against offenders becomes very difficult.

In many cases, it can be found out that governments have appropriated natural resources from their owners (e.g., forests from village or any other local bodies) and have failed to manage them in an effective manner. In this way they have created de jure state property but de facto open access: the absence of effective management and enforcement has simply turned the forest into a resource that can be exploited on a first-come-first-serve basis.

Tanzanian villagization policy

There are policy analysts who believe that the only way to sustainably use natural resources is through private property. Welch (in Ostrom, 1990), for example, argues that privatization is the only way to manage common pool resources

sustainably. It might, however, be difficult to own some resources as private property. How, for example, do you prevent the tragedy of the commons in fisheries? Establishing individual property rights might be very difficult. Even if a system was devised whereby individuals would have to draw certain amounts of units in specified periods, it would still mean that the system is owned communally rather than purely individually.

Village life and conditions in developing countries such as Tanzania cannot favour private ownership of natural resources. Three realities examined here below should be carefully considered before advocating for this property ownership regime (Runge & Humphrey, 1983).

The first reality is that of poverty. Private property ownership of natural resources like that practiced in the West will be expensive to our countries. For the system to work, a village or local authority will require a well developed and funded administered judicial system, capable of adjudicating local disputes. An under-funded judicial system with administrative problems will create more problems such that it might be better for resource management to be left in the hands and ownership of the communities. The fact is that it might be difficult to develop and fund such a system under such poverty scenario.

Secondly, the majority of the people in developing countries live in rural areas. They sustain their lives through the use of resources such as forests, water, land, etc. The distribution of these resources to individuals and the issuing of exclusive user rights might deprive the majority of the people of such resources. The unequal distribution will be enhanced by the fact that a few people with wealth will acquire even bigger shares of the resources in time. Such an occurrence might destabilize the rural areas in resource use and it might be to the disadvantage of resource management.

The third important fact about poverty is uncertainty about one's survival in the face of natural disasters. It is common for crops to fail because of drought or floods. No one is sure that under such calamity he/she will be spared from death. In such situations, developed common property systems can be used to cushion people from such adversaries by assuring inclusion in hard times rather than exclusion from exploiting a resource to sustain life.

The villages where IFRI activities take place and where initiatives for management of forest resources by communities will take place have been formed as a result of the *Ujamaa* policies of 1967. These include the villages which we are now

working with. The villages are Nkwendoo in Nkweshoo Forest, Gwata-Ujembe, Geza Ulole and Maseyu in Kitulang'alo Forest. The IFRI Research programme need to understand the legacy of the Ujamaa policies in villages. For a clear grasp of the importance of this contention, it is instructive to review the formation villages in Tanzania and its legacy

The Arusha Declaration and the Policy of Ujamaa

Ujamaa, a variant of African socialism, is an economic and political philosophy which is claimed to be essentially African in character. The choice of the name *Ujamaa* emphasizes the Africanness of the policies pursued (Nyerere, 1968). *Ujamaa* basically involves building a society on the foundation of Africa's past, with emphasis on certain characteristics such as extended family, co-operation, and concern for the welfare of all members of the community.

Ujamaa required the state apparatus to control the major means of production and exchange, abolish the exploitation of man by man (and thus eliminate social classes), and reduce the income gap between the rich and the poor and between urban and rural areas in the country. It required that economic development be based on self reliance, implying that development be carried out by the people using resources found in the country. Aid, loans, and grants from outside the country were accepted, provided that they did not interfere with the political integrity of the country. Emphasis on economic development was laid on raising the standard of living in the rural areas.

The policy of socialism and rural development entails villagization (living in *Ujamaa* or planned villages) so that the government can provide economic and social services (Nyerere, op. cit.). The objective of the *Ujamaa* villages development strategy was to mobilize traditional communal values for the pursuit of modern development objectives on a national scale. It was primarily geared toward developing peasant farming by adapting traditional values of co-operative production through village co-operatives and the gradual use of modern scientific techniques of cash and food crop production, and thus to improve the incomes of the broad masses of the entire rural community (Chacha, 1976).

One of the major criticisms of the Arusha Declaration advanced by Marxists regarding the Tanzanian socio-economic system is that the decision of the Tanzanian leadership to adopt socialism was not an outcome of a process of revolutionary social change. In other words, it was not a consequence of class struggle. It was also not geared towards a new mode of production and thus did

not alter the existing production relations, that is, the Tanzanian underdeveloped economy vis à vis the capitalist economies of the developed world. In essence, the only change achieved was that of altering the relationship between the state and the enclave sectors of the economy (Loxley, 1979).

The Villagization Policy

The *Ujamaa* policy, which was essentially one of rural development, was based on villagization. It outlined new ways of achieving resettlement, and emphasized socialism as the ideology which would guide socio-economic activities in villages. The policy called for the creation of social relations of production which are co-operative and based on communal property holdings (Nyerere, *op. cit.*).

The initial strategy adopted by the Tanzanian leadership to establish *Ujamaa* villages in 1967 was to let the people themselves decide to establish the villages and the mode of association they desired. An *Ujamaa* village was supposed to be an autonomous entity created and governed by the people who live in it, using their own regulations and by-laws. The responsibility of the government and party officials was to educate the people about living in an *Ujamaa* village and the advantages therein, until the people understood.

The establishment of *Ujamaa* villages on voluntary basis did not succeed because the people moving into them had other motives (Miti, 1982). These included the following:

- a) In cash crop areas and areas of land scarcity, the marginal population viewed the policy of *Ujamaa* villages as a way of enhancing their economic well-being. Thus, when this condition was not met, they had no reason to continue living in these villages, so they left.
- b) Production on co-operative basis had to produce encouraging results. Failure of this led to emigration from the villages.
- c) In areas which were less developed (in comparison to other areas within the country) establishment of *Ujamaa* villages was viewed as a means of enjoying government free socio-economic services. Co-operative production and *Ujamaa* building assumed a second place. Thus, when the expected services failed to materialize, the villages collapsed.

The last factor can be viewed as the most important in the establishment and continual survival of *Ujamaa* villages. However, the area and size of the population

requiring these services were large in relation to the ability of the government to provide them. This led to the collapse of the voluntary establishment of *Ujamaa* villages, prompting the government to order the people in rural areas to live in villages (Lwoga, 1985; Maro, 1990).

Organisation of the village government

The village government comprised a Chairperson and a Village Council of twenty five members. The Chairperson and the members were all elected by the village assembly, comprising all adults of the village above the age of eighteen years. The Council (the village government) was divided into five committees (see Figure 4.1).

Criticisms of the villagization policy

Some criticisms levelled against the villagization policy, which have a bearing on forest conservation, and are outlined below (Omari, 1984; Lwoga, 1982; Mapolu, 1985; Maro 1988, 1990).

- a) The policy of villagization was the same as the one started by colonialists in the 1950s (except there was less mechanization), continued by the independent government, and later abolished. Thus, rural people could notice the resemblance.
- b) The selection of new sites for villages was mainly guided by availability of services in an area, e.g., existing schools, dispensaries, roads, and water. The importance of large areas of fertile arable land was rarely given consideration.
- c) In some areas, physical coercion was used in moving people to the villages. This caused hardships and destruction of property. The response from the people was hostility, resentment, and despair.
- d) In some cases, those responsible for deciding a new location were vindictive enough to ensure that some of the best buildings in the old villages were demolished as a means of getting even with the wealthy owner. This resulted in hatred.

Villagization and the environment

Many villages were unplanned and had inadequate tree cover and inter house space. In some cases, people found themselves in villages that resembled small

towns, with the houses built very close to each other. In contrast to shifting cultivation, farms had to be used intensively, without leaving them to fallow. Woodfuel had to be obtained from areas around villages. This type of land use caused environmental degradation and severe deforestation around the villages (Mascarenhas, 1979; Kihyo, 1991).

The current situation of villages

The Ujamaa principles of production have long been abandoned in Tanzania. According to the International Monetary Fund/World Bank (IMF/WB), the policy was economically a failure. In 1986, the country entered into an agreement with the IMF/WB to restructure the economy and adopt capitalist principles. Although building socialism is still proclaimed in the constitution (URT, 1998b), in practice Tanzania is a capitalist country. The village structures remain as per the Villages and Ujamaa Villages (Reg., Desg. & Adm.) Act (1975), but in most of them there are no communal production activities at the village level. They have been a failure anyway, and it is only those communal production activities where people organized themselves voluntarily that have been producing positive results (Kihyo, 1994).

The Design Principles and Tanzanian Villages: A Comparison

Below is a comparison between the principles of long enduring Common Property Resources (CPRs) and the situation obtaining in the Tanzanian villages. Materials are drawn from various sources, but mainly from Ostrom (1990) and the Villages and Ujamaa Villages (Reg., Desg. & Adm.) Act (1975).

- *Clearly defined boundaries: Individuals or households who have rights to withdraw resource units from the CPR must be clearly defined, as must the boundaries of the CPR itself.*

The boundaries of a CPR need to be defined for the benefit of the owners, but also to facilitate collective action. Owners of a CPR will have their confidence and security of ownership enhanced if it is exactly known where their jurisdiction begins and where it ends. In this way, they can not be afraid to invest their resources in the CPR because of fears of the fruits of their investment being appropriated by others, and they being in a weak position to take action. In extreme cases, outsiders can deplete the resources because they have nothing to lose. Secure boundaries will give the owners powers to take action against any body who violates them. The question of clear boundaries augurs well with the previous assertion that common property is private property, only that in common property the rights are to a group of individuals, and not a single person.

Most villages have got no clearly demarcated boundaries, except a few that have natural features such as rivers and hills as boundary markers. This lack of clear boundaries creates a problem in guarding such resources, as nobody is in charge. The Villages and Ujamaa Villages (Reg., Desg. & Adm.) Act (1975) states that for a village to be registered, its boundaries should be clearly defined.

- ***Congruence between appropriation and provision rules and local conditions:*** *Appropriation rules restricting time, place, technology and/or quantity of resource units are related to local conditions and to provision rules requiring labour, materials, and/or money.*

Rules should be worked out defining appropriation and inputs conducive to maintaining the sustainability of a CPR. The rules should reflect the special attributes of that particular resource. For example, if it is a forest resource, the harvesting of its products should take into account the Mean Annual Increment (MAI), the Current Annual Increment (CAI), and the volumes harvested every year. Rules should be made to the effect that volumes harvested every year do not exceed the MAI. The planting of trees, be they indigenous or exotic, should be aimed at an increase in the wood resources, depending on future expectations. Rules should be made about tending operations such as fire fighting (in the dry season) and weeding.

The Villages and Ujamaa Villages (Reg., Desg. & Adm.) Act (1975) gives powers to Village Councils to make rules. As such, the rules that are conducive to sustainable use of CPRs in villages could be made. Two reasons can be cited to explain why such rules are not in place in many villages. First, colonial administration took control of management of forest resources from communities. Thus, the traditions to manage these resources were not practiced and have died in many parts of the country. However, in some areas such as Shinyanga region, such practices still exist. Secondly, the development of rules at present should take into account modern knowledge in forest resource management. However, rules have been introduced in some places regarding the use of forests. In Mwanihana Forest Reserve and areas of Lushoto district, villages are allowed to collect wood from the forest on specific days and in specified head loads. This is an effort to control depletion of the resource.

- ***Collective-choice arrangements:*** *Most individuals affected by the operational rules can participate in modifying them.*

Individuals who form the CPR institutions are able to change the rules such that they conform to the real world situation as circumstances change. Making sure

that individuals follow the rules (enforcement) is the task of every member. As Ostrom (1990) notes, in the cases described in case studies, no external authority has had sufficient presence to make sure the rules were in use. What was apparent was active investment in monitoring and sanctioning activities.

All villages have democratic structures. The highest body in a village is the village assembly. This is composed of all members of the village who are eighteen years of age and above. Decisions of the village are mostly taken with the sanction of the village council.

- **Monitoring:** *Monitors, who actively audit CPR conditions and appropriator behaviour, are accountable to the appropriators or are the appropriators.*

In most cases, this is feasible in villages where there are people's militia. These militia are villagers and are answerable to the village government. They can therefore be used to monitor the use of forest resources in their areas.

- **Graduated sanctions:** *Appropriators who violate operational rules are likely to be subjected to graduated sanctions (depending on the seriousness and context of the offense) by other appropriators, officials accountable to these appropriators, or both.*

In long enduring CPR institutions, the term "quasi-voluntary compliance" is used. In an attempt to explain the meaning of the term, Levi (in Ostrom, 1990) explains that "quasi-voluntary" is when the noncompliant are subject to coercion. Village governments can impose fines on offenders of agreed-upon regulations. These can be in cash or in kind. Habitual offenders usually pay heavier fines.

- **Conflict-resolution mechanisms:** *Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.*

At the village level, conflicts can be resolved locally through Reconciliation Committees. These Committees are recognized by formal law, and are constituted at the village level by involving the "wise men of the village." Courts at the primary, district, and regional levels can refer a case to the Reconciliation Committee, where mostly traditional laws are used to resolve conflicts. Land and marital conflicts are the commonest. The village Chairperson is the head of these committees.

Village governments sometimes feel the necessity to formulate by-laws, or to

cover certain difficult areas which traditional laws can not. According to the Local Government Ordinance of 1982 (URT, 1982), these by-laws should be approved by the Minister responsible for local governments before they can be operational. In most cases, there has been a delay in the approval of such by-laws.

- ***Minimal recognition of the right to organize:*** *The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.*

The Villages and Ujamaa Villages (Reg., Desg. & Adm.) Act (1975) lists as one of the functions of the Village Council to encourage its members to undertake communal activities. The comparison shows that agreements exceed disagreements in the design principles. The design principles have more in common with the way Tanzanian villages are organized and operate. This requires IFRI research programme to generate data and information that can be used to implement policies that attempt to involve local communities in forest management.

Formation of Forest Sub-committees

- a) In some areas of the country, for example the Shinyanga region, there are still indigenous institutions that regulate forest use in the community.
- b) In the IFRI protocols, identification of Forest Associations is provided for. In villages where there are no forest associations, they will be encouraged to form a committee whose members will be drawn from all the harvesting organizations. This committee will be called the Forest Sub-committee and will be answerable to the Village Council through the Production Committee (see Figure 4.1). The legal and organizational framework exist for the formation of such committees in villages. Part III, section 12 (3) of the Villages and Ujamaa Villages (Reg., Desg. & Adm.) Act (1975) provides for the formation of such committees, thus: "A village Council may establish committees and delegate to such committees any of its functions." Members of the Forest Sub-committee will be part of the Village Council. The forest policy also gives powers to village governments or entities designed by village governments to manage village forest reserves (URT, 1998a).
- c) In a village where there are no harvesting organizations, villages should be encouraged to form Forest Sub-committees elected from the members of the village. In this way, IFRI teams will in their efforts to foster good management of forests held as commons have specific people to work

with in villages. Areas of collaboration will include such issues as drawing management plans, formulating and implementing by-laws where required, drawing forest boundaries, and training.

As part of the IFRI program, pilot studies have been conducted in two forests: Nkweshoo and Kitulagh'alo Forest Reserves in Kilimanjaro and Morogoro regions respectively. In both areas no formal forest user groups were identified. At Nkweshoo Forest Reserve, the village government had formed a forest committee while the villages using Kitulagh'alo Forest Reserve had not formed one. When these users form committees, the IFRI team will work with them to write management plans for their forests and assist in further training on the wise use of their resources.

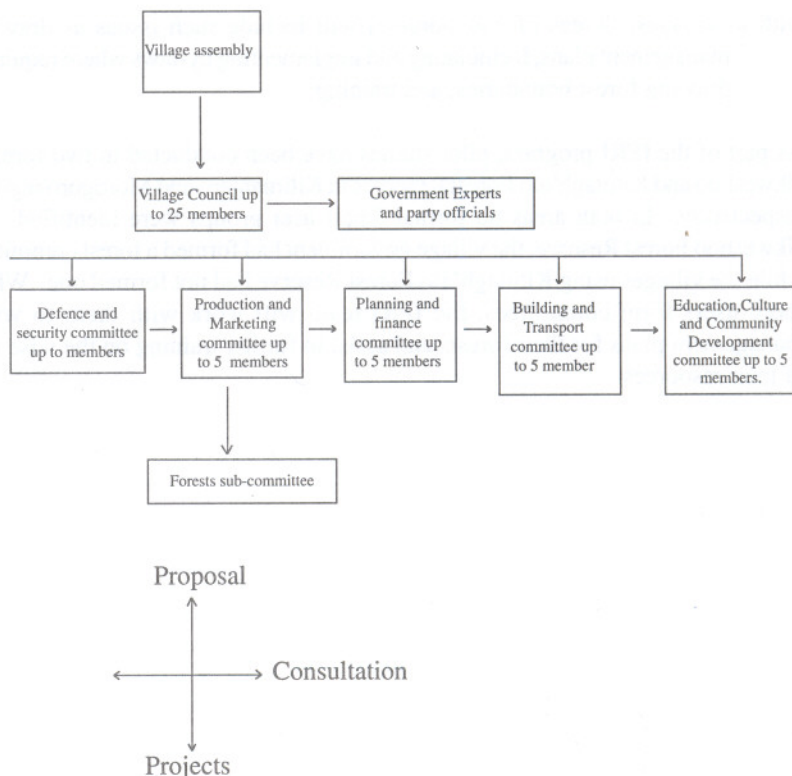


Fig.4. 1: Structure of a typical village and position of forest committee

Conclusions

Past history shows that indigenous institutions for use and management of forests were abolished by colonial regimes. After independence, efforts were not made to reverse the situation, to create a favourable environment whereby people in rural areas could enjoy forest products without interference from the government. The village structure and legal framework, the current forest policy, and the information generated through the IFRI research programme can be used to revive the positive relationship between the people and their forest resources.

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Chapter Five

Institutions and Natural Resources Management Conflict: The Case of Mount Elgon Forest

Paul O. Ongugo & Jane Njuguna

Introduction

Two forest adjacent communities were studied using the International Forest Resources and Institutions (IFRI) research methods and tools (see Annex II). These are Matumbei and Chepkengen settlement communities. Matumbei settlement borders Mt. Elgon National Park while Chepkengen borders the forest reserve. The major communities living in both settlements are the Luhya who comprise fifty percent of the inhabitants, the Sabaot who account for forty five percent, and other tribes-the Kikuyu, the Luo, and the Kisii who account for the remaining five percent of the inhabitants.

Matumbei settlement has a population of about twenty seven thousand inhabitants from about two thousand households. The residents from this settlement derive most of their basic income from subsistence farming. They also rely on the forest for many basic needs such as water, fuel, food, and shelter. Chepkengen settlement is the closest to the Kimothon forest block which is very important for commercial logging of exotic and indigenous trees. The settlement has a population of about forty thousand inhabitants from about six thousand nuclear families housed in approximately one thousand households. The residents of Chepkengen settlement derive most of their basic income from livestock and subsistence farming. The most important food crops grown in the two settlements are maize, millet, sorghum, and beans. Majority of the households consume their own food for about seven months of the year. All households in the two settlements use firewood for their fuel.

Forest Products for the Matumbei and Chepkengen Communities

According to IFRI (1998), a forest product is a resource unit or good that can be extracted from or used in the forest or provided and/or maintained by forest users. Products can be categorized as consumptive plants or plant-like forms and/or inorganic or mineral-like materials, and animals. The local communities represented here by the two settlements benefit from the forest by enjoying its consumptive and non consumptive products. The consumptive products include

trees, grasses, bushes, soils, stones, minerals, water, and wild animals. The non consumptive products are the sacred areas for worship and recreation as well as the peace of mind which the forest environment provides.

According to the communities, the five most important products from the forest are grass, firewood, poles and posts, water, and medicinal plants in order of priority. It is important to note that although logs for timber are harvested in large quantities from the forest, not much timber is used in the two settlements. This is because commercial loggers, who are scorned by the residents, extract trees and process them far away from the communities. The residents are not allowed to cut trees for timber. Direct benefits from the commercial loggers are therefore minimal. These loggers cut huge trees carelessly and leave trails of destruction in their areas of operation. Such activities open huge areas of forest land to encroachment.

The User Groups of Mt. Elgon Forest

The IFRI (1998) protocols describe a user group as a group of people who harvest from, use and/or maintain a forest, and who share the same rights and duties to products from a forest, even though they may or may not be formally organized. What makes this definition different from one that includes a few random individuals collecting miscellaneous items from the forest is that the users know the shared duties and rights that they hold in common for harvesting from the forest. Shared rights and duties may have evolved through customary law and/or been prescribed by a legislative, judicial, or administrative body of a local, regional, or national government (Ostrom, 1995). For an individual to share rights and duties with others, general knowledge of the content of such rights and duties and the legitimacy of their enforcement should be present and understood by all the user groups.

Inhabitants depend on the Mt. Elgon forest resources for their subsistence. Most of these people live within zero to ten kilometres from the forest boundary. They heavily depend on the forest for pasture, poles, posts, water, and game meat. The people have formed themselves into loose user groups. Basing on the information gathered during the survey, the following user groups were identified: herdsman, non-resident cultivators, firewood collectors, pole and post cutters, hunters, water collectors, medicinal plant collectors, and honey harvesters.

Although these user groups are not formal, they know, understand, and appreciate one another's rights to the specific forest products which they depend on for their

livelihood. They are emphatic on the need for their rights to be safeguarded through their participation in rule making and rule enforcement in order to sustain the forest resources. As users of particular forest products, they are concerned about the deteriorating conditions of the forest and they are keen to make their contributions to ensure the sustainable management of the forest resources.

User Group Conflicts

In the last five years some issues have created conflicts among the user groups. The major one was the tribal clashes of 1992 and 1995 which created suspicion among the tribes who live in the area. The herdsmen depend for their livestock on grass from the forest, while the non-resident cultivators would like to use the land for food production. Cattle grazing sometimes means that the herders have to move far and wide within the forest. In some cases, they may even have to cross into a neighbouring country. The Bagisu ethnic group that lives across the border in Uganda usually carries out cattle raids across the border. When such raids occur, communities sometimes end up with complete loss of livelihood which in turn leads to counter raids until peace is restored through traditional ways. This may be by one community paying for the wrongs done to another, e.g., by giving away a specific number of animals.

Both the firewood collectors and pole and post cutters should be eager to increase the number of trees which they can cut for their products. They should actually be working very closely with the non-resident cultivators. However, this has not happened due to two main reasons. One is that no mechanism currently exists through which they can interact as user groups with the same long term interest, and the other is that non-resident cultivators would wish to continue growing food and cash crops on the forest land rather than grow trees for the government. No clear policy for user group involvement in forest improvement and protection exists. The forest guards who are supposed to protect the forest by working closely with the user groups are in most cases hostile to the user groups and tend to pursue their individual interests rather than those aimed at safeguarding the forest resources from wanton destruction (Ostrom *et al.*, 1993).

Analysis of Institutional and User Group Conflicts

Recent interest in the social and biophysical variables affecting forest conditions have focused on population growth and economic activities as social driving forces that have a negative impact on forest biological diversity and environmental condition. Instead of conceptualizing human action as the driving force, it is

more appropriate to think about human choices and the variety of adaptations that individuals may make when population increases and resources become scarce. Institutional arrangements, including land and tree tenure and the role of forest users in the governance of forest resources, have strong mediating roles that need to be taken into account in understanding how human behaviour affects forest conditions (Ostrom, 1995).

The Mount Elgon case provides a situation where both land and forest resources have become scarce under a human population which is increasing at a very fast rate of about four percent per annum. In this part of Kenya, families have adopted a practice where family land is divided among the sons. Two important observations are critical especially where the people entirely depend on land for livelihood. Depending on the agroclimatic conditions, land can be subdivided only to a particular extent after which the parcels become unproductive and cannot provide for a family's livelihood. Second is the issue of gender. The trends in family formation indicate that a ratio of girls to boys in the family is usually one to one. Thus, the land inheritance pattern leaves the girl child landless, thereby complicating tenurial arrangements.

Concluding Remarks

According to the residents of the two settlements, the three most serious problems facing the forest resources are lack of clear policies on resource management and utilization, conflicting legislative and sectoral arrangements, and insecurity caused by illegal fires and cattle rustling. The residents also observed that the above problems can be solved through interventions by both the community members themselves and outside institutions such as governmental and non-governmental organizations. Community involvement through participation in forest management can provide a major impetus towards the resolution of the many conflicts and management problems. Shivakoti et.al., (1997) have observed that instead of simply contrasting community versus state institutions, it is important to break up concepts analytically in order to examine how diverse institutional arrangements shape the exercise of power and allocation of benefits. It is important too, to understand the variety of rules, norms, and actions in user-organized resource management units, and to examine the inner structures of such user groups instead of lumping them all together as one form of community organization.

For the Mt. Elgon case, no formal forest association was found to exist. Korten (1983) noted the lack of an appropriate local organization within the community

as one of the obstacles to ensuring people's participation in development programmes. Community organizational structures ensure that such communities as user groups have competitive bargaining abilities. This is where we require strategies to ensure that both social and economic capacities of communities are enhanced before involving the communities in joint management of forest resources. For such an endeavour to succeed, pilot cases to study and monitor community involvement in projects which address environmental stewardship are extremely important. One major difficulty is how such an arrangement can be pursued: should it be based on the private sector option or on a mixture of the public and private sectors?

Kenya as a developing country is faced with issues of human nature which impact and will continue to impact on the well being of its renewable resources. These issues can be summarized into three major ones as follows:

- **Poverty:** Poverty alleviation is a major concern to the government and people of Kenya. This problem can be tackled by encouraging communities to participate in economic activities. In order to encourage individuals and communities to engage in investment opportunities, an integrated approach to development where a forest resource is the base should consider those economic activities which are both forest and off-forest based. The issue of off-forest activities hence becomes important as a way of controlling deforestation as the activities use non-timber products.
- **Social capacity:** In many developing countries, social capacities to deal with the various aspects of forestry are still very low, especially when dealing with conservation and management. Building of the forest user communities' social capacity through technical training is thus highly imperative.
- **Joint forest management:** Various attempts have been made to bring communities to jointly manage forest resources. In Kenya where most of the forest resources are still in the hands of the government, modalities to involve local communities in the management of forest resources are still being developed. The main issue here is that forest managers must democratize forest governance and make it more people-focused. Such a democratization process will require the liberation of the minds of both the forest users and managers in order for them to appreciate the potential value they stand to gain from this approach to natural resources management.

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Chapter Six

Forest Resource-based Conflicts in Uganda

John R.S. Kaboggoza

Introduction

Conflicts over the appropriation, management, and use of forest resources can pose significant constraints to sustainable forest management. Oftentimes, there are long-standing conflicts between governments, their agencies, the private sector and local communities, as well as among and within communities over resource use and control.

Forest policies, laws and regulations have a considerable impact on the conflicts involving forest-dependent communities, particularly the disadvantaged and marginalized groups. These groups, mostly the poor, women, and indigenous peoples are the most dependent on forests and trees. Policies, along with the laws and regulations enacted to implement them, can mitigate conflicts, create new, or exacerbate existing ones. However, conflicts that involve forest-dependent communities are seldom taken into account when formulating forest policies, an omission that often further marginalizes and disadvantages them.

There is a need to sustainably manage forest resources to provide rural livelihoods, environmental services, and forest and tree products. Participatory forest management is increasingly becoming recognized as an effective strategy to help meet this need. Yet, conflicts over natural resources can hinder sustainable forest management. Such conflicts have always existed, but the speed and magnitude of change associated with global trends have tended to increase them. These trends include globalization, the growing inequity in resource distribution and economic benefits, population growth, and deforestation with associated environmental degradation. Developing procedures that enable all actors to participate in the development, implementation, and appraisal of national resource policies is critical for sustainable forest management.

Forest Resource-based Conflicts in Uganda

There are many forest resource-based conflicts in Uganda. To explore them, it would be necessary that we examine the various forests one by one.

Mt. Elgon national park

Located in eastern Uganda, Mt. Elgon is a heavily forested national park, covering an area of 1,145 km². It was gazetted as a forest reserve in 1938. Between 1938 and 1970, there was no indication of any significant conflict between the forest authorities and local communities. It is also possible that during this period, the need for forest products by the population was easily met by the apparently abundant resources. However, poor or lack of boundary demarcation and weak management by the 1970s resulted in massive encroachment on the then forest reserve. In the late 1980s and early 1990s, a massive operation was carried out by the Forest Department to evict encroachers from the reserve. This was the origin of active conflict between the communities and the forest authorities.

Kibale game corridor

In the 1960s, a few individuals from the over populated Kigezi district in southwestern Uganda settled in the corridor between Kibale forest reserve and Queen Elizabeth national park. By 1986, the population of these settlers had risen to between ten and fifteen thousand people, all of them almost the same ethnic group.

In the early 1990s, through the efforts of the Forest Department and Local District Administration, Cabinet resolved that settlers be evicted and resettled in the adjoining Kibaale district. Contrary to many reports, the eviction was smoothly carried out. The settlers, however, claimed that they were brutally evicted, resulting into loss of lives and property.

Mabira forest reserve

Mabira forest reserve is a natural forest covering 300 km², located astride the Kampala-Jinja highway. Being between two urban centres, the reserve faces heavy pressure from encroachers and illegal users.

During the Idi Amin regime in the early 1970s, government launched a 'Double Cotton Production' campaign which required new land to be opened up for cotton growing. Due to the general lawlessness supported by state agents, encroachment, mainly in the form of crop cultivation started in the forest. By 1986, a physical count revealed that about sixteen thousand encroachers were living within and cultivating the forest. About ten thousand hectares of the forest were found to have been destroyed or seriously degraded. In 1988, on the initiative of the Forest Department, the government ordered all the encroachers to vacate the forest without

preconditions. In less than one month, all encroachers had vacated the forest and returned to their original areas. The conflict situation that was expected did not arise.

Namanve forest reserve

Namanve was gazetted as a forest reserve in the 1950s to cater for firewood and building material needs of the Kampala urban populace. The forest is located about 8 km east of Kampala city centre, and covers a total area of one thousand four hundred hectares. About half of the forest was planted with *Eucalyptus* species by the Colonial Administration in the early 1960s. Management aspects of the forest revolved around the protection and harvesting of the existing crop. No significant new planting was done either by the Forest Department or anyone. By the 1980s, what remained of the forest were huge unproductive *Eucalyptus* stumps.

Most of the Namanve forest was planted between 1990 and 1995 with funds from NORAD. Under this project, six hundred hectares were replanted with *Eucalyptus grandis* and maintained. However, in a major policy shift, private farmers were encouraged to participate in tree planting within the forest reserve on permit basis, and those who were interested were allocated parcels of land ranging from five to thirty hectares. The size of the parcel depended on the farmers' success in planting and maintenance. About sixty farmers and several institutions participated.

The policy change arose out of the realization that the Forest Department and even the project did not have the necessary resources to carry out the planting. Five-year permits were given to interested farmers to carry out the planting with the assistance and technical supervision from the Forest Department. In 1996, however, in yet another sudden shift in policy, the government degazetted one thousand hectares of the forest and converted it into an industrial area, to be managed by the Uganda Investment Authority. This area included most of the private farmers' woodlots. Recently, the government has agreed to compensate the farmers.

Mt. Rwenzori forest

This forest was regazetted as a national park in 1992. As in the Mt. Elgon case, local communities have restricted access to the park's resources. There are also indigenous peoples (pygmies) living in these forests. However, potential conflicts have been overtaken by the civil war in the region.

Mbarara ranching belt

Large areas of land were re-surveyed, mapped out, and allocated to 'progressive' farmers for large scale ranching in the late 1960s and early 1970s. This development locked out the small and free-grazing pastoralists. Restructuring of the scheme, which was embarked on in the early 1990s, has not solved the problem.

Kiboga forest

Immigrants from other districts occupied gazetted forest reserves in Kiboga district, erected residential structures, and opened up agricultural fields. The conflict has been seriously politicized and not properly resolved since.

Major Causes of Conflicts

- ***Access to, ownership, and use of land:*** It is now apparent that because land is inelastic, forest reserves are the easiest alternative to acquire 'free' land for agriculture, industrial development, urban expansion, and other uses.
- ***Changes in government policy:*** Policy changes have been pronounced without any consultation and due regard to other stakeholders. The change of status of the Mt. Elgon forest to a national park was sudden and done without participation or consultation with the local communities, or even the local government. This particular policy change is believed to have been dictated upon government by some donors. Although the legislation sailed through Parliament, press reports indicated that there were dissenting voices from several members of the house.
- ***Lack of alternatives:*** Failure by government and its agencies to consider alternatives for the affected parties has often aggravated the situation. This issue is very pertinent, especially in the Namanve tree farmers' case. Clearly, government (Uganda Investment Authority) had the option of purchasing the adjoining land from private owners to meet their requirements. This was not done. Besides, the line ministry and the Forest Department were taken by complete surprise.
- ***Increase in population:*** This is undoubtedly going to cause more conflict situations as the need for survival becomes paramount. Although modernization of agriculture is a policy priority, food security for the population remains elusive. The situation in the Mabira forest reserve

case is often aggravated by unreliable weather conditions. Existing agricultural practices have exhausted the soils and reduced crop yields outside the forest reserve. So the need to feed the ever increasing population will force more communities into the 'fertile' forest lands.

- **Poverty:** This is possibly the single most important underlying cause of conflict in the natural resource sector. Communities living in proximity to natural resources (forests and wildlife) will continue to rely (legally and illegally) on them for their livelihood and for economic survival. Mabira is under intense pressure in this respect.
- **Ignorance:** Ignorance can be on both the community and government officials. The officials need to understand the community perspective if they are to work together with communities. The community also needs to understand the concept of natural resource use since it may affect national programmes or agendas.
- **Political influence:** This factor has been identified in many of the conflict cases cited above. The recent introduction of democratic elections in the country coupled with monetary and other gifts to the electorate means that conflicts will be exacerbated by political influence. Both local and national politics are equally involved.

Conflict Resolution Mechanisms

Several resolution mechanisms have been tried with different results. Each conflict situation demands a different approach since no two conflicts can be identical. In analyzing the conflict resolution mechanisms employed in these cases, the following general picture unfolds:

- a) Negotiation seems to be the cardinal tool of conflict prevention and/or resolution, and so each party should be prepared to give and take in order to reach an amicable solution. Unfortunately, communities start the negotiation process from a weak point due to ignorance, lack of information, and poor leadership.
- b) The common '*policing*' policy seems to work but only in the short term. Moreover, the accompanying legislation coupled with government bureaucracy often lead to lengthy court proceedings which are usually costly to the central governments.

- c) There is an apparent lack of conflict-handling mechanisms within government structures so conflicts are handled like fire-fighting exercises.
- d) The absence of effective communication channels between the parties compounds the conflict situation. This further leads to failure in feedback or monitoring and evaluation processes.
- e) It has been mentioned elsewhere that civil wars and insecurity inhibit or weaken all conflict resolution attempts.
- f) Decentralization of government services in Uganda does offer some opportunities for resolving natural resource conflicts at the grass-root level. However, it is ironical that natural resources are considered 'national' resources to be controlled from the centre. This completes a vicious cycle between the centre and the grassroots.
- g) Related to this is the restoration of traditional rulers and institutions, which have yet to demonstrate their role in conflict resolution.

On analysis of Uganda's policy framework, the following strengths and weaknesses become apparent:

Strengths

- a) Community participation is emphasized in the policy framework which implies that there should be consultations in the process of policy formulation.
- b) Sustainable development is emphasized which implies that development projects have to consider environmental concerns.
- c) National gender policy urges the formulation of gender-sensitive policies. In the Land Act, for example, the wife has veto powers on the sale of family land.

Weaknesses

- a) Budgets are too small to support full implementation of policies regulating forest related-activities.
- b) Implementation is sectoral in nature, leading to conflicting messages to farmers or communities.
- c) The time frame to change policies is sometimes too long or too short. For

example, the Land Act was rushed before the implementation logistics were carefully considered. A committee has been set up to see how to implement this Act.

- d) At the lower levels, there is lack of knowledge/skills to interpret the existing policies. This is true for both government workers and communities.
- e) Feedback, monitoring, and evaluation processes are very poor. This situation leads to lack of awareness among policy makers of whether the policies are being implemented as proposed.

At the global level, a meeting on the integration of conflict management considerations into national policy frameworks was held in Antalya, Turkey, in October 1997. The meeting sought to identify ways and means of effecting this integration, including both forest and other policies that impinge upon the forestry sector, and to ensure greater participation from forest-dependent communities in the policy formulation processes. A set of guiding principles were developed to help in the management of resource-based conflicts. These guidelines include the following:

- a) Recognition of and respect for local rights, knowledge, structures, responsibilities, and values (economic and non-economic).
- b) Development and implementation of clear and transparent procedures for addressing conflicts, including dispute resolution, negotiation, mediation, facilitation, and adjudication processes that support and build on local mechanisms.
- c) Adoption of participatory processes for development, implementation, and appraisal of natural resource policies that include all users' interests and empower indigenous people, women, and other disadvantaged individuals.
- d) Development and dissemination of information that is clear, accessible, and appropriate in cultural forms.
- e) Encouragement of management for multiple use of forests and trees to meet the needs and values of diverse users, giving priorities to communities and people that are directly dependent on these resources.

As a way forward, the following activities have been proposed and will be funded by the Forests, Trees and People Programme (FTPP) of FAO. The activities will be carried out by members of the FTPP network in Uganda as presented in Table 6.1.

Table 6.1 General Objective: Identifying Appropriate Ways of Managing Conflicts

Priority need	Specific objective	Outputs	Activities
Harmonize policies	Study and compile contradictions within related policies.	Documentation of contradictions.	Meeting with relevant groups: <ul style="list-style-type: none"> • Parliamentary group on natural resources • Related sectors • National workshop
Empowering communities	<ul style="list-style-type: none"> • Develop negotiation skills among communities • Develop a training manual 	<ul style="list-style-type: none"> • Sensitized community reports on conflict negotiation • Awareness on natural resource legislation created • Training manual produced 	<ul style="list-style-type: none"> • Identify needs • Develop training materials • Workshop • Follow-up activities • Adaptation of FAO training manual to Ugandan setting
Communication	Strengthening community mechanisms in a selected community for conflict management	Documentation of: <ul style="list-style-type: none"> • Existing and alternative channels • Appropriate strategies implemented 	<ul style="list-style-type: none"> • Explore relevant traditional community mechanisms • Develop mechanisms for communication in the community through a participatory process.

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Chapter Seven

The Effect of Household Endowments and Entitlements on Sustainable Forest Resource Use and Management

G.N. Nabanoga & W.S. Gombya-Ssembajjwe

Introduction

Forest resources in Uganda serve a number of productive and protective roles such as maintaining soil fertility, preventing soil erosion, and providing a reliable water source, all of which are important for the country's agricultural development. From an economic point of view, tree/forest resources are important to the extent that they can provide direct monetary and social benefits to the local individuals and their community. The capacity of land to produce food and other agricultural products in Uganda has declined, especially in Mpigi district where the protective roles of the forest have been overlooked. The district has a high population density of 250 persons per square kilometre—a density that exerts pressure on the existing forest resources. Large forested areas in this district have been cleared in order to produce food to feed the high population, and cash crops to meet the demand created by market expansion as a result of increasing population in the entire country. These activities are carried out without consideration of the significant role forests play in economic and human development.

Although there is a mechanism for controlled use of state owned forests in Uganda, the lack of enforcement of laws and regulations has, among others, exposed these resources to degradation. In Mpigi district, it is hard to differentiate between gazetted/state forest and open access forest resources.

This chapter analyses the resource endowments and entitlements, as well as the relations between forest resource use and poverty among the residents of the settlements close to Butto-buvuma forest in Mpigi district. Variations between different socio-economic groups and political institutions are analyzed. Similarly, key constraints to improved livelihood are identified in order to investigate whether there are particular economic and social differentiation processes at play. Participatory Rural Appraisal (PRA) was used in the initial stages of the study in order to investigate the socio-economic setting of these communities. A socio-economic household survey was later carried out in four settlements (Buyala,

Kagezi, Nalubugo, and Kisamula). Households were randomly selected from the lists provided by the village/local councilors (LCs). Up to 40% of the target group was sampled to obtain 106 households.

Household Resource Use and Management

Both external forces and internal relationships influence actions and decisions of a household in resource use and management. There are many external forces in this respect, but for the purposes of this chapter, only population growth, tenure issues, market-related conditions, and natural vagaries have been considered. A high population density implies high pressure on the forest resource, as people harvest products such as fuelwood and clear land for agriculture. The 'mailo' land tenure system that obtains in Butto-buvuma means that the 'Kibanja' occupants (tenants) who are the majority have limited rights which entail only 'usufruct' rights, i.e. the rights over the developments on the soil and not the rights on the soil itself.

The settlements that are close to the main Kampala-Mityana highway (Buyala and Kisamula) have better market access for their commodities compared to those that are far off the road. These settlements also fetch higher returns from their commodities, since they are strategically positioned and do not incur extra transport costs to the roadside markets. Lack of marketing information in the area also makes it difficult for the people to transact profitably. Natural vagaries, especially those that are related to climate, cause a lot of uncertainties and greatly affect household decisions. Although the settlements close to Butto-buvuma forest are within the Lake Victoria basin, the erratic rainfall distribution over the area imposes hardships upon the production systems.

Household resource endowments

The main endowments to households include land, capital, labour and wood resources. About 80% of the people are tenants and the rest encroachers on the forest reserved land. During the study, the majority (88.7%) of the people had small pieces of land (an average of 1.6 ha.) on which to cultivate subsistence crops. About 2 % had no land for cultivation at all, and had to depend on food bought from other members of the settlement. About 59% of the settlers had less than one hectare of land. The only ways in which land could be acquired in these settlements included inheriting, buying, borrowing, hiring, forest clearing, and 'taungya' farming in the forest.

On average, land costs US\$ 540 per hectare but it can be hired at US\$ 20 per hectare per season (6 months). Inheritance seems to be the cheapest but most

complicated means of acquiring land. With the increase in the population, however, fragmented land productivity (fragmentation is closely associated with inheritance) has become neither sustainable nor economically viable.

There is very limited access to formal credit and loans by the local people living in settlements close to Butto-buvuma forest reserve. Informally, the local people obtain loans from friends, relatives, or neighbours without any collateral. Those who give loans/credit and those who receive it depend on the socially binding norms to pay back what they owe others. This ensures that there are no loan defaulters. The main source of income for the household is the sale of surplus food crops, which are now scarce due to the increasing population vis-a-vis the declining land productivity. Therefore, the sale of forest products is appearing more profitable especially to the youth due to low investments.

The amount and quality of labour a household accesses depends on how much labour can be mobilized through the members of that household. However, a household can also access labour through hiring from other households, and may also hire out its own labour. The population structure in the surveyed area indicates a very high dependence ratio of 1:1.8. This implies that about 56% of the household members are dependant. This population stratification stipulates a low labour access and a future population increase, projecting towards increased pressure on land and forest degradation. The labour force of the household significantly depends on the 15-64 age group for production. It can also be concluded that it is the same age group that takes part in forest resource use activities and is responsible for forest degradation.

The majority of the households (77.8%) are located less than one kilometre away from the forest. Several settlers can walk this short distance with ease, extracting forest resources on a daily basis. The proximity of the forest is an incentive to the local people to harvest more regularly from the forest without seeking alternative sources/substitutes for the same products. Given the large numbers of individuals depending on forest resources in such circumstances, forest degradation becomes inevitable. There are rules and regulations governing access to the forest though. Free access and usufruct rights are given to women to collect such products as fuelwood, crafts materials, wild foods, and medicines for subsistence use only. In short, the resources needed by a household are functions of the household's subsistence as well as cash needs. Generally, land is limiting since the land holdings of most households are too small to meet even their subsistence needs. On average, households need to increase their current land holdings by about 1.9 ha to be able to reach the national wide average of 3 ha.

Household production processes and entitlements

Through various production processes a household is able to convert its endowments into entitlements. Such processes include land clearing for agriculture, pitsawing for timber, charcoal burning, fuelwood gathering, and pole and non-timber products harvesting. These processes can (and indeed have!) lead to degradation of natural resources, the extent of degradation depending on access to the resources, ecological conditions of particular areas, production systems used by farmers, and other activities of the household that would involve the use of forest products.

A household uses its endowed land, capital, and family labour to produce agricultural products for both subsistence and sale. The quality and quantity of both land and labour determines the output realized from the production activities (Sen, 1981; Ellis, 1988 & 1992; Vedeld, 1995). The fact that the settlements close to Butto-buvuma forest reserve have a high dependence ratio of about 56% means that labour availability for crop production may not be constrained but the productivity per labour unit utilized is highly reduced. Moreover, the output for a given household is insufficient, given that the producer-consumer ratio is very low.

Nearly all the respondents (96.6%) claimed that their land was fertile when they first acquired it. The majority of the respondents (91.2%) defined degraded land as land with low crop yields. Only 8.2% defined it as land with reduced crop quality. According to 80.6% of the respondents, a lot of land degradation has occurred in the last five years in all the settlements. As a result of a disproportionate increase in population over land, land fallow periods have been extremely reduced and in most places completely abandoned. The available land size for any given household needs to be intensively worked to be able to produce food to sustain the population. Very little manure, if at all, is returned to the soil after harvesting. Removal from the soil without replacement increases soil mining and hence a great reduction in soil fertility. This explains the 80.6% response that degradation has occurred in the last five years. The decline in land productivity over the recent years has encouraged many households to acquire more than one plot of land for agriculture. This has in turn led to greater fragmentation of croplands and a further reduction in land productivity, given that land holdings in the settlements are small.

The most prominent farming system in the settlements is the home-gardens (mixed cropping). A typical home garden consists of bananas, coffee, and other food

crops such as beans, maize, cassava, sweet potatoes, and vegetables. These crops are generally used to meet both the subsistence and commercial needs of the household. Ellis (1988) defined subsistence consumption as the proportion of farm output that is directly consumed by the household as opposed to the proportion sold in the market. The availability of parallel markets for these crops in the settlements compels farmers to sell part of their subsistence crops.

The forest-related activities carried out by the households in the settlements have serious implications for the quality and quantity of forest products available for consumption for both the present and future generations (Gombya-Seembajjwe, 1990). About 94% of the respondents participate in forest related production activities. These include fuelwood collection, both for subsistence and sale (89% and 22% respectively), charcoal burning (13%), pitsawing (2.5%), and other non-wood harvesting activities (19%). Apart from the women who collect fuelwood for subsistence use, the activities of all the other user groups are illegal.

The user groups comprise individuals from various households who are brought together by common resource use interests. About 80% of the households depend significantly on forest activities to generate subsistence products, particularly fuelwood and non-wood products such as medicines, wild foods, and crafts materials. Almost 60% of the households depends markedly on forest activities to generate household income. The forest activities that generate income, albeit illegally, include charcoal burning, commercial fuelwood cutting, pitsawing, and brick burning. Local brewing and casual labour provision are not very pronounced.

The distribution of income generating activities is shown in Table 7.1. According to the 1991 population and housing census, 90% of Ugandans use wood-based fuel. And although some people in the cities and towns use electricity as fuel, its cost is nevertheless prohibitive for the majority of the urban dwellers.

Table 7.1 Distribution of cash income generating activities in Butto-buvuma, 1997

Activity	% respondents from settlements				
	Buyala	Kagezi	Kisamula	Nalubugo	Total
Charcoal burning	8.8	1.9	6.9	5.0	22.6
Fuelwood selling	6.3	2.5	8.7	5.0	22.5
Sale of foodstuffs	1.3	4.4	3.7	5.2	14.6
Brick burning	7.5	0.0	0.5	0.0	8.0
Local beer brewing	0.6	0.6	3.1	0.0	4.3
Casual labour	1.3	0.0	0.0	0.0	1.3
Other*	7.8	5.9	7.9	5.1	26.7

Source: Survey data

* Mainly sale of commodities in kiosks and off-farm employment

Gross Output Value (GOV) was used to estimate output from various production processes and revealed that food crops contribute the greatest percentage (See Table 7.2). This is because all households in the settlement engage in cultivation as the main production activity. According to Sen (1981) and Ellis (1988 & 1992), a rural household is both a consumer and a producer, making it use its food crops for both cash and subsistence purposes. The major food crops that contribute to the income are bananas, sweet potatoes, cassava, and beans. The main cash crops that have been used to calculate GOV in these settlements are coffee and *Musa* sp. which is used in brewing local beer. Forest products (charcoal and commercial fuelwood) do not prominently feature as major contributors to GOV probably because all the activities are illegal, making the number of participants unreliable.

Table 7.2 Annual GOV for income generating activities in Botto-buvuma, 1997

Source	Households (HH)	GOV (U shs)	Mean GOV for sampled HH	Mean GOV for all HH	% of total GOV
Food crops	160*	240,480,000	1,503,000	1,503,000	87.9
Cash crops	49	21,408,000	438,898	133,800	* 7.8
Forest products	34	11,809,622	347,342	73,810	4.3
Total	160	273,697,622	2,287,240	1,710,610	100.0

Source: Survey data

* Households participate in more than one activity.

Table 7.3 shows the distribution of GOV in the settlements. About 19% of the total households are classified as the most 'well-off' (with an output level > Ushs 300,000) and control about 23% of the GOV. The 'worse-off' households (with an output level < Ushs 100,000) are also about 19% and hold 8% of the total GOV. The 'middle class' households (with output levels between Ushs 100,001 and 300,000) are about 62% and control 69% of the total GOV.

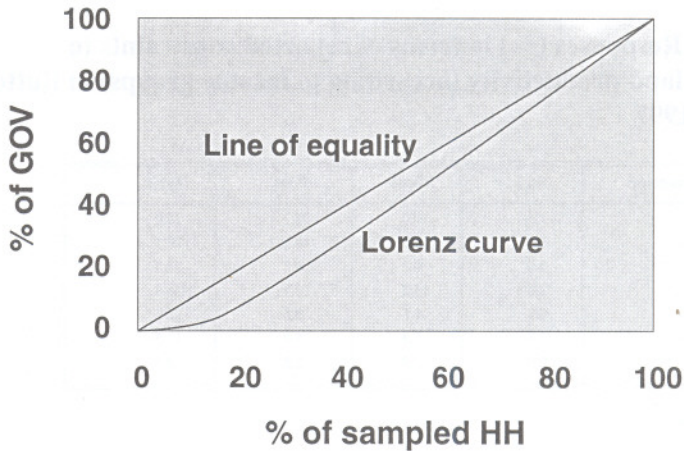


Figure 7.1 Lorenz curve for GOV distribution.

The Gini coefficient which is the ratio of the area between the diagonal and the Lorenz curve is 0.25, indicating that there is no significant difference between the 'poor' and the 'rich'.

Constraints to Resource Use and Management

There are several resource use and management constraints in the settlements close to Butto-buvuma forest. These constraints are reflected in the inability of the people in the settlements to improve the productivity of their land and hence their welfare.

Constraints to improved household production and welfare

Different households have different constraints to improved production and welfare. The fact that over 80% of the households depend significantly on agriculture-related activities for both subsistence and income generation means that important household production constraints are centred on land productivity. About 20% of the respondents indicated having constraints to improved land productivity which include land shortage, diseases and pests, labour shortage, weather fluctuation, low access or lack of inputs, and low access or lack of capital. Detailed responses for each constraint are shown in Table 7.4. All these constraints reflect what Sen (1981) described as production failures since all constrain production processes.

Table 7.4 Responses (%) in terms of reported constraints to improved land productivity (according to income groups) in Butto-buvuma, 1997

Constraints (percentage)	Rich	Middle	Poor	Total
Labour shortage	1.3	10.0	13.7	25.0
Diseases and pests	3.3	6.6	18.1	28.1
Land shortage	0.0	6.2	16.3	22.5
Low land fertility	2.8	13.3	22.7	38.8
Weather fluctuation	0.8	4.7	9.5	15.0
Shortage of capital	1.3	5.3	5.9	12.5
Other	0.0	1.3	2.5	3.8

Source: Survey data

About 18% of the respondents indicated having constraints related to improved welfare. Given that different households experience different constraints to improved welfare, Table 7.5 gives the list of common constraints. The respondents who had no constraints in improving their welfare (3.1%) are the ones that are regarded as well-to-do or better off than the others in this settlement.

Table 7.5 Responses (%) in terms of reported constraints to improved welfare around Butto-buvuma, 1997

Constraints (percentage)	Rich	Middle	Poor	Total
No constraint	3.1	0.0	0.0	3.1
Famine	2.9	5.8	20.1	28.8
Poor health	5.5	8.2	15.1	28.8
Low income	3.6	16.7	33.5	53.8
Weather fluctuation	0.0	9.0	6.0	15.0
Land shortage	0.0	4.2	13.3	17.5
Other	0.0	3.2	3.2	6.4

Source: Survey data

About 54% of the respondents indicated low income as a problem to improving household welfare. This implies that land-related activities such as crop production do not generate adequate income for the household. The endowment failure is thus related to access to land.

Table 7.6 Distribution of land in the settlements around Butto-buvuma, 1997

Land holdings (ha.)	Total land (ha.)	Average land area	% of land (ha.)	Total households	% of households
0-0.5	11.9	0.2	7.5	40	36.0
0.6-1.0	20.2	0.3	12.7	26	23.4
1.1-1.5	19.2	1.3	12.0	16	14.4
1.6-2.0	24.8	1.6	15.6	14	12.6
2.1-2.5	9.3	1.1	5.9	4	3.6
2.6-3.0	5.6	0.8	3.5	2	1.8
3.1+	68.0	1.05	42.8	9	8.1
Total	159		100	111	100

Source: Survey data

Figure 7.2 below shows the Lorenz curve for the distribution of land in the sampled area, indicating that there is a great inequality in land distribution, with a Gini coefficient of 0.54.

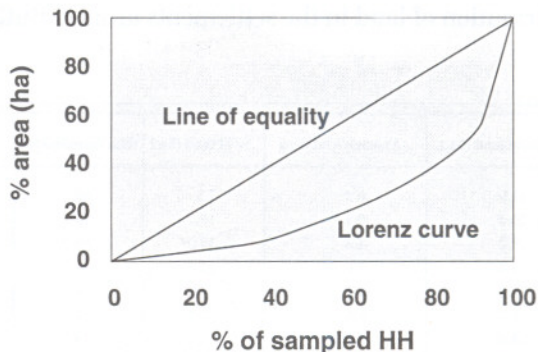


Figure 7.2 Lorenz curve for the distribution of land

Since as much as 90% of the GOV is generated through agricultural production, it would be reasonable to infer that the amount of GOV generated should be directly proportional to the size of land holding for the households. This, however, is not the case in the surveyed area. The land holdings in the settlements are too small compared to the generated GOV. The probable reason is that with increased land scarcity, households efficiently and intensively use the limited available land to generate values by increasing productivity per unit area. If this is the case, then it would support the thesis that as land becomes more scarce, land degradation will be halted.

From Table 7.6, it is evident that a mere 8% of the sampled households own about 43% of the land while 36% of them occupy only 12%. This implies that over 80% of the households have to seek alternative sources of income other than rely on land.

The entitlement failure is related to exchange failures due to constrained crop marketing systems in the settlement. There are also transfer failures, mainly created by limited output and the break down of some social systems that used to ensure transfer of entitlements. The majority of the farmers lack adequate marketing information and the lack of co-operatives to standardize crop prices, inputs, and outputs makes the marketing of agricultural produce less profitable. This is mainly attributed to state failures since it is the state that should provide extension services to the rural communities. These types of failures are common in most developing counties where rural market systems for agricultural produce are not well developed (Convey, 1995).

Since forest related activities are important for income procurement but contribute only 4.3 % of the GOV, then several constraints related to access, use, and sale of forest products are not uncommon. Most of these constraints are related to both informal and formal institutional arrangements.

Constraints to improved environmental conditions

The fact that more than 80% of the households in Mpigi district still rely on nature to meet their agricultural production needs and over 90% rely on nature for energy makes maintenance of environmental quality difficult. As long as local people have no alternative access to endowments that would substitute natural resources, the degradation of natural resources such as forests cannot be avoided. However, it is possible to extract goods and services from natural resources in a more environmentally friendly way.

The enforcement of rules and laws for access and use of natural resources by the state have not been effective, thereby rendering the would-be state governed property de facto open-access. This process, observed in many developing countries (Shanmugaratnam, 1996), signifies the failure of both informal and formal institutions to manage and monitor natural resources such as forests.

Household Diversification

Households respond to increasing scarcities of endowment access. They also respond to endowment and entitlement failures by indulging in alternative activities that would enable them acquire essential entitlements for their livelihood. Household diversification possibilities depend upon agricultural production and utilization of forest resources. Most of the households (about 94%) in the settlements close to Butto-buvuma forest depend on agriculture to generate their income. This means that land is a very important endowment in these settlements.

The limited landholdings implies that most households have to diversify their production activities so as to be able to meet their subsistence and cash needs. The diversification process must markedly depend on the households' differences in income. The income differences are also linked to household resource endowments and how these households diversify their resource use on the different income generating activities. Table 7.7 shows the distribution of resource endowments and some household characteristics for different income groups. Households with the highest GOV systematically have greater access to all endowments. Households with more people who can work on the farms (family labour) are relatively 'better-off' compared to the average rural household.

Table 7.7 Distribution of resource endowments and some household characteristics for different income groups

Endowments/household characteristics	Income groups		
	Rich	Middle	Poor
Land (ha)	8.4	1.8	0.5
Labour (average per household)	4	3	2
Use of hired labour	2	0	0
GOV (Ushs)	2,156,143	1,888,514	693,367
Age of household head (yrs)	54	46	31
Male-headed household (%)	89	78	67
Female headed (%)	11	22	33
Household size	8	6	5
Education (yrs of school)	5	7	3
Religion (% Catholic)	56	62	57
Tribe (% Baganda)	100	94	90
Migrants (%)	22	42	32

Source: Survey data

However, the dependency ratio (*c/w*-ratio) is the same for the rich and middle income groups (2:1) but higher for the poor (2.25:1). The 'well-to-do' households have more land and can therefore obtain more income from both food and cash crops. Despite the limitation on land for most middle and poor households, their dependence on income from food and cash crops is crucial since they contribute more than 90% of the total GOV. 'Well-to-do' households also depend on other sources of income outside the settlements. These include business investments in the main urban areas, including shops, kiosks, and transport business. The income generated from these activities was not quantified and therefore not included in the generated GOV because those involved were not willing to disclose what they earn, alleging that they do not keep records. The poor households indulge more in forest related activities to generate income (See Table 7.8) because the investment involved is 'minimal'. That is, they invest their labour only since all activities are illegal.

Table 7.8 Relative importance of production activities for different income groups, 1997

Income group	Food crops		Cash crops		Forest resources	
	Ushs '000,000	% of GOV	Ushs '000,000	% of GOV	Ushs '000,000	% of GOV
Rich	103.4064	43	11.7744	55	0.590481	02
Middle	88.9776	37	8.5632	40	4.723849	40
Poor	48.0960	20	1.0704	05	6.495292	55
Total						
GOV	240.4800	100	21.4080	100	11.80962	100

Source: Survey data

Household differentiation/consolidation

Different households adapt differently in different social settings. The way households progress over time can be summed up in what is referred to as the differentiation-consolidation dichotomy (Ellis, 1988), occurring in the form of processes of social change (Vedeld, 1996). Two different scenarios for social change have been considered. The first is the social differentiation scenario in which the community disintegrates into two classes—one of rural landless wage labourers and the other of larger capitalistic farmers (Ellis, 1993). This scenario thrives on three assumptions. First, that there is private ownership of land. Second, that some households abandon their land holdings as a result of competition in production. Third, that farmers lose their assets through debts and increasing wage employment.

The second scenario is one of social consolidation where there is no marked differentiation into classes. This is so because the household is mainly interested in reproducing itself in a social setting with less emphasis on capital expansion, and with institutional constraints inhibiting capital access (Vedeld, 1996). This scenario, too, is built on three assumptions. First, that land subdivision through inheritance counteracts concentration of land. Second, that labour use is intensified through self-exploitation. Third, that large capital investment on farms is not attractive as an investment objective.

In the settlements surrounding Butto-buvuma forest there is private ownership of land. This tenure system implies that with an increase in population, there will be increased land sub-division through inheritance, thereby counteracting

land concentration-a thesis for social consolidation. The survey did not have a detailed investigation of loans and credit schemes. It was found out, however, that there were no formal credit facilities, and although informal credit systems existed, they were not widely used. Wage employment was not significant in these areas since most of the poor households risk their labour into illegal forest production activities. The findings show that only 2% of the better-off households hire labour.

Despite the limitations in endowments, the households still survive and therefore simple reproduction is accomplished. The high level of forest production activities indicate that the households are not living off their farms alone. This suggests that intensification of self-labour is needed for forest production activities. It is also reasonable to assume that there is no land accumulation among the rich income group, as only two households had land more than 10 ha. Land has been greatly subdivided through inheritance (the data show that about 36% of the households have land holdings below 0.5 ha.). Most households lack the capital to invest since what they produce is barely sufficient for their subsistence consumption.

From Table 7.7, it is evident that the poor households are generally those that have been recently established, are female headed, or have low access to both labour and land. This means that over time, these households could be forced to sell the little land they own if it becomes insufficient for subsistence survival, thereby rendering them landless in the long term-a thesis for differentiation.

The existing Mailo land tenure system culturally allows people to pass on land through inheritance and prohibits its sale outside the clan. This protects the households from becoming landless and therefore encourages social consolidation. However, the practice encourages land fragmentation to holdings of uneconomical sizes thereby discouraging commercial production.

According to the survey data, there is a marked diversification of activities as a result of differences in access and utilization of resource endowments. Settlements close to Butto-buvuma forest display an adaptation trend that is between social differentiation and consolidation trends. In the short run, the settlements may have a socially consolidated trend but which may differentiate in the long run as the rich households get richer and the poor ones poorer. The data collected was not sufficient for making strong conclusions on aspects related to definite processes of social change. This is mainly because the data lacked comparisons of activities over time.

Given this empirical situation, it is inevitable that over 90% of the local people in the settlements close to Butto-buvuma forest reserve will continue to depend significantly on the forest to generate their entitlements. The fact that the forest resource is also being degraded by continuous utilization makes household diversification in forest resource use a necessary component. The utilization and management of the forest resources, however, depends significantly on the institutional arrangements that are in place for the use and management of these resources. It is important to note that most of the activities taking place in the forest are illegal as a result of land shortage and increased demand for subsistence products. But more importantly, it is because of the breakdown in the monitoring and enforcement structures for the laws governing access and utilization of the forest resources. In this regard, the institutional arrangements for forest resource use and management are considered.

Conclusions and Recommendations

In this survey, we set out to investigate the present adaptation of households to resource use and management. This entailed an investigation into the external factors affecting household resource access and use, access to endowments, use of entitlements, constraints to improved welfare, as well as the diversification and differentiation processes for the households over time.

Household adaptation in settlements surrounding Butto-buvuma forest is partly a function of the extent to which resource endowments such as land, labour, capital and forest resources are accessible for the production of entitlements by the household. From the survey, it is evident that land is a major limiting factor. The average land holding for the four settlements was 1.6 ha and more than 70% of the respondents had land holdings below this average. There is inequality in land distribution—only 8% of the households occupy about 43% of total land in the surveyed area. Capital is also insufficient and there are no established credit facilities available in the area. More than 90% of the households' production processes are dependent on family labour which is relatively scarce, given the dependency ratio of about 56%. The limited access to land and labour has driven local people into excessive exploitation of forest resources.

The majority of the respondents (94%) in this survey had farming as their main production/economic activity. Households with more land and labour had a significantly higher GOV since both food and cash crops generate about 95% of this GOV. Land and labour, among other endowments, were shown to be very important diversification factors in the settlements. Poor households have

diversified their production activities through the utilization of forest resources, which is itself labour intensive. For the poor income group, food crops generate 20%, cash crops 5%, and forest resources 55% of the GOV. On the whole, about 80% of the households depend significantly on the forest to generate subsistence products, particularly fuelwood and non-wood products such as medicines, wild foods, and crafts materials. About 60% of the households depend significantly on forest activities to generate household income.

The well-to-do households are not motivated to invest in agriculture because the production process is largely nature-dependent and its profitability very low. Wage employment is not common basically because of two reasons. First, the poor households intensify their labour use through self-exploitation in most production activities, especially forest-based ones. Second, the rich households place their investments outside agriculture. Markets for production outputs are imperfect or less apparent and there are transfer, exchange, as well as distribution failures. This shows that the extent of 'inequality' among households is not so pronounced and that there is a stable community with respect to market pressures.

In light of the foregoing, the following can be recommended:

- a) Credit facilities should be extended to poor households to enable them invest in land and improved farming systems such as zero-grazing and agro-forestry.
- b) In order to achieve sustainable agricultural production, there is a need to classify the land according to its potential for production of different crops. This is likely to reduce on 'mining of the soil'
- c) Prices for both agricultural and forest products are set by buyers to the disadvantage of the producers (the households). Therefore, there is a need to sensitize households on negotiating for reasonable prices for their products.

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Chapter Eight

Commercial Farm Forestry: An Alternative Tree Stock

M.O. Athieno Mwebesa & W.S. Gombya-Ssembajjwe

Introduction

Uganda is endowed with favourable climatic conditions, both for agricultural production and tree growing. As a result of the high demand for forest products for energy, construction, transmission, and furniture, farmers are turning to forestry and forest tree growing as an income generating activity. Therefore, the motivating force for the farmers to invest in forestry or tree growing is largely monetary. They earn significantly from firewood, poles (building and transmission), and fence posts. Over 70% of the supply of these products has hitherto been from natural forests. This implies, however, that there is enormous pressure on these forests.

Peri-urban plantations and Integrated Pilot Wood Farms Project

Officially, forest development and management have been taking place in urban and peri-urban areas in Uganda since the early years of the Forest Department (established in 1898). Over 10,000 ha of land in and around urban centres were initially planted with sawntimber and fuelwood species such as mahogany (*Khaya* and *Etandrophragma* sp.), Muvule (*Milicia excelsa*), Nkoba (*Lovoa* sp.), and Elgon Olive (*Olea* sp.). Gradually, these areas were planted with Eucalyptus to meet the urban fuelwood needs. Currently, some 10,500 ha. of hardwood (*Eucalyptus*) plantations have been planted in urban and peri-urban areas (Forest Department, 1994).

Unfortunately, during the long political turmoil that reigned in the country between 1971 and 1985, uncontrolled clear felling of forests took place on a large scale without replenishing. Forests were harvested prematurely and indiscriminately, and many individual stumps lost vigour or died. This period was characterized by poor management of forests, poor staff performance, encroachment, and a general breakdown of law and order. All these socio-political problems led to the destruction and hence depletion of the earlier planted hardwood forests. Consequently, the pressure on the existing natural forests increased, prompting the Forest Department to initiate the Peri-Urban Plantations Project (PUPP) in 1989 to reduce this pressure. The project benefitted from the Norwegian Agency

for Development Cooperation (NORAD) financial assistance. The recommended tree species were *Eucalyptus grandis* for the wetter areas, and *E. tereticornis* and *E. camaldulensis* for the drier areas. *Eucalyptus* species were recommended basically because of their favourable properties, which included the following:

- a) ability to adjust to a wide range of sites;
- b) fast growth rate and ability to coppice;
- c) straight bole and narrow crown which allow dense spacing and thus high biomass yields; and
- d) crown casting of a minimum of shade, allowing other vegetation and crops to grow underneath if grown at a wider spacing with *Eucalyptus*.

Moreover, *Eucalyptus* species have a wide range of uses (Poore & Fries, 1985). These include poles for building construction and power transmission, wood for pulp and paper, firewood and charcoal, furniture, hardboard, and particle boards.

The PUPP is responsible for the establishment of government plantations and the Forest Department for leasing the 'forest' land to the public. The land is leased at Ushs 1,000 per ha. per annum for the establishment of woodlots by farmers. Private wood farmers are encouraged by the PUPP staff to use the taungya system (growing of seasonal agricultural crops in a woodlot/plantation) so as to reduce establishment costs. Therefore, the objective of the PUPP is basically threefold.

It consists in the provision of the following:

- a) wood energy in the form of fuelwood to the urban populations. This prevents the destruction of natural forests to meet this need;
- b) building poles to the urban poor for the construction of their dwellings as well as to the construction industry in towns and surrounding areas; and
- c) additional income to the urban poor who participate in the private woodlot farming scheme.

The PUPP target group consists of the Forest Department staff, the urban poor, and people in the project areas who can turn tree planting into a major source of income. The first phase of the project covered the districts of Kampala, Jinja, Mbarara, Mbale, Tororo, and Arua. These districts were chosen largely due to the acute fuelwood and pole shortages, and the generally degraded environment in the areas. The project is now in its second phase and has expanded to cover other districts as well. However, its set objectives have led to a number of research questions. For example, can poor farmers afford to grow trees for commercial purposes? Is there a capable enough population to constitute an effective market? Is the demand for the various forest

products produced by the private wood farmers effective? Are these farmers realizing profits from tree growing?

In a search for answers to these questions, a study was carried out in Jinja, Kampala, Mbarara, and Masaka districts. The first three districts were chosen because they were covered in the first phase of the project, while the last was chosen on consideration of commercial Eucalyptus growing having started there as early as the 1980s. This was during the CARE Tree Planting Project which set in motion tree planting by many private farmers. This chapter is based on this study.

In Uganda, many private farmers have taken up Eucalyptus growing. This is mainly because of public realization that the natural forests are decreasing at a fast rate and yet the demand for forest products is increasing. The coppicing nature of Eucalyptus trees, the minimal silvicultural management required, and the generally low maintenance costs make it a favourable species for the private farmers. Another important reason is that Eucalyptus is a fast growing tree (rotation of 3-4 years) compared to other tree species which take as long as 25 years to mature. This makes Eucalyptus growing a profitable venture if the farmers are able to sell their products.

Silvicultural operations

Silviculture is an intervention in ecosystems intended to modify the yield of woody species in a desired way (Price, 1989a). While silvicultural practice consists of the various treatments that may be applied to forest stands to enhance their utility for any purpose, it is directed at the creation and maintenance of the kind of forest that will best fulfil the owner's objectives (Julian, 1982). Generally, forest tree growing has got specific characteristics that differentiate it from agricultural productive activities. For example, the production period is very long, forests provide a set of complex benefits, trees are immobile, and are the raw materials and output of forest production (Gregory, 1987).

These attributes affect the individuals' motivation to carry out forest activities in a rational and reasonable manner. For example, the first variable creates an obstacle to human willingness to invest costly resources in forests. In light of alternative investment opportunities, individuals would invest their limited resources in those ventures offering early and high returns to them. The second variable is likely to frustrate investors, as forest management for specific products is discouraged. The third one indicates that the pricing of primary forest products such as firewood

highly depends on the location of the forest. The fourth variable creates conflicts in the use of forest trees. When a tree is harvested for firewood, for example, it is at the same time destroyed and is no longer available for other uses e.g. fruit harvesting, now and in the future (Gombya-Ssembajjwe, 1996). This implies that a set of complex silvicultural operations is involved right from growth of seedlings to harvesting of products.

However, operations vary according to the tree species involved, although some, such as site preparation, planting, weeding, maintenance, and protection have to be applied in all cases. For instance, the PUPP project recommended tree spacing for *Eucalyptus* is 2m by 2m, resulting in a planting density of 2,500 trees per ha. However, outside the project areas farmers use various spacing. In Masaka district, many tree farmers use a spacing of 2.4m by 2.4m, resulting in a planting density of 1,728 trees per ha.

Consumption of forest products

Consumers tend to react differently to price changes. Normally, when prices are high people will consume less per unit quantity and vice versa. Similarly, people with high income are likely to spend more on the purchases they make. However, this might not be the case with forest products, as low prices might be indicative of poor quality. This is the principle of elasticity which is a measure of the degree of responsiveness of the quantity demanded of a good to changes in its price and in income respectively. Therefore, low prices alone may not induce consumers to take more of say firewood. People with high income are unlikely to spend on certain forest products, provided there are available substitutes.

In addition to prices, therefore, consumption of forest products depends on the availability of substitutes and/or complementary goods. It also depends on the derived demands. For example, if there is increased demand for cooked food, the demand for firewood is likely to increase as long as there are no substitutes available. A consumer will make his/her choice in such a way that he/she is able to achieve the highest satisfaction from such a combination (Johnson, 1990; Henderson & Quandt, 1980). But all this is based on the assumption that the consumer is aware of the alternatives he/she is faced with and is capable of evaluating them in light of the constraints imposed by the income resources.

Marketing

Marketing is the process of determining consumer demand for a product or service, motivating its sale, and distributing it into ultimate consumption at a profit (Abbot

& Makeham, 1988; Johnson, 1990). It exists when buyers wishing to exchange money for goods or services are in contact with sellers wishing to exchange the goods or services for money (Johnson, 1990). Therefore, it is a system of inter-communication or a network of dealings that exists to enable buyers and sellers of goods, services, or resources make contact.

Pricing

Price is the amount of money one must pay to obtain the right to use the product, sometimes serving as a signal of quality. A product priced 'too low' might be perceived as having low quality (Hawkins, Best & Coney, 1995). The price of a product in an open market is basically controlled by supply and demand. If the supply of a product is small and many people want to buy it, the price will be high. When it is plentiful and there are few buyers, its price will fall. The private wood farmers would rely on a pricing system that depends on the prevailing market conditions. This means that they must be knowledgeable about the markets for the forest products.

Financial analysis

The profitability of investment in tree resources can be assessed using the flat-rate stumpage (price of a standing tree). However, this method makes low-value tree resources unprofitable (Price, 1989a). A flat-rate stumpage per tree would make small trees very unprofitable but would have little effect on profit from large trees. Since forestry is a long term investment, costs occur and revenues accrue over a long time. Therefore, it is necessary to compare the revenues and costs accruing to the investor at different times. This comparison provides for a criterion for profitability which dates back to the 19th Century German Forestry Economics and has been used for example by Lenschner (1984) and Klemperer (1996) to determine the present value.

Investments in natural forests would give positive returns at very low interest rates. For example, Price (1989 b) argued that even at a discount rate of three percent, returns from investment in natural forests in Continental Europe and the Indian Sub-continent failed to justify the early costs. Akode (1991) attempted to determine the profitability of industrial tree growing in Uganda using an economic rate of return of fifteen percent-a rate applied by the World Bank in 1987 to implement the Uganda Forestry Rehabilitation Project-and a stumpage price of Ushs 2,600 per m³ of first class wood of *Cupressus lusitanica* grown at a rotation

of 25 years, and obtained a net present value (NPV) of Ushs -124,920. To have a positive NPV, stumpage price had to be increased by one hundred thirty five percent. At that price very few Ugandans would afford to buy processed wood of Cypress. However, Gombya-Ssembajjwe (1999) followed the Leuschner (1984) and Klempere (1996) application to determine the profitability of *Eucalyptus* growing in Busiro county, Mpigi district. His results revealed that at ten percent rate of interest *Eucalyptus* growing was profitable.

Study Findings

Socio-economic characteristics of Eucalyptus farmers

Out of two hundred and forty *Eucalyptus* farmers, sixty were interviewed, fifteen in each district. The results concerning their socio-economic characteristics are as shown in Table 8.1.

Table 8. 1. Socio-economic Characteristics of Private Wood Farmers

District	Land tenure			Gender		Income status		
	Lease	Customary	Other	M	F	High	Mid	Low
Jinja	12	3	0	13	2	0	15	0
Kampala	14	1	0	14	1	3	12	0
Masaka	0	12	3	15	0	1	14	0
Mbarara	12	3	0	14	1	1	14	0

The majority of the private wood farmers (80% in Jinja, 93% in Kampala, and 80% in Mbarara) used leased land from the Forest Department. In Masaka district, eighty percent of the private wood farmers used land that was held under customary tenure. The majority of the tree farmers were male. In Jinja district, there were two women groups (one group with eight members and the other with ten) involved in *Eucalyptus* tree growing. For our purpose these two groups were considered as two farmers.

There were many women involved in *Eucalyptus* growing in Jinja district because forestry extension service is more effective there than in the other districts. Secondly, women are better mobilized in resource pooling groups than elsewhere. Although a few women owned *Eucalyptus* woodlots, most of them obtained benefits from tree growing since they had access to some products such as firewood for

domestic use. The marketing of the products was done by men who decided on which product and how much of it to sell, at what price and how to spend the cash obtained. In all the districts the private wood farmers were either public servants (both retired and serving), some of whom were business people. Low income earners could not afford such investments due to the high establishment costs. Record keeping was very poor in all cases.

Forest products

The private wood farmers are product-oriented. There was, thus a need to determine what products were on demand and what factors affected their marketability in order to determine the profitability of investing in Eucalyptus tree growing. Although firewood was one of the major products of these farmers, its demand and supply varied between the districts as indicated in Table 8.2. In Mbarara district, for example, the farmers were not selling firewood. One possible reason was that the trees were not allowed to reach Class III size, the demand for Class II size (poles) being very high. The second reason was the fact that there was a good supply of Acacia firewood from the vast open woodland forests.

Table 8.2. Monthly Sales of Firewood (m³) by Private Wood Farmers

District	No. of farmers	Average volume sales	Price/m ³ (Ushs)		
			Range	Mean	Av.
Jinja	12	500	1,000-5,000	3,000	2,100
Kampala	13	85	1,500-2,500	2,000	2,000
Masaka	7	104	1,500-2,000	1,750	1,800

In Jinja where the demand for firewood was highest, as many as eighty six percent of the farmers converted the whole tree into firewood thereby acting as retailers and/or wholesalers. The total volume of firewood sold per district on a monthly basis was 1,100 m³ for Kampala, 6,003 m³ for Jinja, and 730 m³ for Masaka; and were significantly different ($X^2 = 45.8$, $p < 0.01$). The high amount of firewood sold in Jinja could be due to lack of supply from natural sources. The price range was also significantly different between the districts ($X^2 = 17$, $p < 0.05$).

Poles

Although private wood farmers could produce both building and transmission poles, the demand for the former was higher, and the farmers got cash returns earlier than in the case of the latter. Therefore the results presented in this paragraph are based on building poles (See Table 8.3).

Table 8.3. Monthly Sales of Building Poles

District	No. of farmers	No of poles sold		Price per pole (Ushs)		
		Total	Average	Range	Mean	Av.
Jinja	13	36,800	2,830	300-1,000	650	677
Kampala	15	22,500	1,500	500-800	650	630
Masaka	12	23,240	1,937	200-1,500	850	500
Mbarara	5	6,000	1,200	800-1,500	1,150	1,020

All of the surveyed farmers in Kampala district sold some of their products as building poles. However, only eighty seven percent of the farmers in Jinja, eighty in Masaka, and thirty three in Mbarara sold some of their products as poles. The results showed that the number of poles sold by farmers were significantly different between districts ($X^2 = 63.0$, $P < 0.01$). The price at which the private wood farmers sold building poles was important since poles were the major tree product and would therefore determine whether investing in tree growing was worthwhile or not. There were significant differences in the selling prices of poles within the districts ($X^2 = 41.2$, $P < 0.02$) and between them ($X^2 = 41.2$, $P < 0.02$). This implied that farmers did not follow the Forest Department pricing system.

The Department's pricing system for forest products was a flat rate for plantations of hardwoods and softwoods regardless of assortment, but only varied according to species and size. For example, the price of Eucalyptus poles of Classes I and II was Ushs 700 (US\$ 0.58), while Class III was Ushs 800 (US\$ 0.67). The selling prices largely depended on the negotiating power of the wood farmer and the buyer. The average price per pole was lowest in Masaka where the farmers mostly sold coppices. The demand for poles was mostly by traders from Kampala. Record keeping was very poor and the activity mostly depended on family labour (not valued in monetary terms). Kampala had the second lowest price, probably due to the supply of cheaper poles from other sources such as Kyotera, Masaka, and Mubende districts. Mbarara district recorded the highest average selling

price because Mbarara municipality is developing very fast in terms of trade, commerce and industry. Building poles from Mbarara are also sold in Rwanda and Burundi.

Fence posts

Apart from firewood and building poles, a few farmers in the two districts Kampala and Masaka sold fence posts as well (See Table 8.4).

Table 8.4. Monthly sales of untreated posts in Kampala and Masaka

District	No. of farmers	No of posts sold		Selling price (Ushs)		
		Total	Average	Range	Mean	Av.
Kampala	4	1,300	325	600-700	650	675
Masaka	3	5,500	1,833	500-600	550	533

Farmers sold untreated posts to middlemen at an average price of Ushs 675 and 533 per post in Kampala and Masaka respectively. After treating the posts, these middlemen sold each post at Ushs 2,600 and 2,300 in Kampala and Masaka respectively.

Production cost per tree

Production costs per tree varied from farmer to farmer and district to district because of land tenure, socio-economic, and cultural factors. In almost all the cases, the *taungya* system was practiced in order to help farmers reduce establishment costs (See Table 8.5).

Table 8.5. Costs of Establishing 1 ha. of *Eucalyptus* woodlot

District	Land	Clearing	Seedling	Planting	Weeding	Overhead*	Total
Jinja	1,000	86,667	53,666	13,000	220,000	281,107	651,440
%	0.15	12.69	8.24	2.0	33.77	43.15	100
Kampala	1,000	192,857	175,467	136,250	434,923	139,042	1,079,539
%	0.10	17.86	16.25	12.62	40.29	12.88	100
Masaka	1,000	156,250	100,625	51,250	298,750	50,000	657,875
%	0.15	23.75	15.30	7.79	45.41	7.60	100
Mbarara	1,000	443,538	355,962	28,308	49,636	220,757	1,099,201
%	0.09	40.35	32.38	2.58	4.52	20.08	100
Total	4,000	875,312	685,720	228,808	1,003,309	690,909	3,488,055
Average	1,000	218,828	171,430	57,202	250,827	172,726	872,014
%	0.11	25.09	19.66	6.56	28.76	19.81	100

*Transport, Travel, Supervisory and patrol

The establishment costs in Kampala and Mbarara were higher than the average because the farmers, mostly serving or retired civil servants, relied heavily on hired labour. Overhead costs contributed highest to the total cost of establishing one hectare of *Eucalyptus* in Jinja, while in Kampala and Masaka the highest contributions arose from weeding costs. In Mbarara land clearing costs were the highest. In all cases, the items with the highest costs were mainly carried out by hired labour. In Kampala and Masaka, the weeding costs were high because the *taungya* system was not being practiced. The high cost of seedlings in Mbarara was due to the high percentage of replacing seedlings damaged by termites.

In Jinja, Kampala and Mbarara districts, farmers used a spacing of 2m x 2m, making a total of 2,500 seedlings per hectare. Therefore, the cost of establishing one seedling was Ushs 261, 432, and 440 for Jinja, Kampala, and Mbarara respectively. In Masaka, farmers used a spacing of 2.5m x 2.5m, planting a total of 1,728 seedlings per hectare at a cost of Ushs 381 per seedling.

Profitability of Eucalyptus growing by private wood farmers

Since *Eucalyptus* tree species coppice, they yield products to the investor in perpetuity after every rotation period of about four years. In this study, returns (costs and revenues) were scheduled on a per hectare basis as summarized in Table 8.6 below.

Table 8.6. Summary of Returns for 1 ha. of Eucalyptus for Poles

District	Cost (Ushs)	No. of poles sold*	Av. price/pole	Revenues (Ushs)
Jinja	651,440	2,000	677	1,354,000
Kampala	1,079,539	2,000	630	1,260,000
Masaka	657,875	1,382	500	691,000
Mbarara	1,099,014	2,000	1,020	1,040,000

* The study established that most farmers were able to sell at least 80% of the original stock.

To calculate the PV of a PPA, it was assumed that the farmers had the option of banking their net profit so as to earn some interest (i.e. in the case of a fixed deposit account or investing in *Eucalyptus* growing). In this case interest rates of ten and fifteen were used, since these were the current interest rates for fixed deposits in most commercial banks. Another assumption was that farmers would sell poles only, since most of them invested in *Eucalyptus* for pole production. The results for the four districts, using both bank interest rates for savings (at 10 and 15%) and loans (at 25%) in case of borrowed money are presented in Table 8.7.

Table 8.7. Summary of PV of PPA (Ushs) for Different Interest Rates

DISTRICT	Interest rates (Percentage)								
	10			15			20		
	*Rot 1	Rot 2**	Rot 3**	Rot 1	Rot 2	Rot 3	Rot 1	Rot 2	Rot 3
JINJA	1.53	2.09	1.11	0.93	1.15	0.54	0.48	0.72	0.30
KAMPALA	0.39	1.74	0.93	0.24	0.96	0.45	0.12	0.60	0.25
MASAKA	0.07	0.92	0.49	0.44	0.51	0.24	0.22	0.32	0.13
MBARARA	2.04	3.10	1.65	1.25	1.71	0.81	0.65	1.07	0.44
AVERAGE	1.00	1.41	0.75	0.61	0.78	0.37	0.32	0.48	0.20

*Rot = Rotation

**Rot = 2 is after 8 years while Rot 3 is after 12 years

Note: Cost for Rotation 2 & 3 is 49% of that of rotation 1; while revenue doubles on assumption that 2 coppices are left per stump. Price per pole assumed constant

For example, substituting values in the equation:

$$SA_0 = a (1.0 / (1.0 + i)^n - 1.0)$$

$$a = (1,336,250 - 827,014)$$

$$= 464,236; i = 0.10$$

$$n = 4.$$

$$\text{Then, } SA_0 = 464,236 (1.0 / (1.0 + 0.10)^4 - 1.0),$$

$$= 464,236 (1.0 / 0.68),$$

$$= 1,000,294 \text{ Ushs or US\$ } 833.58.$$

Investment in *Eucalyptus* growing for the production of poles on a rotation of four years were profitable for all the districts combined and for each individual district. However, there was great variation. The low PV for Masaka was a result of low selling prices. As expected for forestry investments, the calculated PVs decreased as the interest rates increased, indicating that investments using loans might not be very attractive to farmers especially in Masaka and Kampala districts, when the loan was to be paid back at an interest rate of twenty five percent. The profitability of *Eucalyptus* growing can be increased with the sale of firewood and fence posts, but the farmers have to wait for two or three more years before earning cash, thus reducing the PVs.

Discussion

Private wood farmers manage woodlots of varied sizes, ranging from one to ten hectares of land. Those with woodlots of up to ten hectares of land are mostly serving or retired civil servants using leased land, and small-scale entrepreneurs using their own land. While the civil servants consider wood farming as a pension scheme, the small-scale entrepreneurs view it as a way of diversifying their income-generating activities. However, the poor and women are not involved in wood farming, mainly because of the high initial investment costs involved in establishing *Eucalyptus* woodlots. But it is also due to the fact that they are not informed owing to the limited extension services in the districts.

Some of the woodlots mature and become ready for harvesting, but the farmers find difficulties in accessing markets for their forest products. This is almost always occasioned by poor roads, absence of market locations, and an extremely

low level of the building industry. The study also revealed that socio-economic factors such as income, population size, and educational level affect the marketing of forest products in one way or the other.

There are some marketing options available to the farmers, e.g., selling a range of different forest products. They can convert a tree into building poles, firewood, and fence posts instead of selling standing trees where they are not able to get the right value for the trees. By adding value to the forest products such as treating the fence posts and building poles, the farmers can manage to attract more buyers. The fence posts can be sold treated with preservatives such as Creosote, Tanalith and Celcure. The average price of a treated fence post is Ushs 2,600 and 2,300 for Kampala and Masaka respectively.

In Jinja and Mbarara there was no farmer selling fence posts. There is in fact no demand for fence posts in Jinja, so trees are converted into the more profitable firewood. In Mbarara, the demand for fence posts is higher than the supply, and is being met by the supply of untreated posts from Masaka. Most of the farmers in Mbarara grow trees in the areas characterized by poor soil, so they harvest the trees before they have reached Class III size from which the posts are obtained.

There are two criteria of assessing the profitability of investment in tree resources. The first is the use of the flat-rate stumpage, i.e., using the price of a standing tree. However, this method makes low-value tree resources unprofitable (Price, 1989a). Since tree growing is a long-term investment, costs occur and revenues accrue over a long time. Therefore, it is necessary to compare the revenues and costs accruing to the investors at different times. This forms the second criterion for profitability.

The ability of *Eucalyptus* species to coppice implies that the crop can be harvested in perpetuity. Experience shows that in Uganda it is possible to harvest from the same stump of *Eucalyptus* tree for more than fifty years if it is well managed. The results of this study confirm what Leuschner (1984), and Klempner (1996) found when they determined the profitability of investment in tree growing (only trees capable of coppicing) using the PV of a PPA. They found out that such investments could bring in a series of positive returns after every rotation period, even at interest rates that would result in negative returns in other forestry investments. The results of this study also confirm earlier findings by Gombya-Ssembajjwe (1999) that investment in *Eucalyptus* growing by a few selected farmers is profitable at ten percent interest rate.

Conclusion and Recommendation

Eucalyptus tree growing in the surveyed areas was generally being undertaken by the middle class men, majority of whom were serving or retired civil servants. Their major objective in this venture was to create for themselves a sort of pension scheme. A few other small-scale entrepreneurs who engaged in *Eucalyptus* tree growing aimed to diversify their income-generating activities. Although the farmers produced a variety of products, building poles constituted the commonest product and were sold to middlemen at tree length measurements.

The major factors affecting the marketing of the products of *Eucalyptus* woodlots were poor record keeping, poor infrastructure, and lack of information. Farmers could improve on the status of their sale returns by diversifying their products or partial processing them instead of selling whole length trees. Their profit margin could be increased by reducing on the weeding costs and keeping records properly for proper determination of selling prices.

In order for the Peri-Urban Plantation Project to achieve its set objectives, the following recommendations need to be taken into consideration:

- a) training private *Eucalyptus* farmers in book-keeping;
- b) encouraging them to form associations in order to capture the benefits of economies of scale, e.g., cheap market information; and
- c) putting pressure on the government to take affirmative action for women and the poor as far as participation in commercial tree growing is concerned.
- d) Credit availability for farmers.

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Chapter Nine

Sacred Forests: An Alternative Way of Conserving Forest Resources

W.S. Gombya-Ssembajjwe

Introduction

Although Uganda is basically an agricultural country, forestry plays a significant role in the country's economy, both in monetary and non-monetary terms. However, the sector's contribution to Uganda's economy is most pronounced in the non-monetary form. The rural communities living in the forest vicinity benefit substantially from a wide range of non-wood products which include roofing materials, natural fibres, medicine, water, and food. Forests have also helped to preserve historical and cultural sites of some communities as well as biological resources.

Forest tenure in Uganda is closely linked to the land tenure systems existing in the country. During the colonial period, a few individuals and traditional local institutions acquired land under the new tenure arrangements (free-hold, lease-hold, and *mailo*) while the majority remained as tenants on public, private, or customary land. The forested areas which were not allocated to individuals were declared forest reserves, and were to be open to the natives for domestic requirements only.

User and ownership rights relating to sacred forests are relatively complicated as they are not officially recognized, yet they are closely linked to the land tenure rights. For example, a land owner has the right to own and optimally manage the forest resource on his/her land, yet users of the same resource have "usufruct" rights. This has in some cases caused conflict in the management and use of sacred forests, and has consequently caused deforestation and loss of culturally important trees. There are no formal systems to regulate the use and management of sacred forests, and the formal arrangement for conflict resolution-the legal system-is not based on the people's cultural values.

Indigenous Technical Knowledge

Indigenous knowledge surrounding natural resource use and conservation is gaining recognition in the management of natural resources. Indigenous knowledge has been defined as a body of knowledge built up by a group of people through

generations of living in close contact with nature (Johnson, 1992). It includes a system of self-management that governs resource use. Banuri and Marglin (1993) make a useful distinction between 'modern' and 'non-modern' knowledge systems. These categories are to be seen as 'ideal' types: all societies employ some combination of these two knowledge systems.

Modern knowledge is based on western science and ideology, and is in a powerful and dominant position in the world today. It is characterized by a belief in universalism, individualism, and objectivity. It also has an instrumental view of nature, and is not connected to a place. Due to its claim to universalism, other knowledge systems are not recognized or, if they are, they are labelled inferior and viewed to be characterized by ignorance or superstition. Within the field of forestry, scientific forestry represents a modern knowledge system. Data are quantitative and are collected scientifically by people who do not use or depend on the resource they are studying. Modern knowledge is reductionist in the sense that elements are separated from each other for the scientist to gain an understanding: connections and links are seldom emphasized. Materialism and emphasis on economic profits are also stressed in modern systems. Modern knowledge is therefore recorded and transmitted through written documentation.

Non-modern (indigenous) knowledge, on the other hand, is embedded in experience and place. Its actions are linked to social, political, spiritual, and moral spheres. By virtue of this embeddedness, indigenous knowledge is bounded by its context. Individuals are seen in context; culture is related to place and linked to nature. This knowledge is based on observation and experience, using a holistic understanding in which all elements are interconnected, and is often transmitted orally. It is an important source of information and knowledge that can help to avoid costly mistakes and assist the traditional groups in their development within their indigenous cultural framework (Gerden & Mtallo, 1990). We must emphasize that both modern and indigenous knowledge systems change and people generally use some combination of the two contrasting systems.

This chapter presents the results of a study carried out in Mpigi district, Uganda. The overall aim of the study was to present an example of a traditional conservation system to the forest management. The specific objectives of the study were threefold:

- a) to illustrate the importance of culture in people's decisions about their forests;
- b) to show the biological and ecological importance of sacred groves; and

- c) to learn from local institutions, building on their knowledge for possible improvements on the management of both sacred forests and other forest systems.

The study was carried out on thirteen privately owned cultural forests (sacred groves) in central Uganda (See Figure 9.1). These sacred groves are located in Mpigi and Mubende districts. Twelve of the groves are located in Mpigi district alone. The southern portion of the district lies just north of the equator, while the north-eastern part encloses Kampala district, the capital of Uganda. The district is subdivided into 1311 villages found in five counties, covering a total area of 6220 km². Fifty percent of the total arable land is in agricultural production. The major economic activities in the district are agriculture and livestock raising. Crop rotation is commonly used in agricultural fields, and commercial agriculture is almost non-existent (Fendru, *et al.*, 1988). Forests cover about 360 km², and are scattered throughout the district. Most of these are government forest reserves. As earlier noted, however, this study was based on the smaller, non-state owned cultural forests that are on the land classified as agricultural land. The total area covered by these forests is not known: the Mpigi District Forest Office is currently compiling a list of private natural forests excluding the sacred forests.

A reconnaissance survey was carried out in order to locate the sacred groves in the district. The identification of the forests was done with the help of the elders, traditional healers, and the youth from within the community. Contacts were made with various village officials who were briefed on the purpose of the study, for identification of the possible respondents. Participatory Rural Appraisal (PRA) methodologies were used to obtain sociocultural information. In-forest sampling was also carried out to collect biological information on the forests.

The sacred forests are concentrated in three of the five counties of Mpigi district (See Table 9.1). These three counties are considered to be the original counties of the Ganda ethnic group. One forest, Kintu, is situated in Busujju county, Mubende district. This forest was selected because it is considered by the Baganda to be the original sacred forest in Buganda. It is the forest where Kintu, the first king of Buganda, allegedly got lost (Kaggwa, 1971).

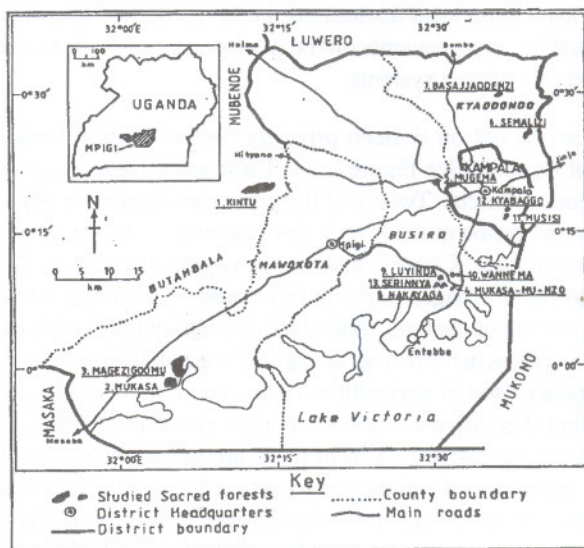


Figure 9.1. Map of Mpigi District showing the sacred forests studied.

Occurrence of the Sacred Forests

The sizes of these forests range from 0.02 to 10 ha. However, their significance surpasses their small size. Table 9.1 shows the sacred forests: their location, size, and whether or not they are under threat of deforestation. Although sacred forests are not of much economic importance, they have undergone-and still do-deforestation (Gomba-Ssembajjwe, 1997). Serinnya, Kyabaggu, and Musisi sacred forests have almost “disappeared,” yet the areas where they were located are still referred to as forests by the local people. This is because the people still use these areas for the same functions as before. Kintu, Semalizi, Magezigoomu, Mugema, Mukasa, and Mukasa-mu-Nzo have not yet been threatened by deforestation.

Table 9.1. Sacred Forests

Forest	County	District	Size (ha)	Deforestation threat	Deforestation type
Magezigomu	Mawokota	Mpigi	10.0	no	none
Kintu	Busujju	Mubende	3.0	no	none
Mukasa	Mawokota	Mpigi	1.0	no	none
Mukasa-Mu-Nzo	Busiro	Mpigi	0.2	no	none
Mugema	Busiro	Mpigi	0.2	no	none
Semalizi	Kyaddondo	Mpigi	0.3	no	none
Basajja-ddenzi	Kyaddondo	Mpigi	0.05	starting	sand mine
Nakayaga	Busiro	Mpigi	0.2	starting	tree harvest
Luyinda	Busiro	Mpigi	0.1	starting	tree harvest
Wannema	Busiro	Mpigi	0.1	starting	agriculture
Musisi	Kyaddondo	Mpigi	0.05	yes	housing
Kyabaggu	Kyaddondo	Mpigi	0.02	yes	housing
Serinnya	Busiro	Mpigi	0.05	yes	housing

The Management of Sacred Forests

The management of forests by communities or individuals entail different types of controls. Sacred controls are one such important type used to manage sacred forests, a method that influences other material and economic uses of the forests.

The management patterns of the sacred forests revealed characteristics of the non-modern system of knowledge discussed by Banuri and Marglin (*op. cit.*). Management knowledge is embedded in community experience and is often linked to spirituality. Spirituality within African religions emphasizes concepts such as kinship, unity, mutual respect, collaboration, brotherhood, and living in harmony with the environment (Our Culture and the Environment, 1991). The context in which each forest is placed is crucial, as different historical events or beliefs determine the specific rules and management patterns surrounding each forest. These rules and patterns are transmitted orally, another characteristic of non-modern knowledge systems.

The sacred control mechanism

Sacred controls are defined as norms based in religious beliefs and enforced by their internalization, community sanction, or religious leaders (Fortmann and Nihra, 1992). Sacred forests are of great cultural and historical values for families, clans, and tribes. They are governed by cultural beliefs and beliefs in spiritual powers. Thus, culture and religion are tied to practical and material aspects of forest management. Therefore, the continuation of this cultural/religious system may help to guarantee

conservation of the small isolated sacred forests, some of which are of the tropical moist forest type. However, there are no written rules or guidelines to regulate forest use and management: community members grow up with the knowledge of the dos and don'ts relating to the sacred forests. Usually, a member of the community in which the forest is located is responsible for its governance. These particular individuals are in most cases possessed by the spirits of the people the forests were named after.

The role of traditional institutions

Traditional institutions such as those surrounding the sacred forests are necessary communal institutions in the management of natural forests, as they involve the entire population of a geographical area in a system of common obligations. These institutions are based on shared norms and behaviour patterns and this can be a basis for successful forest management. Elders of the communities play a very important role since the management of the forests is based on the indigenous knowledge system which is orally transmitted. However, the influx of immigrants who do not share the same norms and beliefs can and have led to the weakening of the sacred control mechanisms.

Experiences

Management techniques are acquired through continuous on-job training. Management information is passed on to young children by grandparents and parents as well as other elders of the communities. Beliefs concerning the governance of sacred forests originated and grew from the awe the Baganda had for the forests. This awe started with the death of king Kintu around the 14th Century AD. Kiganda legend has it that Kintu disappeared in a dense community of trees. People started referring to that community of trees (and probably similar ones) as kibira, which is loosely connected to cheating, because that community of trees cheated them of their beloved king. Therefore, for fear of getting lost in the forests, the Baganda were very much concerned about breaking the rules that could lead to their disappearance in the forests. To ensure safety, individuals' entry into the forests was highly discouraged.

Rules and their enforcement

Although entry into and use of each sacred grove is regulated by specific unwritten rules, some general rules apply as well. In all of the sacred groves, women are not allowed to enter the forest alone; and those who are in menstruation are not allowed to enter at all. People are not allowed to urinate, defecate, or make love in the forests.

Spiritual sanctions in combination with simple fines or penalties are used to enforce the rules for each forest. For example, elders continuously remind the community of the dangers that await those who abuse the forests. The managers often visit the forests in the company of children in order to pass information on to the younger generations. Stories of terrible happenings that befell those who abused the forest are passed through the community on to the younger generations. Common threats of spiritual punishment include the offender's home being invaded by insects, insanity, crop destruction, and infertility. Penalties generally include returning to the forest that which was removed, and imposing fines of animals, food, or cash. Relatives of the offender often organize to cleanse him/her of the wrath of the spirits. These rules and enforcement methods have a practical significance as well. They prevent overuse of forest resources and ensure the sustainability of the resource (Gombya-Ssembajjwe, 1997).

Uses of Sacred Forests

Sacred forests are very significant, not only for their cultural importance, but also for historical and material reasons. Most of the sacred groves studied are historical sites for a community, clan, or family where members go to consult with ancestral spirits. Most of them are also associated with a spirit (e.g., named after the spirit of a person) hence the human names associated with these forests. Others are sites for family or community festivals. Worship, spiritual consultations, and sacrificial offerings are therefore common uses of the groves.

Material uses of the sacred forests vary from forest to forest (See Table 9.2). In some forests, almost no product is permitted to be removed while others provide people with a great variety of products. Wild animals are common in sacred groves and harvestable ones include bushbucks, wild pigs, and edible cane rats. Fruits include mangoes, pineapples, passion fruits, jack fruits, and *Afromomum* sp (matungulu). Many of the sacred groves are sources of medicinal herbs. Famous ones include *Vernonia amygdalina* used in the treatment of malaria and *Garcinia huillensis* for cough (See Table 9.3). Some sacred groves protect water catchment areas. Wood is also allowed to be harvested from some sacred groves.

Table 9.2. Different Uses of the Sacred Forests

Forest	Uses
Kintu	Original site for the leopard clan; firewood collection; hunting; harvesting of building poles for royal functions.
Mukasa	Spiritual consultations while requesting god mukasa for rain.
Mukasa-Mu-Nzo	Spiritual consultations for good luck, healing.
Magezigoomu	Historical site of Kayozi and Ngeye clans, spiritual consultation site, hunting, yam gathering, commercial harvesting of timber and charcoal, and firewood gathering for own use.
Mugema	Nkima clan historical, ancestral site; firewood collection for own use; shade for passengers waiting for taxis.
Semalizi	Spiritual consultations for good luck and healing, fruits gathering, firewood collection, harvesting for poles and walking sticks, medicinal herbs.
Basajjaddenzi	Spiritual consultations for good luck and healing, worship, community's site for festivals, medicinal trees.
Nakayaga	Water catchment area.
Luyinda	Sacrifices for ancestral spirits, mature tree harvesting.
Wannema	Historical site for Ngonge clan for spiritual consultations and festivals, tree harvesting for building poles, medicinal herbs.
Musisi	Medicinal herbs and spiritual consultations.
Kyabaggu	Shade for clinic attenders.
Serinnya	Spiritual consultations.

Although the above uses can be provided by other forests, the cultural use of these forests is confined to a particular forest. Therefore, once that particular forest disappears, an alternative one may not be available. One of the reasons why sacred forests are used for medicinal purposes is that they are rich in tree and other vegetation which are put to different uses as indicated in Table 9.3.

Table 9.3. Trees and Other Vegetation found in the Sacred Groves

Latin name	Local name	Usefulness
<i>Acalypha volkense</i>	Jelengsa	Basket making
<i>Acanthus arborea</i>	Matovu (veg)	Medicinal
<i>Agave sisalana</i>	Bugooowa (veg.)	Rope making
<i>Afromomum sanguina</i>	Matungulu (veg.)	Food
<i>Albizia grandbracteata</i>	Nnongo	Timber
<i>Albizia zygia</i>	Nnongo	Timber
<i>Alchornea hirtella</i>	Unknown	Unknown
<i>Antiaris toxicaria</i>	Kirundu	Bark cloth/Firewood
<i>Antidesima laciniatum</i>	Unknown	Unknown
<i>Anunans</i>	Nanaansi(veg.)	Food
<i>Artocarpus heterophyllus</i>	Ffene	Fruits/timber
<i>Aspernenum sp.</i>	Unknown (veg.)	Unknown
<i>Bersama abyssinica</i>	Unknown	Unknown
<i>Blighia unijugata</i>	Nkuzanyana	Fuelwood
<i>Bosquea phoberos</i>	Mugwi	Timber/Fuelwood
<i>Bricharia sp.</i>	Unknown (veg.)	Unknown
<i>Bridelia micrantha</i>	Katazami	Fuelwood/poles
<i>Britalia sp.</i>	Unknown (veg.)	Unknown
<i>Calcasia sp.</i>	Unknown (veg.)	Unknown
<i>Canarium schweinfurthii</i>	Muwafu	Timber/food
<i>Cassipourea congensis</i>	Unknown	Fuelwood
<i>Celtis durandii</i>	Kasiisa	Timber
<i>Celtis mildbraedii</i>	Lufugo	Timber
<i>Citrus sinensis</i>	Mucyungwa	Fruits
<i>Clausena anisata</i>	Musokoliindo	Fuelwood
<i>Cocos nucifera</i>	Munazi	Fruits
<i>Coffea canephora</i>	Mwanyi	Beverage
<i>Commellina sp.</i>	Nnanda (veg.)	Medicinal
<i>Cordia millenii</i>	Mukebu	Timber
<i>Craterispermum laurinum</i>	Munula	Timber
<i>Croton macrostachys</i>	Unknown	Unknown
<i>Cyanthea sp.</i>	Unknown	Unknown
<i>Dictyandra arborescens</i>	Muteganjobe	Timber
<i>Dovyalis macrocalyx</i>	Unknown	Unknown
<i>Dracaena fragrans</i>	Luwaanyi	Boundary-maker
<i>Erythrina abyssinica</i>	Girikiti	Medicinal
<i>Erythrina excelsa</i>	Mubajangabo	Timber
<i>Fagara angolensis</i>	Munyeenye	Timber
<i>Ficus exasperata</i>	Luwawu	Fuelwood
<i>Ficus natalensis</i>	Mutuba	Barkcloth/Firewood
<i>Ficus brachylepis</i>	Unknown	Fuelwood
<i>Ficus branchipoda</i>	Mukokowe	Fuelwood
<i>Ficus cyathistipula</i>	Unknown	Fuelwood
<i>Ficus polita</i>	Unknown	Fuelwood
<i>Ficus stipulifera</i>	Unknown	Fuelwood
<i>Ficus urceolaris</i>	Kitonto	Fuelwood

<i>Flacourtia indica</i>	Unknown (shrub)	Unknown
<i>Funtumia elastica</i>	Nkago/Namukago	Timber
<i>Garcinia hullensis</i>	Nsaali/Musaali	Fruits/medicinal
<i>Harungana madagascariensis</i>	Mulirira	Fuelwood/medicinal
<i>Lamnea welwitschii</i>	Kingalangala/Mukowa	Fuelwood
<i>Leptopsis cochleata</i>	Unknown (veg.)	Unknown
<i>Lovoa brownii</i>	Nkoba	Timber
<i>Macaranga angolensis</i>	Mwokyannyama	Fuelwood
<i>Macaranga lancifolia</i>	Mutete	Fuelwood
<i>Macaranga monandra</i>	Mwokyannyama	Fuelwood
<i>Maesopsis eminii</i>	Musizi	Timber
<i>Mangifera indica</i>	Muyembe	Fruits/fuelwood
<i>Markhamia platycalyx</i>	Nsambya	Poles/medicinal
<i>Momodica foetida</i>	Bombo (veg.)	Medicine
<i>Oxyanthus speciosus</i>	Kamwanyimwanyii	Poles/fuelwood
<i>Pachystela brevipes</i>	Nkalati	Timber
<i>Paropsia guineensis</i>	Segwafu	Fuelwood
<i>Phoenix reclinata</i>	Nkindukindu	Mat making
<i>Phyllanthus capilari</i>	Mutunuka	Medicinal
<i>Phyllanthus discodius</i>	Kamennyambazi	Timber
<i>Piptadeniastrum africanum</i>	Mpewere	Timber
<i>Pittosporum mannii</i>	Mubazankonyo/Nabuluka	Timber
<i>Polyscias fulva</i>	Setaala	Drum making
<i>Pseudospondias microcarpa</i>	Muziru	Timber/fruits
<i>Pycnanthus angolensis</i>	Lunaaba	Timber
<i>Rothmannia urcelliformis</i>	Unknown	Unknown
<i>Salacia elengans</i>	Unknown (veg.)	Unknown
<i>Sapium ellipticum</i>	Musasa	Fuelwood/medicinal
<i>Securinea virosa</i>	Lukandwa	Medicinal
<i>Scolopia rhamnophylla</i>	Nkanaga	Fuelwood
<i>Spondianthus preusii</i>	Mimbiri	Fuelwood/poison
<i>Syzygium cordatum</i>	Kalunginsanvu	Fuelwood
<i>Teclea nobilis</i>	Nzo	Poles/fuelwood
<i>Tetrorchidium didymostemon</i>	Mukejekeje	Fuelwood
<i>Therea sp.</i>	Unknown	Unknown
<i>Treculia africana</i>	Unknown	Unknown
<i>Trema orientalis</i>	Kisiisa	Fuelwood
<i>Trichilia dregeana</i>	Sekoba	Fuelwood
<i>Syzygium cuminii</i>	Jambula	Fruits/fuelwood
Unknown	Kaama (yam)	Food
<i>Vangueria apiculata</i>	Mutugunda (Veg)	Fruits
<i>Vernonia amygdalina</i>	Mululuza	Medicinal
<i>Vitex doniana</i>	Unknown	Unknown

Tree richness of the tree species in sacred forests

The results presented in Table 9.4 show the comparison of the sacred groves with other types of forests. The Table shows the results of measurements taken from a total of fourteen forests, four from each of government exploitation forest reserves, private, and sacred groves, and two from government nature forest reserves. The results indicate that sacred groves have a low species richness but a higher basal area compared to other forests. The low species richness is due to their limited sizes, while the high basal area is a result of trees not being harvested in most sacred forests.

Table 9.4. Sampling and Tree Measurements

Institutional arrangement	Actual count (No)	Species richness	Shannon index	Basal area (m ²)/plot	Mean height (m)
Sampling					
Exploitation	830	117	3.97	0.100	3.96
Nature	186	56	3.65	0.005	3.91
Private	587	92	3.83	0.009	3.89
Sacred groves	254	41	3.05	0.007	3.34
Trees					
Exploitation	1692	132	4.05	0.75	12.4
Nature	699	90	3.84	0.77	14.6
Private	1134	114	3.96	0.60	11.7
Sacred groves	539	62	3.42	0.80	11.1

Protected Forests and Deforestation of Sacred Groves

The sacred forests which were not under threat of deforestation included Kintu, Mukasa, Mukasa-Mu-Nzo, Magezigomu, Mugema, and Semalizi. These forests were characterized by clearly demarcated boundaries and well defined property and user rights; awareness level of immigrants and community members about the rules and sanctions governing the forests; involvement of children in forest management; inculcation of traditional forest values among the children; regular inspection of the forest; boundary maintenance of the forests (by either planting boundary markers or digging all along the perimeter of the forest); and local conditions guiding access rules and use. For example, violators receive sanctions that depend on the violation and the presence of locally available conflict resolution mechanisms.

A number of factors were identified as contributing to the deforestation of Basajjadenzi, Nakayaga, Luyinda, Wannema, Musisi, Kyabaggu, and Serinnya sacred forests. These included the weakening cultural values, development projects undertaken solely for economic gain, increases in both population and immigration, conflict between formal external and informal locally based tenure systems, foreign religions and western ideas, commercialization of fuelwood, agriculture, and natural causes, such as lightening, storms, and maturity.

Conclusion

There are several lessons to learn from this study that can contribute to sustainable management of forests. These include the following:

- a) continuous education of the local people about the role of forests in their lives;
- b) involvement of the children in matters related to the forest resource at a very early age;
- c) well defended property and user rights to minimize conflict;
- d) regular inspection of the forest resource to minimize illegal use;
- e) a graduated system of punishment; and
- f) quick and easily affordable conflict resolution mechanisms.

The study revealed that indigenous knowledge based on community experience, local conditions, culture, and ecology is used to govern the sacred groves in central Uganda. It has become clear now that sacred groves play important roles in the conservation of species diversity. However, due to their small sizes, the sacred groves are less important than the large size forest reserves. To narrow the gap that exists between them, therefore, research on and recognition of indigenous knowledge systems needs to be increased. It is strongly recommended that the government in general gives political support to the conservation of sacred forests and the Forest Department in particular recognizes these forests and takes an inventory of the occurrence.

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Annex I

Memorandum of Understanding between the Government of Uganda and the Residents of Muduuma and Kiringente Sub-counties, Mpigi District

Preamble

The Government of Uganda is in the process of formulating a forest policy that aims at giving local communities around its forest reserves a mandate to participate fully in the management of these reserves. In order to come up with a workable forest policy, the Forest Department (FD), Ministry of Lands, Water and Environment has set aside Butto-buvuma Forest Reserve as one of those forests to be used for pilot studies. The objective of the studies was to investigate whether the local communities can self organize to exercise the powers as well as responsibilities to manage forest resources collectively. This objective fits in well with the government policy of decentralization.

Butto-buvuma Forest Reserve (BFR) is a natural moist forest about 1096 ha in size. It is found in the sub-counties of Muduuma (Kisamula-Lugyo, Malube-Nalubugo, Naziri-Buyala) and Kiringente (Kagezi, Luvumbula, Mabuye, Kaggaba, Ssekiwunga, Galatiya, Nsujjampolwe) in Mawokota county, Mpigi district.

The forest, however, has been highly degraded not only by the local communities around, but also by the people from beyond the two sub-counties. The major degrading activities are pitsawing, charcoal burning, commercial firewood harvesting, and agricultural encroachment.

Desire and Purpose

To enter into collaboration that would enable the Government of Uganda and the people of Muduuma and Kiringente sub-counties to work together in the management of BFR.

Article 1: Title

This is a memorandum of understanding between the government of Uganda and the residents of Muduuma and Kiringente sub-counties, Mpigi District, for the joint participatory management of BFR.

Article 2: Scope and Objectives

We wish to collaborate in undertaking joint forest management of BFR.

Article 3: Areas of Cooperation

The collaboration stated in Article 2 above will specifically be in the following activities:

3.1 Conservation and protection of the forest

- Safeguarding the forest against any illegal exploitation
- Protection against agricultural encroachment.
- Re-forestation and tree planting.
- Development of ecotourism.

3.2 Administration

- Formation of local forest management committees
- Reporting

3.3 Training

- Training of local forest management committees and local communities in forest management skills.
- Training of communities in conservation and importance of forests.
- Teaching of the young generations in conservation knowledge.

3.4 Other activities that may be of mutual benefit

- Any activity that may come up in the future is taken care of here.

Article 4: Organization and Administration

The administration of the collaboration will be undertaken by the Chairperson of the Butto-buvuma Forest Management Committee (BFMC) and the Commissioner of Forestry, FD.

For every approved activity the two persons shall be responsible on behalf of the two agreed parties. A steering committee of 8 people, consisting of the Commissioner of Forestry; the District Forest Officer (DFO), Mpigi; 2 representatives of the Department of Forestry, Makerere University; Chairperson of BFMC; 2 LC V Councillors; and 2 persons representing the people (one from each sub-county), will be responsible for planning and monitoring of joint activities. The Steering Committee shall meet at least twice a year.

4.1 The nature and election of the Butto-buvuma Forest Management Committee

4.1.1 The local forest management committee will consist of :

- (a) Chairperson

- (b) Vice Chairperson
- (c) Secretary
- (d) Treasurer
- (e) Two youth representatives (male and female)
- (f) One woman representative
- (g) One landlord (Omuttaka)
- (h) Ex-Officials:
 - Forest Ranger/Guard
 - All LC 1 Chairmen in the areas concerned
 - LC 1 in charge of Labour and Environment
 - Two children (boy and girl)
 - All those individuals who went to Babati Tanzania, who may have not been elected in any other office
 - Religious leaders

The chair shall alternate between Muduuma and Kiringente sub-counties.

4.1.2 Term and conditions of service

4.1.2.1 Duration of service:

The committee will serve for a five-year term of office before fresh elections are held.

4.1.2.2 Office bearers:

All adult residents, in the concerned LC s of the two sub-counties, in general elections, will directly elect the committee after every 5 years. After the first 5 year term of office, the veterans who went to Tanzania will no longer have an automatic right to sit on the committee as ex-officials.

4.2 Duties of the Committee

- To make and execute a management plan in collaboration with FD.
- To make annual reports and quarterly ones to DFO, Mpigi District and LCIII and V.
- To make laws/regulations or bye-laws pertaining to the use and management of BFR.

Article 5: Responsibilities

Each party will carry out its work programme in accordance with a plan of activities. Each party may, however, propose modifications of the work programme to the

other party in writing. Each party shall review and evaluate the collaboration as need arises. The responsibilities of the two parties are regulated by FD; Ministry of Environment and the BFMC.

5.1 FD responsibilities will include:

5.1.1 To oversee the planning, administration, and implementation of this memorandum of understanding.

5.1.2 To teach, train, and advise the residents about the proper management and development of the forest reserve.

5.2 BFMC responsibilities will include

5.2.1 To oversee the planning, administration and implementation of this memorandum of understanding.

5.2.2 To protect the forest against man-made hazards.

5.2.3 To bring to the authorities anybody engaged in the activities that may lead to the degradation of the forest.

5.2.4 To carry out reforestation in the gaps left in the forest and also plant trees in their shambas.

5.2.5 To elect sub-committees responsible for the management of the forest.

5.2.6 To establish and manage ecotourism sites on the forest fringes.

Article 6: The Rights of the Local Communities

All residents have the right of access to all parts of BFR for leisure and for cultural purposes, and to obtain any product, or work in the forest for monetary gain or not so long as he/she adheres to the laws governing the forest.

6.1 Products from the forest

6.1.1 These products can be obtained freely:

- Water
- Dry firewood for domestic use
- Edible fruits for domestic use

6.1.2 All residents will obtain the following products after getting permission from BFMC:

- Palms
- Fruits

- Emisumba (fibre leaves for making ropes)
- Poles
- Commercial firewood
- Reeds
- Tubers
- Honey
- Stones
- Black soil
- Establishing tourist sites
- Clay
- Sand
- Canes
- Cultural rites
- Medicines
- Seedlings and seeds

6.3 *These activities will not be allowed in the forest*

- Charcoal making
- Hunting
- Making fire outside the established fire camp areas
- Agricultural encroachment on the forest
- Grazing of animals in the forest.

Article 7: Bye-laws Governing the Forest Reserve

- 7.1 Anyone found burning charcoal in the forest will pay a penalty fee of Ushs fifty thousand only (50,000/=) or serve a sentence of one year in prison. All the charcoal and his tools will also be confiscated from him.
- 7.2 Anyone found cutting wood for firewood for monetary gain, will pay a penalty fee of Ushs 50,000/= and all the firewood will be confiscated.
- 7.3 Any illegal pitsawyer will pay a penalty of not less than Ushs 100,000/= or serve a prison sentence of 3 years and all his tools and timber will be confiscated.
- 7.4 Anyone (e.g. a tourist, foreign traditional healers etc) found with prohibited products of, or in use of the forest without permission of the committee will pay a penalty of Ushs 5,000/= or serve a sentence of 3 months in prison.
- 7.5 Any member of the local forest committee found engaging in any illegal activities in the forest, will serve a penalty or prison sentence double that one of the ordinary person, and will be removed from the Committee.

- 7.6 In addition, any residents whose plots of land (Bibanja) form immediate boundary to the forest are to be responsible for any damages done to the forest next to their plots in 100 metres

Article 8: Funding, Disbursement, and Revenue Sharing

Both FD and BFMC shall solicit funds to support this collaboration in addition to revenues collected from the forest. BFMC will be required to prepare realistic estimates of revenue collections and expenditure for each accounting period which begins in July and ends in the June of the following year. The budgets will be approved by the steering committee.

Financial transactions under this memorandum of understanding will be in accordance with the regularities of the Government of Uganda. Revenue obtained from the sale of produce from BFR shall be shared on a proportional rate of 60% to BFMC and 40% to the Government. The revenue retained by the BFMC shall be utilized on development plans as approved by the steering committee.

Article 9: Reporting

FD and BFMC shall keep each other informed about all matters of importance relevant to this memorandum of understanding.

Article 10: Equipment and Other Property

Equipment and other property obtained under this memorandum of understanding shall remain the property of the recipient party.

Article 11: Disputes

If any dispute arises relating to the implementation or interpretation of this memorandum of understanding, there shall be mutual consultations between the parties with a view to securing a successful implementation. Should the parties fail to resolve disputes, then they shall refer to the Steering Committee whose decision shall be final.

Article 12: Amendments

Any amendment to this memorandum of understanding shall be subject to approval by the Steering Committee.

Article 13: Termination

The involvement of local communities in forest management is long-term.

However, the relationship shall be reviewed every two years with the aim of strengthening it. Termination will only be resorted to if there is evidence that the forest is being degraded more than before. In case of termination of this memorandum of understanding either party will give the other party a written notice six months before the termination.

The Memorandum of Understanding is signed on two originals.

For and on behalf of Government For and on behalf of Residents of Muduuma
and Kiringente Sub-Counties

.....
Commissioner of Forestry

.....
Chairperson, BFMC

Signature

Signature

Date

Date

Annex II

The International Forestry Resources and Institutions (IFRI) Research Programme *Adapted from Ostrom and Wertime, 1995*

The International Forestry Resources and Institutions (IFRI) Research Programme is a long term effort to establish an international network of Collaborating Research Centres (CRCs) which will:

- Continuously monitor and report on forest conditions, plant biodiversity, and rates of deforestation in participating countries or regions;
- Continuously monitor and report on the activities and outcomes achieved by community organizations, local, regional, and national governments, businesses, NGOs, and donor managed projects in particular countries and regions;
- Analyze how socioeconomic, demographic, political, and legal factors affect the sustainability of ecological systems;
- Prepare policy reports of immediate relevance for forest users, government officials, NGOs, donors, and policy analysts;
- Build substantial in-country capacity to conduct vigorous and policy-relevant research relying on interdisciplinary teams already trained in advanced social and biological scientific methods; and
- Prepare training materials that synthesize findings for use by officials, NGOs, forest users, and students.

In order to understand the accelerated rates of deforestation in tropical countries, the IFRI programme has identified three basic problems. These are:

- a) The lack of accepted scientific understanding about which variables are the primary causes of deforestation and biodiversity losses, and how these variables are linked to one another. This is the problem of *knowledge gap*;
- b) The lack of reliable data about specific policy-relevant variables in a particular time and location. This is the problem of *information gap*; and
- c) Lack of permanent in-country centres with interdisciplinary staff trained in vigorous forest mensuration techniques, participatory appraisal methods, institutional analysis, geographical information systems (GIS), and database management. This is the problem of *assessment capability*.

IFRI research programme draws on the Institutional Analysis and Development (IAD) framework developed and used by colleagues associated with the Workshop in Political Theory and Policy Analysis at Indiana University over several decades.

The IAD framework has been used to study how institutions affect human incentives and behaviour, as these impact on urban services, metropolitan areas, the provision and production of infrastructure, and the governance and management of natural resource systems. At the core of the IAD framework are individuals who own different positions (e.g. member of a forest user group, forest official, local forest user group official, land owner, elected local, regional and/or national official) who must decide upon actions (e.g. what to plant, protect, harvest, monitor, or sanction) that culminatively affect outcomes in the world (e.g. a forest ecology and the distribution of forest benefits and costs).

In a dynamic setting, human behaviour impacts on local ecologies that are also affected by global and local physical factors. Human incentives and behaviour are also affected by socio-economic and demographic factors as well as institutional factors.

The IFRI research programme provides an interdisciplinary set of variables about forest management and use that are assessed near the forest in relationship to the local communities utilizing and governing the forest. The effects of district, regional, national, and international policies as they impact on a local setting can be assessed through this effort. The results of IFRI studies provide in-country information for policy makers at the local district, regional, and national levels. The information is collected by researchers who are deeply familiar with the local settings rather than from secondary sources that are compiled by international organizations or national agencies drawing from various sources of externally compiled information. The IFRI programme relies on the building of a permanent international network of CRCs.