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Community-Based Forest Management: What Scope for Conservation and Livelihood Co-Benefits? Experience from the East Usambara Mountains, Tanzania

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The Tanzanian Community-Based Forest Management policy is based on the assumption that formalized forest tenure by village communities results in increased incentives for sustainable forest management. We compared the policy expectations to village forest management practices in northeastern Tanzania. Findings suggest that the practices follow policy in terms of increased security of rights, but exclusionary management of village forests precludes livelihood benefits while costs are unevenly distributed. Management appears effective at the village scale, but concerted efforts are likely to be needed to increase its long-term and landscape-level sustainability, and to create more significant incentives for the communities involved.

KEYWORDS *forest rights, community, livelihoods, sustainability, Tanzania, REDD*

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INTRODUCTION

The past two decades have witnessed a wave of devolution of forest rights to communities living in and around forests in Asia, Africa, and Latin America (e.g., Colfer, Dahal, & Capistrano, 2008; German et al., 2010; Larson, Barry, & Dahal, 2010). This forest tenure reform (Larson et al., 2010) has been driven by observed shortcomings in centralized natural resource governance in terms of effectiveness and equity, and increasing recognition of the rights of forest adjacent people as part of a broader introduction of human rights concerns and rights-based approaches to natural resource governance globally (Campese, Sunderland, Greiber, & Oviedo, 2009). Bringing public, government-owned forests—often *de facto* open access resources in developing countries—under the management of local communities is expected to increase the effectiveness and efficiency of management (cf. United Republic of Tanzania [URT], 1998). Increased security of rights is also expected to translate into more direct livelihood benefits from forests to communities (e.g., Larson et al., 2010).

The recent tenure reforms have also intended to return some protected forests back to the domain of the local people, based on experiences of failed conservation due to lack of local “buy in” (Larson et al., 2010). Some also suggest that governments are more likely to devolve rights to low-value forests to communities (Dahal, Larson, & Pacheco, 2010; Larson, 2011), which may partly explain why community forest management has been implemented in conservation landscapes of low direct utilization potential.

Recently, involving local communities in conserving and restocking forests has been in the global spotlight regarding climate change mitigation initiatives such as Reduced Emissions from Deforestation and Forest Degradation or REDD (e.g., Angelsen, 2008). Built on sustainable community-based forest management, REDD is hoped not only to contribute to tackling climate change, but also to provide livelihood and biodiversity co-benefits. At the same time, there are concerns that REDD could also entail additional restrictions on local people’s forest rights (e.g., Larson, 2011).

This article seeks to better clarify the potential of community-based forest management to deliver conservation and livelihood benefits in “conservation landscapes” that attract international attention and support. We compare the expectations of the Tanzanian Community-Based Forest Management (CBFM) policy with the practices and outcomes in six villages in the East Usambara Mountains, northeastern Tanzania. The article explores three research questions: (a) How does CBFM establishment reallocate forest rights?; (b) What are the positive and negative livelihood impacts of rights reallocation for forest adjacent communities?; and (c) How well does CBFM support ecological management, measured as trends in forest disturbance following devolution of forest rights to local communities?

BACKGROUND

Property Rights, Livelihoods, and Sustainability: A Brief Introduction

Property rights condition access, use, management, and benefit flows from resources based on social mechanisms such as statutory or customary law (Bromley, 1991). The main types of property or tenure systems in Africa are state property, private property, and common property (German et al., 2010). The latter is often confused with open access where rights are unspecified, enabling uncontrolled access and use, especially when state authorities do not recognize common property. To understand how tenure reforms affect local livelihoods, it is important to consider also *de facto* rights based on custom or other mechanisms of communal recognition (Larson et al., 2010), in addition to *de jure* rights based on statutory law. New community-based institutions may place restrictions on previous customary rights (Benjamin, 2008).

For common property, rights can be analyzed as bundles of rights—including the rights of access, withdrawal, management, exclusion, and alienation (Schlager & Ostrom, 1992). Yet rights alone do not shape livelihood outcomes, but these are also conditioned by a number of other factors. Ribot and Peluso (2003) list structural and relational mechanisms such as access to markets and knowledge, authority, social relations, and social identities, which both constitute strands of powers from which actors can draw in their effort to maintain, claim, and contest access to resources, as well as constrain their action. Hence, the outcomes of a forest tenure reform cannot easily be prescribed but are likely to be conditioned in varying contexts by diverse actors and their power relations, and often multiple and overlapping institutions.

In theory, security of rights may enable and/or enhance abilities to derive livelihood benefits from forests through: (a) conversion of forest to farmland; (b) access to and use of forest products; and (c) payments for forest environmental services, such as in REDD (cf. Dahal et al., 2010; Sunderlin et al., 2005; Tacconi, 2007). The first option has led some authors to point out that the devolution of rights cannot be assumed to result in avoided deforestation instead of forest clearing, which might offer quicker livelihood returns (e.g., Tacconi, 2007). Recent studies, however, suggest that increased security of communal forest rights often correlates with deferred use (Chhatre & Agrawal, 2009; Persha, Agrawal, & Chhatre, 2011). Persha et al. (2011) demonstrate a positive causal relationship between autonomy of local forest users in rulemaking and both conservation and livelihood outcomes.

Community-Based Forest Management in Tanzania

Community-Based Forest Management (CBFM) made it to the National Forest Policy in 1998 and to the law in the Forest Act of 2002, following

TABLE 1 Status of Community-Based Forest Management in Tanzania

Area of forest under CBFM	2.35 million ha (11.6% of all unreserved forest)
Number of villages engaged in CBFM	1,457
Number of districts engaged in CBFM	51 (38% of national total)

Sources: Blomley, Ramadhani, et al. (2010) and URT (2008c).

pilot projects in different parts of Tanzania. Simultaneous land law reforms, the Land Act and Village Land Act of 1999, as well as decentralization of local governance (Local Government Authority [District and Urban] Act 1982, Local Government Reform Programme 2000), made CBFM possible. CBFM is one of two types of participatory forest management recognized by the Tanzanian law and policies. Joint Forest Management (JFM) concerns community management of government forests. CBFM enables villages, through the village council (the lowest recognized administrative unit, consisting of 25 elected representatives) as the trustee, to manage forests on village land and reap all the benefits.

Table 1 presents the progress of scaling up CBFM in Tanzania.

The CBFM policy focuses on the demarcation and setting aside of village land forest reserves (from here on, “village forest reserves” or VFR), which are usually managed by a village forest committee or environment committee (URT, 2007). Villagers have the right to make and enforce rules about the harvesting and management of the reserve, exclude others, monitor resource use, and sanction violators. They may harvest timber and forest products, collect fines, and collect and retain forest royalties (URT, 2007). To be recognized officially, a VFR requires a management plan and associated by-laws approved by the village assembly (a periodic meeting open to all villagers above 18 years of age) and the district council. CBFM establishment usually happens with the facilitation of district personnel or non-governmental organizations (NGOs), according to guidelines provided by the Ministry of Natural Resources and Tourism (URT, 2007).

Policy Expectations of Community-Based Forest Management Outcomes

Blomley and Ramadhani (2006, p. 95) cite “two broad (but largely implicit)” policy objectives of CBFM: (a) sustainable forest management (the primary goal), and (b) improved rural livelihoods. A third goal, security of tenure, is also considered here as the envisioned primary means to achieve the two ultimate goals.

A review of the relevant policy texts in relation to these goals confirms that increasing the security of rights is emphasized in the National Forest Policy (URT, 1998) and a revised policy draft produced in 2008 (URT, 2008b);

“... clearly defined forest, land, and tree tenure rights will be instituted for local communities, including both men and women” (URT, 1998, Policy Statement 39). This is expected to “... enable sustainable management of forests on public lands” (URT, 1998, Policy Statement 5).

In terms of livelihood benefits, it is specified only that village forest reserves are to be managed “for production and/or protection based on sustainable management objectives” (URT 1998, Policy Statement 6). National growth and poverty reduction objectives are mentioned as potential threats to sustainable forest management (URT, 2008b). The National Strategy for Growth and the Reduction of Poverty stands out among the documents with the target to “Scale up Participatory Forest Management in all Districts, as a mechanism for increasing income of rural communities from natural resources management” (URT, 2005, Annex, p.11). The CBFM guidelines note that “... villagers may wish to reserve their forest because ... they wish to obtain tangible benefits from sustainable harvesting” (URT, 2007, p. 1). The government also commissioned an evaluation of the success of participatory forest management in contributing to rural livelihoods, supporting the notion of implicit livelihood benefit expectations (URT, 2008a).

The National Forest Policy (1998) includes goals regarding a sustainable supply of forest products and services by maintaining sufficient forest area under effective management, and conservation of forest ecosystem services; biodiversity, water services, and soil conservation. The National Forest Programme (URT, 2001) emphasizes forest reserve and buffer zone development through regimes such as CBFM and JFM. The CBFM guidelines postulate that communities may want to engage in CBFM in order to contribute to forest conservation, restoration, and regeneration (URT, 2007, p. 1).

In sum, there is an explicit goal in the forest policy to “assign owners” to all forests, which is expected to lead to increased effectiveness of management. Furthermore, there is an implicit assumption that increased tenure security will also create livelihood benefits.

STUDY AREA AND METHODS

Study Area

The East Usambara Mountains in northeastern Tanzania are renowned for their unique biodiversity (Rodgers & Homewood, 1982; Burgess et al., 2007). Conservation of the now fragmented mountain forests has dominated official management strategies since the 1990s. A history of commercial logging and estate farming, and the expansion of smallholder agriculture, has created a mosaic of forest and agricultural land uses across the landscape (Figure 1). Expansion of farming and forest fragmentation is considered a threat to the endemic biodiversity and ecosystem functioning. The establishment of

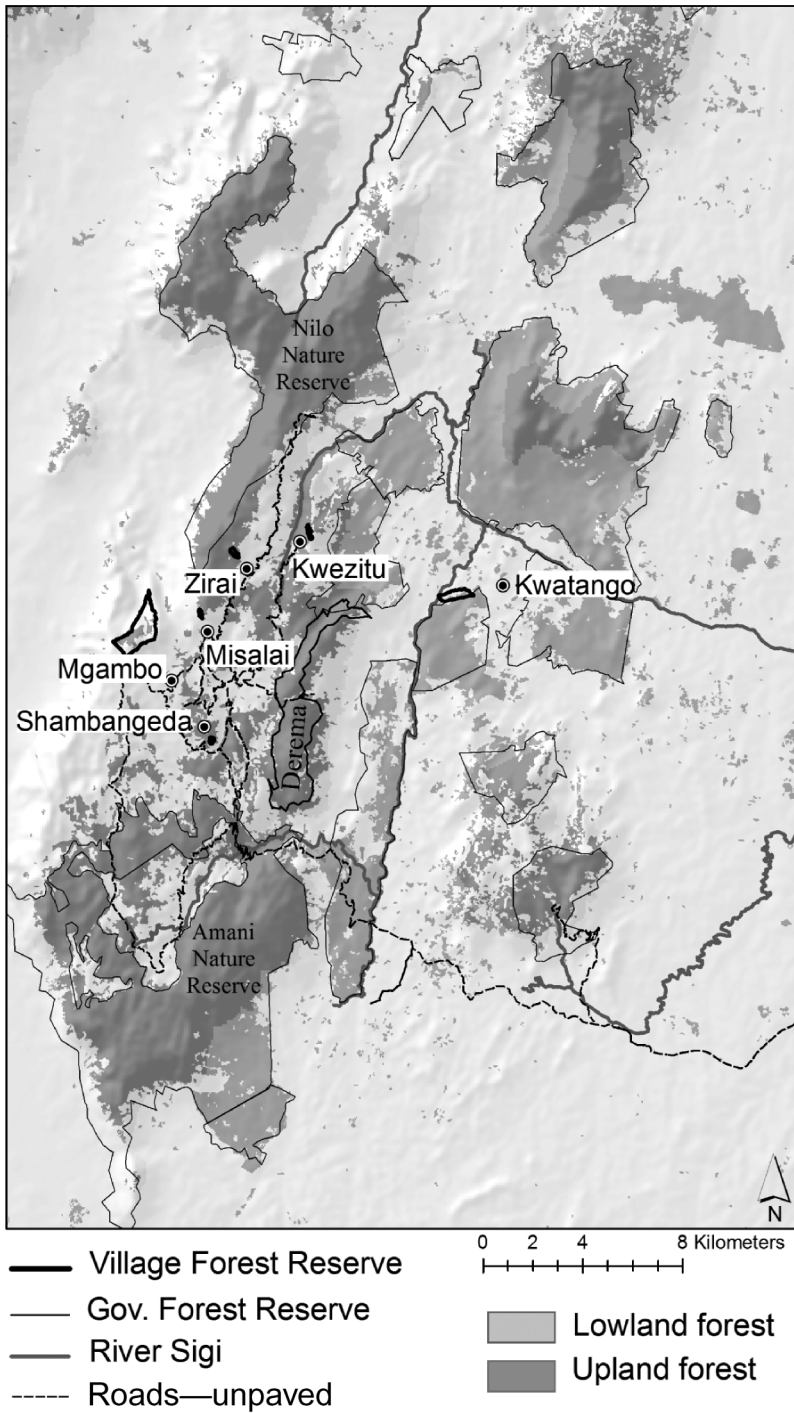


FIGURE 1 The East Usambara Mountains landscape, with the six study villages and village forest reserves (courtesy of Dr. Jaelyn Hall, October 2011).

forest reserves that were closed to local people dates back to the German and British colonial era (Hamilton & Bensted-Smith, 1989; Woodcock, 2002).

Although only 1% of CBFM currently takes place in mountain forests (Blomley, Ramadhani, Mkwizu, and Böhringer, 2010), there is great interest by national and international conservation organizations to promote participatory forest management—and more recently, REDD—in these high-biodiversity landscapes. CBFM was first piloted in the late 1990s with support by the International Union for Conservation of Nature (IUCN) and the government of Finland (Veltheim & Kijazi, 2002; Vihemäki, 2009). From 2004 onward, NGOs, the Tanzania Forest Conservation Group (TFCG), and the World Wide Fund for Nature (WWF) have actively promoted CBFM in nearly all villages of the East Usambaras.

We conducted research in six villages in the Muheza district in 2008–2010 to evaluate different stages of CBFM establishment and implementation (Table 2). Whereas CBFM was first piloted in the villages of Zirai and Mgambo in the late 1990s (Veltheim & Kijazi, 2002), the scheme went through some years of dormancy before being reactivated in 2004 with the help of TFCG.

With the exception of Kwatango, all villages are located in the densely populated uplands, where VFRs are surrounded by agroforestry systems (spice cash crops, especially cardamom grown under partially cleared forest canopy) and sun-grown crops. Bordering village areas are large commercial tea plantations and government forest reserves. Work opportunities in the plantations and in the 1980s logging operations, as well as favorable farming conditions, have attracted many immigrants to the area. The Shambaa, considered the original dwellers of the Usambara Mountains (Feierman, 1974), are still the largest ethnic group in the study villages.

TABLE 2 Details on Village Forest Reserve Characteristics and Research

Village forest reserve	Reserve area (ha)	Year of establishment	Forest type	Dates of research
Kwatango	52	2004	Lowland forest	Social (6 mo. in 2008–2009); ecological (2008–2010)
Misalai	60	2007	Submontane rainforest	
Shambangeda	18	2004	Submontane rainforest	
Kwezitu	36	2004	Submontane rainforest	Social (3 mo. in 2008–2009); ecological (2008–2010)
Mgambo	156	1998 (2004)	Submontane rainforest	
Zirai	36	1998 (2004)	Submontane rainforest	

Methods

In total, 409 villagers in the six communities were inquired about the perceived changes regarding forest rights, livelihoods, and forest management after CBFM establishment. There are risks associated with evaluating change through perception-based methods alone (cf. Lund, Balooni, & Puri, 2010). Since the lack of comparable data prior to CBFM establishment precluded the use of a quasi-experimental design, perception-based data were triangulated through a three-step mixed method design. First, qualitative methods—primarily gender-segregated focus group discussions and participant observation—were used to obtain community-level information on changes in forest rights, livelihoods, and forest management. Structured surveys were then administered to observe frequencies and differentiate anecdotal from salient patterns of data. In the third phase, results were interpreted, validated, and complemented in focus group discussions in the villages.

Changes in management were also assessed through a series of forest disturbance transects in the village forest reserves, measuring the frequency of pole and timber cutting. Two to three transects were established in each VFR. All transects were surveyed four times between November 2008 and September 2010. Poles were defined as all trees with straight stems at least 2 m in length and with a circumference at breast height (CBH) of 15.7–47 cm. Timber trees were defined as all trees with straight stems at least 3 m in length and exceeding 47-cm CBH. All live, naturally dead, old cut, and new cut poles and trees within 5 m in either side of the transect line were recorded. Data obtained through disturbance transects were mainly analyzed by observing changes over time in ratios of freshly cut poles or trees versus numbers of live poles or trees along the same transects. Since data about the forest areas prior to CBFM establishment was lacking, we did not aim to assess the impact of CBFM on forest condition; rather trends in the effectiveness of current management were observed.

A review of the village forest management plans, and interviews with district and NGO staff involved in facilitating CBFM processes and village leaders, contributed to our understanding of forest rights reallocation practices and outcomes.

Originally planned as separate studies, the household survey sampling differed in two subsets of the six villages, although partly overlapping variables were measured. In Shambangeda, Misalai, and Kwatango, the survey was based on a random sampling of a minimum of 70 households per village that were drawn from the village registers. The first 40 households were prioritized for interviews, and the remaining households formed a reserve from which substitutes were drawn if a primary household could not be interviewed despite attempts on 3–4 consecutive days. Both spouses of a household were interviewed separately. In Zirai, Mgambo, and Kwezitu, an intercept sampling approach was used. Sampling quotas were set to survey

20% of all households within each village, and 15% per subvillage. One person per household, either the household head or spouse, was interviewed. The survey protocols were pretested and practiced in a different village, which allowed gradual adjustments and improvements to the questionnaires and interview techniques before the surveys were administered. The surveys were administered in Swahili, the Tanzanian national language widely spoken in the study villages.

RESULTS

Policy Expectation 1: Increased Security of Rights and Clearly Defined Ownership of Forests and Trees

As a result of CBFM establishment, *de jure* rights to withdraw and manage resources and exclude others have been devolved from the central and local (district) governments to the villages. The security of these rights is enhanced through codified village forest bylaws and management plans, already approved by the Muheza district council for Zirai, Kwezitu, Mgambo, and Kwatango, and pending final approval for Misalai and Shambageda at the time this article was drafted.

At the same time, customary *de facto* management, withdrawal, and exclusion rights to forestland and resources, previously held by individuals and families, have been reallocated to the “community,” embodied in the village council and the forest committee. In all of the study villages, the establishment of a village forest reserve has involved the appropriation of customarily held private farmland to some extent, although VFR establishment is primarily intended to take place on communal land. Village leaders and forest committee members discount the appropriated farms as “encroaching” into the forest, but the origin of these land claims varies. In Misalai, the land had been previously allocated to the farmers by the village council, which then used its legal right to revoke the rights because the land was not being used (Village Land Act 1999, Section 57[1]). The affected farmers, however, stated that they had been actively farming those areas, contesting the basis of the village council’s action (group discussion, Misalai, September 2009).

On average, 18% of the survey respondents in the study villages reported a change in their access to forest resources since the establishment of the VFR. The vast majority (90%) of these changes were toward more restricted access. Decreased access to firewood was mentioned most frequently, followed by timber and building materials.

The diversity of sources of forest products may explain why most of the surveyed villagers did not report changes in access. Firewood is collected on individual farms as well as from neighboring farms, according to a Shambaa tradition. All of those who reported restrictions on access due to CBFM responded by displacing harvesting from the village forest to farms or tea

company forests. For villages located near tea estates, the proportion of those harvesting in the tea company forest is high. For people who rely solely on tea picking for livelihoods and do not have their own farms, access to other people's farms and forest areas for firewood is crucial.

There is a specific policy expectation that farmers will also have rights to indigenous tree species, including "reserved species" of conservation or commercial timber value, in addition to planted exotic trees (URT, 1998, p. 19). If the village area has been defined, the village council holds extensive rights to all trees on village land, including the reserved species (Forest Act, 2002, section 65[3]; URT, 2007). In practice, forest officials continue to follow the old forest law in that the reserved trees are always managed by the government, and their harvesting requires a permit from the district office (e.g., statement by an official of Amani Nature Reserve, Shambangeda village meeting, April 2009). The village council controls harvesting of other trees in all villages. Harvesting timber for sale is controlled by the Muheza district council. Farmers explain their common aversion to allow tree re-growth on privately held land by the difficulties faced in obtaining harvesting permits and competition with other crops sold more easily.

New sets of *de jure* and *de facto* withdrawal rights appear to have been formed following the establishment of the VFR. Understanding of allowed and forbidden activities in the VFR varies between surveyed villagers with no direct role in forest management and forest committee members in Misalai, Shambangeda, and Kwatango (Table 3). Only activities in which the three

TABLE 3 Perceptions of Allowed and Forbidden Activities in the Village Forests

	According to villagers (<i>n</i> = 153)			Forest committee members (<i>n</i> = 21)		
	% Allowed	% Forbidden	% Does not know	% Allowed	% Forbidden	% Does not know
Activities strictly forbidden according to bylaws						
Starting a fire	1	80	19	0	100	0
Farming	0	78	22	0	100	0
Hunting	1	69	30	5	90	5
Grazing	1	79	20	0	100	0
Extracting timber	1	78	22	9	90	0
Activities allowed with a permit						
Beekeeping	17	45	38	33	67	0
Activities allowed or not specifically forbidden						
Collecting medicinal plants	6	62	32	19	76	5
Collecting firewood	10	65	25	14	86	0
Collecting wild vegetables	13	55	32	14	86	0
Rituals	0	69	31	0	95	5

VFR bylaws coincide have been included in the Table. Among the forest committee members, the percentage of those interpreting officially allowed activities (de jure rights) to be de facto forbidden is even higher than among the other villagers.

It is possible that the forest committee members associated our research team with the conservation establishment and wanted to convey effectiveness by citing stricter management practices than are actually applied. However, in Misalai and Shambageda, we observed women challenging the village leaders in public meetings to push for collection of firewood in the VFR at least on certain days, which they were denied. Although the request is in line with the management plans, it appears that a more cautious approach is indeed implemented. Furthermore, in Zirai, Kwezitu, and Mgambo, the village councils had told people not to go to the forest at all in order not to disturb regeneration.

The results may also reflect the specific history of the East Usambaras, where local people have been denied de jure rights to forests since pre-independence. This alienation of people from forests may mean that forests are seen as “forbidden places” in which only illegal activities take place. In discussions, villagers often stated that they did not enter the VFR because one could be perceived as engaging in an illegal activity. Possibly for the same reason, the Swahili word for forest, *msitu*, is only used when referring to a protected area. A privately owned piece of land, even if left in the forested state, is always called *shamba*, farm (Rantala & Lyimo, 2011).

In Misalai, villagers voiced their frustration over illegal logging by outsiders which they did not have the means to stop, while the use of forest products, especially timber, had been made difficult for the villagers themselves (e.g., village meeting, Misalai, April 2008).

Policy Expectation 2: Livelihood Benefits

FINANCIAL RETURNS: REVENUE FROM ACCRUED PRODUCTS AND SERVICES DERIVED FROM COMMUNITY-MANAGED FORESTS

The village forest committees keep a book of the committee expenditure and revenue from the forest. As Table 4 demonstrates, yearly revenue is between negligible and nonexistent, consisting of entrance fees paid by sporadic visitors, mainly researchers, and a few fines paid by those who have broken the village forest bylaws.

Mgambo-Handei VFR has generated relatively more revenue from tourists and researchers compared to the other villages. The village also participated in a REDD pilot project. A team of villagers, partly overlapping with the forest committee, conducted carbon monitoring in the VFR, and the village was to be paid compensation for avoided deforestation. In 2009, it was debated whether the village had already been disbursed an agreed

TABLE 4 Financial Returns to the Villages from Community-Based Forest Management, in Tanzanian Shillings (US\$1 = TZS 1,500; 2011)

Year/Village	Misalai	Shambangeda	Kwatango	Mgambo	Zirai	Kwezitu
2008	0	0	0	0	10,000 (US\$7)	20,000 (US\$13)
2009	0	10,000 (US\$7)	0	104,000 (US\$69)	15,000 (US\$10)	10,000 (US\$7)
2010	0	0	0	180,000 (US\$120)	0	0
2011*	100,000 (US\$67)	0	0	0	0	0

*The first 5 months of 2011.

TZS 1.5 million (US\$1,070). Forest committee members claimed to have no knowledge of it (interview, October 2009), whereas the project coordinator stated that the money had been paid in 2008, and that he had received the minutes of village council meetings stating decisions on use of the money and a report on the expenditure (Email communication, October 2009). The committee members suggested that the uncertainty about the carbon money might have been due to mismanagement of public funds by the Village Executive Officer (interview, October 2009). Hence, forest carbon income, or knowledge about how the income was spent, may have contributed to an intravillage power struggle; and in the worst case, embezzlement.

A minority of the interviewed villagers expressed awareness of returns from CBFM to the community (mean 23%; 48% in Mgambo) or to individual households (mean 3%; 11% in Mgambo). Over two thirds of those who suggested that the village gets some revenue did not know what it was spent on, and indicated that this was up to the village leaders to decide. There had been direct returns to households only in Mgambo, where five villagers had each been paid TZS 5,000/day for a 5-day carbon monitoring exercise once a year (i.e., TZS 25,000 (US\$ 17)/yr).

INDIRECT BENEFITS

Indirect financial returns to individuals are also negligible. These are mainly related to the collection and sale of the seeds of an indigenous tree, *msambu* (*Allanblackia stuhlmannii*). A few respondents in Misalai and Shambangeda reported to have collected *msambu* seeds in the VFR and other areas, and to have earned on average TZS 40,000 (US\$27) in a year (October 2007–September 2008).

Income was also generated from other forest products, but these originated from other land uses, such as agroforestry systems and fallows. The link between CBFM and revenue from butterfly farming—promoted as a conservation-friendly, alternative income-generating activity in many East Usambaran villages—is indirect, as butterflies are not limited to the reserved

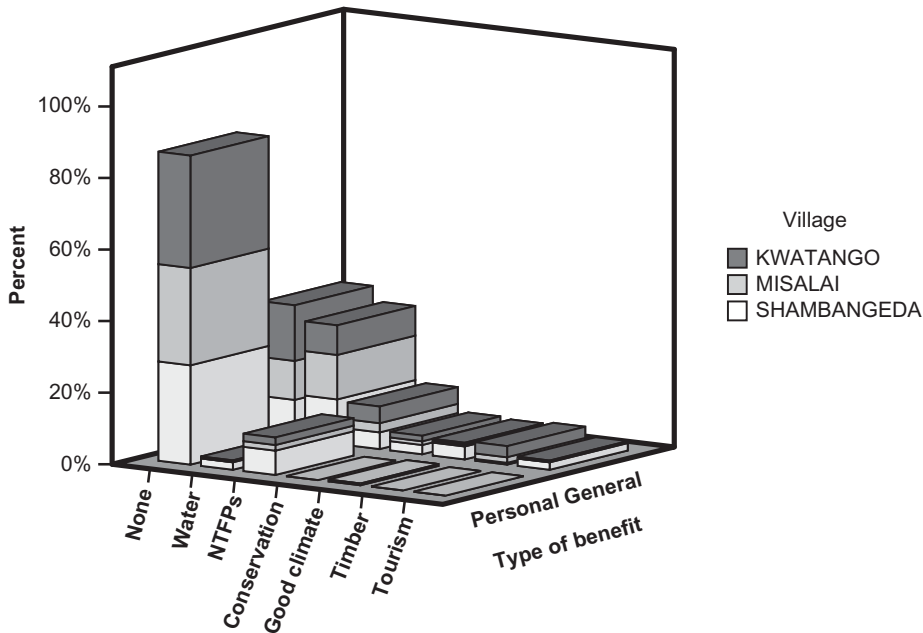


FIGURE 2 General and personal benefits of village forest reserves mentioned by survey respondents in Misalai, Shambangeda, and Kwatango villages ($n = 198$). “Conservation” includes “Conservation of wild animals” and “Conservation of environment”; “NTFPs” are Non-Timber Forest Products.

forests but exist in other areas where their host plants grow. Income from butterfly farming appears to serve as a strong incentive to conserve village forests for those directly involved (Morgan-Brown, Jacobson, Wald, & Child, 2010; authors’ data). In Figure 2, butterflies are included in the Non-Timber Forest Products (NTFPs) as a personal benefit obtained from the VFR in Shambangeda village.

Another indirect and unquantifiable link is between the perceived improved environmental conditions due to the establishment of VFRs and the resulting increased agricultural production and income. Forty-three percent of the survey respondents in Shambangeda, Misalai, and Kwatango mentioned good environmental conditions (increased rain, improved climate, or soil erosion control) as a benefit of having a VFR, and a few considered this a direct personal benefit (Figure 2). “Rain” was the single most common benefit mentioned, combined in Figure 3 as “water,” including also “increased water in rivers” and “moisture.”

LIVELIHOOD COSTS

In analyzing the benefits of CBFM, it is also important to consider potential costs. These may occur in the form of opportunity costs (i.e., forgone

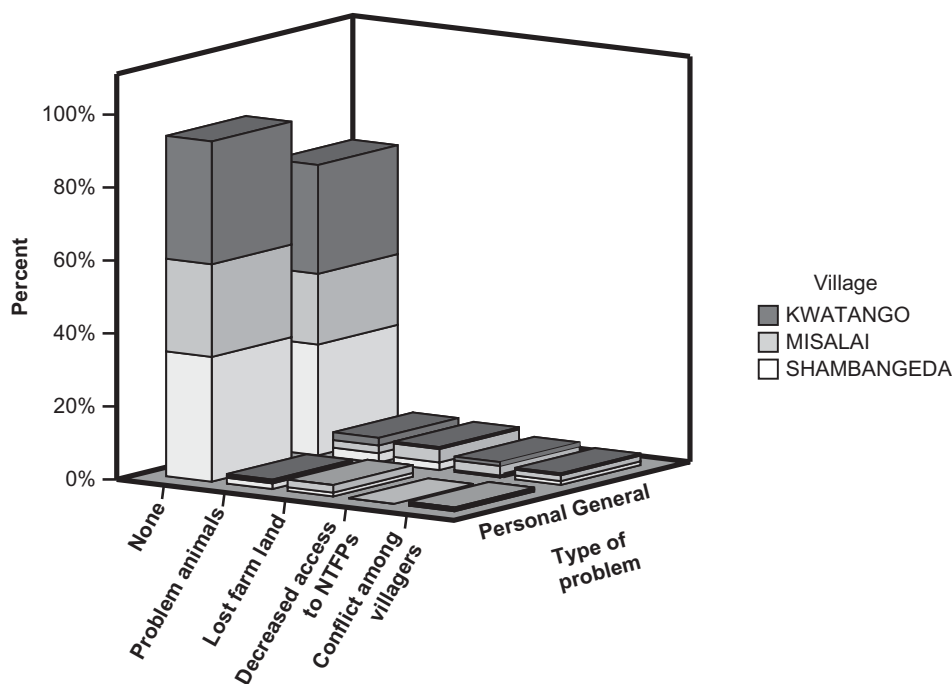


FIGURE 3 General and personal problems associated with village forest reserves, by survey respondents in Misalai, Shambangeda, and Kwatango villages ($n = 198$; “NTFPs” are Non-Timber Forest Products).

benefits due to CBFM) or as transaction costs associated with the establishment and management of village forests. Figure 3 indicates that there may be direct costs to some, although seemingly few, villagers.

The respondents in Misalai and Shambangeda that had incurred costs in the appropriation of their farmland for the VFR had lost, on average, one quarter of their land, although their slightly larger than average land endowments may have mitigated the opportunity cost (Table 5). The affected farmers felt powerless to contest the village council decision and most of them opted for a private solution—i.e., farming their remaining land.

TABLE 5 Farmland Lost to Village Forest Reserves

Village (n respondents)	Areas lost, ha (mean/min–max)	Proportion of area lost of total farmland accessed, % (mean/min–max)	Current land accessed, ha (mean/min–max)	Village average, land accessed, ha (mean)
Misalai ($n = 3$)	0.5/0.2–0.8	31/17–50	1.5/0.4–2.4	1.1
Shambangeda ($n = 4$)	0.5/0.1–0.8	17/9–31	2.9/0.4–8.1	2.0

Interviewees in all villages claimed that crop-eating animals such as monkeys and rats, feeding on farms adjacent to the forest, had increased due to the VFR. The animals add to the workload of especially women and children whose task it is to keep watch on farm, day and night.

Forest committee members, and also other villagers who occasionally participate in communal forest activities, complained about lack of compensation for their efforts. Forest income is used to compensate those who patrol the forest at a rate comparable to local daily farm wages, but these funds are not always available (Table 4). A review of the minutes of Kwezitu forest committee meetings in 2009 indicated a steady decline in member attendance as the year progressed. Especially in Mgambo where the village forest is large, committee members expressed concern over difficulties in motivating forest patrols and hence their capacity to monitor forest use.

Policy Expectation 3: Ecological Effectiveness

On average, over 60% of the interviewees in the all the villages stated that villagers observed the forest bylaws. The rest were not sure, or thought they were only complied with to a certain extent. It is possible that the confusion about forest rules (Table 3) confounds these results. A number of respondents stated that the ways in which people violated the bylaws included collecting firewood, wild vegetables, and medicinal plants—officially allowed uses of the VFR.

The transect data supports the villagers' perceptions regarding CBFM effectiveness. The numbers of live poles and trees recorded along the same transects increased between the surveys conducted in 2008–2010 (Figure 4). Pole and tree cutting is minimal; on each survey on average 0.64 newly cut poles/100 standing poles and 0.09 newly cut trees/100 standing trees were recorded. The numbers remained low throughout the study period; no clear

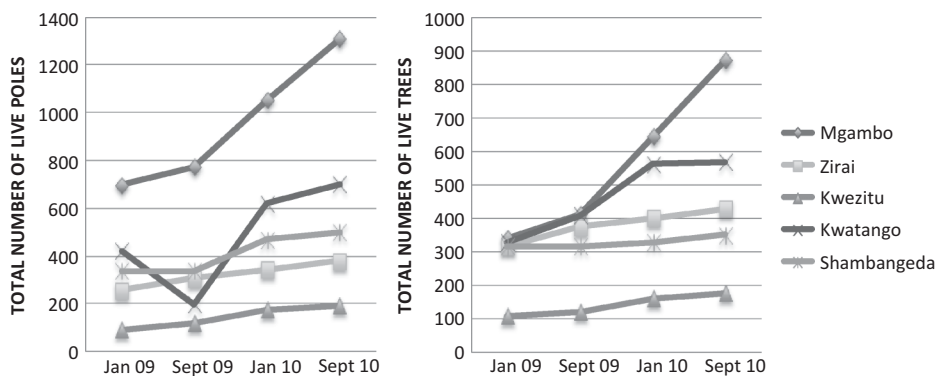


FIGURE 4 Numbers of live poles and trees recorded on four consecutive surveys of the same transects (total no. recorded poles and trees/2–3 transects/VFR).

trends of increase/decrease of disturbance from one survey to another or between the villages were observed.

Nevertheless, the benefits of effective CBFM may be too small in scale to result in landscape-scale conservation benefits. Figure 1 highlights the challenges for the policy expectation of maintaining sufficient forest area under effective management through CBFM. The village forest reserves in the East Usambaras are very small when considered from a landscape perspective, and relatively isolated from the large government reserves. Especially in the densely populated uplands, communal land is scarce and increasing needs for farmland are likely to dictate the small size of VFRs. Villagers confirmed that it is not possible to expand the VFR areas because of the need for farmland.

DISCUSSION

Apart from the valuable reserved trees, the East Usambaran practice follows the policy in terms of devolution of statutory forest rights from the government to the village council. But it also entails reallocation of previous rights of individuals and families to the village councils and forest committees, who then impose very strict regulations on access and use. In doing so, they have copied the reserve-centric, exclusionary model of forest management implemented during decades of centralized governance. Forest reservation is also the core of the CBFM policy, whereas forest and tree management on private land or unreserved communal land has been given little attention. It is no surprise, then, that the livelihood benefits from secure communal forest rights in the East Usambaran context are marginal. The uneven distribution of CBFM benefits and costs mostly depends on proximity to forests (more likely to be affected by land appropriation, problem animals), access to alternative sources of forest products, and participation in activities by conservation and research projects. This is similar to the findings of other studies that have aimed at assessing the performance of participatory forest management in Tanzania (e.g., Meshack, Ahdikari, Doggart, & Lovett, 2006; Lund & Treue, 2008; Vyamana, 2009).

The current practices can be seen to reflect path dependency in forest regime evolution. Mahoney (2000, p. 517) presents a “power explanation” for institutional reproduction where inefficient and/or inequitable outcomes continue following regime change, as long as they are supported by an elite group that reaps benefits. Returns from alternative livelihood activities such as butterfly farming may have an important function for the livelihoods of some community members who form a “critical mass” (Oliver, Marwell, & Teixeira, 1985) that pushes for collective action in forest management. While indifference toward forests prevails among the majority, small benefits

may offset opportunity costs that concern only a small subset of the village population.

Yet, the impact of the unequal distribution of benefits and costs on the sustainability of resource management may be questioned (cf. Baland & Platteau, 1999), especially when it comes to transaction costs (Ostrom, 1990). The making of strict forest rules and their even stricter implementation might actually be explained by a reduced need for monitoring in the absence of incentives. The more complex the rules, the greater the monitoring burden (Agarwal, 2010, p. 368).

Contrary to the predictions of theory, Blomley, Pfliegner, et al. (2008) found that the effectiveness of Joint Forest Management increased over time even when it did not provide direct incentives. Studies elsewhere have found that communities have demanded more secure tenure rights due to outside encroachment on their land (Larson et al., 2010). In the absence of direct livelihood benefits from the forest tenure reform, the security of the exclusion right may be important. In other words, if the communities themselves do not benefit from the forest, then outsiders such as illegal loggers should not benefit, either (see Babili & Wiersum, 2010, for similar dynamics elsewhere in Tanzania). Negative experiences of forestland appropriation for government reserves as recently as the 2000s (Vihemäki, 2009) may also have prepared fertile ground for community-managed reserves in the East Usambaran villages. CBFM presents a chance for the communities to reclaim their exclusion right after being denied it for more than a hundred years (Woodcock, 2002). This at least leaves the eventual fate of the forest in the hands of the community, with hopes of future, if not current, forest benefits.

Even if the exclusionary management of the VFRs was effective in the long run, the question remains whether the policy expectations on sustainable supply of forest ecosystem services can be attained through the current practices of CBFM. The conservation of biodiversity, water services, and soils may be compromised due to lack of attention to the land use matrix surrounding the small and isolated VFRs. Harvesting of forest products is displaced from the reserved area to surrounding areas, mostly private farmland, where it goes on relatively uncontrolled. Nevertheless, Vihemäki, Hall, Leonard, Mwangoka, and Mkongewa (2012) studied the biodiversity of VFRs in some of the same villages and found that they contained rarer or more restricted range plant species compared to other land uses outside of the government forest reserves. They suggest that VFRs are conducive to biodiversity conservation, but they also note that this function may be compromised unless attention is paid to the surrounding land uses.

Whereas a silver bullet for managing the trade-offs between conservation and livelihood goals in conservation landscapes is likely to remain elusive, vigorous research efforts can produce knowledge on the underlying conditions for “winning more and losing less” (Sunderlin et al., 2005, p. 1396). In addition to rule-making autonomy, dependence on forest

resources for livelihoods and an entrepreneurial model of collective management have been proven to be strong incentives for sustainable forest management (Dahal et al., 2010; Persha et al., 2011). Access to markets and supporting infrastructure are particularly crucial for the success of community enterprises. Such support is unlikely to be found for extractive commercial activities that are usually perceived undesirable in conservation landscapes.

The hopes are therefore placed mainly on nonextractive activities, such as payments for environmental services and ecotourism. Although ecotourism in the East Usambaras has been discussed since the 1990s, there are many constraints to developing it (cf. Shemdoe, 2008). Furthermore, for ecotourism to contribute to local development, it usually requires considerable external support in terms of investment and time (e.g., Kiss, 2004).

The experiences of Mgambo and other villages can inform future efforts to reward local communities for carbon sequestration and other environmental services. They clearly need to address the risk of elite capture of communal benefits, and the biased interpretation of laws by district, and potentially national, authorities. Moreover, it has not yet been determined how carbon tenure and access to benefits will correlate with forest and tree tenure in Tanzania, even if the latter were secure. Well-defined exclusion rights, and the capabilities to claim them, emerge again as a key prerequisite for any future community benefits from nonextractive activities.

One more factor to be scrutinized as an underlying condition for successful CBFM could tentatively be proposed based on the East Usambara case: sustained and coordinated efforts by all landscape stakeholders to break out of regime paths rooted in the history of forests and people. When more rigorous assessments on the performance of community forest management are demanded as a prerequisite for further investments (e.g., Bowler et al., 2011), it should be remembered that Rome was not built in a day. Concerted efforts to address the increasingly identified gaps between policy and practice should be undertaken before the potential of CBFM in delivering a balance of livelihood and conservation benefits can be fully assessed.

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