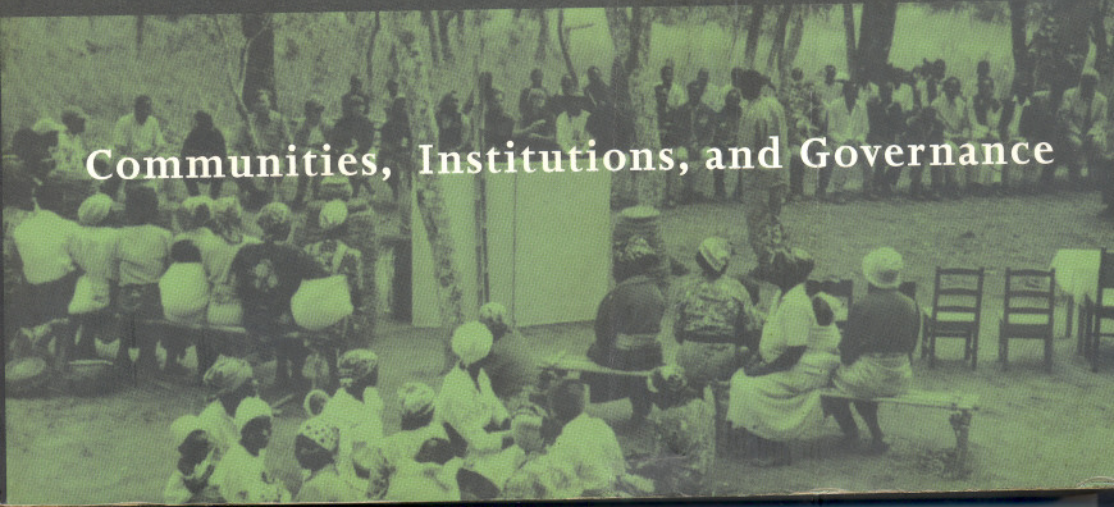


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# People and Forests

Communities, Institutions, and Governance



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## Successful Forest Management: The Importance of Security of Tenure and Rule Enforcement in Ugandan Forests

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### Introduction

Uganda's forest resources are an essential foundation for the country's current and future livelihood and growth. Over nine-tenths of Uganda's energy requirement, for example, is generated by forests (Ministry of Finance and Economic Development, 1993). Forests are also important for timber and for their role in increasing agricultural productivity. They support wildlife and other forms of biodiversity vital for the country's future heritage, as well as for generating foreign exchange through a tourist industry focused on the diverse flora and fauna of Uganda.

These valuable forest resources are disappearing rapidly. The 1992 Uganda National Environmental Action Plan (NEAP) estimated that deforestation was occurring in Uganda at the rate of 500 square kilometers annually, while the United Nations Food and Agriculture Organization (FAO) (1993) estimated it to be at 650 km<sup>2</sup> annually.

The proximate causes of forest loss are clearing for agriculture, pitting, and logging for lumber, charcoal, and firewood production. However, not all forests are experiencing this problem equally; in some forests we do not find overexploitation. If we can come to understand why certain forests do not experience overuse, perhaps these lessons can help construct management schemes that are more effective and sustainable.

Among the more important independent variables that affect the level and type of consumptive utilization of forests in many settings are the security of tenure that local residents possess related to forests and the level of rule enforcement related to the use of forest resources. These

variables are important because individuals who lack secure rights to forest resources are strongly tempted to use up these resources before they are lost to the harvesting efforts of others. Further, if rules regulating access and use of forest resources are not adequately enforced, the *de facto* condition becomes one of open access rather than secure tenure.

In this chapter, we argue that the condition of forests in Uganda is related to the uncertain status of land and forest tenure regimes. In our study of five forests, ranging from 60 to 4,500 hectares, we find that in those areas where a system of property rights is well known to the local population and is enforced, the condition of forests is arguably better than in those areas where locals play no part in forestry management and national laws lack enforcement (NEAP, 1992). We also find that in addition to government-enforced rules, the recognition of indigenous rights to forest-resources management leads to successful management practices.

### Forest Use in Uganda

To establish the effect of the independent variables described above on the outcomes (deforestation or sustainable use of the resource), studies were conducted during the fall of 1993 in five selected sites located in Uganda's four agroecological zones (tall grasslands, short grasslands, semiarid, and highlands).

Two forests were studied in the tall grassland zone in Mpigi District about 30 km west of Kampala. Two forests from one site were included because they represented a "natural experiment" in which very similar natural forest lands were divided into two forests with different tenure regimes and use rights. One of the forests is known as Namungo Forest, which is a privately owned 40 hectare patch. Adjacent to Namungo Forest is a 1,000 ha section of the Lwamunda Forest, which is a government forest reserve. Both of these forest patches are tropical moist evergreen with closed canopies (Barbour, Burk, and Pitts, 1987) and are locally classified as medium-altitude *Piptadenistrum-Albizia-Celtis*, after the three typically dominant species in this area (Howard, 1991).

From the highlands agroecological zone, we studied the 1,200 ha Echuya Government Forest Reserve, located approximately 500 km southwest of Kampala in Kabale District. It is a montane forest characterized by *Arundinaria alpina* bamboo species and scattered *Dombeya-Macaranga* tree species (Banana et al., 1993a, 1993b). From the semiarid agroecological zone, we selected the Mbale Forest Reserve (1,207 ha). This forest, a savanna grassland forest characterized by *Acacia-Albizia-Combretum* tree species and *Cymbopogon afronadus* and *Hyparrhenia spp.*, is located approximately 70 km north of Kampala in Luwero District (Banana et al., 1993c).

Bukaleba government forest reserve (4,500 ha), located 140 km east of Kampala in Iganga District, was selected to represent forests in the short grass agroecological zone. It is a wooded savanna grassland forest, characterized and dominated by *Combretum*, *Teclea*, and *Terminalia* tree species (Banana et al., 1993b).

### Level of Consumptive Utilization

Local forest users consume a wide variety of forest products in all five forests. Some of these uses are legal; a great number are not. Significantly, the intensity and pattern of these consumptive uses vary across the forests.

In all five forests, local forest users are permitted to harvest forest products for subsistence use in "reasonable" quantities. Access to these forests for other benefits, such as recreation and cultural activities, is open to all local users. If forest users desire to harvest forest products for commercial purposes, however, they are required to purchase a monthly or seasonal license from the Forest Department.

The specific pattern of legal use in each forest, however, varies. In Namungo Forest, the Namungo family (the private owner) recognizes the customary rights of the local residents located at the edge of their forest for the last half century. These residents are allowed to harvest firewood, poles, craft materials, medicinal plants, water, and fruits and wild foods from the forest (Gombya-Ssembajjwe et al., 1993). To monitor the use of this forest by local residents, Namungo employs a staff. The adjacent Lwamunda Forest Reserve, which is a government forest reserve, is also

used by local residents for harvesting similar products. Prior to 1981, selective logging of trees over 80 centimeters in diameter by logging companies had been permitted and carried out in both Namungo and Lwamunda Forests. Locals living near the Echuya montane forest use bamboo stems extensively for firewood, poles, thatch, and fibers. In Bukaleba and Mbale Forests, the *Acacia-Albizia-Combretum* tree species that dominate are used extensively for commercial charcoal production by the local people, and the *Cymbopogon afronadus* and *Hyparrhenia spp.* grasses are used as thatch and for grazing by local and transhumant grazers in the dry season (Banana et al., 1993a, 1993b, 1993c).

The pattern of illegal consumptive use by local people also varies widely. Table 4.1 contains data regarding illegal exploitation and disturbance collected from a random sample. In each of the forests larger than 200 ha, a random sample of 30 plots was taken from 200 ha of a forest patch that is accessible to the community and where human foraging is likely to be high. The table categorizes five types of illegal activities observed in the plots: charcoal burning, pitsawing, commercial firewood collecting, grazing of livestock, and agricultural activity.

Distinct patterns emerge from the data. The plots in Lwamunda, Mbale, and Bukaleba Forests endure considerable illegal consumption activities. Mbale, for example, bears the highest level of disturbance, with all but four out of 30 sample plots showing evidence of illegal use; the

Table 4.1

Number of sample plots with evidence of illegal consumptive disturbance (N = 30 per forest)

Name of Forest	Commercial					No Illegal Consumptive Disturbance
	Charcoal	Pitsawing	Firewood	Grazing	Farm	
Namungo	1	2	2	0	0	25
Lwamunda	3	8	10	0	0	9
Mbale	10	1	5	22	4	4
Echuya	0	0	3	1	0	26
Bukaleba	0	0	12	2	5	11

Note: In some sample plots, more than one type of disturbance was observed.

grazing of livestock appears to be the most frequent of illegal activities within Mbale Forest. In the plots of Lwamunda and Bukaleba, the commercial collection of firewood seems to be the most regular illegal use, observed in at least a third of the sample plots in each forest.

Overall, about 70 percent of the sample plots in Lwamunda, Mbale, and Bukaleba forest reserves show evidence of illegal consumptive utilization of one form or another. In Namungo and Echuya Forests, however, only 20 percent of the sample plots show such illegal consumptive use in each of the five categories. In Namungo Forest, no type of illegal use appears in more than 10 percent of the plots, while in Echuya Forest, three of the five types of illegal uses were not observed at all.

To investigate how the illegal consumptive uses presented in table 4.1 affect the physical condition of the forests, physical data were collected in each of the sample plots as well. The methodology for the data collection began with the demarcation of three concentric circles in each plot. In the first circle (1-meter radius), the amount of ground cover by species was estimated. In the second circle (3-m radius), shrubs and tree seedlings were identified and their heights measured. In the third circle (10-m radius), all trees were identified, their stem diameter at breast height (DBH) measured, and their heights estimated.

It can be noted that the consumptive disturbances were not universally as high as they were observed to be in Lwamunda, Mbale, and Bukaleba Forests. Data collected for trees indicate that tree species diversity was slightly better in Lwamunda forest reserve (73 species) than in the privately owned Namungo property (64 species) (table 4.2). The higher species diversity value in the government reserve may have come about by gap formation associated with repeated selective harvesting between 1971 and 1985, when there was no effective forest management by the state because of the prevailing civil strife (Becker, Banana, and Gombya-Ssembajjwe, 1995). When large trees are harvested, they form openings in the forest where a wide variety of seedlings may become established and compete, leading to a higher species richness (Denslow, 1987).

Species diversity was generally low in all of the sites in the Savanna and Montane forest zones. The number of species observed in these zones

Table 4.2

Summary of data collected for trees in plot samples of the pilot-study forests

Forest	Area (hectares)	Species Richness	Stems per Hectare	Mean Diameter at Breast Height (centimeters)	Total Basal Area (square meters)
Namungo	60	64	362	23.4	19.0
Lwamunda	1,000	73	338	26.6	16.0
Mbale	1,207	28	164	15.0	3.0
Echuya	1,200	18	5,556 <sup>a</sup>	4.6 <sup>a</sup>	9.2 <sup>a</sup>
			180 <sup>b</sup>	20.3 <sup>b</sup>	6.0 <sup>b</sup>
Bukaleba	4,500	34	190	17.8	5.0

a. Bamboo.

b. Trees.

was limited to 28 in Mbale Forest, 32 in Bukaleba Forest, and 18 in Echuya Forest.

The number of stems per hectare and total basal area were significantly higher in Namungo than in Lwamunda Forest, although the distribution of different tree-size classes were not significantly different in both forests (table 4.2). Both forests were dominated by trees having a diameter range of 10 to 40 cm. Very large trees with diameters greater than 80 cm were rare, representing less than 2 percent of the trees. Tree-size class distribution was also not significantly different in Mbale and Bukaleba. Both forests were dominated by small trees having a diameter range of 10 to 20 cm. Mature trees had been harvested for firewood and charcoal. Trees were larger in Echuya Forest, where tree harvesting is prohibited.

The data demonstrate that not all forests are being used at the same rate or in the same manner by the people living near them. Degradation was not found to be as extensive in Namungo and Echuya Forests as it was in Lwamunda, Mbale, and Bukaleba Forests. These latter three forests show serious signs of open-access utilization that, if left unabated, could lead to a local fuelwood shortage, substantial forest degradation, and loss of useful biotic resources and amenities.

## The Role of Tenure and Enforcement

Security of tenure of natural resources is an important issue if local communities are to use sustainably natural resources in their localities. Tenure is a set of rights that a person or some private entity holds to land or trees (Bruce, 1989). It includes questions of both ownership and access to resources. Tenure helps to determine whether local people are willing to participate in the management and protection of forests (Bromley, 1991/92).

During the colonial period, indigenous peoples' rights to harvest and dispose of trees were significantly restricted. Similarly, after independence, Uganda's forest policy, like many other developing countries, has been characterized by the strong concentration of power over forest resources in the central state apparatus, and the corresponding lack of local participation in forest and tree management.

Failure to recognize indigenous systems of forest management and indigenous rights to resources has led to

- Fewer incentives for the local communities to protect trees,
- Disincentives for local people to engage in tree planting and reforestation projects, and
- Excessive reliance by the state on punitive measures to enforce the law.

Lawry (1990) argues that where forest habitats have little economic value to local people because of restrictive access rules, sustainable local management institutions are unlikely to emerge. Incentives for conservation by local people can be improved by increasing the value of the resource to local people by, for example, granting more access rights or by granting local communities a percentage of forest concession revenues. None of these measures have been adopted by the Forest Department.

Insecurity of land and tree tenure may explain the observed general degradation of the forests throughout Uganda. A centralized state policy that is not backed with enough resources to enforce its rules has led to a condition in which most forests in Uganda are *de facto* open-access resources.

And yet insecure tenure alone does not explain the observed variance of degradation that we found in our study's forests. The most significant



difference between the forests is the high level of illegal consumptive utilization of Mbale, Lwamunda, and Bukaleba Forests and the lower level of illegal use in Namungo and Echuya. To account for this variance, we turn to an explanation that features the enforcement of rules at the local level.

Although all forest reserves have clearly defined boundaries, the study reveals that monitoring is difficult and costly in Lwamunda, Mbale, and Bukaleba because these reserves are large with long borders, requiring many forest guards to monitor them effectively. The financial and human resources available to the Forest Department, however, are inadequate to carry out the task of policing these forests. In addition, the government officials (forest guards, forest rangers, and forest officers) who monitor and enforce the rules are poorly paid and, thus, not motivated to carry out their duties. As a result, forest users who choose not to comply to the rules can easily escape detection. This allows individuals to use forests illegally and, hence, leads to forest overexploitation.

The Echuya and Namungo Forests, in contrast, have a much greater level of monitoring and enforcement. Namungo Forest is small (60 ha) with short borders and a path around two sides of it. Namungo's family lives on one side of the forest and the settlements are on the other side. Since Namungo values the forest for his own rights to harvest timber (after due notification of his intention to harvest) and employs farm workers who can be forest guards for part of each day, his forest has more guards than an average government reserve. Additionally, because local residents are allowed to exercise their traditional rights to harvest forest products (such as firewood, poles, medicines, fruit, fodder, and other forest products), residents tend to protect actively the forest against outsiders who try to use Namungo Forest. Thus, the level of rule enforcement in Namungo's Forest is relatively high, both because Namungo employs private guards and also because locals enjoy strong and secure rights to products within the forest. The advantage of the forest's small size, short borders, and perimeter path around two sides helps to make monitoring more effective.

Like the more illegally used forests of this study, Echuya is a large government reserve. But certain important features of Echuya help to limit the amount of illegal consumptive use. Although subject to the same

constraints on human and other resources that discourage other government guards from effectively enforcing the national rules, the Forest Department staff in Echuya has augmented its monitoring capabilities by using the help of an Abayanda pygmy community. The department allows the Abayanda the right to live within, and appropriate products from, the forest on a daily basis—rights that other local residents do not possess. Because they live within the forest, the Abayanda are in a good position to monitor who is harvesting from the forest, especially since locals are allowed by law to enter the forest only once per week (on Thursdays). Echuya's physical layout also helps protect it from overexploitation. The Kabale-Kisoro road is the only road passing through the reserve and can be patrolled easily. Thus, while Echuya is large when compared to Namungo Forest, accessibility is difficult, the level of monitoring is significant, and the likelihood of being caught harvesting illegally is quite high.

The department's reliance on the Abayanda as forest monitors is effective for three reasons. First, because the Abayanda do not live with the rest of the community, they do not fear retaliation from those they report to the Forest Department staff. Second, the Abayanda are less likely to collude with other local residents in breaking rules since there is little interaction between the two communities. Third, the Abayanda have an incentive to protect the forest on which they depend on a daily basis.

In the other three forests, actions of local people suggest that unrestricted, unplanned, and illegal exploitation—as indicated by the levels of disturbances or illegal harvest—is not effectively prevented. The officials who govern these three resources have not minimized opportunities for activities that lead toward the rapid deforestation of these sites.

To comply with the rules regulating use of a resource, local users must

- Be aware of the possible consequences of not complying with the rules;
- Understand that there is sufficient monitoring of rule compliance; and
- Observe that individuals who abstain from illegally obtaining forest products do not compete with neighbors who obtain substantial income from illegal forest products (Ostrom, 1990).

In Lwamunda, Mbale, and Bukaleba, the local people are aware that there is no effective rule enforcement. As a result, these forests are a *de jure* state property but *de facto* open access. The absence of effective

management and enforcement has turned these forests into a resource that can be exploited on a first-come, first-serve basis that leads to overexploitation:

## Conclusions

While it is difficult to address many of these issues with cross-sectional, rather than time-series data, this chapter has put forward a few assertions about the importance of tenure, enforcement, and forestry management at the local level in Uganda.<sup>1</sup> In this chapter, we argued that security of tenure and level of enforcement of rules are critical issues in forestry management. Using five cases from Uganda, we provided some evidence that supports the view that for successful forest management to be achieved in Ugandan forests, attention must be paid to both the rules that allocate property rights over forest products and the way those rules are enforced.

This chapter indicates that forest resources are more likely to be sustainably utilized if an effective structure of institutional arrangements exists that gives rise to an authority system meaningful at the local level. A government forest reserve (state property) and a private forest (private property) can be as degraded as a communal forest (common property) if there are no effective institutional arrangements and associated organizational mechanisms to monitor and enforce rules that prevent wanton harvesting of the resource (Bromley, 1991/92). Regardless of the *de jure* property regime, all forests can be *de facto* open-access regimes if there are no effective institutions and mechanisms to enforce the rules.

Insecurity of land and tree tenure discourage local participation in forest-management and forest-protection activities. This in turn increases the cost of monitoring and rule enforcement by the state. Part of these increasing costs can be met by employing locals to monitor in the place of regular national staff, as is the case in the Echuya forest reserve. But the long-term sustainability of a strategy that merely strengthens the enforcement of national laws is questionable. First, it would be difficult to replicate the situation in which a community of individuals is willing to provide monitoring services at an extremely low rate of remuneration, as are the Abayanda. Second, a great deal of tension exists between the

Abayanda population and the others living around Echuya Forest. The Abayanda, considered an inferior social group by most Ugandans, are generally treated quite poorly by the Kiga ethnic group living near the Echuya forest reserve. This social tension could vitiate the forest management scheme that uses the Abayanda as an extension of the Forest Department.

Given management institutions in which local residents have a greater stake in the resources and management of a forest, it appears that successful forestry management might endure. Namungo Forest appears to be sustainably used not only because of its guards but because community residents are allowed to use the forest according to traditional custom. This makes residents more motivated to discourage outsiders from invading the forest.

As Uganda searches for ways to manage its forests, the lessons from these five cases may be instructive to policymakers. State-centered policies appear to have failed in many Ugandan forests; the costs of maintaining a top-down institutional arrangement necessary to protect forestry resources are far too high. Alternatives that appreciate the preferences and capabilities of local communities should be weighed, not only because they appear to reduce the costs to the central state of managing numerous small forests but because they appear to be more effective in maintaining forest patches in relatively good condition.

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### Note

1. IFRI protocols are designed to collect data over time, so we will return to these forests in the future in our attempt to further untangle these issues.

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