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Introduction

Around 20 years ago, Tanzania adopted the policy of participatory forest management (PFM) to create incentives for increasing villagers' participation in forest management.¹ The timing is thus fitting to reflect on the achievements and challenges of the PFM process so far. There have certainly been successes. For one, the introduction of the policy itself represented a major milestone on the journey away from centralized forestry (Hurst, 2004). Studies have illustrated examples of how community-based forest management (CBFM) in Tanzania has contributed to improving forest conditions and in few cases improved livelihoods (Blomley et al., 2008; Kajembe, Nduwamungu, & Luoga, 2005; Lund et al., 2015; Persha & Meshack, 2015; Treue et al., 2014). Nonetheless, challenges remain. Notably, there is a mismatch between participation ideals and the way the process has been framed, or structured, as well as outcomes on the ground in terms of actual participation and forest management practices. Paradoxically, PFM has been shown to reaffirm domination by forest bureaucrats and other experts to the detriment of the local autonomy and decision-making that was a normative goal in and of itself as well as a key assumption underlying its promises of improving local livelihoods and forest conservation² (Green & Lund, 2015; Lund, 2015; Lund & Saito-Jensen, 2013; Vyamana, 2009).

This working paper presents experiences with PFM from a handful of sites across the country, relying on existing published literature as well as our own research experiences. Having been involved in a number of major PFM research projects in Tanzania, we, the authors, have a combined experience of more than 20 years of conducting research in this field³. We summarize important findings that explain the observed chasm between participation ideals and local realities and offer some recommendations. While some of our diagnoses and recommendations may contradict conventional wisdom in forestry, we believe that this report contributes valuable insights to the continued efforts to further sustainable forestry in Tanzania.

We begin by outlining the global ideals of participatory forestry. We then present an overview of the realities of PFM as they appear in existing research. We do not attempt an exhaustive survey of literature or our own research. Rather, we emphasize issues concerning the framing of PFM as a bureaucratic and scientific project, and how that shapes it in practice. We then present case studies

¹ Through increased participation, PFM seeks to improve local democracy, rural livelihoods, and forest condition.

² Ribot (2002) discusses the theoretical foundations for the link between local autonomy and decision-making and the promises of improving local livelihoods and forest conservation underlying participatory forestry policies.

³ Examples of research projects include "Applied Research in Participatory Forest Management, 2008-12" (j.nr. 104.Dan.8.L.725) and "Science and Power in Participatory Forestry, 2014-18" (FFU – No. 13-05KU) funded by the Danish Council for Development Research, and "Applied Research In Participatory Forest Management (PFM) - Assessing Under Which Conditions PFM Contributes To The Goals Of Poverty Reduction, Sustainable Forest Management And Improved Local Governance, 2008-10" funded by Tanzania Ministry of Natural Resources and Tourism.

illustrating some of the core problems with PFM before concluding with some general recommendations for improving participatory forestry policy and guidelines.

Participatory forestry in an ideal world

The adoption of participatory approaches to forest management was part of the global changes in the development industry that was popularized in the early 1990s.⁴ Proponents of participatory approaches claimed that participation will give “‘the poor’ a voice and a choice” (Cornwall, 2006, p. 62). Participation was also pitched with promises of improving efficiency and effectiveness. Addressing local needs as identified by the local people themselves would minimize the chances of addressing the wrong problems or of applying incompatible solutions (Ribot, Agrawal, & Larson, 2006). Participatory approaches to development led to the decentralized natural resource management reforms around the world. These reforms entailed a transfer of powers over natural resources from the central to the local government’s authorities and other locally elected bodies (Ribot et al., 2006).

In Tanzania, these reforms in the forest sector culminated in the approval of the National Forest Policy (NFP) in 1998 following an extensive piloting phase funded by donors⁵. NFP officially declared the government’s intention to involve local communities in forest management. The policy prescribes procedures for co-management arrangements of government reserves (i.e. joint forest management (JFM)) and a more devolved arrangement of managing forests on village land (i.e. community-based forest management (CBFM)) (URT, 1998, 2001, 2002, 2007, 2013a, 2013b). What these two schemes have in common is that they both involve the transfer of some powers to local communities. They both aim at sustainable forest management by pursuing the following triple-objectives: improved forest condition, improved local livelihoods, and improved local democracy (Blomley & Iddi, 2009).

Ideally, these two PFM arrangements envisage local communities gaining formally recognized decision-making powers in forest management (i.e. ‘communities as forest managers’) (URT, 2007). The role of professional foresters is envisaged to change from ‘policemen’ and ‘prescribers’ to ‘partners’ and ‘facilitators’, assisting local communities’ management. Local communities are seen as decision makers and not simply protectors and willing helpers of professional foresters. Ideally, participatory forestry is supposed to build on local forest knowledge. Furthermore, these arrangements are envisaged to deliver ‘financial sustainability’ through sustainable utilization of forest resources.

PFM would facilitate the active management of large tracts of forests, despite severely limited public budgets, by enrolling local communities in oversight and practical management. The overarching assumption is that by deriving tangible economic benefits (institutionalized) from the forest, local communities will be willing to implement forest management according to the standards of professional forestry.

In practice, participatory forestry came to reproduce many of the central tenets of State forestry. This includes a continued reliance on the standard scientific forestry approach, initially developed

⁴ But Cornwall (2006) traces the origin of participation discourse as far back as colonial era, casting doubt on the novelty of the participatory approaches to development when they were re-introduced in 1990s.

⁵ Table 1 in Lund et al. (2017) provides an overview of the donor-funded PFM pilots.

in central Europe in the 18th century, and spread across the World through European imperialism. Scientific forestry comprises principles and methods that aims at ensuring a permanent forest estate and a sustainable supply of forest products, mainly timber. For this purpose, forests are demarcated (enclosed), measured and their growth rates modelled to yield predictions about how they will respond to different management options. Four tenets characterize scientific forestry: (i) an emphasis on timber production, (ii) general assumptions about forest ecology including species composition at the ‘mature’ state, regeneration processes, and growth rates; (iii) the necessity of forest inventories to determine the condition (degraded, disturbed, mature) of a particular forest and; (iv) the need to divorce forestry from alternative land uses (Hansen & Lund, 2017).

Accordingly, scientific forestry dictates physical demarcation of forests in the landscape, which in turn demands a more general land-use planning, and inventories that enumerate the species and size classes of trees in the forest. Such situated knowledge about a forest is then fed into forest growth models to forecast how the forest will respond to different management interventions. The result is a time bound forest management plan that pursues specified objectives (usually timber production), associated flows of products and environmental services, and predicts the forest condition in response to specified management interventions. Across the world, national-level objectives of forest conservation and restoration are used to justify that official recognition of community authority over forest resources depends on national forest services’ endorsement of technical management plans that build on these processes.

Implicitly, PFM processes couched in scientific forestry terms assume that local communities are interested in and able to plan and manage on such terms. They also assume that scientific forestry knowledge is useful in informing local institutions of the management practices needed to deliver sustainable forest management irrespective of varying local social, economic, political, and ecological contexts. As we will demonstrate below, these assumptions appear not to stand closer scrutiny.

Local realities

Research on PFM in Tanzania illustrates a gap between ideals and realities. Government-sponsored reports and foresters admit that PFM has not lived up to its promises. The most recent official data on the coverage of PFM in the country are from 2012 (URT, 2012). This data shows that PFM covers about 7.5 million hectares of forests in 77 districts and 2,285 villages. CBFM covers 2.4 ha in 1,233 and JFM covers 5.4 million hectares in 1,052 villages. Studies have cast doubt on these statistics, arguing that they create an inflated image of actual developments on the ground (Lund, Sungusia, Mabele, & Scheba, 2017). Even when ignoring these concerns, the statistics indicate a modest development when considering the extent of forests in Tanzania. Of the 48 million ha of forest in Tanzania, 19.6 million ha fall in central and local government reserved land, making it eligible for JFM and 24.6 million ha fall on village and general land making it eligible for CBFM (URT, 2015). In terms of the outcomes of PFM, the existing body of studies finds that it may promote sustainable forest management (Blomley et al., 2008; Lund et al., 2015; Persha & Blomley, 2009; Treue et al., 2014). However, evidence on the social outcomes indicates that PFM falls short of its promises of equitably distributed social and economic benefits to forest adjacent communities (Green & Lund, 2015; Lund & Saito-Jensen, 2013; Lund & Treue, 2008; Persha & Meshack, 2016; Vyamana, 2009)

Many agree that progress and outcomes have fallen short of expectations. Yet, there is disagreement about the causes of this demise. Generally, government foresters diagnose the problem as one related to local communities' low capacity to undertake technical forestry. The obvious solution emerging from this diagnosis is more capacity building programs and facilitation of villagers' management (Green & Lund, 2015). This should be addressed along with more resources to facilitate large-scale implementation following rigorous scientific forestry principles. A growing body of research, however, argues that the problem lies less in local communities' low capacity for technical forestry and more in the professional foresters' embrace of technocracy (Lund, 2015; Sungusia & Lund, 2016; Vyamana, 2009). Below is a summary of PFM realities in Tanzania and the main reasons provided in the literature for the lack of progress in achieving the promised benefits.

Techno-bureaucratic framing limits autonomy and facilitates elite capture

While the PFM ideal seeks to transfer more autonomy to local communities, detailed regulations and technical plans mean that, in reality, only limited power is transferred, and local autonomy is cut short. The technical framing of PFM tends to privilege formal expertise and scientific knowledge, which is in the remit of professional foresters. The policy requires that village land forest reserves (VLFRs), and any other forest for that matter, must be managed according to an inventory-based management plan (URT, 2002). This entails measurements, calculations, modelling, and estimation of sustainable level of harvesting i.e. the level of harvesting that ensures not only the permanence of the forest estate, but also a continued flow of products from it (mainly timber). Further, the framing of PFM unleashes a string of bureaucratic procedures: monitoring and reporting, record keeping, hammering of stumps and logs, and registration of villages as timber trader, just to mention a few. It's worth mentioning here that these tendencies of framing participatory forestry in complex and costly scientific and bureaucratic ways are not limited to Tanzania. FAO (2016) identifies requirements for detailed management plans and overly complex regulatory procedures as key constraints to participatory forestry, and there are similar examples from a number of countries⁶ (e.g. Basnyat, Treue, Pokharel, Lamsal, & Rayamajhi, 2018).

The technical framing of PFM increases the dependence of local communities involved in forest management on professional foresters, as local communities cannot comply with techno-bureaucratic requirements on their own. Scholars have thus interpreted the technical framing of PFM as resulting in a process of "recentralizing while decentralizing" i.e. through PFM government bureaucracies come to gain greater oversight over and control with local forests and forest users (Ribot et al., 2006). Thus, the technical framing of PFM contradicts the policy objective of increasing participation – understood as autonomy and devolved decision-making - of local communities in forest management.

Similarly, the technical and bureaucratic framing of PFM has been seen to produce "committee forestry" (as opposed to community forestry) characterized by low levels of awareness of and participation in forest management beyond the elected village leadership. Usually this leadership is comprised of relatively wealthy people with better education (who can read and write and are able to navigate bureaucratic procedures and technical directives of professional foresters) (Lund 2015, Lund and Saito-Jensen 2013). The individuals who tend to occupy leadership positions for multiple election periods have been observed to capture disproportionate benefits through various

⁶ Lund (2015) reviews experiences from a number of different countries and settings.

allowances. Ironically, this process of elite capture may be nurtured by the government foresters in charge of facilitating PFM at the village. Not because government foresters are against democratic elections. But because the techno-bureaucratic framing of PFM implies a strong incentive to seek to retain those with knowledge of the procedures in their positions, so as to avoid cost of having to educate a new cadre of leaders (Green & Lund, 2015).

Forest officers retain more decision-making powers

While participatory ideals demand the transfer of decision-making power to local communities, in reality professional foresters retain much of this power. As stated in the previous section, participating communities are compelled to depend on professional foresters to meet technical requirements such as detailed inventory and management planning. Even where approved management and harvest plans exist, participating communities cannot implement them without the consent of professional foresters. For example, in the Nyamwage and Tawi VLFRs in Rufiji District a special hammer to mark stumps and logs was required before allowing harvesting. It took a long process (2010 – 2015) to obtain the hammer and still, when it arrived, it was entrusted with the DFO instead of giving the hammer to those managing VLFRs. Thus, harvesting in the VLFRs is not possible without the presence of DFO and his expenses are covered by villages.

During harvesting, villages can sell standing trees or processed woods. When Nyamwage village chose the former option, DFO required a signed contract between the village and a buyer witnessed by a district lawyer. Out of concern that working with a district lawyer could potentially lead to considerable delays, village leaders changed their minds and chose to process the logs themselves and sell sawn timber. This time, DFO required Nyamwage village to be registered as timber trader and obtain respective license from TFS. The outcome was prolonged delays (on top of a long time it took to obtain the hammer) in harvesting to the extent that the interested buyer gave up. At the same time, village leaders were finding it increasingly difficult to convince their fellow villagers that the VLFR was still economically viable and worth protecting against illegal loggers from the nearby Ikwiriri township. Here, a professional forester's effort to be involved in the management of VLFR under the pretext that local communities cannot be trusted to do it on their own caused more damage than good.

Oftentimes, regional and district authorities, perhaps working on advice from professional foresters, issue bans on harvesting and transportation of timber and charcoal beyond village and/or district borders, e.g. Kiteto and Iringa. While these recurring bans may be justified in different contexts, they tend to override any plan local forest managers may have and undermine incentives for communities managing VLFRs. The bans signal and perhaps remind local communities that their claims to forest resources are weak or loosely enforceable. They remain in charge of protecting the forest, but their right to benefit from it are stripped away. The effect of the unpredictability of government directives is further exacerbated by the recent repeated calls by the Minister of Natural Resources and Tourism to centralize forests on village and general land on the pretext that local communities have failed to properly manage them.⁷ Instead of addressing barriers that prevent PFM

⁷ “Wakati huo huo, Waziri Kigwangallah amesema Wizara inakusudia kuchukua misitu yote iliyo chini ya vijiji na Halmashauri kwa vile zimeshindwa kuisimamia ipasavyo na hivyo kupelekea sehemu kubwa ya nchi kugeuka kuwa jangwa.” <https://michuzi-matukio.blogspot.com/2018/02/waziri-kigwangallah-awashukia-viongozi.html> (5.02.2018).

from realising its full potential, some of them policy related, the government seeks to take the forests and land away from the people. Now, no one can fault/criticise the Minister's good intentions to ensure improved forest conservation, but the framing of local communities as the problem could potentially wipe out little gains from decades of work to develop PFM and cause more damage to the forests as a result. Most government professional foresters we have interacted with are sympathetic to the framing that local communities have failed to manage forests and approve the move to centralize management of forests on village land.

Local forestry knowledge marginalized

By privileging one form of knowledge, one necessarily demotes other forms (Mathews, 2011; Scott, 1998). Since scientific forestry knowledge (reservation, inventory, management and harvest planning) is given a central stage in PFM, it follows that local forestry knowledge possessed by local communities recede to the background. If one sees PFM as a way of extending the reach of scientific forestry and hence professionalism to village land,⁸ then the architects of PFM assumed that local forestry knowledge is either non-existent or inadequate to produce their ideal type forest management. In other words, the starting point of negotiations on power transfer is the knowledge and practices that professional foresters approve of and that local communities are expected to adopt. The starting point is never what local people are knowledgeable about the forest and capable to manage it. As a result, PFM becomes an instrument of controlling local populations instead of empowering them to take full control of and benefit from their forests. The result is also VLFR modelled after government reserves/protected areas with strict boundaries in which grazing and other human activities are prohibited in favour of timber production sold to outsiders. This has important implications for the extent of incentives available to communities. Even though it may appear a perfect thing to do in the eye of a professional forester, it undermines local communities' access i.e. ability to benefit from their forests (Ribot & Peluso, 2003). Prescriptions couched on scientific forestry knowledge fault most of the local uses of forests and thus undermine creation of institutions (rules of the game) to ensure social justice and effective implementations (Klooster, 2002).

Non-implementation

The emphasis on technical practices in PFM processes produces non-implementation. The cost of completing steps such as land use planning, inventory, and management planning are beyond the reach of many villages (Scheba & Mustalahti, 2015). As a result, progress is restricted to areas where donor funding is available, producing islands of supposed sustainability amidst a sea of unmanaged landscapes. In other words, PFM implies a strive for perfection of a poorly fitting model of scientific forestry in the few places receiving donor funding, all the while huge tracts of forests on village and general lands all over the country remain unmanaged.

Forest management plans based on forest inventories are seen as a requirement for PFM. They are costly to produce, often of poor quality (due to the prohibitive costs of doing forest inventory), and

"Tumegundua misitu mingi tuliyokabidhi kwa jamii imeharibika kwa hiyo lengo ni kuhakikisha serikali inasimamia kwa ukaribu utunzaji wake" – Hon. Hamis Kigwangallah. 31.10.2018.

⁸ Known as state formation in the literature.

rarely do they guide actually in day to day management of forests⁹ (Green & Lund, 2015; Scheba & Mustalahti, 2015). Even if the plans were of good quality, they are unlikely to be used in actual management. This is because the plans build on the assumption implicit in scientific forestry, that the main (only) purpose of forestry is to produce timber. However, the forests managed under PFM in Tanzania are used for many other purposes, for which the management plans do not yield relevant information. Furthermore, the complex natural forests in Tanzania, such as miombo woodlands, are not amenable to the ideals of scientific forestry. It is not feasible to reduce the complexities of miombo woodlands to the order required of silvicultural manipulations, measurements, growth and yield modelling. Since these woodlands are multi-species and non-equilibrium ecosystems, and species- and site-specific information on growth is usually lacking, most models are grossly underspecified and have little empirical backing (Mwakalukwa, 2014). Thus, the apparent precision of forecasting is but a mirage.

Land use plans are seen by planners and foresters as important to guarantee long-term protection of the land set aside for forest conservation. As demand for agricultural land is projected to increase, land use planning is seen as a way of shielding the reserve from current and future land pressures. But since land use planning is implemented as a technical, rather than a political process of resolving conflicting interests, villages adhering to approved land use plans are hard to find (Walwa, 2017). Even though land use plans and forest management plans are rarely followed and at times add to land use conflicts, it is not unusual to find experts recommending more of it as a way of addressing land conflicts and improving resource management (Walwa, 2017).

Further, excessive planning requirements and restrictive rules impose high costs on villagers. As a result, the costs of meeting the requirements and following the rules are not economically justified (cost exceeds the benefits) in the eyes of local communities. The result is non-implementation, which damages the relations between villagers and foresters and other government officials. When requirements cannot be met, villagers and government officials alike are put in a precarious situation. Villagers will feel the need to hide the true state of affairs from government officials. And government officials will be facing a dilemma: If they ignore the true state of affairs, they will protect the villagers, while making themselves vulnerable to sanctions for not enforcing compliance with the official regulations. If they enforce compliance, they will compromise villagers' livelihoods and incentives to participate in forest management. Thus, the costly and often irrelevant requirements of the techno-bureaucratic framing of PFM undermines the conditions for its own success.

Case Studies of the Challenges of Technocracy in PFM

The technical framing of PFM brings up questions around the relevance and practicality of scientific forestry knowledge. To be clear: our purpose here is not to question the value of science. Rather, our questioning of the relevance of scientific forestry knowledge to the management of natural forests (including complex miombo woodlands) and its practicality in the context of participatory forestry is an attempt to improve the effectiveness and social outcomes of forest management approaches in practice. It is about recognizing the fact that scientific approaches that were developed in one context for a specific purpose may not be relevant everywhere else. In what follows, we present selected cases to illustrate the irrelevance and impracticality of the technical

⁹ These are also the findings from similar research in other countries, e.g. Nepal (many of which are linked to on SCIFOR's homepage, <https://ifro.ku.dk/english/research/projects/scifor/newsbxjune2014/journal-articles/>)

framing of participatory forestry and the problems arising from the current privileging of technobureaucratic approaches to forest management in general.

Case 1: Namatunu VLFR: Complex ecologies challenge the ideals of scientific forestry

This case is succinctly described in Sungusia and Lund (2016). Namatunu village is located in Nachingwea District in Lindi Region. Out of the 45,136 ha of the Namatunu village land, 8,567 ha were declared a VLFR in 2006. But harvesting in the VLFR was only achieved in 2015 for various reasons: initially, a decision was reached to let the forest grow and accumulate more utilizable resources, but in later years harvesting was delayed for a mix of reasons including lack of an inventory-based plan and difficulties in finding buyers.

High cost of meeting technical requirements

Nachingwea was one of the Districts prioritized to receive funding for PFM activities in the National Forest and Beekeeping Program under the Finish support (GoF & URT, 2013). As a preparation for implementing harvesting and to lay the ground for developing standardized inventory and planning procedures for VLFRs, the program supported detailed forest inventory and harvest planning in Namatunu VLFRs (FORCONSULT, 2015; URT, 2014). The inventory and harvest plan were completed by a consultant at a cost of more than US\$ 27,000, which translates to over US\$ 3.15 per ha. This should be considered a conservative estimate because detailed inventory was done only in 1,680 ha falling in block 1 (the plan divided the forest into five blocks, each representing a five-year management plan making a rotation of 25 years). If one accounts for that, the cost of planning per hectare goes up to over US\$ 16. As stated earlier, the idea was to pilot “appropriate methodology for such an inventory system cum a harvesting plan which is easy to implement with relatively unexperienced survey teams and which can be carried out at reasonable costs” (URT, 2014, p. 2). By any account, US\$ 27,000 is not a “reasonable cost” for most villages and in absence of external financial support.

An irrelevant blocking system

Despite the expensive detailed inventory used to create a harvesting plan, it turned out to be of little use in actual forest management. The estimated volumes of harvestable trees were near impossible to find in the extensive and varied forest and, when found, trees of harvestable size were bent and rotten.

Even though a sample was drawn from the entire forest reserve, detailed planning was implemented only for block 1, which represented the first five years management cycle. The plan prescribed 127 Mninga trees (*Pterocarpus angolensis*) of harvestable size (>45 cm) that can be sustainably harvested per year. During implementation, local forest managers, with assistance from a District Forest Officer and experienced pit sawyers brought in from Iringa, decided to start with Mninga as the buyer was already lined up. However, following rigorous search of block 1, the 127 trees could not be found. The consultant was asked and supplied GPS coordinates of sampled plots that contained some of the Mninga trees with diameter greater than 45 cm. Only five trees were located, either bent and/or rotten and thus unworthy for timber. In the end, local forest managers decided to abandon the plan and proceeded to harvest 809 pieces of Mninga in block 2. The consultant clarified that the estimates they produced were built on some probabilities i.e. when they reported a density of certain number of trees per hectare, it does not mean that one will find those trees in

every hectare in block 1. However, 127 trees were prescribed in absolute number and not as some statistic. Also, the consultant expressed doubts about local forest managers' honesty and whether they actually did search the entire 1,680 ha of block 1 diligently. In other words, if they searched hard enough, they would find the trees, according to the consultant.

Even the local forest managers were dismayed by the consultant's blocking system approach to the chaotic miombo woodlands and knew beforehand that the odds of the plan to succeed was small. For one thing, since miombo woodlands are not planted forests, trees are not evenly distributed by species and age. It is possible for trees of a given species to be concentrated only in one part of the forest. It is also possible that trees of harvestable size are randomly scattered in the forest in such a way that each block contains some. Thus, if you restrict harvesting to block 1 for the first five years, it means that trees of harvestable size today in block 5 shall wait for at least 20 years to be harvested. The risk of losing the tree to pest, diseases, natural death, fire, and even thieves is thus maximized. What is even more, Mninga trees can look younger (small diameter) than their age. For reasons related to site quality and climatic factors, a very old tree could have a diameter of less than 45 cm. Judging these trees as being below harvestable size and thus leaving them standing for the next 20 years is synonymous to letting them rot.

An annual growth rate of 3 mm is assumed for all tree species in Namatunu VLFRs. This is a big assumption as it is nearly impossible to establish by how much miombo species would grow in a year because that depends on too many variables to practically measure and include in a model. The consultant wrote in the report, "There is very little literature on diameter growth in natural forests including miombo. Even the little literature available it is difficult to establish a single diameter increment figure because of the high variation of tree sizes, species, form and spatial composition. Even within one species the growth of younger trees would be different from those older trees and this will be complicated by competition factors" (FORCONSULT, 2015, p. 9). As Mwakalukwa (2014) notes, quite a wide range of growth rates are reported in the literature and mostly were obtained using permanent sample plots. Counting growth rings of *Brachystegia spiciformis*, he obtained an average growth rate of 1.93 ± 0.14 mm year⁻¹ (mean \pm SE). If trees actually grow at a rate slower than 3 mm per annum (which is not unlikely), the harvesting plan will be thrown into disarray.

The consultant and professional foresters insisted on the blocking system despite its irrelevance to the management of Namatunu VLFRs. When technocracy was challenged by local realities, the consultant shifted the blame elsewhere and was unwilling to reflect on the relevance of their proposed approaches. The consultant saw the congruence between the problem i.e. how to manage the forest sustainably and their proposed interventions. Local forest managers in Namatunu village, on the other hand, saw the incongruence between what the consultant prescribed and local ecologies, but had to give in to the authority and apparent expertise of experts (wasomi). Experts can invoke the appearance of coherence of logic underlying the technical planning, while local forest managers often cannot.

The double standards and disincentives for landscape level restoration

Local communities can keep up to 100% of revenues collected from sustainable harvesting of trees in their VLFRs. At the same time, they have no business to do with trees on their village land but outside of the VLFRs. This part of the village land is categorized as general land (16,099 ha in Namatunu village) and usually ownership of trees found here are claimed by the Tanzania Forest

Service Agency (TFS).¹⁰ TFS are mandated to issue licences for harvesting from general land, as well as collect royalties paid for trees on general land and villages can claim up to 10% of the revenue. This creates a disincentive for local communities to manage trees falling outside of the VLFRs. At the same time, local communities are hesitant to allocate more of the 16,099 ha to VLFR fearing the unpredictability of government policy. Local communities fear that once the land is included in the VLFR, the government may decide to take it away and add it to the network of national forest reserves. The 16,099 ha are thus left out of the VLFR to meet future demands for agricultural land and other uses.

Namatunu struggled to attract buyers for its timber. Of the 807 pieces that were harvested in the first cycle, 647 pieces were sold to the District Council as part of implementing the Presidential order of ensuring sufficient desks in schools. Long distances to major markets like Dar es Salaam may explain timber traders' lack of interest in Namatunu timbers. Double standards certainly lower the demand for VLFR timber. While harvesting cannot take place in VLFR without detailed inventory and harvesting plan, it does take place on the general land part of the village land without any inventory or plan. Harvesting quota for general land are thus arbitrary and more susceptible to manipulation. Since it is impractical for TFS and district foresters to be on site during harvesting, buyers of timber from general land usually harvest unsupervised. On the contrary, harvesting from VLFRs is strictly supervised and harvesting limits are more likely to be respected. Further, local forest managers sell standing tree volume derived from actual log measurements. As URT (2016) show, these tend to be systematically higher than standing tree volumes derived from sawn timber, which is common for general land, as government foresters are not on site during harvesting. This is an important observation because it implies that, for a tree of the same size and species, buyers pay when harvesting from VLFR than general land.

Case 2: SULEDO VLFR: Elusive economic benefits, land pressure, and centralization of power over land and forests

SULEDO VLFR was among the first to be created in Tanzania. It has been the subject to international praise as the best case illustrating the power of local actions to forest and biodiversity conservation while benefiting the local population.¹¹ SULEDO was established in 1993 as a joint initiative of nine villages. The number of villages forming SULEDO has since increased to 13, due to the splitting of some of the original villages. SULEDO leadership rue the tendency of dividing villages without being consulted as it complicates matters (SULEDO administration).

SULEDO enjoyed sustained donor support from the beginning: initially, SIDA - Sweden provided support through Land Management Program (LAMP) and later through Association of Local Authorities of Tanzania (ALAT). The last round of SIDA support ended in 2017 as a result of some mismanagement of funds. SULEDO leadership claimed that the donor pulled out too early before the organization could stand on its own feet. One must keep in mind that SULEDO received donor support from 1993 through 2017.

At a size close to 175,000 ha of miombo woodlands, one would expect the VLFR to support sustainable utilization and justify its existence in the eyes of villagers. But as is the case with many

¹⁰ TFS cites the Tanzania's Land Act of 1999 that defines general land as including 'unused' parts of village land.

¹¹ https://www.equatorinitiative.org/wp-content/uploads/2017/05/case_1348258301.pdf

other VLFRs, SULEDO has struggled to live up to its expectations, mainly for reasons related to the technical framing and professionalization of CBFM.

Complex ecologies, elusive economic benefits

Earlier estimates show that up to US\$ 213,000 could be generated annually from timber harvesting in SULEDO.¹² But our recent field data show that SULEDO has struggled to deliver on this front. People in villages forming SULEDO have a fuzzy recollection of the last time their villages received some payments as a share of revenue generated from the VLFR. SULEDO leadership confirmed these reports and recounted challenges that over years have prevented more economic benefits from flowing to member villages.

Like other VLFRs, SULEDO initially focused on conservation and protection (1994 – 2009). In 2010, a pilot harvesting of some 500 ha was implemented. It was projected that the harvesting would generate some 500 million shilling. In actual sense, only 80 ha were harvested generating around 40 million shilling. The timber trader abandoned the harvesting, citing problems including bent and rotten trees and sapwood. The harvesting was based on the advice of a Peruvian consultant hired through the SIDA funded project. Around 2012/2013, another company was contracted to harvest from SULEDO. The company applied to harvest four species but actually harvested two species. The company deposited money for more volume than it was able to harvest – again citing rotten and bent trees.

Harvesting does not appear to be based on detailed forest inventory. When some of the authors of this working paper visited in December 2017, SULEDO leadership was not in possession of any inventory information of its forest. The only known inventory was conducted by TAFORI and it involved only six permanent plots for about 170,000 ha of miombo woodlands. Reports have never been seen and TAFORI are known not to monitor those permanent plots anymore. SULEDO plan merely says that 300 ha can be harvested per year in each member village (a total of 300 * 13 villages = 3,900 ha per year). This criterion is coupled with species selection, application of a minimum diameter, and some sort of rotation. SULEDO leadership admits that it is not possible for the time being to invest in detailed inventory and harvest planning. Such an investment would certainly be a bad investment as SULEDO is currently struggling to attract buyers. This makes sense as it is a bad economics for the cost of information to exceed its benefit. Desperate to cash in, SULEDO is not waiting for a detailed inventory-based harvesting plan to be completed - buyers are just taken to parts of the forest with sufficient materials to meet their needs.

Recentralizing decision-making power

Donor support led to the creation of a salaried team of professionals (a forester, project manager, an accountant) charged with the management of the VLFR on behalf of member villages. Now that donor funding has dried up, these professionals point out that they have worked unpaid for months. What keeps them going is the anticipation of revenues from sustainable utilization of timber in the VLFR. Realising some revenues has been almost achieved on a number of occasions but was never materialised.

¹² https://www.equatorinitiative.org/wp-content/uploads/2017/05/case_1348258301.pdf

The employed professionals are part of SULEDO Secretariat (Executive Committee) responsible for the implementation of day to day activities, including enforcement of rules around the management of the forest. The Secretariat reports to the Zonal Executive Committee (ZEC), the decision-making body of SULEDO. All these are supra-structures created parallel to elected bodies and thus somewhat less responsive to peoples' needs.

The following case is a good example. The SULEDO villages would like to reduce the size of the VLFR to make more land available for other uses, but have, so far, failed to do so. Citing population growth and thus a growing demand for land, Sunya village seeks to free some 2,500 ha of the forest reserve for agricultural land. An elderly man in Sunya village argued that the number of landless villagers is increasing and that the wish to revoke parts of the VLFR land is therefore unlikely to dissipate any time soon, especially when the promised economic benefits from PFM are not forthcoming. The wish to revoke parts of the VLFR is also present in other member villages. The SULEDO leadership admits to the land pressure, not only from member villages but also from people from nearby townships including Gairo and Kibaigwa who are seeking to invest in larger-scale commercial farming. The leadership argues that because the VLFR was declared (gazetted) through a Government Notice (GN), it will require the President's consent to change the use of the land which is a near impossible process. They also argue that the GN offers the villages protection of their rights, because without it the Director of Forest and Beekeeping Division can easily appropriate the forest and make it a government property.

Then, there is a perennial problem of interference by the District and other higher authorities. SULEDO management cites this as a major challenge hindering progress. In 2016, the District Executive Director instructed SULEDO to produce school desks for the entire district (following the President's order). A total of 2,235 desks were produced. The market price was Tsh. 80,000 shilling but the District Council paid only Tsh. 45,000 per desk. The harvesting turned out to be a huge loss given the high operation cost.

In 2017, a total of 140 logs were harvested. But transporting the logs to the market (outside of the district), District Commissioner for Kiteto and the District Security Committee intervened. They argued that harvesting/transportation of logs was banned. The Commissioner instructed SULEDO management to use the stationary sawmill installed at its office to process the logs into lumber. Given the high cost of transporting the logs from harvesting sites to the mill, SULEDO management worked out that selling logs would generate Tsh. 18 million compared to Tsh. 8 million from selling sawn timber. Even though the Commissioner may have had good intentions to insist on value addition and creation of local employments, he ended up frustrating local initiatives to manage forests. The financial struggles facing SULEDO continue. It looks as though for every move they make to realise CBFM promises, there is something and somebody waiting to frustrate them.

Case 3: Gangalamtumba and Kidunda Kiyave VLFRs: Sustainable management in the absence of forest inventories

This case has been described in (Lund & Treue 2008; Green & Lund 2015; Lund et al. 2015). Gangalamtumba and Kidunda Kiyave VLFRs are neighbouring forests situated in Iringa District, Tanzania, and set in a relatively flat landscape, lying 850–1,500 m above sea level. Kidunda Kiyave VLFR (~4,900 ha) is situated in Kiwele village, whereas Gangalamtumba VLFR (~6,000 ha) is in

Mfyome village. The forests are dry miombo woodlands; the area receives an average rainfall of c. 600 mm per year, and the mean annual temperature is c. 21 °C. Like other cases described in this working paper, Kiwele and Mfyome villages have struggled to take control over the management of their forests, generate sufficient revenues, and improve their livelihoods.

Sustainable management in the absence of a plan

Decentralized forest management was introduced in the villages during 1999–2003 via the Danida supported MEMA¹³ project that provided support to community awareness campaigns, delineation and demarcation of VLFR boundaries, establishment of village natural resources committees (VNRCs), and formulation of forest management plans. The projects had a total budget of 3.8 million USD focused on the development and implementation of PFM in 23 villages, and included an international advisor and accountant, and several consultancy companies involved in socio-economic baseline surveys, forest inventories, market studies, and the development and implementation of monitoring systems.

Initially, Kiwele and Mfyome villages were invited to implement JFM only – focusing on the Kitapilimwa National Authority Forest Reserve. Yet, an inventory of this forest indicated that it was in poor shape and it was thus decided that no harvesting could be allowed. To provide the two villages with incentives to participate in forest management, the project decided to target unreserved forests on the village's land for CBFM.

Thus, land use planning proceeded in the villages and VLFRs were demarcated. Management plans for the VLFRs were subsequently written with information on the forest. Rather than being informed by a forest inventory - an assessment of forest condition using standardized approaches-, the plan was based on the inventory results from the Kitapilimwa forest reserve and visual inspections of Kiwele forest (Green & Lund, 2015). This was because the MEMA projects had used up its finances for forest inventories at the point in time when it was decided to include the unreserved forests. Despite this, the plan contained specific harvest quotas aimed at ensuring regrowth of the resource and informing sustainable management.

This plan has never been updated in the 20 years that have passed, exclusively due to resource constraints. Leaders in Kiwele and Mfyome villages appear unaware of any detailed inventory and harvesting plan. Village leaders do not believe that it is possible to know how many trees are in their forest (detailed inventory). One leader argued, *“our forest is about 5000 ha. It is not possible to know the number of trees (quantity) in this forest. Changes are occurring every day. When you take out some trees, new ones are taking over. That one is able to tell exactly the number of trees on the forest? Impossible. Maybe only trees that are ready for harvesting”* (Group discussion, Kiwele, Dec 2017). Village leaders think it is probably possible to know the number of trees of harvestable size. Even with that, they think the cost of counting trees will exceed the benefits of doing so. Still, village leaders suspect that information on the number of trees in the forest might be useful: *“If it is possible to get that number, it can perhaps help to tell if we started with 100,000 trees and we have harvested 100, we can tell how many trees are remaining in the forest”* (Group discussion, Kiwele, Dec 2017).

¹³ Matumizi Endelevu ya Maliasili

The ecological sustainability of the local management is gauged on the basis of inventory work and analysis of satellite imagery data and are reported in Lund et al. (2015). The inventory shows that the basal areas of the two forests are comparable to estimates found in other dry miombo woodlands. The crown cover and diameter distributions indicate that the intensities and types of use leave room for regeneration. Overall, the two forests thus appear in good condition. Given this, a harvest level that roughly equals growth appears to be a reasonable criterion for resource sustainability of management, and a stump inventory indicates that harvesting is much lower than growth and, thereby, sustainable, although we cannot say anything about changes in species composition. Subsequent results from a disturbance analysis based on satellite imagery over time corroborate this impression when interpreted in light of local priorities. Interviews with village-level managers indicated that they are knowledgeable about their forests and exert control with forest types and extents of forest use. Thus, the forests are now actively managed for sustainability in ways they have not been before and would not have been in the absence of the CBFM intervention.

The results in this site are, in all likelihood, a consequence of legal reform (the devolution of rights to the village level), a supportive environment (donor funded support and supportive district forest officers), and a favourable location (the forests are located relatively close to the district forest offices and have, consequently, frequently been visited by forest officers, researchers and others).

Financial viability through local uses

Neither of these two CBFM forests have many large-diameter trees that are suitable for timber production, and the meticulously kept financial records of revenue and expenditures of the VNRCs over several years indicate that the main income sources of the VNRCs are from firewood for tobacco curing and charcoal, but also grazing and a host of other sources. The uses for which fees have been paid are illustrative of the wide range of ways in which these forests are important of local livelihoods.

Incomes for the VNRCs have ranged around 4 – 7 million Tanzanian shillings per year, and more than half of this revenue was used for management and administrative costs for forest management, while also providing a surplus for smaller investments in locally-relevant public infrastructure (Green & Lund, 2015; Lund & Saito-Jensen, 2013; Lund & Treue, 2008). This rather low revenue earning potential of these woodlands is indicative of the need for simple and low-cost approaches to forest management for PFM to be financially sustainable.

Recentralization and demotivation

Communities in Kiwele and Mfyome villages are not fully in control over their forests. VNRC main tasks are limited to patrolling and reporting to district officials on the status of the forests (e.g. extent of illegal activities) using special forms. But this is now not happening regularly. Decisions on how much to harvest and when are still made by district officials. All requests for harvesting are forwarded to the district and officials decide what to harvest, how much, and where to harvest.

In 2017, the District Commissioner for Iringa decided to impose a harvesting ban to save the forests from what appeared to officials as excessive charcoaling. The decision was taken without consulting the two villages whose VLFRs depend on sustainable utilization to justify their existence in the eye of village members. For the whole year, it became impossible to implement any

harvesting in the VLFRs. and VLFRs struggled to conduct patrols and other forest management activities. VNRCs tried to challenge the ban. They argued that people are submitting request to harvest legally, and they are turned away. Instead, they harvest illegally. In other words, the ban does not mean harvesting is not taking place. The ban fuels illegal harvesting because legal harvesting is impossible. A leader pointed out that *“Ordinary people want to harvest. They want to do it legally but stop them. They want to produce charcoal. In the end, they are left with no option other than stealing from us”* (Group discussion, Mfyome, Dec. 2017).

While the ordinary people are turned away, village leaders argued that it is not unusual for them to receive people with special permits to harvest timber for special purpose issued by district officials. A case in point is when the president ordered that no student shall sit on the floor for shortage of desks in schools. District authorities defied their own ban and issued permits to harvest timber for that purpose. Village leaders argued that if it is true that forests are in bad conditions and the ban is meant to restore them, then the ban should stand no matter what. It cannot be possible that forests are in bad condition when villagers want to harvest and in good shape when the government is in need of some timber.

A district officer tried to defend the decision to ban harvesting. He argued that the ban provides a breathing space for district officials to regroup and draw up a plan to control illegal forest products. He also cited inadequate resources as a reason to support the ban. When you allow harvesting, you need to be able to monitor it. The officer pointed out that *“The district has received a lot of applications for harvesting in Mfyome. But we have no vehicles at all. No fuel even when you can borrow a vehicle from other departments. We are immobile. We cannot make it to Mfyome. It is true that the District Council keeps 25% of revenues generated in VLFRs. But the proceeds go to the main account controlled by the District Director. We cannot access this money to support forest management in the District.”* One could add that the resources generated from the taxation of charcoal, firewood, grazing etc. in the villages would not go far in relation to fueling and maintaining a fleet of vehicles.

The Land Question

As in SULEDO, leaders in Kiwele and Mfyome villages are grappling with the challenge of shortage of land to meet the demand from village members. The argument holds that due to population increase, the per capita land available for agriculture is decreasing and more people are without land to set up farms. As in SULEDO, there have been talks to release part of the reserved land for human use. But this would require the approval of the District Council. Even though villagers decided to allocate land to set up forest reserves, they just cannot change their minds even in light of changing circumstances and when land available for agriculture is no longer sufficient. The District officials are unlikely to approve such changes. Officials are arguing against proposals to reduce the size of VLFRs to make more land available to cater for the increasing demand. Addressing Kiwele villagers, a district official put it this way:

“If there’s advice that I give as an expert is that do not reduce the size of VLFRs. I am not against your arguments and requests to release more land for other uses. But if we reduce the size of our forests, will these forests be able to serve us in the long run? Population will continue to grow, so does the demand for more land. What will happen in the end? When we are contemplating to reduce the size of the forests, we must keep in mind that we are digging our own graves. Our energy security will be at risk. If you look at urban dwellers, an individual just occupy a very small piece of

land, put a sewing machine, and make money. These people never ask for more land, they just improve productivity from the same pieces of land they occupy. I encourage you to do the same: think about increasing productivity from the same piece of land we are already cultivating. Let's do away with thinking of expanding agricultural lands into new frontiers. Land is a reserve for future generations.” (Group discussion, Mfyome village, Dec 2017).

While professionals are resisting pressure to revisit the size of VLFRs, it remains to be seen for how long. Our own assessment based on field experiences, land pressure is unlikely to lessen and constitutes a severe threat to the long-term sustainability of CBFM.

Case 4: Machemba village: Stop and go conservation for more than a decade

Machemba village is situated 40 km west of Tunduru town, Tunduru District, Ruvuma Region. The village land consists of an area of approximately 18,000 ha and the village has nine sub-villages and a population of around 2,300 distributed across approximately 600 households. Machemba's Chiumbe forest is situated in the western part of the village, bordering the state-run Sasawara Forest Reserve that is managed by Tanzania Forest Service. Sasawara Forest Reserve is part of the so-called Sasawara - Lukumbule elephant route, which is believed to be used by animals to migrate to and from both Selous and Niassa Game Reserves (Hofer et al. 2004). The following recounts how various conservation interventions have tried to lay claims to parts of Machemba village land and Chiumbe forest, and the politics and challenges engendered thereby.

First attempt – Establishment of a VLFR in Machemba Village

In 2006/7, Tunduru District was chosen as one of 25 districts to receive funding from the World Bank, aimed at supporting CBFM implementation through Tanzania's second Social Action Fund (TASAF II). The funds earmarked for CBFM activities amounted to USD 135,000 in Tunduru District. This was to be used to facilitate implementation of CBFM in six villages. None of the village councils were consulted prior to the decision. Machemba was one of the six villages.

Machemba had previously caught the interest of district officials because of the alleged timber resources found in Chiumbe forest. In the early 2000s, the District Forest Officer proposed to the Tunduru District Council to reserve the forest as a Local Authority Forest Reserve for timber production. This would have given the district forest office control over the forest, but the idea faltered due to a lack of funding to finance the reservation process. Now, in 2007, with available funding, there was a chance to see the forest reserved as a VLFR, which would gain district authorities influence over its management.

In October 2007, a District Facilitation Team visited Machemba to introduce the idea of CBFM. In the morning, the team briefed the village council on the project, and a village assembly was held the same afternoon. Concerns raised during the assembly, e.g. about CBFM causing land scarcity, land use conflicts, and human-wildlife conflicts, were put to rest by the facilitation team, arguing that land use planning would solve such problems. One village councillor recalled: “They told us that our concerns are manageable as the government would facilitate land use planning to allocate village lands into different land uses. And when we will start harvesting in our forest reserve, our youth will be employed, and the village government will earn income to fund community development projects. Thus, our challenges will automatically be resolved”. The village assembly

agreed to proceed and elected a Village Natural Resources Committee (VNRC) to oversee the process.

As a next step, the facilitation team and VNRC identified the boundaries of the proposed VLFR. Thereafter, a participatory forest resources assessment followed. At this point, conflict at the village and accusations of misuse of funds at the district forest office made the process come to a halt. Only in 2012 was it resumed. However, at that point, an order arrived from the Forestry and Beekeeping Division to conduct village land use planning. This activity, which is a requirement in the CBFM guidelines, had been ignored initially. Thus, a village land use planning process was initiated, but could not be completed before the TASAF funds ran out. That marked the end of the initial attempt, costing more than 22,000 USD and lasting six years, to establish a VLFR in Machemba.

Second attempt – replacing VLFR by WMA in Machemba Village

In 2013, Machemba was again approached by conservation agencies, this time with an invitation to join the nearby Chingoli Wildlife Management Area (WMA), along with other six villages.

The idea was accepted, and village land use planning was initiated. The planning was led by external consultants and took a mere five days. Chiumbe forest, which in 2007 was proposed to be reserved as a VLFR of 6,200 ha, was divided into two areas: a land reserve for future expansion of agriculture land or settlements of 2,349 ha and a forest reserve of 4,243 ha that would be included in the WMA.

Then contestations emerged both from within and outside the village. Some villagers contested the idea that Machemba would be a member village of Chingoli WMA, and therefore boycotted the Village Assembly where the village land use plan was approved. Secondly, the Tanzania Forest Service contested Machemba's village land use plan by claiming that the land proposed for Chingoli WMA is part of Sasawara FR, and, thus, not village land. The conflict implied that the process of annexing Machemba village into Chingoli WMA came to a halt. Yet, still in 2018, the Chingoli WMA leadership firmly stated that Machemba is a member village.

Third attempt – re-establishment of the VLFR in Machemba Village

With the WMA process stalling in 2013/14, Machemba was again invited to enroll Chiumbe forest under CBFM. WWF also supported this process under the Ruvuma Landscape Programme, in parallel with their supporting the process of annexing a part of Machemba village land to the Chingoli WMA.

This time, the demarcation of the VLFR was supposed to follow the boundaries identified in the 2013 village land use plan that was conducted as part of the WMA process. However, instead new boundaries were drawn that expanded the VLFR with around 400 ha from 4,243 to 4,612 ha. These new boundaries included more than ten households and more than 5 ha of cashew farms in the VLFR. This created conflict with farmers in the affected area, as they claimed that they had not been consulted during the demarcation process.

Nevertheless, the process of formalizing the VLFR continued with participatory forest resources assessment in order to prepare a provisional forest management plan. The document was presented

to the Village Assembly during March 2015. At the assembly, the issue of shifting boundaries emerged when villagers questioned why more land had been included in the VLFR without their consent. District and NGO staff appeased the villagers by assuring them that they have the power to revoke the contested part. As a result, villagers approved the plan and the VLFR was declared. On 16th June 2015, another Village Assembly was convened to hand over forest management rights to the village. Following approval of the plan, farmers who were included in the VLFR were ordered to vacate and they did so.

Stop and go – but where and at what cost?

The three rounds of stop-and-go conservation interventions in Machemba targeting Chiumbe Forest illustrate policies and processes driven by funding priorities and time schedules rather than by local needs or ecological considerations. Chiumbe Forest initially drew the attention of foresters for its timber values. Later, different conservation actors latched onto the idea that it is a vital piece of the puzzle to ‘secure’ wildlife mobility through the Selous-Niassa Wildlife Corridor, which itself is seen as part of the Ruvuma Landscape. This compelled conservation actors to launch different initiatives onto Machemba’s village land. The challenges faced by Machemba villagers were also shaped by shifting institutional landscapes and political priorities in the Tanzanian government. The creation of Tanzania Forest Service implied a push for resurveying and regaining control of central government Forest Reserves, such as Sasawara FR. While couched in a rhetoric of conservation – saving the national forest estate from destruction and encroachment – the creation of Tanzania Forest Service also echoes the neoliberal turn in public administration that ought to be efficient and self-financed. Yet, ironically, CBFM in Machemba only became a reality due to repeated influxes of donor funds for conservation. Machemba also illustrates that CBFM and other conservation interventions continue to be framed in terms that are way beyond the means of villagers, and of the government of Tanzania.

Case 5: Sautimoja VLFR: Costly and irrelevant requirements

Sautimoja village is located in Tunduru district, Ruvuma region. It is 90 km east of Tunduru town, along the Masasi - Tunduru road. Farming is the major source of livelihood in the area. Food crops grown include maize, paddy, cassava, sweet potatoes and pigeon peas, while cash crops are cashew nuts, sesame, and groundnuts. Other livelihood activities include livestock (mainly chicken), casual labour, petty trades, and handicrafts.

The forest is called Chihuruka forest and covers 21,966 ha of Miombo woodland. The forest is an important catchment area for several streams feeding the Ruvuma river. The forest is also an important habitat for animals and serves as a corridor for animals moving between protected areas in the area.

Establishment of village level forest reserve

Sautimoja registered its village level forest reserve (VLFR) on 16th June 2015 following the completion of a forest management plan (FMP). The process had started in 2014 with technical and financial support from WWF. The planning followed a standard approach with little emphasis on local situation, knowledge, practices, and livelihoods. Consequently, the plan has little relevance to

the community, and as we will show, the plan is only partially followed, and many of the rules in the FMP are modified to match the local reality. We here summarize the key challenges met in the implementation of the management plan in Sautimoja. These are: i) burdensome administrative requirements; ii) forest patrols; iii) fire protection; and iv) timber harvesting.

Burdensome administrative requirements

The FMP demands that most forest uses requires a written permit, and some uses requires payment of a fee. For instance, cutting of raffia and bamboo, which could be done freely in the past, now requires a written permit from the Village Natural Resource Committee (VNRC). Harvesting of forest products for commercial purpose requires the prior payment of a fee, which is to be paid into the VNRC bank account in Tunduru town, 90 km from the village. Prior to depositing money into the account, the applicant must write a letter to the VNRC indicating the type and quantity of the forest produce to be harvested in order to be granted a harvesting licence.

Forest patrols

The FMP stipulates that the village must compose a forest patrol team of six people: a patrol commander, three VNRC members and two ordinary villagers. The team must undertake at least three forest patrols every month. Every forest patrol should be recorded in a patrol book indicating date, time spent, area patrolled, illegal activities observed, people arrested, and legal action taken. The report should be submitted to the VNRC. After two years of FMP implementation only 31 patrols (44.9%) have been conducted. This is because the village does not have the funds to cover the costs of the patrols. These include the cost of buying fuel for the two motorbikes that the village has purchased to facilitate forest management activities, food, and allowance for patrol guards. The costs are estimated to be Tanzanian Shillings (TZS) 120,000 per patrol, and if three patrols are needed per month, the total annual cost amounts to TZS 4,386,900. A VNRC member explains:

Our forest is too far from the village centre. It is about 50 km. We cannot walk to reach the forest. We normally use two motorbikes to transport forest patrol guards. And because of the distance, the patrol team also should take food to be eaten in the forest. All these things need money. If VNRC has no money to buy food and petrol, we cannot patrol the forest as planned in the FMP.

Forest fire protection

Traditionally, use of fire has been a common forest management practice, e.g. in connection with collection of forest products. The FMP strictly banned all use of fire in the forest and a lightening of fire attracts a penalty of TZS 50,000. The FMP also include elaborate requirements for fire protection. These include the establishment and maintenance of a 10 m width fire break around the VLFR, and controlled, early burnings to remove debris on the ground. But neither of these activities has been implemented; the reason again being lack of funds. Approximately TZC 16 million was needed to establish the fire break, and the annual maintenance of fire breaks and prescribed burnings amount to TZS 4,000,000. The forest does not generate sufficient revenues to cover these costs.

Timber harvest

The cumbersome administrative requirements for timber harvest have already been discussed above.

Based on the forest inventory that was carried out in connection with the FMP in 2015, the VLFR can support a sustainable harvest over the first five years of 12,485 stems, equivalent to 17,591 m³ of timber, divided over 10 different tree species. In the two first years of implementation, the community has only been able to sell 114 m³ of timber (0.6 %) to two external buyers. The main reason is the strict requirements for timber harvesting in the VLFR as compared to non-reserved forests. Because of the strict rules, community members who previously were engaged in timber trading have decided to quit. Also, after the FMP, no community members have applied for harvesting licence to obtain timber for domestic use. The reason being that the cost of timber, after paying the required 20% of stumpage fee plus the cost of employing a pit sawyer, is higher than the price of timber harvested from outside the VLFR.

The harvesting requirements are also said to be the main reason for the first two buyers to shy away from further business with the village. According to the FMP, only trees above 45 cm diameter at breast height are allowed to be harvested. When the first buyer, accompanied by the harvesting supervisors of the VNRC, went to the forest, they spent two days without finding any harvestable trees, seriously questioning the quality of the implemented forest inventory. More harvesting supervisors were added but, in the end, they could only find a few harvestable trees. Therefore, a decision was made to harvest small trees.

The second buyer had a mobile sawmill, and his ambition was to harvest more than 3000 m³. As a pilot activity, he acquired a permit and paid for 70 m³. He encountered two problems. First, like the first buyer, to find harvestable trees despite sending harvesting supervisors in advance to search for trees. Second, where to place the sawmill became a problem. With reference to the FMP, the VNRC demanded that the buyer placed his sawmill outside the VLFR because of alleged risk of fire from the debris. After a long discussion, the buyer was allowed to install his sawmill inside the VLFR on the condition that he would remove all debris.

Both buyers complained about the high costs of timber harvesting which made timber harvesting in the VLFR non-competitive. The harvesting requirements were not formulated by the local community, but introduced by professional foresters with inspiration from standard administrative circulars, decrees and guidelines. Overall the evidence presented here on the Sautimoja forest testifies to a top-down forest management planning approach with little emphasis on local knowledge, practices and livelihoods. And these prescriptions have little relevance to members of the community because they do not comply with the socio-economic use and management of the forest. This case study illustrates that there is a strong need for forest management regulation which are developed in line with local realities and capacities.

Conclusion and Recommendations

CBFM in Tanzania was meant to lead to improvements in forest condition, rural livelihoods, and local democracy. As mentioned in the introduction, studies have documented cases where CBFM has had positive impacts on forest condition and, in few cases, to livelihoods improvements, although these improvements often appear to benefit local elites, while poor and forest-dependent

villagers carry the brunt of the costs. Furthermore, the livelihoods improvements are curtailed by the fact that most natural forests – miombo woodlands in particular – are not major sources of direct economic benefits.

The five cases presented in this report illustrate that villages are struggling to generate revenues from their VLFRs and that this undermines the incentive structures underpinning CBFM. The cases also illustrate that the CBFM ideal of local autonomy is rarely, if ever, realized in practice. Further, the cases illustrate that CBFM manifests as top-down processes of governance interventions driven by externally formulated priorities and funding decisions and led by government officials and NGO staff. The cases also illustrate that bureaucratic and technical demands impede progress on CBFM, as it makes the implementation of CBFM very costly for government officials and villages alike. The demands are not justifiable on grounds of being important and relevant to actual forest management practice. Finally, the cases illustrate a problematic double standard in forest governance that undermines the incentives for villages to engage in CBFM. These are all general findings emanating from across several cases and of clear policy relevance.

These findings are crucially important in a context where deforestation and degradation is ongoing across much of Tanzania, and where the identified causes and accompanying rhetoric about local communities tend to misdiagnose the problem, or at least overlook the aspects that are highlighted here. Often, professional foresters and urban elites blame local communities for deforestation and forest degradation. Villagers are seen as unable to comprehend and implement proper planning and management of land and forests. They are also often seen as overly focused on immediate needs at the expense of the environment and long-term sustainability. Such unfounded ideas about rural communities may have fuelled the recent calls from government officials and politicians for centralization of management of all the forests in the country, including those under the management of village governments.¹⁴

The cases described in this working paper and our research in general show that the very insistence on technical forestry and expertise is part of the problem. Firstly, the principles of scientific forestry that undergird CBFM and that emphasize on modelling, technical planning and rotational forestry appear to be challenged by local ecologies characterized by chaotic (as opposed to orderly fashion of even-aged plantation monocultures) woodlands. Secondly, CBFM is out of sync with local realities (local knowledge, local needs) by insisting on demarcation and separation of people and forests on which rural livelihoods are anchored. Thirdly, the emphasis on technical and scientific forestry approaches make CBFM too costly to implement for most communities. It also means that villages spend years trying to meet technical requirements, painting the image that CBFM is not actually meant to deliver any economic benefits to the people. It follows that CBFM is only attempted where there is external donor financing, which results in the aforementioned islands of supposed sustainability amidst a sea of unmanaged landscapes. In other words, PFM implies a strive for perfection of a poorly fitting model of scientific forestry in the few places receiving donor funding, all the while huge tracts of forests on village and general lands all over the country remain unmanaged.

Our findings call for policy reform and a rethinking of the technical framing of CBFM.

¹⁴"We want the forest management agency to have the mandate to oversee the country forests as well as those under village governments and municipal councils as well" <https://www.ippmedia.com/en/news/parliamentary-committee-commends-tfs>

However, this reform must go beyond the policy realm. A significant reason for why we see the continued reliance on techno-bureaucratic framing of forestry in both policy and practice is the current forestry education in Tanzania (Sungusia, 2018). The forestry education is dominated by a curriculum that strongly emphasises scientific forestry, as the approach to managing all type of forests. The curriculum neglects decades-old advances in forest ecological research as well as insights from social sciences and the humanities of relevance to understand and foster participatory processes to manage complex socio-ecologies. Forestry education is further dominated by the banking pedagogy that closes down the possibilities for students to acquire an ability to question the basic tenets of the dominant forms of knowledge.

Based on our research findings, we believe that PFM and the notion of what forestry entails in Tanzania would benefit from radical reform, which will involve going back to the basics. Here, we offer a set of recommendations that we believe, if implemented, could bring CBFM – and forestry more generally – closer to the theoretical ideals of participation, sustainable forest management, and broader societal relevance and progressive impact.

- a) PFM rules and procedures should be simplified. The techno-bureaucratic framing of PFM leads to non-implementation and favors elite domination. Our call for simplification is not a call for no regulations. Instead, we believe regulations and rule-setting should proceed in accordance with the environmental subsidiarity principles discussed in (Ribot, 2002). These principles dictate setting only the minimum environmental standards and transferring sufficient discretionary power to local communities. Unlike a management planning approach, the minimum-environmental-standards approach allows for more flexibility in local decision making that is responsive to local needs and aspirations. Local forest managers are only sanctioned if the set minimum environmental standards are not met. For example, forest officials could agree with local communities on a minimum forest cover and then let local decision-makers be free to determine how the forest will be managed. Using spatial technologies, forest officials can then monitor forest cover changes and sanction communities only when the cover falls below the set minimum level. This would render redundant costly management planning procedures and bureaucratic oversight procedures.
- b) The forestry education must be rethought. Currently, the forestry education does not adequately equip students with theoretical perspectives and tools to enable them to engage in the contexts of PFM in natural forests. It is thus important to rethink forestry curriculum and pedagogy as it is virtually impossible to achieve a meaningful change to forestry policy without reforming processes that generate and legitimate official forestry knowledge. The rethinking should broadly aim at:
 - i) Achieving diversity in forestry knowledge. Empower students to question and problematize formulation of problems in ways that render scientific forestry knowledge a natural solution. This would require moving away from teaching scientific forestry as a golden standard and complete form of knowledge and instead seek to deliberately expose students to its limitations and other forms of forestry knowledge.
 - ii) Related to (i) above, the emphasis should be put on the relevance of different forms of forestry knowledge to the management of different types and contexts of forests. Thus, the education should prepare foresters to recognize and cater their approach to different

- socio-ecological realities (eg large-scale plantation forestry producing timber versus miombo woodlands used and managed for multiple purposes by rural communities).
- iii) Embrace the philosophy that forestry is about people as much as it is about the trees. It is thus important for forestry curriculum to include perspectives from the social sciences and humanities, as they are better designed to deal with social aspects of forest management. Further, these subjects have the potential to cultivate students' critical faculties and thus improve the relevance of forestry and foresters to the management of different types of forests and to society more broadly.

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