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Managing the Miombo Woodlands of Southern Africa: Policies, Incentives and Options for the Rural Poor

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ABSTRACT *Miombo woodlands cover vast areas of southern Africa. Of comparatively little interest for export-oriented commercial logging, they are part of a complex system of rural land use that integrates woodland management with crops and livestock. There is also evidence that woodland resources are extensively used for household consumption, greatly reducing the risk of households falling deeper into poverty as a result of environmental or economic stress. New opportunities for improving the management of miombo woodlands, with poverty mitigation in mind, suggest four policy options. First, communities are becoming more active in managing local natural resources, a result of decentralization and land reforms, which suggests that there may be good scope for strengthening related policy and legal frameworks and the measures to implement them. Second, new and integrated conservation-development approaches are emerging, which suggests possible scope for providing payments for environmental services to increase the value of managed woodlands. Third, markets throughout the region are developing and expanding, which suggests great scope for enhancing forest-based markets by removing restrictive legislation and by supporting local producers and forest enterprises. Fourth, all these opportunities suggest that public forest institutions can be revitalized by strengthening their service delivery orientations, with poverty mitigation as a main objective.*

Introduction

Miombo woodlands are the most extensive tropical seasonal woodland and dry forest formation in Africa. The miombo region covers around 2.4 million km². Characteristically, miombo is found in areas that receive more than 700 mm mean annual rainfall on nutrient-poor soils, and is dominated by a few species, mostly from the genera *Brachystegia*, *Julbernardia* and *Isoberlinia* (Campbell *et al.* 1996; Dewees *et al.*, in press). Miombo

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woodlands cover substantial portions of southern Africa: Angola, Zimbabwe, Zambia, Malawi, Mozambique, and Tanzania, and most of the southern part of the Democratic Republic of Congo (DRC) (Figure 1).

Miombo woodlands lack the appeal of tropical moist forests and offer little to commercial logging interests. Most miombo has been heavily disturbed, with very little old-growth woodland remaining, and forest cover continues to decline (Table 1), largely

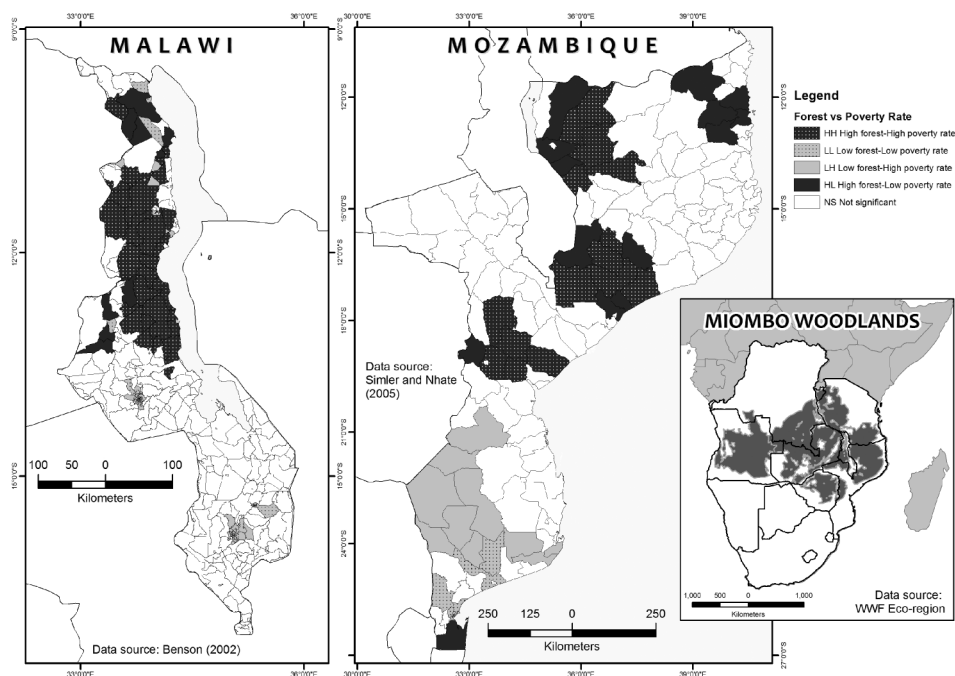


Figure 1. Forestry and poverty relationships in Malawi and Mozambique. Inset shows the distribution of miombo woodlands.

Source: Data sources as noted. Main maps from Sunderlin *et al.* (2007).

Table 1. Deforestation rates in countries where miombo woodland predominates (FAO 2007)

Country	Total forest (2005) 1,000 ha	Annual rate of change			
		1990–2000		2000–2005	
		1,000 ha/yr	Percent	1,000 ha/yr	Percent
Angola	59104	–125	–0.2	–125	–0.2
Malawi	3402	–33	–0.9	–33	–0.9
Mozambique	19262	–50	–0.3	–50	–0.3
Tanzania	35257	–412	–1.0	–412	–1.1
Zambia	42452	–445	–0.9	–445	–1.0
Zimbabwe	17540	–313	–1.5	–313	–1.7

Notes: The similarity of the data between the two periods points to the lack of reliability of such estimates. Miombo and other forest types are not distinguished in the data.

driven by land clearing for agriculture and wood extraction for energy. In many cases these forces work in tandem, with wood extraction followed by agriculture. But there is much variation in the levels and causes of deforestation—and poor understanding of cause and effect (Abbot & Homewood, 1999; Dewees, 1995; Mwampamba, 2007).

Why then should miombo be of any interest? For one thing, it sequesters an enormous amount of carbon, and so, from a global perspective, is quite important. Biodiversity is also significant (Frost *et al.*, 2003). Although the richness and diversity of faunal species is low, the miombo region has an estimated 8500 species of higher plants, more than half of them endemic. Species diversity and localized endemism are high in many herbaceous plant genera.

Miombo is also important for livelihoods. Seventy-five million people inhabit miombo regions, and an additional 25 million urban dwellers rely on miombo wood or charcoal as a source of energy (Dewees *et al.*, in press). Most miombo has been heavily disturbed precisely because it has great local value. It provides dry-season fodder for large livestock populations and fuelwood for domestic use and rural industry. It offers construction material for farm structures and homes for millions. It is a rich source of wild foods and fruits, reducing the vulnerability of poor rural households from the risks of crop failures. With few alternative economic opportunities, up to a third of household consumption among poor rural households can come from dry woodlands.

This paper demonstrates that miombo is indeed worth managing in the first place, that its immense value to local economies gives it a place of special importance, and that a range of explicit policy measures can improve its management. It has three main sections. First, we demonstrate that miombo woodlands contribute significantly to livelihoods. Second, we identify some opportunities for improving their management, positing that they are a significant safety net for poor rural households. Third, we propose policy interventions for removing some of the constraints to managing miombo woodlands and to improving the potential for the rural poor to benefit from better woodland management.

We focus on four interventions that could contribute to meeting this objective:

- More fully devolving rights and responsibilities for miombo woodlands to the local level.
- Exploiting opportunities for leveraging transfer payments to achieve environmental objectives through schemes like payments for environmental services.
- Increasing the value of woodland production and enhancing forest-based markets by removing restrictive legislation and strengthening local producers and forest enterprises.
- Revitalizing forest institutions to reorient them from their largely regulatory roles to having a much stronger service orientation aligned with the poverty mitigation agenda.

The Significance of Miombo Woodlands

Woodlands are a Valuable Resource

The role of miombo woodlands in rural economies is now better documented. Cavendish (2000), for example, undertook a pioneering and very detailed case study about woodland income in Zimbabwe, and this has been followed by several others (Campbell *et al.*, 2002; Fisher, 2004; Mutamba, in press; Hegde & Bull, in press). These studies all record high dependence on miombo woodlands, though the variability within countries can be large.

Jumbe *et al.* (in press) show that forest income from different sites in Zambia ranges from less than 10% to nearly 50% of total income. Zambian dependency levels are some of the highest so far recorded globally (see Vedeld *et al.*, 2004 for a global overview). In the Zimbabwe studies, woodlands contributed about 15% of total income (Cavendish, 2000; Campbell *et al.*, 2002).¹

The miombo studies show that the poorest of the poor depend more on woodlands. Campbell *et al.* (2002) found in southern Zimbabwe found that nearly 30% of income is woodland-based in the lowest wealth quartile but less than 10% in the top wealth quartile. Similar conclusions come from Fisher (2004) and Jumbe *et al.* (in press). For three villages in Malawi, the addition of woodland income to the household accounts reduces measured income inequality by 12% (Fisher, 2004). Cavendish and Campbell (in press) also recorded the inequality-reducing impact of environmental income.

Studies also indicate that miombo woodlands are natural insurance. Using seasonal household data for rural Malawi, Fisher and Shively (2005) found that households experiencing an income boost (from remittances or a good harvest) depended less on forest product extraction than those not receiving such a boost. Ngaga *et al.* (2006) record miombo woodland as the provider of 'famine foods'. Hegde and Bull (in press) document how miombo resources help when wildfires and illness hit household assets. With 'illness' shocks, households increased their consumption of environmental resources by 42%. Kayambazinthu *et al.* (2005) and Barany *et al.* (2004) point to the importance of dry forest resources to households afflicted by HIV/AIDS.

For individual products, the importance of forests and dry woodlands is equally clear. The estimated annual value of the charcoal industry in the four largest urban areas of Malawi is about US\$41.3 million (Kambewa *et al.*, 2007)—slightly less than the value of the tea industry and about 0.5% of the recorded GDP. Around 76% of households in the Mozambique towns of Maputo and Matola (with a combined population of about 1 400 000 in 2001) were reported to rely partially or exclusively on woodfuels for cooking (Pereira, 2001). Per capita woodfuel consumption ranged from 0.92 to 1.00 m³ (Brouwer and Falcao, 2004) and can be even higher when supplies are physically abundant.

Other products are also of significant value. In Tanzania apiculture provides some income to about 2 million people (Mwakatobe & Mlingwa, 2005). Large volumes of miombo wood are used for home construction and livestock enclosures. Despite the low availability of commercial timber species in Mozambique's miombo, timber exports reached around US\$65 million in 2005, or 4% of total exports (FAO, 2007).²

Miombo woodlands also help in managing livestock. During wetter times, open grassy patches within the miombo are sometimes heavily used for grazing, but miombo itself becomes quite important as these grass patches are burnt over or fully grazed late in the season. Miombo is seasonal, and loses much of its leaf cover during the winter dry season. In the early spring, the 'late dry season flush' sees the miombo coming back to life, with vast swathes of the woodland covered in bright red, orange, and yellow foliage. At this time, when seasonal grazing resources are otherwise highly constrained, miombo comes into its own as fodder for livestock.

There are strong associated links with agricultural production as well. As cattle tend to be kept at night in enclosures, manure is accumulated in these enclosures, is composted and spread on fields. It is sometimes supplemented with leaf litter, collected in great quantities from miombo woodlands and is used in lieu of expensive chemical fertilizers. Depending

on the availability of leaf litter, this highly valuable soil supplement can yield good returns (Bradley & Dewees, 1993).

Woodlands Mitigate Poverty

Woodlands are a pharmacy, a supermarket, a building supply store, and a grazing resource, providing consumption goods not otherwise easily available, particularly in subsistence economies.

Poor rural households depend vitally on miombo woodlands, and spatial analyses of the distribution of poverty bear this out (Figure 1). In Malawi there is a statistical correlation between areas with high forest cover and areas with high poverty rates. While not implying causality, the correlation suggests that miombo can be a safety net in the very areas where poverty rates are high. Mozambique shows a similar correlation between high forest cover and high poverty rates, though the correlation extends to less than half the forested area (Sunderlin *et al.*, 2007).

Arguments in favour of clearing miombo for agricultural expansion as a means of poverty mitigation, are quite weak, and there is a much stronger case for integrated types of land uses. Land-use intensification in mosaic-like patterns, where fields and woodlands are found side-by-side, may offer the best least-cost solution to expanding agricultural production at woodland frontiers.

New Opportunities for Improving the Management of Miombo Woodlands

Resource Rights are Shifting to Local People

In the last few decades, the need for communities to be more active in resource management has come to the fore, and there is a global trend towards devolving responsibility for natural resource management to local stakeholders. A wide range of studies on devolution processes in miombo countries are now emerging, with both positive and negative outcomes (Balint & Mashinya, 2006; Nemarundwe, 2004; Virtanen, 2003). Wily (2000, 2003) observes that policy or legal commitments to decentralization in the land and forestry sectors is widespread in southern Africa, but the experience has not necessarily been positive. Table 2 summarizes what is happening with decentralization and devolution in some miombo countries, revealing the high diversity in terms of processes and outcomes.

Shackleton *et al.* (2002), drawing on case studies from the miombo region and elsewhere, note that devolution has brought advantages. It gives recognition to local people as legitimate resource users rather than as poachers, criminals and squatters. It provides new channels for rural dwellers to communicate their priorities to government decision-makers and, in some places, for improving community-government relations. It can enhance villagers' organizational capacity and political capital by encouraging local people to join new networks and forge new relationships. Where devolution has been in place longer, local people tend to demand more autonomy, bringing about reforms that promote local interests. Devolution can also address equity and make inroads to enhance the participation of marginalized groups and women in decision-making. Working in Tanzania, Lund (2007) found that decentralizing taxation to the lowest local government tier could enhance revenue collection from the use of

Table 2. Trends in decentralization and devolution in some of the miombo countries

Trend	Malawi	Mozambique	Tanzania	Zambia	Zimbabwe
Decentralization policy	Decentralization policy in place since 1998	Decentralization implemented (Salomão & Matose, in press)	Decentralization implemented and considerable progress in most sectors	Decentralization launched in 2004 but no enabling laws	Decentralization in place
Forestry and decentralization	Decentralization not adequately addressed in the forest policy	Forestry policy (1998) and act (2002) call for delegation of responsibility to the lowest level. Land and wildlife/forestry laws contradictory with respect to tenure	Forestry policy (1998) and forest act (2002) indicate clear commitment to decentralization. Forest and land policy closely aligned	Forestry policy (1998) and forest act (1999) only allow for community involvement in local forests (not national). Policy disenabling (Gibbon et al. 2005)	Policies for local control in place for wildlife but not forestry
Commitment to implementation	Few practical results (Blaikie, 2006). Devolution in forestry less successful than other sectors. Forestry slow to approve local forest management plans	Commitment at policy level, but many implementation problems. Devolution fragmented and limited by sector-related barriers and lack of procedural guidelines. More successes for wildlife than forestry	Implementation extremely impressive with large numbers of villages and large forest areas already covered (Blomley & Ramadhani, 2006)	Implementation mechanisms vague	Decentralization to district councils only. Committees often collapse when projects end. More successes for wildlife than forestry
Benefit sharing	Government retains powers to define the type and location of resources that communities may manage	Very restricted benefits from concessions; and often benefits do not reach communities	Village Forest Reserves are fully devolved; communities receiving full revenue rights (Wily & Dewees, 2001)	Limited benefits to local communities. Elite capture by traditional leaders	Benefits end with the district council. Elite capture by traditional leaders
Mainstreaming	Projects the norm	Projects the norm	Forestry devolution mainstreamed	Projects the norm	Projects the norm; though wildlife was mainstreamed

Note: Based on information collated by Fiona Patumgarten for the Center for International Forestry Research.

Table 3. Budget allocation to different sectors: the case of Malawi and Tanzania 2007/08

Sectoral budget line	Malawi		Tanzania	
	Total recurrent and capital budget (US\$ million)	Spending (% of total budget)	Total recurrent and capital budget (US\$ million)	Spending (% of total budget)
Forestry	4.7	0.4	7.2	0.2
Agriculture	149.8	13.5	291.9	6.3
Education	125.5	11.3		
Health	130.7	11.8	453.8	10.0
Irrigation and water development	36.7	3.3	835.5	18.0
Lands and natural resources	23.2	2.1		
Tourism, wildlife and culture	5.3	0.5		
Local government and rural development	12.0	1.1		
Other	487.9	56		
Total budget	1108.6	100		

Source: Based on information collated by Fiona Paumgarten for the Center for International Forestry Research.

low value natural resources and increase the likelihood of using a share of the collected revenue to finance public services.

New Integrated Conservation–Development Approaches are Emerging

The miombo region is in some respects at the centre of a range of innovative attempts to integrate conservation and development. The conservancy model in Namibia (just on the edge of the miombo region), where community institutions have become deeply engaged in habitat conservation, is a prime example of how ‘win-win’ outcomes can be fostered for local resource users and nature (Anderson *et al.*, 2006). Interest in poverty-conservation relationships has taken on global significance, with much critical thought on what works and what does not. There is also an expanding range of studies emerging from miombo countries (Virtanen, 2003; Frost & Bond, 2008).

Interest in the idea of organizing schemes for individuals and communities to receive payments for environmental services (PES) is also growing globally and in the miombo region. Under Zimbabwe’s CAMPFIRE (Communal Areas Management Programme for Indigenous Resources), communities and local governments have marketed hunting and wildlife-viewing rights to safari operators. In turn, communities have set aside large areas of communal land, under their jurisdiction, for wildlife conservation. From 1989 to 2001 CAMPFIRE generated more than US\$20 million for participating communities, 89% of it from sport hunting (Frost and Bond, 2008). External donors provided substantial additional finance for local conservation associated with CAMPFIRE, even exceeding the revenues from sport hunting. CAMPFIRE was seen by donors as an entry point for broader rural development investments and governance initiatives. But because the financial benefits often ended up with district councils rather than participating communities, the incentives to participate were weakened.

In Mozambique a similar effort in Sofala Province seeks to link PES with local community conservation and rural development (Hegde & Bull, 2008). Participating communities receive conditional payments for carbon sequestration if they adopt various tree-planting measures and agree to limit woodland clearance. In the medium run this is likely to raise incomes and diversify livelihoods, but in the short run households have been reluctant to adopt these measures due to liquidity shortages and risk aversion.

Markets are Developing and Expanding

New niche markets for forest products, rapidly expanding urban markets, new buyers of old products and new communication technologies can improve market access for the poor.

New niche markets. Globalization is creating niche markets for miombo woodland products. For example, fruit from the marula tree (*Sclerocarya birrea*), widely distributed in the miombo region, has formed the basis for a new global industry for the cream liqueur Amarula, now sold in around 150 countries. Consumer demand for ‘green’ and ‘fair trade’ products can improve the competitiveness of small-scale producers. Export markets for wild natural product ‘derivatives’ such as fruit oils (e.g. marula oil and melon seed oil), also often tied to fair trade initiatives, have high potential. It has been estimated that the potential regional market for eight oil-producing wild fruit miombo species is around US\$3 billion—if reliable markets can be established. The opportunities for these and other products, such as organic teas and food additives, are believed to be far from fully exploited (Mander & le Breton, 2006).

A market for ‘green, clean’ products is emerging for honey, edible mushrooms, and for art products such as carvings from miombo hardwoods. Certifying commercial timber production in the miombo region has been somewhat problematic,³ though organic certification for miombo products has some promise. In Zambia, for example, wild mushrooms harvested and exported by Mpongwe Coffee and Organic Stallholder Cooperative are certified (de Boer, 2003), as are honey and beeswax exported to Europe from northwestern Zambia. Market development is not always easy though, nor do woodland products always yield the expected financial benefits.

Expanding domestic markets. Growing urban populations have greatly increased the demand for charcoal, medicinal plants, wild meat, and construction wood (Shackleton *et al.*, 2008). The continued strong growth in urban consumption of woodfuels reflects persistently low incomes in Africa, with surveys demonstrating positive income elasticities for woodfuel at low incomes (Arnold *et al.*, 2006). The Stockholm Environment Institute (2002) estimated that the consumption of charcoal increased by around 80% between 1990 and 2000 in both Lusaka and Dar es Salaam. The proportion of households in Dar that reported charcoal as their principal fuel increased from about 50% to 70% over the same period.

There has also been a massive expansion of medicinal plant trade. Krog *et al.* (2005) found 198 medicinal plant traders in three markets in Maputo, up from 10 in 1980. Traders were selling medicines from some animals and more than 100 plant species, all obtained from forests and fallow land. *Hypoxis hemerocallidea* (the African potato), one of the

more important species sold in these markets, is used to treat several ailments including those related to HIV/AIDS.

New buyers of old products. China's economic growth has already had significant repercussions for forest product markets in miombo countries. Still in its early days, trade with China could rise dramatically. It is likelier still that other Asian countries will also enter these markets as their economies grow. Both China and India have formed strong trade links throughout the miombo woodland region.

New trade links are being developed even within Africa. South Africa is proving to be a particular engine of growth, importing timber from other countries in the miombo region, as well as finished products for domestic sale and export. One notable example is woodcrafts, where markets in South Africa are now selling large quantities of tree-based products from other countries (Shackleton, 2005). This kind of regional trade is partly an outcome of better communication technologies.

New technologies and institutions are opening market possibilities. Advances in communication technology, particularly mobile phones and the internet, are improving information flows and strengthening links between small-scale entrepreneurs and markets (Souter *et al.*, 2005). The mobile telecommunications sector has grown in Africa by an average of 78% a year over the last 10 years. An IFAD project in Tanzania has shown the effect of mobile telecommunications on the bargaining power of smallholder farmers. Previously hoodwinked by truck drivers about market prices, they can now independently verify this information or directly link with buyers in Dar es Salaam (IFAD, 2006).

Policy Options for Improving the Management of Miombo Woodlands

The significant value of miombo woodland products to rural households, both for income and for a safety net during times of economic stress, suggests that the fairly limited 'forest' policy options that governments usually put in place to deal with 'forestry' issues are not broad enough for dealing with this much wider scope of product values. What are the policy options for miombo woodlands? Four particular intervention areas are resonant.⁴

Devolving Rights and Responsibilities

Devolving control over forest resources, while having much to offer, is not a panacea (Campbell *et al.*, 2001). Examined here are two elements of devolution: a strong policy and legal framework and strong implementation measures.

In a number of countries the wider policy framework is simply not conducive to local control (Blaikie, 2006; Campbell *et al.*, 2001). There is no recently drafted forest law in Angola, for instance, and the sector still uses a colonial regulatory framework. In Zambia progress with participatory forest management has been slow because of the lack of a sound policy and legal framework (Gibbon *et al.*, 2005). In some cases there are good policies in place (as in Tanzania) and decentralized management has been mainstreamed throughout the forestry sector. But even then there are critics. For example, Petersen and Sandhövel (2001) point to lack of clear rights and adverse incentives, while Meshack *et al.* (2006) record the high transaction costs of local control, suggesting that they are highest for the poorest and that policies and legislation need to be simplified to reduce them.

Devolution has been decidedly more effective when rights of access use, control and ownership are completely—rather than partially—devolved to local communities (Wily, 1999).

An enabling policy and legal framework is an important signal, but without strong and effective local measures it is insufficient. In many places initiatives are still at the planning and experimental stage, often top-down in design (Wily, 2003; Goldman, 2003). Awkward, unrealistic, expensive, and overly complex system design lacks the simplicity essential for widespread adoption and for real local community involvement in woodland management. Pilot schemes that do not give meaningful power to local actors are unlikely to succeed (Wily, 1999). Schafer and Bell (2002), based on experience in Mozambique, suggest that the state's reluctance to take measures to devolve control over natural resources (regardless of what 'policy' says) stems from three things: the desire of forestry personnel primarily to protect the forests, the economic interests of state agents in exploiting valuable natural resources themselves, and the unwillingness of politicians to devolve local control over natural resources in areas that are politically sympathetic to the opposition.

One manifestation of the lack of commitment to devolution is the focus on degraded resources rather than high quality woodlands. Another manifestation is the limited benefits that local producers are allocated. In Mozambique the national forest regulation establishes that only 20% of the taxes from the extraction and use of forests and wildlife should be returned to the communities living within or close to the forest areas. In 2006 only US\$422 000 of more than \$2 million in revenues were returned to the 956 communities (Almeida Siteo, pers. comm.).

In many instances, there is a presupposition that earlier community controls over woodland use existed and were effective, when this may not have been so. Governments may give customary authorities control over natural resources that far exceeds their capacity for management. In other cases they transfer control over resources to a local elite that uses woodlands mainly for political or economic gain.

Shifting forest management responsibilities to communities requires significant and sustained investments in social mobilization, institution building and capacity building. Forestry agencies (and other agencies) are seldom equipped for this task. Communities also need to see benefits from the forest to build an incentive to protect the resource and manage it sustainably. Success in devolving forest management may also need to be coupled with creating broader rural livelihood opportunities.

Developing Payments for Environmental Services (PES)

Devolved rights and responsibilities may not always deliver on management that secures global environmental values (such as carbon sequestration and biodiversity). As Scholes (1996) points out, if half the carbon in the top 30 cm of soil and all the carbon in woody biomass were released in half the existing miombo in the next 30 years, the mean rate of release would be around 200 million metric tons of carbon a year. (Total carbon released from land-use change around the world is estimated at around a billion tons of carbon a year.) There would also likely be a decrease in the formation of rain-generating convective storms, because of increased reflection of solar radiation and decreased surface roughness, increasing atmospheric stability (Xue & Shukla, 1993). For biodiversity, endemism is significant in the miombo region. While many miombo countries are well covered by national parks, there is a limited understanding of their effectiveness in conserving biodiversity.

There may be good opportunities to exploit opportunities for transfer payments to achieve environmental objectives, particularly if carbon markets develop more extensively. The challenge will be to incorporate these types of objectives into multi-dimensional rural development initiatives and to secure participation by the poor.

PES schemes, seldom straightforward, pose their own challenges, especially for reducing poverty (Wunder, 2008). The poorest may not be able to get involved in PES schemes because they lack control over the land and are not in a position to enter a contract for delivering environmental services. Poor households may lack the capital, skills, and labor, and the access to credit and technical assistance, to implement the changes required by the PES scheme. And the transactions costs of PES schemes with numerous smallholders may be higher than those of schemes that deal with a few large landowners. So PES schemes may not be pro-poor.

Wunder (2008) argues that PES schemes are most successful when they are based primarily on deals that make sense for the primary goal—environmental service delivery—rather for subsidiary goals such as poverty reduction. Why? Because carbon markets, operating in restrictive ways and with single objectives, are less conducive to supporting multi-objective development operations. Given the overlaps of rights and resources and their allocation among multiple user and income groups, single-objective PES schemes can be especially difficult to pull off.

A key question is whether there are any buyers for miombo environmental services. Tourism, centered on wildlife, offers some good opportunities for communities living close to wildlife-rich areas. And with climate change, carbon markets may emerge as an important driver (Chomitz, 2007). Miombo woodlands have lower wood carbon storage per hectare than tropical forests, but because they cover such extensive areas, their aggregate contribution is large. If effective delivery mechanisms can be devised, woodlands might be included in REDD⁵ schemes.

Enhancing Markets for Forest Products

Increasing the value of woodland production through other more conventional markets will involve two concurrent approaches. First is enhancing forest-based markets by removing restrictive legislation (say, by allowing communities to harvest resources previously harvested by state monopolies or freeing up transport regulations) and strengthening local producers and forest enterprises (say, by strengthening local marketing federations of producers to provide economies of scale). Second is ensuring that woodland production can be sustainable so that markets are assured of future supplies.

In some cases the forest regulatory framework has not been aligned with the value of the resource, making transaction costs too high for poor producers. In others the regulatory framework has done little more than give officials a means to extract resources for personal gain (Mackenzie, 2006). More externally imposed forest rules could provide more opportunities for undermining local governance. Regulatory simplification would increase value-added to local forest users.

Regulatory instruments—to prevent the overexploitation of forest resources and raise government revenues—inadvertently undercut livelihood opportunities for local producers and traders. For example, many policies prohibit harvesting forest products for commercial purposes from state-owned forests. Ironically, these restrictive institutions have not prevented resource degradation; in many cases they have removed the responsibility

for management from the actual users. In addition, revenue generation has been limited (Jumbe *et al.*, in press).

In Malawi the government put in place measures that, from a policy perspective, were to control the charcoal market and reduce deforestation (Dewees, 1995). Charcoal became more costly to produce and to get to the market, reducing demand but also creating good opportunities for intermediaries to capture extra revenues, usually from bribes. With production pushed out of the legal domain, the forestry department had less control over the process. The forest department could not collect stumpage fees even if charcoal was made in forest reserves, nor could it advise or train charcoal producers on woodland management and charcoal production (because that would have been illegal).

To ensure market participation, well established and effective local organizations are needed to coordinate ‘bulking up’ of resources, to benefit from economies of scale in reducing transport costs, to maintain quality standards, to improve market recognition, to improve supply chain capability and to act as a watchdog against corrupt practices of regulators (Penrose-Buckley, 2007; Antinori & Bray, 2005). These organizations can improve market engagement, but in general they are lacking.

Revitalizing Forest Institutions

There is good evidence that woodlands can contribute as much as dryland crop production to household consumption. In some cases they contribute significantly to the national economy as well. Even so, within the overall national policy and budgeting framework, forestry is commonly marginalized. And few resources are provided through the budget process to support sustainable management, to develop appropriate technical information about management, to enforce realistic and constructive regulations, and to support devolved management (Barany *et al.*, 2004).

True, forestry spending has to be mobilized in the face of many competing priorities—health, education, transport, and agriculture. But agriculture appears to do better than forestry. In Malawi it receives 30 times the budget of the forestry sector—and even more if irrigation is included (Table 3). In Tanzania agriculture receives some 40 times more than forestry.⁶ All countries in the region have agricultural extension services, but forest extension services are either missing or extremely limited. Forestry does not feature to any significant extent in regional development initiatives, such as NEPAD, and it is generally lacking in poverty alleviation efforts.

The lack of public spending has meant that forestry departments cannot implement forest policies, have limited capacity for regulation where it is needed and provide limited services to smallholders and communities (though part of the problem also relates to their lack of service orientation—both a cause and effect of low budget allocations). In theory, budget rationalization (an outcome of public expenditure reviews) should close the gap between what policies say and what budgets deliver. But in practice, the lofty goals outlined in forest policies (and increasingly in environmental policies) are seldom matched with real cash. The lack of policy credibility contributes much to the sense of institutional ineffectiveness.

Marginalized in the budget process, forestry personnel seldom have an adequate platform for ensuring that forestry issues are considered by other branches of government, whether in energy, agriculture or local government. Solutions to the ‘charcoal problem’ may require energy policy interventions (Dewees, 1995; Kambewa *et al.*, 2007). Agricultural

policies that favour the expansion of crop production into fragile miombo areas—such as subsidizing fertilizer, promoting tobacco and cotton to bolster national export earnings, and reforming land tenure can drive deforestation. While forestry policies may declare some forms of production illegal (as for charcoal in Malawi) another ministry (local government) allows sales and collects revenue from the trade (Kambewa *et al.*, 2007). Forestry officers in the field have low salaries, almost no equipment, no current maps, no transport and tiny operational budgets, and yet are supposed to patrol large geographic areas.

Many forest institutions in Africa were established when there were other policy priorities and objectives. Largely regulatory, they were never originally designed to be responsive to the needs of local communities. The idea of forest institutions as organizations with serious service delivery responsibilities is uncommon in most parts of the world—not least in southern Africa. Other parts of the public sector—supported by organizations such as schools and health centres—have a strong rationale for meeting service delivery objectives. Forest organizations in southern Africa continue, largely, to see themselves as relevant simply because of their regulatory functions, not because they are supposed to manage forests *per se*.

When forest organizations attend to management, their lack of service orientation is again evident. They remain locked in old-style forestry focused on timber, plantations, silviculture and on-station work. But miombo woodlands are about honey production, mushroom collection, wildlife management and using and managing a diverse range of other natural products. They are also about poverty mitigation. Forestry agencies have been slow in coming to grips with this reality.

Inventories and management plans, if they are ever done, seldom look beyond timber, failing to take local livelihood activities into account. The agencies have also been misguided at times, relying on systems that don't work for miombo. For example, 'high grading' of valuable timber species is very common, where only mature trees are felled, possibly limiting future regeneration (Desmet *et al.*, 1996). Nor does technical information take into account the new reality that most 'management' is likely to be by local people. Rural development forestry needs to provide local solutions to local problems and to recognize the influence of diversity in the rural community.

Perhaps the biggest challenge for forest institutions in the region will be to reorientate their earlier regulatory roles to a much stronger service orientation, aligned with the poverty mitigation agenda. A major client must be the poor. Reorientation should equip the forest services to take a credible role in reforming legislation and policy, mainstreaming miombo use in the public welfare agenda, incorporating miombo management strategies into decentralization, providing technical advice relevant to poor miombo users, and devising a more effective and realistic national regulatory framework.

Conclusions

Development planning at both local and national levels needs to emphasize woodland management and the safety net functions of the miombo for the poorest. This isn't necessarily a question of forest policy. Instead, it is much more about ensuring that macroeconomic policies and processes, captured in national poverty reduction strategies, eliminate the barriers which undermine the role of woodlands in poverty mitigation. This involves removing restrictive regulations, devolving rights and responsibilities to local stakeholders through appropriate policy and support to implementation, and building forest institutions.

Miombo resources should be recognized as a safety net and managed as such, incorporated into risk and vulnerability planning through social welfare departments and economic planning departments. So, this is more about mainstreaming forestry into the development agenda than keeping forestry in the forestry department.

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Notes

1. The figures for Cavendish (2000) were recalculated to exclude non-woodland environmental income (such as clay and gold).
2. Illegal extraction is not captured in these figures.
3. There is one FSC certificate for the management of Zambezi teak in Zimbabwe, covering 41 574 ha, and two FSC certificates in Mozambique for the management of unspecified natural forest covering around 71 000 ha.
4. Also the global perspective on these themes in Sunderlin *et al.* (2007).
5. Reduced emissions from deforestation and forest degradation.
6. Comparisons of public expenditure across sectors ought to be based on a common numeraire that is sector specific, sector expenditure as a share of sector GDP. But forestry GDP estimates are exceptionally poor. Nonetheless, for Tanzania, at the very most (given the forestry GDP under-estimates) the GDP of agriculture is 11 times that of forestry, and yet budget allocations differ by a factor of 40.

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