

**Local Governance and Forest Conditions:
The Case of Forests in Mpigi District of Uganda:**

by

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Introduction

Uganda, with a total population of 26 million people has 4.9 million hectares of natural forests and woodlands, which cover 24% of the land area (MLWE 2002). In terms of land ownership, the government holds in trust for the citizens of Uganda only 30% of the forestland. This include 15% of the land managed by the newly established National Forest Authority as Central Government Forest reserves and 15% managed as National Parks by the Uganda Wildlife Authority (UWA). Local, private and customary forests make up 70% of all forests and woodlands in Uganda.

Thoughts of decentralizing the Uganda forest sector to better provide for local needs are not new. There has been frequent “migration” of authority over forest resources in Uganda between the local and the central government since the 1940s. The forest policy in the late 1940s devolved power of management of local forest reserves from the protectorate government to local governments. The 1967 republican constitution abolished all kingdoms in Uganda. Local forest reserves owned and managed by local traditional institutions were taken over by the central government, and many small ones were de-gazetted. This was not based on the failure of local institutions to manage forest resources; rather, it was part of a general political move, toward centralization under the assumption that centralization would be more rational and efficient.

In the last two decades, many governments in Africa, Latin America and Asia, implemented decentralization reform policies in the natural resources sector, including forestry. This was under the assumption that decentralization creates enabling environment for the development of effective local institutions that can limit harvesting levels and set management strategies more reflective of local needs. Thus in 1993, ten pilot districts were identified for decentralization of the delivery of services in Uganda. Ownership and management of forest reserves were transferred to the District councils. However, after only two years of operation, ownership of forest reserves with high timber value was recentralized in late 1995 while ownership of the degraded and small forest reserves (forests of less than 500ha in size) were entrusted with the local governments. This was based on the perception by the central

government that the local governments were over-exploiting forest resources support the districts' budget and that the local governments did not have the human capital to manage large and complex forest ecosystems.

Decentralization is varied and has different meanings for different local and non local actors (Lind and Cappon (2001) and Ribot (1999). Similarly, the goals of decentralization are many: provide for regional autonomy, diffuse political and social tensions, and make services and government more efficient, equitable, and accountable. In Uganda, the decentralization of the forest sector under the Local Government Act (1997) was intended to shift responsibility for forest management to elected local government councils and not necessarily to forest user-groups.

Literature on the effects of decentralization reforms on management of natural resources is ambiguous. Proponents of decentralized forest policy argue that rules and regulations made by elected local actors and leaders of traditional institutions are more effective and less costly to monitor and enforce because they are considered as legitimate by the local communities and are more relevant to local situations (Meinzen-Dick & Knox, 1999; Gibson, Williams, & Ostrom, under review). Ribot (1999) however, points out that the assumption that increasing participation of local communities in resource management will result in better environmental practices is not a demonstrated fact. On the other hand, opponents of decentralized forest policy argue that decentralizing forest management will lead to greater levels of deforestation because local governments tend to under-invest in environment protection since they cannot capture all the benefits of the public goods the environment creates (Bahl, 1999) and yet Gibson, Williams, & Ostrom, (under review) demonstrates that investment in regular monitoring and sanctioning of rules is a necessary condition for successful resource management.

However, in their study of local governance in Uganda, both Francis and James (2003) and Olowu and Wunch (2004) reported that generalized local poverty weakens most of the local governments' ability to invest in the management of natural resources and the environment. Due to limited human and financial resources, local governments as is the case with the national government focuses on the provision of traditional social services such as health, education and roads instead of the productive sectors such as the forest sector and the natural resources sector in general. Similarly Oksanen *et. al* (2003) reported that the role of the forest sector in the Poverty Reduction Strategy (PRS) papers in many developing countries is not articulated. In

general the sector is incorporated in a rather modest and unsystematic manner. Consequently most local governments' Development Plans in Uganda give low priority to the forest sector.

Given the fact that the forest sector is ranked low in the Poverty Reduction Strategy documents and that local governments in Uganda have limited (financial and human) resources, it is important to ask whether there is sufficient investment and commitment by local governments to protect the forest resources. It is also important to ask: What incentives do local politicians (Local Council officials) who are in most cases volunteers have to overcome the collective-action problem involved in being active monitors who enforce forest harvest rules? From the literature, it is clear that voluntary provision of monitoring and sanctioning is a second-order, free-rider problem (Heckathorn, 1989).

In this paper, we hypothesize that there is inadequate investment in monitoring and enforcement of forest harvesting regulations by the local governments leading to the degradation of forest resources in the country. Since local councils are the actors charged with implementing decentralization policies, in this paper we also seek to understand the incentives and constraints local politicians face in implementing the Local Government Act of 1997. We use a longitudinal strategy of collecting social, institutional, and ecological data collected from nine forests in Mpigi district in 1994/95 and in 1999/2000. This period represents the first five years of implementation of the decentralization policy of 1994.

The data collected was used to assess the changes in rights and responsibilities, funding and staffing levels, incentives to manage, monitor, and enforce forest rules and regulations and the change in forest conditions following the implementation of the above policies. In the paper, we first present the background to the decentralization reforms in Uganda's forest sector. We then describe the forest estate in Mpigi district, one of the pilot districts where the decentralization policy was first implemented. We then report on sharing of roles and responsibilities between local governments and the central government and the subsequent decline in monitoring and rule enforcement due to limited financial and human capital by the local governments. Finally, using data collected from nine forests located in Mpigi district we report on forest conditions and how they are affected by the absence of effective forest rule enforcement by the decentralized district.

Background to the decentralization reforms of Uganda's forest sector

The British Colonial Government initiated scientific management of Uganda's forestry resources in 1898. Boundaries of the present forest reserves were established in the 1930s and 1940s. The forest policy in the late 1940s devolved power of management of local forest reserves from the protectorate government to local governments. In Buganda Kingdom, the forest policy also called for assistance to willing private landowners in management of private forests for maximum production of timber species. Numerous, small, local forest reserves were gazetted to cater to local demands for timber, building poles and firewood necessary for the economy of rural areas and small townships, while central forest reserves, which were usually larger, were established at the same time to serve regional needs (Hamilton, 1987; Uganda Forest Department, 1951).

In 1964, legislation was enacted to consolidate the law relating to forests and forest reserves. The 1967 republican constitution abolished all kingdoms in Uganda. Local forest reserves owned and managed by local traditional institutions were taken over by the central government, and many small ones were de-gazetted. This was not based on the failure of local institutions to manage forest resources; rather, it was part of a general political move, initiated by the Forests Act of 1964, toward centralization based on the belief that it would be more rational and efficient.

Due to this centralization of the management of forest resources, institutions that local people had devised to limit entry and the harvest of forest resources lost their legal standing (Banana & Gombya-Ssembajjwe, 2000). In the 1970s and 1980s, however, the overcentralized forest sector was notably unsuccessful in its efforts to implement the provisions of the Forests Act (Hamilton, 1987). Lack of participation by local communities in decision-making was often cited as the explanation for inadequate monitoring and enforcement of harvesting regulations and the decline in stocking of trees used for commercial wood products. In addition to lack of local participation, the failure could be attributed to the prevailing political and economic instability caused by the military dictatorship from 1971 to 1979 and civil war between 1980 and 1985.

A five-tiered system of elected Local Councils (LCs) and executive committees was introduced with the Resistance Councils and Committees Statute of 1987 and formalized by the Local Government Act of 1997. The five levels include LC1 (village), LC2 (parish), LC3 (sub-county), LC4 (county), and LC5 (district). Local Councils at every level includes an executive

committee of nine members who have specific responsibilities such as finance, defense, education, health, production, and environment. For example, the secretary for production and environment is in charge of the management of forestry resources. The LC1 includes all residents of the village. The higher-level LCs includes all executive committee members from the LC at the level immediately below them. The LC3, LC4, and LC5 executive committee members are paid; LC1 and LC2 committee members are volunteers. These committees formulate by-laws for management of all natural resources, including forestry. LC5 is also empowered to hire staff to manage and enforce the by-laws.

The nested-layer structure and mechanisms of local governance build on and mimic the enduring administrative hierarchy of the Buganda Kingdom, as shown in Table 1. Although the kingdoms and *kabakas* (kings) were not recognized between 1967 and 1995, the clan structure remained. In 1995, the new constitution again recognized the kingdoms but restricted their participation in national politics. The *kabaka* and kingdom regents were given limited administrative powers, with the primary charge of maintaining and promoting culture. The colonial government ruled through this traditional governance system, and the current administrative boundaries created by the Local Government Act of 1997 coincide with the traditional boundaries.

<Place Table 1 near here.>

In 1993, ten pilot districts were identified for decentralization of the delivery of services. Mpigi was one of the pilot districts. Forest land ownership and management of forest resources were transferred to the District councils. However, after only two years of operation, some rights and responsibilities over forest resources were withdrawn from the local governments due to perceived lack of capacity of district councils to manage forestry resources. The sharing of rights, and responsibilities between the central government and the local government is presented in Table 2.

The Local Government Act was enacted in 1997. The delivery of all services across all sectors, except forestry, was subsequently fully decentralized in all districts. Meanwhile, a Forest Secretariat was created in 1999 to restructure the forest sector and clarify the roles and responsibilities of each stakeholder. The secretariat completed formulation of a new Forest Policy in 2001, a new National Forest Plan in 2002, and The National Forestry and Tree Planting Act in 2003 (Republic of Uganda, 2003), which replaced the Forests Act of 1964.

What was Decentralized and to who?

Roles and responsibilities of managing forest resources in the county were shared between the central government and the local governments. The rights and responsibilities that were decentralized are presented in Table 2.

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The Study area

We use data gathered under the International Forest Resources and Institutions (IFRI) research program from forests located within the tall grassland agro-ecological zone around the Lake Victoria basin in Mpigi District of Uganda (Figure1). The vegetation in this agro-ecological zone is characterized as a tropical moist evergreen forest/savanna mosaic (Howard, 1991; Barbour, Burk, & Pitts, 1987). The high demand for the woody forest products in the last decade has put considerable pressure on tropical moist forest resources in this region. This demand is due to exceptional economic (6% per year) and population growth (3.6% per year) in both the capitol Kampala and the Mpigi District (UBOS, 2002) fueled by one of the most ambitious programs of economic liberalization on the African continent (Reinikka & Collier, 2001). Mpigi district has a population density of 200 persons per km² compared to the national average of 85 persons per km² (UBOS, 2002).

A total of nine forests (Table 3) in the Mpigi District were sampled in 1994/1995 (Gombya-Ssembajjwe, 1996), just prior to the enactment of the 1997 Local Government Act, and repeated five years later. The criteria for selection of individual forests included type of ownership, distance to Kampala, and population pressure on that forest. Private forests were included because private owners may harvest or convert their forests as they wish, but permits for commercial harvesting must still be obtained through the district forest office and local councils. The office also continues to provide advisory services to private owners about sustainable forest management, as many communities are also reliant on private forests for provision of firewood, water, poles, and handcrafts for subsistence.

<Place Figure 1 near here.>

<Place Table 3 near here.>

Mpigi District was chosen because it is situated mostly within one agro-ecological zone and hence the forests were assumed to be ecologically similar. In addition, Mpigi district was a pilot district for decentralization, and contains a large number of forests covering more than 36,000 ha of land under different tenure arrangements. Mpigi District also neighbors Kampala and has historically provided forestry products for the capital. Good infrastructure provides all sites with easy access to Kampala. Thus, we considered the high influence of market demand to be equal across all sites.

Study Methods

Data Collection on institutional changes in the Mpigi forest sector

At the district level, the district forest officer (DFO) and his staff were interviewed to capture the change and division of roles and responsibility of forest monitoring, rule enforcement, and development of forest management plans for both the central and local governments between 1994/1995 and 1999/2000. Additionally, the DFO provided access to records and annual reports for this time period. From these documents we gleaned changes in sector funding, level of staffing, and the decision-making process in the Mpigi District forest sector.

At the community level institutional, geographic, demographic, and socioeconomic characteristics of the villages that use these forests were collected using participatory rural appraisal (PRA) techniques including mapping and group discussions. Discussions were held with local politicians, elders, and forest user groups. This data provided a context in which to interpret the observed forest use patterns and the condition of the forests under study.

Questions on the perception of the level of conservation measures applied in the sampled forests and the conformance of user groups to formal rules-of-use were asked to the various forest user groups for the two study visits. These were then related to the conditions of the sampled forests. Questions related to shifts in the responsibilities for coordinating, passing, and modifying sanctions and harvesting levels were also assessed. The responses to these questions were then used to assess the change in incentives to forest user groups and local councils to manage forests. The responses also aided in identifying changes in levels of monitoring and enforcement and changes in harvesting levels

Data Collection on the Forests' Conditions and data analysis

Forest plots were laid out and bio-physical measurements carried according to the IFRI research protocols (Ostrom, 1998 see www.indiana.edu~workshop/). Data about trees in the sample plots were compiled for structure estimates of each forest. This included an analysis of total aboveground biomass, basal area, stem density, and DBH. These individual forest structure estimates were then compiled to assess aggregate change in the Mpigi forest estate during the period of study. Additionally, for each species the changes in absolute basal area (sum of all stems for that species) was calculated. These forest parameters were used as indicators of forest condition to assess the impact of decentralization.

Dry biomass per stem is estimated by using the following allometric equation developed by Brown, Gillespie, and Lugo (1989):

$$\text{kg/tree} = \exp(-3.1141 + 0.9719 \ln(D^2H)),$$

where D is the DBH in centimeters and H is the tree height in meters.

For the aggregate analysis of forest change in the Mpigi District, descriptive statistics were run on all forests for each visit to determine the median and range of plot biomass and basal area estimates. A two-tailed, paired, sampled t-test was run to test for significance in the difference between structural values in 1994/1995 and 1999/2000.

Results

What incentives do local politicians have to monitor and enforce forest harvest rules?

From the interviews with the DFO and the local politicians, it was observed that the local councilors and community members were not effectively participating in the decision making in the forest sector. The 1964 Forest Act was not repealed during this period and thus, the final authority to issue permits for commercial harvesting of forest produce especially timber, charcoal and firewood was again vested with the central government. The local councils were only required to make recommendations on the suitability of the applicant to the commissioner of forests through the DFO. The local councils could however make bye-laws regarding the use of local forest resources as long as these bye-laws did not contravene the Forests Act of 1964.

Due to the requirements of the 1964 Forest Act, local councils could not make decisions that would reflect the local resource situation. The DFO, an employ of the central government

retained significant authority and dominated local decision making in the management of both local and central forest reserves located in the district.

Local councils and community leaders were however, given the responsibility of monitoring and enforcing forest rules. Interviews with both forest officers and community members revealed that some local politicians could not enforce harvesting constraints apparently as a re-election strategy. For example, from early 2001 to late 2002, the period for local election campaigning, only 10 people were prosecuted in Mpigi district compared to over 20 cases prosecuted in the previous years. This is because enforcing unpopular and locally irrelevant harvesting and management strategies could cost them an election. Community members further reviewed that local politicians themselves encroach and participate in the illegal harvesting of forest products and are thus reluctant to enforce such forest infractions.

Revenue Sharing

Prior to the commencement of the decentralization process in 1993, all revenue from the forest reserves was collected by the DFO and remitted to the central government. The local government retained 40% of the revenue from forestry activities following decentralization (1994-95). Sixty percent of the revenue was remitted to the central government. From 1996 to 2003), the local government retained all revenue from the local forest reserves and 40% of the revenue from the central forest reserves. The revenue obtained from the forest resources was intended to support the district development programmes. However, one of the major reasons given by the central government for recentralizing the forest sector in 1995 was the over-harvesting of the forests by the district local councils in order to meet the district budgetary requirements. Often funds obtained from the forest sector were not reinvested in the sector but was instead used to support the general district budget.

Investment in forest management activities including monitoring and rule enforcement

Despite retaining 40% of the revenue from forestry by the local government, decentralization was characterized by a drastic decline in funding for the forest sector by both the central and local governments. Table 4 shows the changes in funding and staffing levels in Mpigi district prior to and after decentralization.

<Place Table 4 near here.>

Annual funding for district forest activities declined from Ush. 70 million prior to the decentralization reforms to Ush. 8 million. Similarly the number of staff employed in the forest sector declined significantly as shown in table 3 above. No doubt, the decline in funding and staffing levels reduced the level of forest field operation by the DFO's office including monitoring and rule enforcement.

Change in user perceptions of their conformance to laws

We used change in user perceptions of their conformance to timber and charcoal harvesting laws to reflect on the effectiveness of monitoring and rule enforcement by the DFO's office, local councils and private forest owners (Table 5). Timber and charcoal were observed to be the major forest products harvested from Mpigi forests that was likely to lead to forest degradation.

Communities using six of the nine sampled forests reported increased or continued compliance with the laws in regard to charcoal harvesting.

<Place Table 5 near here.>

However, only three communities reported increased or continued compliance with the laws in regard to timber harvesting. This suggests a continued lax of monitoring and rule enforcement of timber harvesting regulations between 1994/1995–1999/2000 possibly because of the high value and high demand for timber in nearby Kampala city coupled with improved livelihoods in Mpigi district (Reinikka and Collier, 2001) during this period.

Due to reduced monitoring and rule enforcement caused by lack of manpower in the DFO's office together with the perverse incentives for local councilors to protect forest resources, one would anticipate widespread illegal harvesting of forest products such as timber, commercial firewood, and charcoal leading to the degradation of the resource. We next exam the data collected from the nine-sampled forests to assess the condition of the forests in Mpigi district between 1994/1995–1999/2000.

Condition of Forests in Mpigi district between 1994/1995 and 1999/2000

Our aggregated analysis of the data collected from the Mpigi District forest estate between 1994/1995 and 1999/2000 revealed a general decline in the number of trees in these forests. It suggests an increase in the rate of stem harvesting between these two dates. Aggregated basal area, mean tree density (DBH > 10 cm), and total aboveground biomass from the nine study forests in the landscape significantly declined during this period ($p < 0.05$) (Table 6).

<Place Table 6 near here.>

An analysis of the changes in average basal area (average of nine forests) revealed that species sold in Kampala timber markets over the past five years and those used for commercial fuel wood were the same as those showing the greatest decline in average basal area across the Mpigi forests (Table 7). This suggests possibly high harvesting pressure on these species abated by lack of effective monitoring and rule enforcement. There is a high demand for timber in Kampala and Mpigi district possibly due to improved levels of livelihoods and also increased demand for commercial firewood used for burning bricks in Mpigi district and for use in factories in Kampala.

<Place Table 7 near here.>

Even though there was an aggregate decline in the number of stems, biomass, and basal area across the Mpigi landscape, some of the individual forest patches were improving and others were stable (Table 8). We use decline in basal area to categorize whether a forest is rapidly degrading, degrading or stable.

<Place Table 8 near here.>

Five of the nine sampled forests were in the “degrading” or “rapidly degrading” categories, and four were in the “stable” category.

Why were some forest patches stable and others degrading rapidly?

If there is reduced enforcement and monitoring by the DFO's office and perverse incentives for local councilors to protect forest resources, then why do we find some individual forest patches stable and others degrading? To better understand the diversity of change in forest conditions among sampled forests, we compared how the user groups of each forest perceived conformance of rules-in-use to formal rules and the levels of conservation (monitoring and enforcing of

harvesting levels) during the study period (Table 5). All forests characterized as having a stable forest condition were those whose managers had maintained appropriate levels of monitoring and enforcement.

Discussion

In theory, the nested layers of local government administrative structure in Uganda, modeled after the enduring Buganda Kingdom administrative hierarchy, provides a viable platform for crafting and enforcing forest rules at the various levels of local governance and was expected to lead to better forest management and thus improved forest condition. Why has the general condition of forests continued to decline in Mpigi District following the implementation of the decentralization program?

The frequent authority migration from the center to the local government and partly back to the center may partly explain the observed decline in forest conditions. The flip-flopping of the policy did not allow for effective local institutions of collective action to develop.

Most important however, the scarcity of (financial and human) resources by the local government appears to have hindered the establishment of effective local forest management. In agreement with the findings of Gibson et. al (2003) and Banana and Gombya-Ssembajjwe (2000) rule enforcement was found to be a key factor for maintenance forests in good condition. For example, one of the stable central forest reserves (Lwamunda A) is near a ranger's office, and the cost to district officers for monitoring is low. Mpang forest, one of the stable forests is a strict nature reserve with seven guards funded by the European Union for more than five years. In addition, there is collaborative forest management between the District Forest Office and the communities around the forest to reinforce rule enforcement by the paid guards. In contrast, there are only 14 guards to monitor and enforce rules in the rest of the forest estate in Mpigi District.

One private forest owner with a stable forest has both the traditional respect (as a sub-county chief in the Buganda Kingdom) and the financial ability to enforce and monitor harvesting levels (Becker, Banana, & Gombya-Ssembajjwe, 1995). This forest owner also works closely with the village-level council and neighboring community members to regulate harvesting. Not all owners are conservation minded and willing to conserve the high-value commodities available in their private forests, particularly in this period of high demand for timber and commercial fuel wood.

We found one forest (Kizzikibbi forest reserve) that was degraded but improving. Here, we found better cooperation among local councilors, community members, and district forest officers. The DFO stated that the local councils near this forest, together with local community members, had developed and enforced strict harvesting rules and regulations. Cooperation among stakeholders was achieved after the community observed rapid decline in tree cover over recent years in Kizzikibbi forest reserve and in other forests neighboring their area. Community members reported that there was increased conformance with both fuel wood and timber harvesting laws and that conservation measures had improved from lax to about right. The community expected the condition of the forest to improve in future.

Finally those forests that were degrading or rapidly degrading did not have any organized form of monitoring or rule enforcement by either the DFO's office or the local government system. Only three rangers and 14 paid guards were available to enforce forest rules in more than 50 small and scattered local and central forest reserves covering a total of area of 37,000 ha. these and other forest reserves in Mpigi district.

The improving condition of Kizzikibbi forest reserve due to the cooperation of the LC system indicates that effective participation of local councils in forest management under the local government Act is possible if the councilors can over-come the collective-action problem involved in being active monitors without a formal salary. Unfortunately, the LC1 and LC11 officials who live close to the forests are volunteers and do not receive salary and many are not willing to undertake the additional duties attendant on devolution.

We also find that the LC 111 and LC 1V councilors (the two levels of local government charged with development of district plans and implementation of the Local Government Act) were expected to enforce the much-resented Forests Act of 1964 as written and as previously implemented by the central government with very limited involvement in decision-making. Yet Meinzen-Dick and Knox (1999) claim that participation in decision-making is the most critical form of participation in natural resources management. Consequently we find that there was limited commitment of local politicians to enforce forest rules. Thus, in order to promote decentralization and transfer of functions, powers, and services within the forest sector, the elected local councils and local government forest employees should be motivated to monitor and enforce forest rules. Revenues collected from the forestry resources should be returned to the

local councils where the forests are located and used to hire forest guards to protect the resource and also to support the budgets of those LC1 councils.

The ambiguous division of roles and responsibilities among the central government, the local government, the private sector, local communities and NGOs/CBOs also led to confusion within the forest sector possibly contributing to the observed decline of forest conditions in the district. Decentralization of the forest sector through the Local Government Act of 1997 was similar across all districts in Uganda. We might expect that during this period of out study, other districts of Uganda experienced similar perverse incentives for local councilors and unclear rights and responsibilities among stakeholders leading to similar decline in tree cover in the country.

There are several factors other than monitoring and rule enforcement that are necessary for successful resource management. These include forest tenure (Tucker 1999, Gibson, *et. al* 2001) distance to markets and population pressure (Agrawal, 1995) and level of dependency of the community on the resource. Determining the contribution of these factors to the observed degradation of forest resources in Uganda would require a large sample size and is beyond the scope of this study. However, Gibson *et. al* (2004) argues that the regularity of rule enforcement is most important factor in determining forest conditions. Therefore, the lack of regular monitoring and rule enforcement due to scarcity of resources by local governments and the unwillingness of local councilors to monitor and enforce resented forest rules as provided for in the 1964 Forest Act may explain some of the observed continued decline of forest conditions in Mpigi district following the implementation of the decentralization policy and Local Government Act.

The National Forestry and Tree Planting Act in 2003 (Republic of Uganda, 2003) that replaced the Forests Act of 1964 has now clarified the roles and responsibilities among the central government, the local government, the private sector, local communities and NGOs/CBOs. The Act also gives legal backing for the establishment of the District Forestry Office and the National Forest Authority (NFA). In line with the National Forest Plan, each District Forestry Service will prepare a District Forestry Development Plan through the District Technical Planning Committee (MWLE 2003). This will take a participatory approach involving stakeholders of the forest sector in the district. All types of forestry developments and initiatives in the district, including local forest reserves, natural forests on private and customary land,

private forest plantations, agro-forestry, urban forestry, environmentally sensitive areas, and any forestry-based enterprises will have to be considered in this plan. This may be done in collaboration with the NFA, which will be undertaking management planning in the central forest reserves.

The District Forest Development Plans will also identify the financial and human resources needed for their implementation, how these resources will be obtained, and the kind of partners that will be involved in the implementation of the plan. The planning will cover the different levels of local government (sub-county and district). Perhaps the establishment of the Forest Authority and District Forest Services will end perverse incentives for local councilors and increase the flow of funds for forest sector operations. However, the local governments are unhappy with transfer of the profitable central government forest reserves to the NFA and only decentralizing a few, non-profitable forestry functions to the District Forest Office since this may perpetuate the shortage of financial and human capital that have plagued them in the past.

Conclusions

In this chapter we conclude that decentralization reforms in Mpigi district were not sufficient to deter the degradation of forest resources. Basal area, stem density, and total aboveground biomass in the sampled forests decreased between 1994/1995 and 1999/2000. The species exhibiting the greatest decline in basal area were those preferred for timber and fuel wood, used for burning bricks and in factories. This suggests high levels of harvesting of commercial products during the study period possibly due to limited monitoring and enforcement of harvesting rules. Scarcity of financial and human resources by the local government appears to have hindered regular monitoring, rule enforcement and the establishment of effective local forest management institutions.

Decentralization in the forest sector was partial, thus local governments had only limited powers to influence forest management beyond monitoring and enforcing rules of use. The limited commitment of local politicians to enforce forest rules may be attributed to limited involvement of local politicians in decision-making and /or perverse incentives to enforce forest rules.

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Table 1. Administrative Hierarchy of the Buganda Kingdom

Buganda Kingdom traditional administrative hierarchy (from around the 13 th century)	Equivalent administrative hierarchy created by Colonial Government and maintained by post-colonial governments (1900–1987)	Equivalent administrative hierarchy created by Resistance Councils and Committees Statute of 1987 and the Local Government Act of 1997
Butongole	Village	LC-1
Muluka	Parish	LC-2
Gombolola	Sub-County	LC-3
Ssaza	County	LC-4
Buganda Lukiiko	District	LC-5

Table 2. What was Decentralized and to who?

	Pre-Decentralization of the Forest Sector (Prior to 1993)	Decentralization of the Forest Sector (1994–1995)	Partial Decentralization (Sharing of rights and responsibilities in the Forest Sector) (1996–Present)
Rights			
Alienation	-Central government could change the land use of forest land by act of parliament	-Local government could change the land use of a forest by enacting bye law	Central government could lease forest land to private developers
Land and tree Ownership	-All forest land and trees owned by CG ¹	-All forest land and trees owned by LG ²	-Forest reserves of commercial value owned by the CG -Small forest reserves owned by LG
Use and Access	-Local communities enter and harvest freely for subsistence use -Commercial harvesters enter and harvest on purchase of permit	-Local communities enter and harvest freely for subsistence use -Commercial harvesters enter and harvest on purchase of permit	-Local communities harvest enter and freely for subsistence use -Commercial harvesters enter and harvest on purchase of permit
Regulation of harvesting levels and Management	-CG prepares and approves forest management plans -CG issues harvesting and permit, collects fees and penalties	- LG issues harvesting and permit, collects fees and penalties	- CG issues harvesting permit on recommendation from LG through DFO - DFO collects fees and penalties on behalf of LG and CG
Revenue sharing	100% to CG	- 60% to CG; 40% to LG	- From CFRs: 60% to CG; 40% to LG - From LFRs: 100% to LG

Responsibilities

Sourcing for funds	CG	LG	CG and LG
Monitoring and rule enforcement	CG	LG	LG and CG

¹CG = central government

²LG = local government including all the nested layers

Table 3. Forest/Site Attributes

Forest Name	Forest Area (ha)	Tenure ¹	Distance to Kampala (km)	Population Density ²
Butto-Buvuma	453	CFR	25	Low ²
Kizzikibbi	520	CFR	70	High ³
Lwamunda A	694	CFR	30	Low
Lwamunda B	400	CFR	30	Low
Magezigoomu	20	Sacred Forest	70	Medium ⁴
Mpanga	500	Nature Reserve	30	Medium
Mugomba	150	CFR	20	Medium
Najjakulya	50	Private	60	High
Namungo	40	Private	30	Low

¹CFR = central forest reserve

²UBOS, 1991; Low = 50–99 per km²; High = 150–299 per km²; Medium = 100–149 per km².

Table 4 Human and Financial resources available to Mpigi District local government following the decentralization reforms

	Pre-Decentralization of the Forest Sector (Prior to 1993)	Decentralization of the Forest Sector (1994–1995)	Partial Recentralization of the Forest Sector (1996–Present)
Operational funding	All from CG ¹ ~ Ush 70 million (considered adequate)	All from LG ² ~ Ush 20 million (considered inadequate)	~ Ush 1 million from CG and ~ 7 million from LG (considered extremely inadequate)
Staffing (salaries provided by CG throughout)	<ul style="list-style-type: none"> - 4 Forest officers - 3 Assistant forest officers - 7 Forest rangers - 28 Guards - 11 Casual forest patrol workers - 4 Administrative staff 	<ul style="list-style-type: none"> - 4 Forest officers - 3 Assistant forest officers - 7 Forest rangers - 28 Guards - 11 Casual forest patrol workers - 4 Administrative staff <p>(Retrenchment of forest staff by CG began)</p>	<ul style="list-style-type: none"> - 1 Forest officer - 0 Assistant forest officers - 3 Forest rangers - 14 Guards - 0 Casual forest patrol workers - 0 Administrative staff

Table 5. Change in Conformance of Rules-in-Use to Formal Rules, 1994/1995–1999/2000

Forest Name	Commercial Fuel Wood ¹	Timber	Conservation Measures
Butto-Buvuma	Increased conformance with laws	Non-compliance with laws	Declined from lax to nonexistent
Kizzikibbi	Increased conformance with laws	Increased conformance with laws	Improved from lax to about right
Lwamunda A	Continued compliance with laws	No compliance with laws	Improved from lax to about right
Lwamunda B	Continued compliance with laws	Increased conformance with laws	Continued lax
Magezigoomu	Non-compliance with laws	Non-compliance with laws	Improved from nonexistent to lax
Mpanga	Continued compliance with laws	Continued compliance with laws	Too restrictive
Mugomba	Non-compliance with laws	Non-compliance with laws	Continued nonexistent
Najjakulya	Non-compliance with laws	Non-compliance with laws	Improved from nonexistent to lax
Namungo	Continued compliance with laws	Increased conformance with laws	Continued to be about right

¹Charcoal and Commercial Firewood

Table 6. Tree Stock in Mpigi District in 1994/95 and 1999/2000

		Statistics from Samples					
		Date of Site Visits	Mean	Std. Dev.	Std. Error Mean		
Biomass (Mg/ha)		1994/1995	199	100	33		
Biomass (Mg/ha)		1999/2000	123	84	28		
Basal Area (m ² /ha)		1994/1995	21	7	2		
Basal Area (m ² /ha)		1999/2000	15	9	3		
Stem Density (stems/ha)		1994/1995	329	91	30		
Stem Density (stems/ha)		1999/2000	244	101	33		
		Paired Differences					
		Mean	Std. Dev.	Std. Error Mean	t	Df	Sig. (two-tailed)
Pair 1	Biomass (Mg/ha)	75	60	20	3.793	8	.005
Pair 2	Basal Area (m ² /Ha)	5	6	2	2.695	8	.027
Pair 3	Stem Density (stems/ha)	84	97	32	2.608	8	.031

Table 7. Ten Tree Species with Greatest Decline in Average Basal Area across Forests,
1994/1995 to 1999/2000

	1994/1995	1999/2000	Change	Use*
	(cm ² /m ²)	(cm ² /m ²)	(cm ² /m ²)	
<i>Celtis mildbraedii</i>	1.5856	0.8632	0.7223	T
<i>Celtis durandii</i>	1.2017	0.6228	0.5790	T
<i>Parinari excelsa</i>	0.6417	0.1064	0.5352	T
<i>Piptadeniastrum africanum</i>	0.9528	0.5241	0.4287	T
<i>Antiaris toxicaria</i>	1.7081	1.3741	0.3341	T
<i>Macaranga monandra</i>	0.5965	0.3047	0.2918	FW
<i>Trichilia priureana</i>	0.4460	0.1568	0.2892	FW
<i>Erythrophleum guineense</i>	0.2463	0.0000	0.2463	FW
<i>Ficus capensis</i>	0.2494	0.0093	0.2401	FW
<i>Pseudospondias macrocarpa</i>	1.4203	1.1834	0.2369	FW

* T = timber; FW = firewood

Table 8. Change in Forest Condition of Sampled Forests in Mpigi District, 1994/1995–1999/2000

Forest	Forest Area (ha)	Basal Area (m ² /ha)		Change in Forest Condition
		1994/1995	1999/2000	
Butto-Buvuma	453	24	16	Degrading
Kizzikibbi	520	25	17	Degraded but improving
Lwamunda A	694	22	21	Stable
Lwamunda B	400	28	9	Rapidly Degrading
Magezigoomu	20	18	9	Rapidly Degrading
Mpanga	500	31	35	Stable
Mugomba	150	10	5	Rapidly Degrading
Najjakulya	50	10	6	Degrading
Namungo	40	27	23	Stable

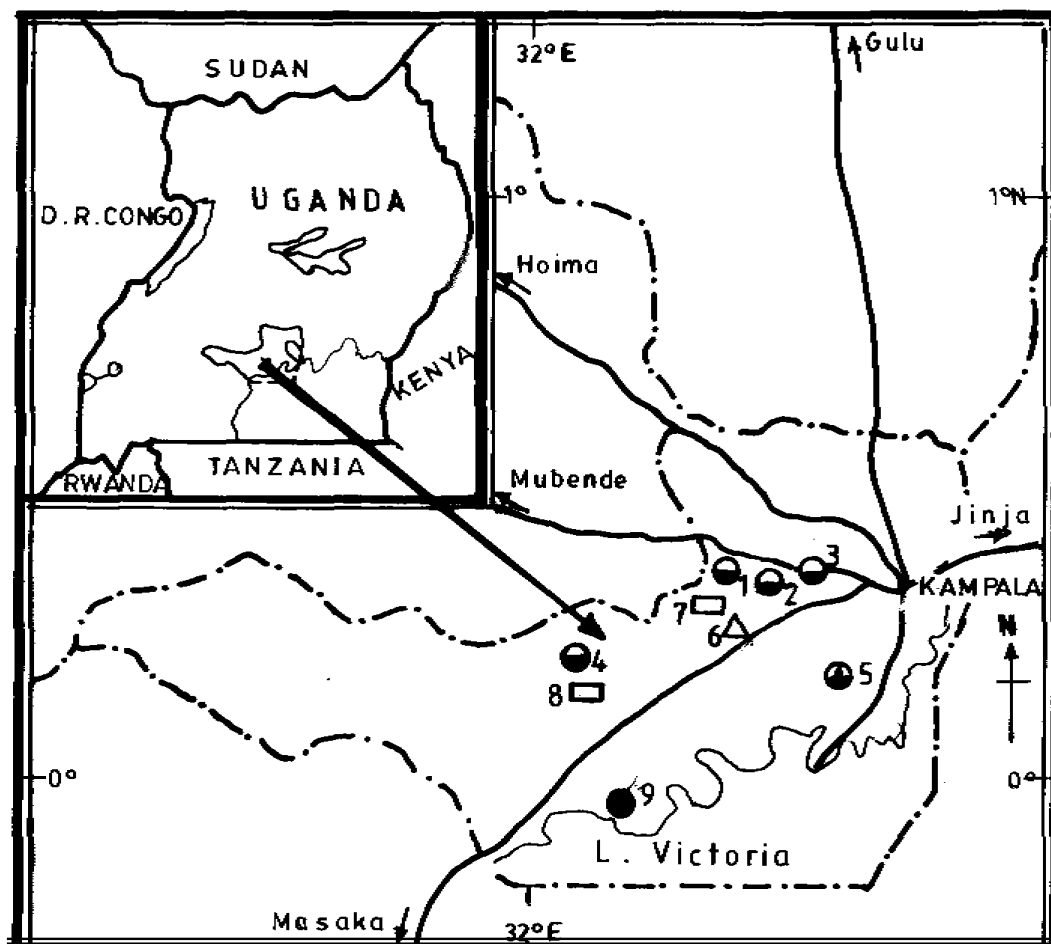


Figure 1. Map of Uganda showing Mpigi District and UFRIC forest sites included in the study: (1) Lwamunda A, (2) Lwamunda B, (3) Butto-buvuma, (4) Kizzikibi, (5) Mugomba, (6) Mpanga, (7) Namungo, (8) Najjakulya, and (9) Magezigoomu

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