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## TENURE AND MANAGEMENT OF TREE RESOURCES IN EASTERN AND SOUTHERN AFRICA: PROBLEMS, EVIDENCE, AND POLICY IMPLICATIONS

by Frank Place and Brent Swallow

Trees are essential throughout sub-Saharan Africa. Products include fuelwood, fruits, poles, timber, and medicines. Wood provides over 80% of cooking energy in nearly all countries of eastern and southern Africa. Trees can be key components of rich, biodiverse ecosystems, providing vital environmental services such as nitrogen fixing, watershed protection, soil erosion control, and carbon sequestration. These different products and services generate diverse stakeholders in agroforestry and forest systems, including private farmers, communities, nations, and the global community.

Some benefits generated by trees accrue over considerable lengths of time and are affected by institutions that govern control, access, and use of trees. Land and tree tenure relationships



differ greatly across the diverse land uses and ethnic communities in sub-Saharan Africa; nonetheless, it is important to synthesize major lessons that are robust across common situations. This brief focuses on two distinct population pressures and land use domains common in eastern and southern Africa: highly-populated areas where cultivation is the dominant land

**There exist diverse stakeholders in agroforestry and forest systems**

## How does tenure affect the ability and willingness of farmers to intensify tree planting?

use and few off-farm sources of trees exist, and relatively low-populated areas containing a significant amount of forest and woodland but where there is increasing encroachment from migrating populations. Using studies conducted by the International Centre for Research in Agroforestry (ICRAF) and its research partners, this brief highlights important tree resource management issues and discusses policy implications.

### HIGH POPULATION ZONES WHERE AGRICULTURE PREDOMINATES

This domain is characterized by shrinking farm sizes and a strong need to intensify land use. Given the risky environment faced by farmers and the limited communal resources, intensification often occurs by diversifying farming enterprises, including planting trees. The major question for tree management is: How does tenure affect the ability and willingness of farmers to intensify tree planting?

Indications that tenure may significantly constrain tree planting include the insufficient number of trees that are planted or protected on farms and the fact that trees found on farms are not types desired by important stakeholder groups (e.g., female farmers or urban consumers). It is difficult to define an ideal tree cover or biomass level and how "insufficiency" would be measured

against this ideal. Neither theoretical nor empirical research has addressed this issue to much extent. Research has focused instead on whether factors, including tenure, tend to lead to greater or fewer trees being planted or preserved on farms. The implicit assumption is that the more trees, the better.

Where might tree management problems exist in eastern and southern Africa? Using remote sensing and ground surveys, several recent studies in the highlands of east Africa have found that the density of trees on farms has actually increased over time despite significant population growth. This has been found in large areas of Kenya,<sup>1</sup> Uganda,<sup>2</sup> and in selected sites of Burundi.<sup>3</sup> For instance, farming land area under tree canopy was found to increase from 23% to 28% across a wide area of central Uganda from 1960 to 1995. Partly due to this increased planting and management, the percentage of all tree cover on farms increased from 35% to 58% in the same period. Tree cover in intensive Chagga homegarden systems in northern Tanzania have remained stable and relatively high. On the other hand, tree cover on farms appears to have remained stubbornly low in Malawi for the past 20 years, at about 2% canopy cover,<sup>4</sup> and substantial qualitative evidence shows remarkable tree cover loss in vast areas of Ethiopia. In summary, tree cover stocks and changes on farms in the region vary considerably.

Even where on-farm tree density is relatively high, there often are imbalances between supply of tree products and what is preferred by consumers. For example, despite the preference of consumers and higher prices for certain indigenous fuelwood trees, hardly any farmers plant these trees, and eucalyptus has become a dominant source (e.g., in Kenya and Malawi). Similarly, while many valued hardwood species had been traditionally preferred for furniture and implements, these have largely disappeared from the landscape without significant management on farms (e.g., Uganda). In some areas of western and central Kenya, despite large numbers of trees, women report widespread shortages of fuelwood.<sup>5</sup> Lastly, many fruit species are planted by farmers but only near their homesteads (common throughout the region).

Tenure may affect these outcomes in several ways. Some high value trees are not grown because of rules restricting their felling or harvesting. In addition, hardwoods and firewood species are often grossly undervalued in stumpage fees when obtained from state land. This can depress prices and reduce incentives for farm production. Apparent fuelwood shortages on farms may result when women are responsible for providing the wood used in cooking fires yet men have the primary rights to plant trees. Lastly, valued tree production often occurs around homesteads mainly to guard against theft and reduce

losses due to actual or perceived secondary rights to these products.



### Key findings

1. Tenure incentives for tree planting on farms generally are favorable in indigenous tenure systems prevailing in eastern and southern Africa.
  - Households have acquired farmland mainly through inheritance or purchase and have strong private rights over this land.
  - Households that plant trees almost always retain rights to those trees.
2. Some indigenous tenure systems appear to discourage tree planting.
  - Matrilineal systems found in selected areas of Malawi and Zambia discourage significant investment in trees by males.
  - Periodic reallocation of land in Tigray, Ethiopia tends to discourage planting.
  - Increasing short-term tenure arrangements in Rwanda and Burundi tend to discourage planting.

**There often are imbalances between supply of tree products and what is preferred by consumers**

## How can tenure institutions reconcile competing demands?

3. Tree planting is an important strategy used by households to help secure landrights.

- Many indigenous tenure systems reward tree planting with stronger individual landrights.
- Tree planting is an inexpensive way of demonstrating use of the land and therefore averting requests for land from extended family members.

4. Tenure arrangements will affect the types of trees that may be planted, who may plant them, and where they may be planted.

- Women's rights to plant and harvest trees remain relatively weak.
- Secondary rights of households to certain tree products (e.g., fuelwood and fruit) and to stover on others' farms are common and may discourage tree planting.
- Rules restricting or prohibiting felling certain species will discourage farmers from planting or managing them.
- Fragmentation of farmholdings can restrict niches where high value trees can be grown to those plots near the homestead.

### LOW BUT GROWING POPULATION ZONES WITH WOODLANDS AND FORESTS

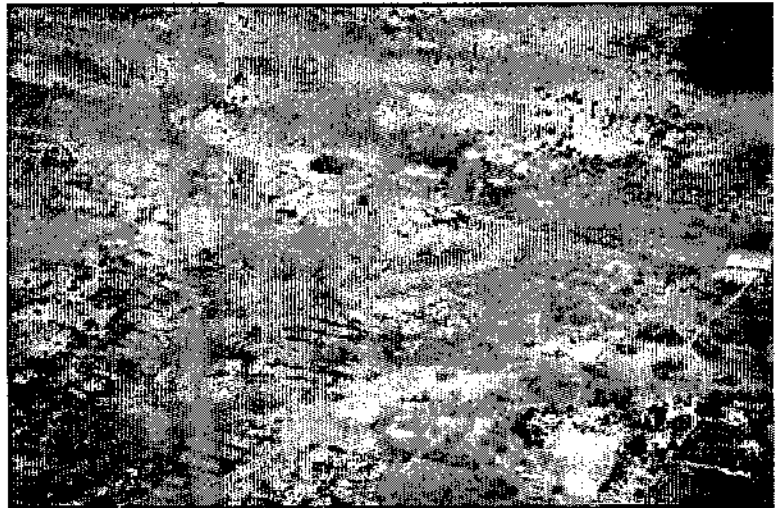
**T**hese areas are characterized by the prominence of non-cultivated areas such as woodlands, bushlands, grasslands, or forests in the landscape.

Continued population growth and limited areas for expansion increases the pressure on these "frontier" lands. As these lands become more scarce, they also become more valuable to the nation in terms of products for urban areas and biodiversity preservation. The major question for tree management is: How can tenure institutions reconcile competing demands for land conversion and maintenance of tree resource stocks?

This is a major challenge. In Africa, woodlands have been cleared everywhere under varying tenure regimes; state, communal, or common management systems seemed to have been overwhelmed by demand for cultivation. For example, between 1971 and 1995, the proportion of land under cultivated farming in 57 randomly selected sites in Malawi rose from 52% to 68%. Similarly, between 1960 and 1995, the increase across 64 sites in eastern and central Uganda was from 57% to 70%. This expansion played an important role in achieving increases in agricultural production since yield increases have not been able to keep pace with population growth.<sup>6</sup> The implication is that local communities have placed a higher value on private management, chiefly in the form of cultivation, than they have on retaining communal management, chiefly for obtaining resources other than crops.

The divergence in valuation of different tenure/land use options is certainly partly due to the relative lack of investment in land improvements on non-cultivated land. This, in turn, is related to the lack of incentives for individuals to invest on these lands. In the past, many projects found households much more willing to plant trees on their own farms than on land managed in common. It is only relatively recently that projects, such as CAMPFIRE in Zimbabwe, have been designed specifically for communities to maintain, improve, and increase benefits from off-farm resources.

Within non-cultivated areas there are differences in the amount of tree cover. For example, in Malawi tree cover in non-cultivated lands dropped from 24% to 17% between 1971 and 1995 from selected thinning of valuable trees. One of the key reasons is the intensified competition for tree resources in the diminishing forests and woodlands. This competition encompasses rural communities (sedentary, pastoral, and migrating), commercial interests supplying a largely urban clientele, and political interests. However, data from Uganda shows only a slight reduction in non-cultivated land tree cover from 44% to 41% between 1960 and 1995. This is due to several factors; an important biophysical factor is that Uganda has a more favorable climate for the growth and regrowth of trees following cutting.



### Key findings

1. Demand for cultivated land drives the ways that indigenous tenure institutions govern the management of non-cultivated land.
  - Conversion of land to agriculture is strongly linked to population growth, and this holds across different tenure regimes.
  - In densely populated zones practically all land has been brought under cultivation and individualized property rights.
  
2. Though land rights on farm land are fairly strong even in sparsely populated areas, they do not stimulate tree planting when the supply of tree products off-farm remains relatively plentiful.
  - Tree planting is positively linked to population density, reduction of off-farm resources, and distance to off-farm woodland sources.
  - Tree planting is more costly and more risky in drier environments

**Conversion of land to agriculture is strongly linked to population growth**

where low population densities are more likely to occur.

3. Tenure institutions to protect local and/or national interests and to sustain off-farm tree resources are weak or overwhelmed by competing demands for these resources.

- There is poor protection, excessively low user fees, and subsidized tree production in many state-owned woodland/forest areas.
- Off-farm tree resources in communal tenure land are often open access; as population pressure increases this is increasingly unsustainable.
- Increased external demands and exploitation of woodlands have obscured rules and rights over tree resources and led to increasing conflicts.
- There are hardly any examples of successful partnerships between the state and local communities for woodland or forest management

**POLICY IMPLICATIONS** Across most of eastern and southern Africa farmers do have favorable tenure incentives to plant and manage trees on their farms. Where a favorable tenure climate does not exist, as in Ethiopia where all land is nationalized, improving tenure policies should be one of highest priorities for increasing tree cover on farms. There are many tenure complexities that inhibit planting particular types of trees, on particular

parts of a farm holding, by particular household members. The most pervasive appears to be the widespread lack of women's rights to plant and harvest tree products. Strong secondary rights to tree products or grazing resources also are pervasive in the region.

Whether and when national or local tenure policies should be modified to address complex and often localized problems depends on several factors. For example, what is the cost and likelihood of success associated with a given tenure policy change? Is tenure change likely to result in greater impact on tree cover than other types of policy change?

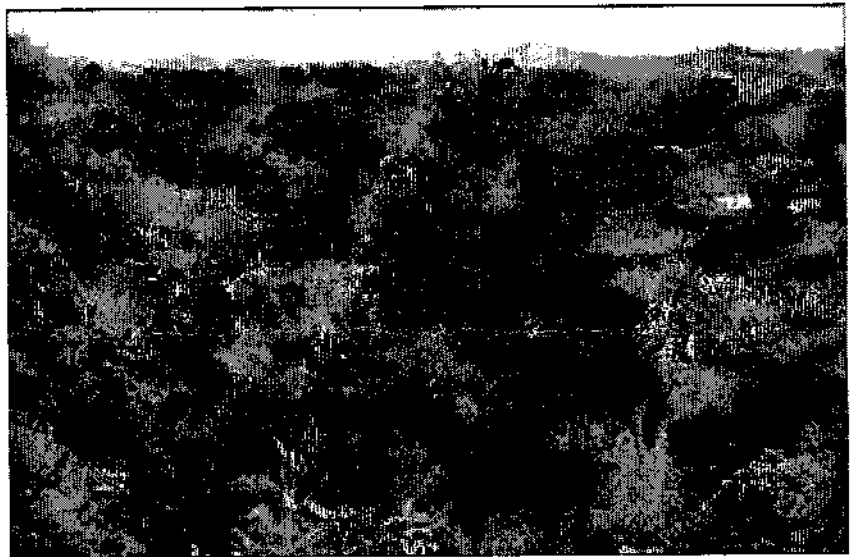
In the event that tenure problems on farms are identified as priorities, what can be done? The case of women's rights is complex in that gender-differentiated property rights are culturally based and resistant to formal legal change. Public awareness of the importance of tree planting at national levels, such as obtained through presidential speeches, can be effective. At least, tree-planting projects that have introduced new tree species or functions (such as for soil fertility improvement) have increased participation of women. Concerning the mitigating effects of secondary rights, it must be recognized that these secondary rights have persisted even under privatization in many areas of the region because local communities have benefited from them. Where changes in

secondary rights can benefit all stakeholders, change is more easily justified.

Some types of tree products or services must be obtained in nonagricultural land uses such as woodlands and forests. Examples would be preservation of natural habitats for biodiversity or the protection of water quality. Such benefits are normally not fully captured by adjacent communities and consequently the preservation of these natural resources is undervalued in relation to potential gains from agriculture. Where these "public good" natural resources occur, the formation of policies and incentives that harmonize local and social objectives must be sought. This requires collaboration between authorities (statutory or customary) at local and national levels; exclusive control by either level would lead to suboptimal policies or implementation. The broader national perspective and legal backing afforded by national institutions is vital, as is the ability and effort in management afforded by local institutions. Identifying feasible institutions that would tackle these issues effectively is not straightforward; this is an area deserving additional resources from national government research and development funds.

In the past, African governments have often enacted tenure policies that could not be fully implemented due to insufficient resources. Often, this has resulted in what might be described as a de facto laissez-faire tenure policy. Many

studies have found that such noninterference may have been appropriate for cultivated land: indigenous systems evolved on their own to provide sufficient tenure incentives to farmers. However, such a policy does not appear to have worked well in the case of woodlands and forests, where unclear or contested property rights have in some cases resulted in severe resource degradation. Governments need to be more active in finding effective tenure policies and institutions to deal with these resource problems. If found, then other types of policies and public investment such as road infrastructure development can be viewed as "win-win" policies rather than as tradeoffs.





## B A S I S B r i e f s

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Photographs courtesy of Anthony Njenga

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## ENDNOTES

<sup>1</sup>P. Holmgren, E. Masakha, and H. Sjöholm. 1994. "Not All African Land Is Being Degraded: A Recent Survey of Trees on Farms in Kenya Reveals Rapidly Increasing Forest Resources." *Ambio* 23 (7): 390-395.

<sup>2</sup>F. Place, and K. Otsuka. 2000. "Population Pressure, Land Tenure, and Tree Resource Management in Uganda." *Land Economics* (forthcoming).

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<sup>4</sup>F. Place, and K. Otsuka. 2000. *Population, Land Tenure and Natural Resource Management: The Case of Customary Land Area in Malawi*. IFPRI/PTD Discussion Paper 27, Washington: International Food Policy Research Institute.

<sup>5</sup>F. Mugo. 1999. *The Effects of Fuelwood Demand and Supply Characteristics, Land Factors, and Gender Roles on Tree Planting and Fuelwood Availability in Highly Populated Rural Areas of Kenya*. Ph.D. Dissertation, Department of Natural Resources, Cornell University.

<sup>6</sup>G. Frisvold, and K. Ingram. 1995. "Sources of Agricultural Productivity Growth and Stagnation in sub-Saharan Africa." *Agricultural Economics* 13: 51-61.