SCIFOR

Science and Power in Participatory Forestry

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Short description of the SCIFOR project

The project 'Science and Power in Participatory Forestry' (SCIFOR) is a partnership between four institutions: the Department of Food and Resource Economics (IFRO), University of Copenhagen; the Department of Culture and Society (DCS), Aarhus University; the Faculty of Forestry and Nature Conservation (FFNC)(Now called College of Forestry, Wildlife and Tourism), Sokoine University of Agriculture, Tanzania and; the Institute of Forestry (IOF), Tribhuvan University, Nepal. The project has an international advisory board comprising Andrea Nightingale (Swedish Agricultural University), Arun Agrawal (University of Michigan), and Jesse Ribot (University of Illinois – Urbana-Champaign). The project runs 2014-2018 and is financed by the Consultative Research Committee for Development Research under the Ministry of Foreign Affairs of Denmark (13-05KU).

SCIFOR concerns rights to natural resources and focuses on the use of science in participatory forestry; its justifications, functions, and how it shapes power relations among actors from the national to the community level. Its overall objective is to promote participatory forestry planning and management approaches that support equitable, environmentally sound, and economically rational forest management. This will be achieved through a research and educational collaboration between university partners in Denmark, Tanzania and Nepal. Tanzania and Nepal are internationally renowned for their extensive and progressive participatory forestry programs. In both countries, research activities will be undertaken by a team of seniors and two PhD students under a three-pronged strategy: (i) investigations targeting all levels of the forest bureaucracy to understand the justifications and values associated with scientific forest management planning (SFMP); (ii) cases of community-forest bureaucracy interactions in participatory forestry implementation processes to understand the functions of scientific forestry and; (iii) intensive community-level case studies focusing on the role of scientific forestry approaches in shaping participation and inclusion and actual forest management practices, including the environmental outcomes.

Opening remarks

Prof. Yonika Ngaga, SCIFOR project coordinator in Tanzania, delivered an opening remarking in which he stressed on the purposes of the workshop. Since most of the participants are practitioners, the workshop serves as a forum to disseminate and validate SCIFOR findings as well as obtain feedback on research work under the project. He noted that the workshop involved a small group of key people with interest in SCIFOR findings. Thus, he would like to see a free and open discussion with lots of questions and inputs from the participants. He noted that this is the 3rd workshop, following similar workshops that took place at the beginning of the project in 2015 and half way into the implementation in 2016. This 3rd workshop is focused on communicating findings from the two PhD students under the project who have started to debate their findings at the university, as well as sharing broader findings from the project. Prof. Ngaga also extended his appreciation to DANIDA for supporting the SCIFOR research project and support to forestry research in general. Given the importance of research to forestry, it is hoped that DANIDA will continue to support forestry research, especially research geared towards searching for better ways to involve communities in forest management.

Presentation by PhD fellow Numan Amanzi

The presentation slides for Numan Amanzi's presentation can be found in Appendix C. Here follows a summary of the presentation.

The presentation focused on implementation of the Forest Management Plan (FMP) in Community-Based Forest Management. The Tanzanian Forest Act, No 14 of 2002, stipulates that FMP is a pre-requisite for the local community to obtain a user right over the forest such as Village Land Forest Reserve (VLFR). However, many scholars have argued against the requirement [1,2]. They also highlighted how forestry science in the preparation of FMP provides an upper-hand to experts, thus limiting local communities' participation [3,4]. This presentation builds on work that empirically examines (i) how the FMP prescriptions match with the realities of the local community, and the reality of the forest, and (ii) what happens when the plan meets these realities. The focus lies on three FMP prescriptions: enforcement of forest rules, controlling forest fires and harvesting rules of forest products particularly timber.

FMP prescriptions on paper and in practice were examined through a study in Sautimoja Village of Tunduru District, Southern Tanzania. The village owns a forest covering 21, 966 Ha of which 19,769 Ha (90%) is for timber production and 2,197 (10%) is for protection. Data collection involved a detailed investigation of the first two years of the FMP implementation through ethnographic field approaches; participant observation – spending six months in the village and in-depth interviews – individual and group. Review archival materials were also conducted to supplement primary data. All information collected was translated from Swahili to English and transcribed in Word.

Findings on enforcement of forest rules, particularly forest patrols indicate a much lower level of patrolling (49.9%) than envisaged in the plan due to lack of funds to cover costs of patrols amounting USD 58 per patrol. Despite a few patrols, numerous inflictions of FMP rules reported but no one arrested/sanctioned and the reason being patrol guards were lacking necessary power and means to sanction culprits, and fear to annoy local communities who are owners and beneficiaries of the "CBFM project." In addition, the patrol guards have not been able to sanction livestock grazers observed in the VLFR on every patrol because of inability to challenge the pastoralists who might resist.

The findings on controlling forest fire show that FMP prescribed two strategies: fire break and early burning. However, neither has been implemented and the reason being lack of fund estimated to be USD 7,482 for the first year. Surprisingly, the findings indicate declined fire frequency and intensity but not because of FMP implementation, rather because of the presence of livestock in the VLFR, which, however, is considered as being illegal.

Regarding harvesting rules for timber, of 17,591 m3 to be harvested for five years, the village only managed to market 0.6% from two tree species - *Pterocarpus angolensis*, *and Afzelia quanzensis* due to a lack of interest among timber traders. This lack of interest was because of two issues. First, detailed harvesting rules and careful oversight in the VLFR as compared to forests on general land, which implied that traders prefer to obtain licenses to harvest on general land. Secondly, villagers experienced great difficulties in identifying the amounts of harvestable trees prescribed in the FMP. The prescribed amounts of harvestable trees could not be found despite great efforts expended by villagers. This could be due to either of two

reasons: (i) that the harvestable trees were so scattered in the forest that they were very costly to find (and, by extension, harvest and transport out of the forest), or; that the forest inventory have provided a less than accurate picture of the volume of harvestable trees. The results of the research is inconclusive on this point.

The results illustrate that the forest planning approach and rules prescribed in the FMP in Sautimoja flow from dominating ideas (suppression of fire, grazing cannot be allowed) and approaches (forest inventory resulting in average volumes per ha) that do not draw on local knowledge, practices, and livelihoods. Consequently, the FMP prescriptions have little relevance to local communities and are therefore occasionally followed, and when followed, modified to fit with the local context. These findings suggest a need for reforms in regulations that inform forest management planning approach to make them more locally adapted, flexible, inclusive and participatory.

Discussion following the presentation by PhD fellow Numan Amanzi

Participants found the presentation and findings interesting. The discussion revolved around a number of themes. One of these was the representativeness of the study, where some participants argued that the findings could not be generalized as they were based on one village only. In response, Numan and the rest of the SCIFOR team mentioned other examples (Namatunu village [5]; Angai VLFR [4]; Kiwele village [6]) from Tanzania where forest planning and management approaches created friction in the meeting with local realities.

The relation between the quality of an inventory and its informational value for management was also discussed. Numan's presentation illustrated that the standard information from a sample-based forest inventory – an average volume of harvestable timber per hectare – is less useful to local forest managers. In the example of Machemba VLFR the inventory indicated average number of trees of harvestable sizes of a range of 4 (mninga) to 18 (mkole) per hectare. However, finding these trees in the forest proved challenging as the inventory did not say anything about their location, nor did the inventory show that many of the trees in harvestable sizes (above 45 cm diameter) where hollow or rotten. Thus, in terms of guiding harvesting, the inventory was less useful. A similar issue of low relevance of average harvestable volumes (number of trees) per hectare in an inventory-based plan in terms of guiding harvesting in the forest was found in Namatunu village [5]. Some participants expressed a belief that a more comprehensive inventory – implemented with rigor – would yield information of relevance. However, given that the inventory done in Namatunu village, for instance, followed very high standards and was costly to implement, the SCIFOR team expressed doubts if a more detailed and rigorous inventory procedures will be practically attainable in the context of the huge forest estate of Tanzania and the limited funds available for forest planning and management. Related to this, the participants also discussed the principle that the costs of any inventory should be weighed against the value of the information thus attained. Thus, inventory efforts should 'pay off' in the sense of yielding valuable or necessary information that could not have been obtained otherwise.

Presentation by PhD fellow Eliezeri Sungusia

The presentation slides for Eliezeri Sungusia's presentation can be found in Appendix D. Here follows a summary of the presentation.

The presentation focused on the explanation for the emphasis on technical approaches in Tanzania's forestry in general and community – based forest management (CBFM) in particular. Scientific forestry – ideas, methods, and principles for ensuring permanent forest estate and non-declining supply of forest products and it involves such things as demarcation, measurement of forests (inventory), and modeling of volume and growth rates, management and harvest planning – is seen as a solution to the sustainability problem. Observations in the field (there is a growing consensus in the literature too) shows that this approach is not without problems especially when applied to the management of natural forests and when it dominates the design of participatory forestry meant to increase villagers' participation in forest management. Some of these problems are high cost of implementation (financial constraints) [4,7,8], incompatibility with local needs (social constraints), incompatibility with ecologies of natural forests (ecological constraints) , elite capture [3], and non-implementation. Yet, even with these problems/challenges, the emphasis on scientific forestry persist. It persists even with noticeable inadequacy of ecological information e.g. growth rates needed to fully make scientific forestry work. The presentation focused on explaining this puzzle, especially the reluctance of government foresters and civil society (villagers and NGOs) to reflect on and question the primacy and relevancy of scientific forestry approaches to the management of miombo woodlands.

Drawing on selected cases (examples), the presentation sought to illustrate how practices of foresters are shaped not simply by self-interests (end values). That is particularly important because of the persistence of practices couched in scientific forestry terms. If the end values were all that mattered to foresters, we would expect to see a variation of practices aimed at those end values. But strategies of action are consistent and persistent. The presentation sought to submit that culture ('symbolic forms through which meanings are experienced and expressed' including habitus, worldviews, rituals, concepts, perceptions, taken for granted assumptions) supplies foresters with equipment with which to construct/organize action, whether they are pursuing personal interest or not. The presentation highlighted the double standard whereby detailed plans are required for VLFRs before any harvesting can take place, whereas there are no plans for government forest reserves nor for forests on general land, even though harvesting has taken place. Foresters justification for the double standard reveal their unwillingness to question the relevance of scientific forestry to the management of miombo woodlands. They cite financial constraints for lack of inventories and management plans for forests on general land. But even where funding is not a problem, we see that social and ecological constraints challenge the relevance of scientific forestry. The Namatunu case [5] was presented as an example of a plan that was made without financial constraints, and how this plan still did not yield information that was relevant and useful for local management.

Other examples that illustrate the reliance on scientific forestry approaches included the Mtanza-Msona case, the differential volume determination methods, and the push for the second generation CBFM. The Mtanza-Msona case shows the role of technical advisers backed with donor money in pushing for more technical approaches in CBFM even when DFOs are willing to live with less technical (PFRA based plans) inventories and plans. The influence of technical advisers can also be seen in the push for the second generation CBFM, which emphasizes on value chain and sustainable harvesting and thus more rigorous

inventories and planning. Despite making CBFM villages worse off and thus undermine efforts to achieve sustainable forest management (making VLFR timber more expensive), different methods for determining volumes of harvested products are applied in VLFRs and general land. Foresters appear unaware of this fact (they do not appear to intentionally strategize to outcompete VLFRs) as they stick to the routine of using conversion tables to determine round wood volumes while villagers continue to measure dbh of tree before felling and/or actual log volume. All these examples illustrated the reluctance of foresters (and civil society) to question the relevance of scientific forestry knowledge, instances of foresters pursuing personal and institutional interests, and the role of donors and technical advisers in making CBFM technical. The presentation concluded by arguing that the cultural explanation of the reliance on technical approaches in forestry holds the potential to achieve deeper and more meaningful reforms. These would require rethinking of the processes that equip foresters with cultural tools that they use to construct lines of actions. This entails, among other things, reforming the forestry curriculum and pedagogy that impose on students only the scientific model of doing forestry. It also entails reforms in the production of scientific forestry knowledge i.e. rethinking of forestry research and consultancies.

Discussion following the presentation by PhD fellow Eliezeri Sungusia

The participants praised the presentation as interesting and thought provoking. Part of the discussion revolved around the issue of non-equilibrium ecology and the issue of lacking knowledge on ecosystem dynamics being an impediment to long-term projection of forest development – i.e. the safeguarding of sustainability and/or optimization of forest structure (seeking to further the regeneration and growth of valuable species) that is the long-term ambition of forestry. Some argued that we know a lot about miombo ecology, for instance. However, the SCIFOR team stood firm on the argument that our knowledge of miombo ecology is far from sufficient to allow for prediction of how these complex ecosystems may develop over a tree generation. This is also acknowledged in recent scientific research on growth modelling of individual miombo woodland species in Tanzania [9]. The limitations of our knowledge is, of course, underscored further by long-term changes in soil and climate conditions. Thus, given this, inventory-based forest management planning cannot be justified on the basis of an argument that we need detailed information – i.e. basal area at species and size-class level and counts of saplings and seedlings – to inform present-day management so that it can nurture long-term sustainability, understood as a certain species distribution. Rather, management of such complex forest ecosystems must proceed with more modest ambitions and crude proxies for sustainability such as, for instance, retaining forest cover. This can, of course, be supplemented with efforts to monitor and, where possible, seek to nurture, certain species deemed of high importance.

The discussion also revolved around differences in management of trees on unreserved and reserved areas of village land. The Namatunu case illustrated how Tanzania Forest Service issues licenses to harvest trees on unreserved parts of village land and how such harvesting happens in the absence of any detailed planning and under procedures whereby harvesters and traders are not scrutinized during harvesting. And TFS does not have authority to ensure the long-term sustainability of tree stands on village land, as the village has the authority over the use of the land. This stands in opposition to harvesting of trees in VLFRs, where management and harvesting plans are required and where villagers exercise scrutiny over harvesting. Taken together, these differences appear to discourage harvesting of trees in VLFRs, which

constitutes a disincentive for villagers to reserve forests on their village land. This disincentive is strengthened by an increasing land pressure in many places, whereby villagers are reluctant to declare VLFRs and, thereby, diminish their land reserve for agriculture for future generations. However, while the establishment of VLFRs is not incentivized, neither is protection of trees on unreserved parts of village land. First, villages can only draw very limited benefits from the harvesting of such trees. Second, leaving trees on village land is seen as jeopardizing the village's land rights, as 'unused' areas of village land increasingly attract the attention of actors with an interest in conservation or agri-business. Thus, presently, trees on unreserved areas of village land unlikely to be conserved. This is for a number of reasons that are outlined here above, some of which relate to the issue of standards of forest management planning.

Presentation by professor Jens Friis Lund

The presentation slides for Jens Friis Lund's presentation can be found in Appendix E. Here follows a summary of the presentation.

The presentation illustrated some of the wider findings of the SCIFOR project's research in Nepal and Tanzania, among other places. Evidence was presented from environmental history accounts of forestry from various places around the world [10]. These show that professional forestry arose in Europe in the 1700s, which resulted in the setting aside of forests from the rural landscape and the eviction of people and livestock from forests. Thus, forests became controlled spaces meant for the production of timber and construction wood for rulers. The presentation illustrated how this view on forests and their purpose in society spread throughout the World through European imperialism. Importantly, however, it also showed that the resulting creation of forest bureaucracies and attempts to implement scientific forestry have been severely challenged by material, financial, and politico-economic constraints. One example of ecological challenges to scientific forestry was a study from Northwestern US showing how silvicultural practices aimed at nurturing the long-term productive value of what was perceived of as old-growth Ponderosa Pine forests resulted in unexpected and detrimental outcomes over a horizon of 50-100 years [11].

The presentation of these historical studies illustrated how attempts at scientific forestry of natural forests across the World have been few and far in between and often rendered ineffective by weaknesses in their theoretical basis and a lack of forest ecological data. This formed the basis for the argument that we, as foresters, also today are limited by lack of knowledge of recruitment and growth of different tree species in complex forest ecosystems (such as miombo woodlands) and by the resulting underdetermination of forest models. This is not least the case because of long-term changes in soil and climate conditions, for instance. Thus, given this argument, forest planning and management approaches cannot be justified by the promise that they will allow us to predict and control the long-term development of forest ecosystems. This points to a more limited and changed role of planning – focusing on shorter time horizons and aiming to nurture resilient forest ecosystems that are likely to support changing uses and priorities and thrive under changing soil and climate conditions.

The presentation then turned to illustrate how SCIFOR's research show that present-day forest governance and management remain challenged by material, financial, and politico-economic constraints, with a specific emphasis on participatory forestry. Specifically, the presentation reviewed research showing that

scientific forestry approaches – favoring forest inventory-based planning – are prohibitively costly, also with massive donor financing, and often result in low-quality plans that, furthermore, are of low relevance to actual forest management practice [2]. It showed how the resulting forest management plans are rarely used to guide actual forest management practices, but that such management, rather, rests on other forms of knowledge, and that such forms – often referred to as 'local' knowledge – appears relevant and useful in relation to guiding forest management in relation to local values and uses [7,12,13]. Finally, the presentation illustrated that a scientific-bureaucratic framing of forestry has a number of political and social implications, appearing to favor elite capture of forestry and privileging – while also in some senses – delegitimizing foresters expertise (when foresters are unable to uphold in practice the ideals of scientific forestry, while still framing forestry in such terms) [2,14].

This, in turn, led to some suggested principles that could guide more realistic, relevant, and low-cost (and thereby practically possible) forms of forest management planning. According to these forest management planning should:

- Acknowledge the unknowns of forest ecologies
- Avoid costly planning requirements, such as plot inventory, clearing of fire breaks, and regular patrols
- Allow local decision-making around permittable uses and management of the forest, including grazing and fire
- Allow local decision-making on harvesting as long as a minimum crown cover is maintained
- Simplify requirements for paper trails – i.e. documentation of forest use and permits

Such more autonomous local management should be backstopped by:

- Advice by foresters
- Random audits of forest integrity, e.g. through remote sensing and inspections

Discussion following the presentation by professor Jens Friis Lund

As this presentation had reemphasized issues of under determination of forest modelling and costs of forest inventory and planning, the discussion revolved around these issues. Some participants again expressed a belief that better utilization of existing data could result in more accurate modelling and prediction of forest development. Others argued that the emphasis on practicability and cost-efficiency implied in the principles for forest management and planning presented are sorely needed as presently, foresters in Tanzania are struggling to make ends meet and this is a situation that is likely to endure.

Others emphasized the issue that while the recommended principles for forest management and planning are commendable, their realization is challenged by the long history and institutionalization of the present way of thinking about and managing forests. This is also a point that the SCIFOR team acknowledges – and examines – and it is therefore important to obtain the support of the forestry research and teaching institutions in Tanzania to introduce new ways of managing also in education.

Concluding remarks and closing

Dr. Siima Bakengesa, Director of Forest Production at TAFORI, delivered closing remarks in which she noted that the one-day workshop had been very fruitful. The presentations were good and judging from the discussion, SCIFOR is producing some good findings. She declared that she looks forward to reading finished products.

Urging foresters to embrace criticisms and change, she noted that as foresters, the landscape is always changing - the way we think, the way we conduct things are bound to change. It is thus helpful for foresters to be prepared to change with changing landscape.

Now that the forestry policy is under review, she urged SCIFOR partners to submit policy inputs that can be considered for incorporation in the revised policy. Appendix F provides such recommendations submitted to the Forest and Beekeeping Division during 2017 by the Danish partners to the SCIFOR project.

She also extended appreciations to the SCIFOR donor for granting the extension by noting that extension is good because it offers opportunities to produce more ideas and debates necessary for the re-thinking of existing dominant forestry models to be achieved.

She wished participants enjoyable stay in Morogoro and safe trips back home. For the visitors from abroad, she urged them to enjoy the beauty of the Morogoro, especially taking advantage of the Uluguru mountain to do some hiking, and the country.

Here follows the SCIFOR team's conclusions on the presentation and discussions during the day.

While participants, especially CBMF/forestry practitioners, accepted the criticisms of scientific forestry model raised by the SCIFOR research, they called for concrete suggestions for alternatives (see some of these in the summary of the presentation by professor Jens Friis Lund). Related to this, there was a consensus amongst participants that the high cost of implementing CBFM is prohibitive. And that it is urgent to devise measures to reduce costs.

Some participants appeared to distrust villagers' forestry knowledge and ability to manage forests sustainably. Participants wondered whether there are forests that are successfully managed using models other than the scientific forestry model. Further evidence of such local, collective management of forests and other ecosystems abound. A prominent example is the work of Elinor Ostrom, for instance [15]. However, a central point of SCIFOR is exactly that local management is *framed* by higher level authorities. Thus, in all VLFRs that the SCIFOR team has done research on, local management has taken place in a context of oversight by forest officers guiding, if not outright deciding on, composition of forest committee membership, rules and regulations concerning forest access and use, forest inventory, allowable harvesting levels, pricing of forest products, and so forth. Thus, rather than looking for examples of 'pure' local management, we should examine how such framing affects local motivation to manage as well as local benefits and costs of management.

Some participants, especially academics, insist that the scientific forestry model is sound and relevant. They also insist on the existence of adequate ecological knowledge and information on many indigenous species to effectively implement the scientific forestry model in the management of miombo woodlands. Again, the

SCIFOR team stands firm on the proposition that the scientific knowledge of miombo ecology is far from sufficient to allow for prediction of how these complex ecosystems may develop over a tree generation (see also [9]). These limitations are underscored further by long-term changes in soil and climate conditions. Thus, management of such complex forest ecosystems should proceed with modest ambitions and crude proxies for sustainability such as, for instance, retaining forest cover. This can, of course, be supplemented with efforts to monitor and, where possible, seek to nurture, certain species deemed of high importance.

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4. Scheba A, Mustalahti I: **Rethinking "expert" knowledge in community forest management in Tanzania**. *For. Policy Econ.* 2015, **60**:7–18.

5. Sungusia E, Lund JF: **Against all policies: Landscape level forest restoration in Tanzania**. *World Dev. Perspect.* 2016, **3**:35–37.

6. Green KE, Lund JF: **The politics of expertise in participatory forestry: A case from Tanzania**. *For. Policy Econ.* 2015, **60**.

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Appendix A: List of Participants

SN	NAME	Position	CONTACT ADDRESS
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19.	Justin Lusasi	SUA PhD student	julusasi@gmail.com

Appendix B: SCIFOR publications with active links to open-access sources

This is a brief annotated bibliography on recent SCIFOR research pertaining to Tanzania. Most of our publications can also be accessed through www.ifro.ku.dk/scifor.

1. Current legislation pertaining to trees and forests – and its interpretation in practice – creates disincentives for the conservation of trees and forests by villagers, because it allows for outsiders to harvest trees unreserved areas of village land, while PFM implementation implies a loss of control over land use with meagre benefits in return due to the low commercial value of most forests (Sungusia and Lund 2016).
2. Current approaches to PFM suffer from techno-bureaucratic logics (Lund and Rutt 2015) that: make implementation prohibitively costly (Scheba and Mustalahti 2015); is irrelevant to local uses and management (Green and Lund 2015, Amanzi 2018) and; promotes elite capture and undemocratic practices (Lund and Saito-Jensen 2013, Green and Lund 2015). Further, the costs associated with creating high quality management plans that follow this logic is too high to bear in the absence of donor support (Scheba and Mustalahti 2015, Lund 2015)
3. Current legislation and approaches to PFM and REDD+ are informed and sustained by a community of donor representatives, national and international experts, and NGO staff who are individually unable to challenge dominant narratives and logics (Lund et al. 2017) that are reproduced in institutions of higher education (Sungusia 2018). Thus, change will require strong leadership from the donor community and investment also in changes in institutions of higher education.

Amanzi, N. 2018. Community forestry in context: how the Forest Management Plan prescriptions defy the reality of Tanzanian forests and communities. Write to Numan Amanzi, numansaidi@gmail.com, for a copy.

Green, K. and J.F. Lund 2015. The politics of expertise in participatory forestry: a case from Tanzania. Forest Policy and Economics 60:27-34.

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Lund, J.F. and M. Saito-Jensen 2013. Revisiting the issue of elite capture in participatory initiatives. *World Development* 46: 104-112.

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Sungusia, E. 2018. Scientific forestry as symbolic violence: Understanding the technical framing of community-based forest management in Tanzania. PhD thesis. Sokoine University of Agriculture/University of Copenhagen. Write to Eliezeri Sungusia, eliezeri.sungusia@gmail.com, for a copy.

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Appendix C: Presentation by PhD fellow Numan Amanzi

PhD Thesis

Local communities' Participation in Community Based Forest Management in Tanzania

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2.0 Specific objectives

1. Initial stages of establishing a Village Land Forest Reserve;
2. Preparation of a forest management and harvesting plan;
3. **Implementation of the Forest Management Plan; and**
4. Participatory forest inventory and harvesting planning methods

PhD research project has four specific objectives. This presentation is focused on objective number 3

Today's presentation

Community forestry in context: how the Forest Management Plan prescriptions defy the reality of Tanzanian forests and communities

1.0 Introduction

- A Forest Management Plan (FMP) is a pre-requisite for communities to attain user rights over the forest.
- Scholars have shown the requirement defy primary CBFM objective.
- This paper examines how FMP match with the local realities.
- To understand how FMP prescriptions they fit with local realities.

1. Introduction *cont…*

- Specifically:

1. How the FMP prescriptions meet with the realities of the community, and the forest.
2. How communities react when FMP prescriptions defy their local realities.

- Our focus is on forest rules, controlling forest fires and harvesting rules

Study area

- One CBFM village in Tunduru District, Southern Tanzania.
- It started CBFM process in 2014 and completed in 2015.
- CBFM Process involved forest management planning.
- The village started implementation of the FMP in July, 2015.

The study was carried out in Sautimoja Village. The village has implemented FMP for two years.

Methods

- Methods: ethnographic field approaches
- Participant observation – spending six months in the village.
- In-depth interviews – individual and group, formal and informal.
- Review of records - FMP, financial reports, and record books.

Results

FMP prescriptions on paper and in practice

Enforcement of forest rules (forest patrols)

- Patrols – for 23 months only 49% of 69 patrols were conducted.
- ➢Reason - lack of fund (USD 58 per patrol).
- Numerous inflictions of FMP rules were reported but no one arrested.
- ➢Reasons – lack of necessary powers and means, and fear to annoy "project beneficiaries."

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The FMP requires VNRC to conduct at least three patrol plus one bird bird patrol (bird monitoring) per month

Enforcement of forest rules (livestock keeping)

- Pastoralists with herds of livestock have observed in the VLFR.
- However, the committee has not been able to sanction them – lack of manpower.
- The village asked the district council to deploy military force.
- District's intervention delayed and village shouldered all costs.

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Grazing livestock in the VLFR is illegal, and a penalty for a person convicted is a fine of 5 USD per livestock.

Controlling forest fires

- FMP prescribes fire break and early burning but not implemented.
- Reason – lack of fund for two years (USD 7, 482 for the first year).
- Surprisingly, fire frequency and intensity reported declining.
- Not because of FMP, because of illegal grazing in the VLFR.

Harvesting rules for timber

- A total AAC is 12,485 stems (17,591 m3) for 10 species
- For two years only 114 m3 (0.6 % of the AAC) were marketed
- Reason - the strict rules in VLFR VS non-reserved forests
- Consequently, few external buyers, and nonlocal buyers.

Harvesting rules for timber *cont…*

- Inventory results do not reflect forest reality, is another challenge.
- "Bigger trees" - >142 cm for Mninga (=1 per 4ha) and >173 cm for Mkongo (=1 per 118 ha)
- It was difficult to find "bigger trees" prescribed in the plan.
- As a result, harvesters decided to harvest "small trees."

The harvesting team spent two days in the forest without seeing any trees above the minimum girth limit.

Tree species	Girth classes	Phase I		Phase II		Total	
		No. of trees harvested	%	No. of trees harveste d	%	No. of trees harveste d	%
Mninga	<142 cm	27	51.92	90	70.31	117	65
	≥ 142 cm	25	48.08	38	29.69	63	35
	Total	52	100	128	100	180	100
Mkongo	<173 cm	5	71.43	1	14.29	6	42.86
	≥173 cm	2	28.57	6	85.71	8	57.14
	Total	7	100	7	100	14	100

The majority of trees harvested had girths below the required minimum. This was done to speed up the harvesting process, and therefore to reduce the costs of harvesting supervison.

Discussion

- Top-down planning approach with little emphasis on local knowledge, practices, and livelihoods.
- ➢Prescriptions are rooted in forest science and conservation laws .
- ➢Focusing on regulating access to save forests.

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Findings provide a direct link back to colonial forest planning where forest bureaucracies instituted conservation laws that focused mainly on regulating access to save forests from what experts awkwardly termed “unsustainable exploitation of the forest resources and traditional land use practices.”

Discussion *cont…*

- Some FMP prescriptions have little relevance to local communities.
- ➢Example - the requirement of written permit from VNR to access forest and LMGH.
- ➢Why? Do not fit with the socio-economic and cultural history of the use and management of the forest.

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Local communities considered some prescriptions to be unjust, because it deprives local livelihoods. Therefore, they access forest illegally, and VNRC members have hesitated in enforcing the rule, which can be translated as resistance to top-down FMP prescriptions.

Discussion *cont….*

- Limited revenue generated from the forest, which makes difficult to make PFM work
- Lack of fund affects the implementation of FMP - costs of allowances, transport, meals and overhead costs.

The village was expected annual revenues between USD 260,000 and 750,000 but ended up earning USD 5,000 and USD 13,000 in the two harvesting operations. The gap between expectations and results is a consequence of both the strict rules that are governing timber harvesting in the VLFR, and forest inventory that gives a false impression of the potential.

Policy implication

- To re-think forest laws, administrative circulars, and decrees that informs management planning approach.
- To re-think on financial and technical support to the CBFM village; it should be extended in the implementation.

Conclusion

- The planning process is driven by experts and serves as a rubber stamp to authorize standard, technical prescriptions
- The FMP prescriptions only partially served as a guide for the forest management.
- Harvesting rules are de facto acted as a barrier for the community to engage in the timber business.

Recommendations

- Fundamental reforms on forest management planning.
- ➢To give more room and voice to the community in forest planning.

A revised planning approach must provide more voice, independence and freedom for local communities to explore management alternatives as well as different sources of revenues to finance forest management, including controlled seasonal grazing

The end

Ahsanteni sana kwa kunisikiliza

Appendix D: Presentation by PhD fellow Eliezeri Sungusia

Understanding the emphasis on technical practices in Tanzania's forestry

Eliezeri Sungusia
Sokoine University of Agriculture
University of Copenhagen

SCIFOR Stakeholders' Forum
11 December 2017

1

The narrative arc

- The scientific forestry (inventory, management planning, rotation forestry) and bureaucratic procedures it nurtures seen as a solution to sustainability question.
- Policy strategies to achieve SFM, including schemes to involve communities in forest management, are couched in scientific forestry terms.
- High rates of deforestation and forest degradation are reported.
- More problems: elite capture, high cost, non-implementation, ecological constraints, social constraints, economic constraints.
- Puzzle: even with dismal outcomes (natural forests), foresters keep on emphasizing technical approaches and refuse to rethink the scientific forestry model.

2

Explaining the puzzle: Foresters are *Homo economicus*

- Power/authority/control over forests: technical/scientific framing of forestry inflates the importance and role of professional foresters.

- Timber/money: provide professional foresters with symbolic tools to gain access to timber and profits it generates.

3

This slide show the existing dominant explanation for the puzzle.

- Do practices in the forest management field shaped by anticipated ends only (power, income, SFM)?

- If the answer is YES, we would expect to see variations in strategies to achieve these ends.

- We observe persistence in scientific approaches to forestry.

4

Towards cultural explanation of practices

- How are ideas about and authority of scientific forestry produced and reproduced in Tanzania's forest management field?

- Emphasize the role of culture: beliefs, worldviews, symbols, traits, rituals, knowledge, perceptions, feelings, thoughts, attitudes ('symbolic forms through which meaning is experienced and expressed').

5

Exploitation without plans, plans without purpose

- Policy require inventory-based forest management plans.

- For VLFRs, strictly enforced; more so under "the 2nd Generation CBFM".

- Out of 455 forest reserves, less than 30 reserves had plans as of 2014 (TFS Three Years Implementation Report, 2014).

- Harvesting in production forest reserves banned since 2011 under TFS; took place before 2011 under FBD.

- Harvesting in general land allowed without management plans.

Foresters' justification for double standard

- Foresters gamble with sustainability on general land. Why aren't they willing to let villagers gamble as well?
  - Foresters' gambling is based on scientific knowledge; villagers' based on nothing. They can't quantify.
  - Forest service underfunded & understaffed. Otherwise, the ambition is to have inventory-based plans for all the forests.
  - The ambition to inculcate in villagers the culture of respecting plans.

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The Taken for granted

- Self-interests at play - revenue collection goals
- Technical forestry = sustainable forest management.
- Villagers are inherently destructive; they don't see values in protecting forests.
- It takes professional foresters to achieve SFM.
- Social, economic, ecological constraints are not sufficient reasons to rethink scientific approaches to forestry.

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The Namatunu Case

- NFBKP + International Technical Adviser → consultancy to develop and pilot inventory method for VLFRs - aiming for standardization.

- Consultant was hired selected for the assignment at a cost: > Euro 27,000.
- Nakambega forest = 8,567 hectares; Cluster sampling (5 plots/cluster, 82 clusters); circular plots (410 plots)
- Divide the forests into 5 blocks @ 5 year mgt plan → 25 years rotation.
- Assumption: 3 mm annual diameter growth, 7.5 cm in 25 years.

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The Namatunu Case

- Block 1 → 1,680 hectares → Mninga 127 individuals can be harvested annually.

- Search for the 127 Mninga in block 1 unsuccessful.

- Using coordinates of exact location for some Mninga trees (>45 cm), found 5 trees, bent and rotten. Harvested block 2 instead, without plan.
- Ecological constraints → trees not evenly distributed, rotten & bent, unknown growth rates, etc.
- Foresters still unwilling to question and rethink scientific approaches to manage miombo woodlands.
- Donors and ITAs role in pushing for technical approaches.

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The influence of donors and technical advisers

- Standardization of inventory methods.
- Mtanza – Msona Case.
- The second generation CBFM.

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These are other examples illustrating the influence of the donors and technical advisers.

The volume determination methods

Data	Method for volume establishment	Log volume	Tree volume
Liwale - Mtawatawa VLFR: 47 trees, which gave 66 logs from which 532 planks were produced. **Volume of sawn timber = 18.78 m³** (Source: MNRT (2016). Technical Note: Challenges related to timber demand from VLFRs).	1. Tree volume established through dbh measurement and FBD volume functions **Log volume established from tree volume (above) using log/tree recovery rates (log 70 % of tree)**	**147.6 m³**	210.9 m³
	2. Log volume established through actual measurement of logs **Tree volume established through measured log volume and log/tree recovery rate (log 70 % of tree)**	63.3 m³	**90.4 m³**
	3. Log volume established from sawn timber volume and use of conversion table **Tree volume established through log volume (above) and log/tree recovery rate (log 70 % of tree)**	60.0 m³	**85.7 m³**
	4. Both volumes established from sawn timber volume and use of standard tree/log/sawn timber recovery rates (Tree: 70 % logs, 30 % sawn timber)	43.8 m³	62.6 m³

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This example further illustrates the technicalising tendency in the forest management field despite the constraints.

The culture shaping the end values; end values shaping practices

- Foresters' strategic calculations cannot be ruled out - emphasis on technical approaches give undue advantages to professional foresters.

- But persistence in scientific forestry actions/practices cannot be explained by the ends.

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The role of culture (Bourdieu, 1972, 1975, 1990, 2001; Swidler, 1986)

- Culture (internalized dispositions, unquestionned assumptions) shaping the foresters' strategies of action.

- Forestry curriculum and pedagogy – impose on students only the scientific way of thinking about and doing forestry.

- Activities of Forestry academics – research and consultancy – designed to perpetuate the established scientific order.

- To achieve rethinking of technical framing of PFM, focus on foresters cultural toolkit – tools with which foresters construct lines of action.

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Thank you!

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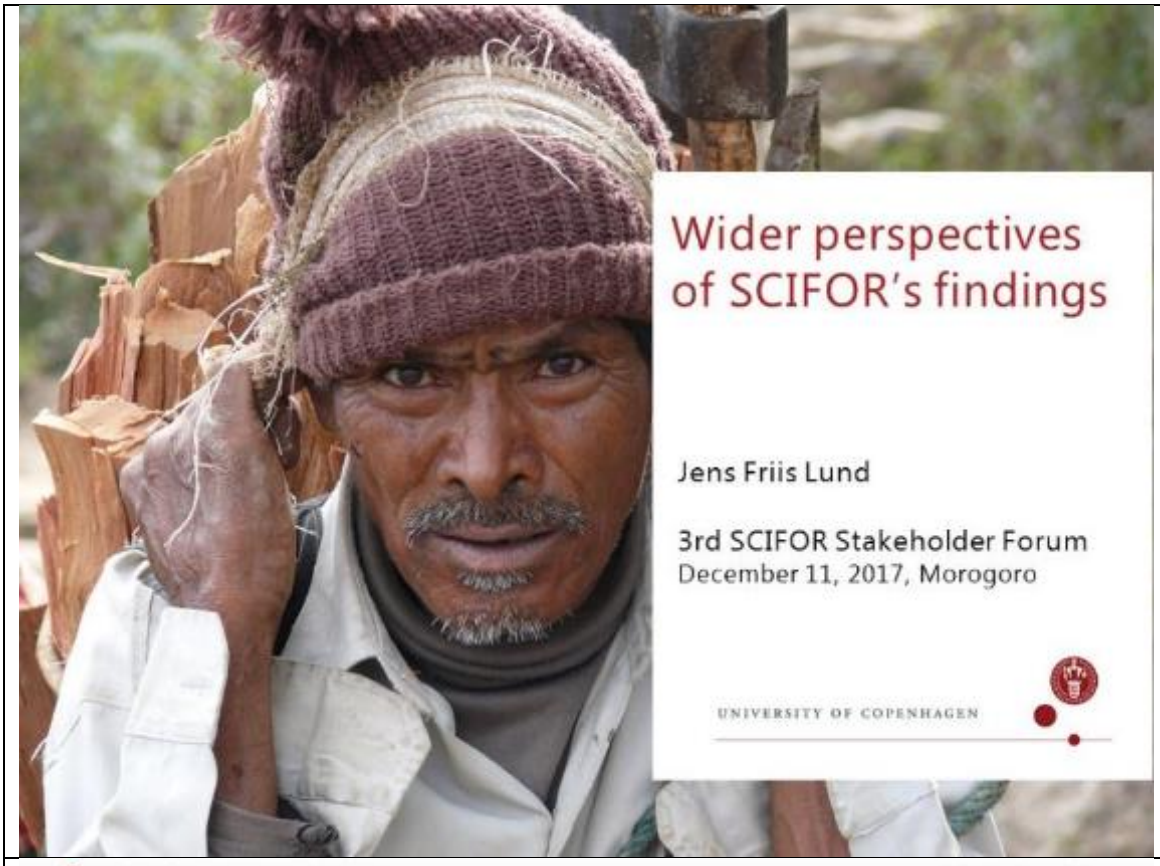
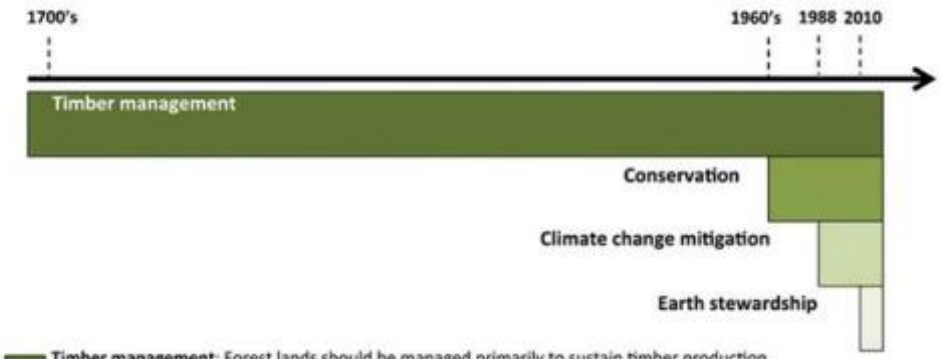
Appendix E: Presentation by professor Jens Friis Lund





Timber management: Forest lands should be managed primarily to sustain timber production.
Forest definition: land bearing vegetative associations dominated by trees of any size (FAO 1953). Temporarily unstocked areas and plantations are considered forest. In 1990 this definition changed to land with tree crown cover (or equivalent stocking level) >10 % and area of >0.5 ha with trees > 5 m at maturity (FAO FRA 2000).

Conservation: Intact forests should be protected to conserve biological diversity. Forest management should minimize ecological impact and maximize ecosystem functions and species interactions.
Forest definition: a dynamic complex of plant, animal and micro-organism communities and their abiotic environment interacting as a functional unit, where trees are a key component of the system (CBD).

Climate change mitigation: Forest conservation, reforestation, and afforestation can reduce global warming through reducing carbon emissions sources and increasing carbon sinks.
Forest definition: a minimum area of land of 0.05 – 1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10 – 30 per cent with trees with the potential to reach a minimum height of 2 – 5 meters at maturity in situ (UNFCCC 2001).

Earth stewardship: Forests are complex adaptive systems whose resilience is intimately linked with society. Ecosystem services of forests are important for poverty alleviation and sustainable development.
Forest definition: a complex system composed of heterogeneous assemblages of individual agents (e.g., trees, animals, humans), closely interacting through flows involving markets, goods and various other ecosystem services (Chapin et al. 2010)

Chazdon, R. L., P. H. S. Brancalion, L. Laestadius, A. Bennett-Curry, K. Buckingham, C. Kumar, J. Moll-Rocek, I. C. G. Vieira and S. J. Wilson. 2016. When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. Ambio

What is forestry?

- Demarcation
- Measurement
- Modelling
- Management
- ...for timber

- Based on fundamental assumptions of the possibility, feasibility and value of notions of prediction and control

Purposes

- Seeing forestry through environmental history
- Present-day observations of forestry in practice
- Ideas for re-thinking forestry

Historical perspectives

These are examples of environmental history studies of forestry that illustrate the challenges to scientific forestry ideals

- *"Financial and other constraints meant that many forestry policies were delayed by several decades, were run with minimal resources, or had to be abruptly abandoned"*

  (von Hellermann 2013, p.13)

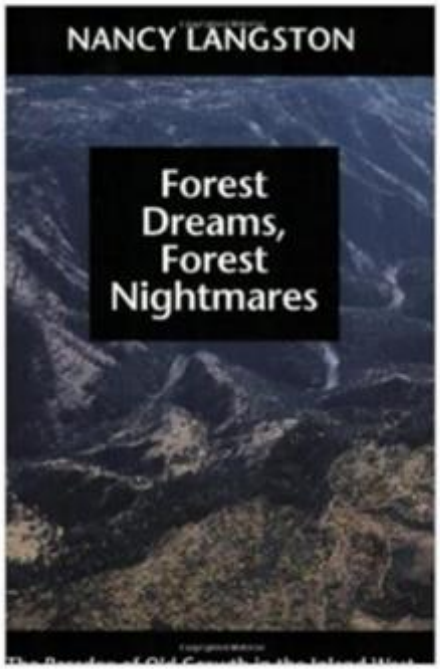
- *"... the projection of authority over forests was not a linear story of progressive State control, but was negotiated constantly according to shifting constellations of power that were sometimes shaped by global events"*

  (Sunseri 2009, p.xiii)

- *"The state regarded forest fires as completely unnatural even in pine and pine-oak forests where fire was essential for forest regeneration"*

  (Mathews 2011, p.44)

Complex and poorly understood forest ecologies



This historical study illustrates how expectations of foresters were proved wrong over 80-100 years

The study was set in the blue mountains north-western US

Blue mountains

Early foresters – arriving late in the 19th century - found open stands of large Ponderosa Pine trees – that they assumed were old-growth forests in need of regeneration cuts

Regeneration following harvesting created even-aged stands of white fir

The white fir stands were prone to insect attacks, drought and, consequently, fire

In the 1980s, there was no more Ponderosa Pine left, the forests had succumbed to pests and fire, and timber industries had to close down

Ecology remains a challenge:
Denmark, December 1999: two years' harvest felled by a storm

Also today, our forests are vulnerable

Ecology remains a challenge:
Chile 2016: Worst fire ever, ~3600 km2 burned

Increasing forest fires may be linked to climate changes – something foresters cannot predict the consequences of into the future

Globally, 2016 was a record-setting year in terms of forest losses – mainly owing to increased fire

Historical lessons

- Complex, changing and poorly understood ecologies
- Economic constraints
  - Market forces
  - Insufficient funding and manpower
- Political imperatives

The lessons from historical studies is that forest management has followed, rather than guided, other developments and that the ability of foresters to understand and predict ecologies is low

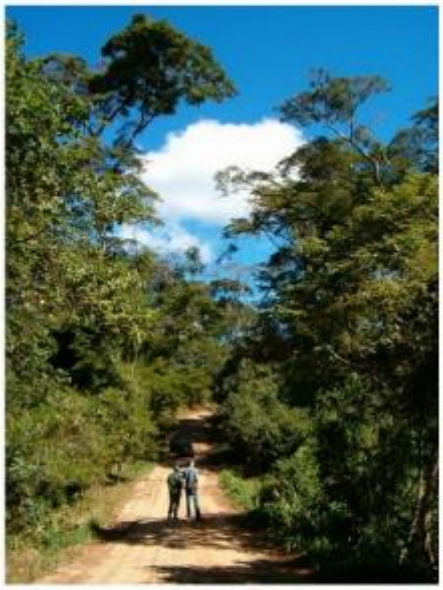
Present-day observations

- Scientific-bureaucratic framing of forestry
  - Applicability and costs
  - Relevance
  - Social and political implications

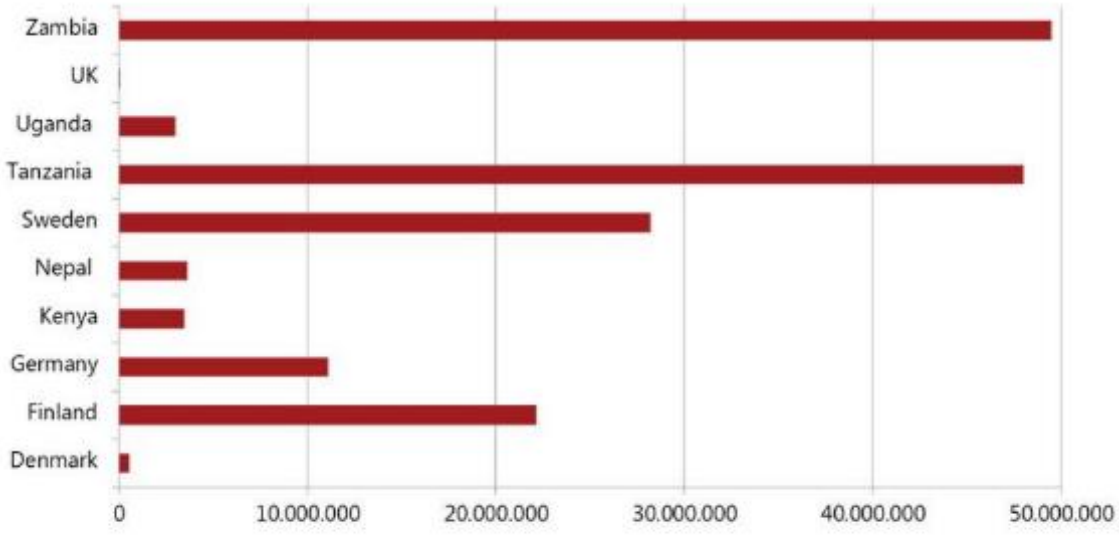
Moving on to some observations from our current research on present-day forestry

Applicability and costs

- Even under conditions of massive donor financing, inventory-based forest management planning is **prohibitively expensive**
- Most inventory-based forest management plans are of **low quality** owing to attempts at cost saving
- Forestry departments demanding inventory-based forest management plans for community forests rarely have such plans for the forest reserves they are managing, c.f. the **double standard**
- The requirement for inventory-based forest management plans constitutes a **major impediment** to the implementation of participatory forestry



Applicability and costs



This figure shows the size of national forest estates. The sheer size of Tanzania's estate illustrates the need for simple and low-cost approaches to management

Relevance

- Management prescriptions in plans are often informed by **political and bureaucratic decisions**, as opposed to locally-relevant goals and information
- Inventory-based forest management plans **do not inform actual forest management** by rural communities because of:
  - Their low quality and underdetermination in relation to complex forest ecologies
  - Their irrelevance to local management purposes
  - The prohibitive costs of management prescriptions
- In practice, management plans' main function is serve to **legitimize** local forest management authority in relation to forestry departments and the community at large
- Rural community members hold **knowledge that is relevant** to their actual management of their forests

Social and political implications

- The scientific-bureaucratic framing of participatory forestry has social and political implications:
  - Favouring elite capture
  - Excluding people of low literacy and numeracy
  - Increasing the costs of participatory forestry for both local communities and forest departments
  - Leading to inefficiencies in resource use
  - Providing opportunities for rent-seeking
  - De-legitimizing the expertise of professional foresters

Conclusions

- Forestry has never been implemented in larger areas of natural forests
- Forestry has never attained an understanding of complex natural forest ecosystems that would allow for modelling of their response to management
- Actual management of natural forests often revolves around on other values and uses than timber
- Actual management of natural forests by people rests on other forms of knowledge than scientific forestry
- The current scientific-bureaucratic forestry model is a poor fit to the socio-ecological reality of forestry

Rethinking the role of forestry – pragmatist policy recommendations

- Simplify forest management planning requirements to:
  - Reduce costs of forestry approaches
  - Ensure that planning reflect the values produced by forests
  - Allow for wide implementation of forestry approaches
  - Produce varied and resilient forest ecosystems
  - Garner the support of local people for forestry
  - Reduce the risks of elite capture and tyranny of experts
- Change forest teaching curricula to reflect the socio-ecological realities of forestry

Rethinking the role of forestry – guidelines for planning in PFM

- Forest management planning should:
  - Acknowledge the unknowns of forest ecologies
  - Avoid costly planning requirements, such as plot inventory, clearing of fire breaks, and regular patrols
  - Allow local decision-making around permittable uses and management of the forest, including grazing and fire
  - Allow local decision-making on harvesting as long as a minimum crown cover is maintained
  - Simplify requirements for paper trails – i.e. documentation of forest use and permits
- Local management should be backstopped by:
  - Advice by foresters
  - Random audits of forest integrity, e.g. through remote sensing and inspections

Appendix E: Comment on 'National Forest Policy 2016 - Final draft'

The below comments to the 'National Forest Policy 2016 – Final draft' were submitted to the Forest and Beekeeping Division during 2017.

Submitted by:

Jens Friis Lund (jens@ifro.ku.dk), Thorsten Treue (ttr@ifro.ku.dk), Henrik Meilby (heme@ifro.ku.dk), all University of Copenhagen.

Introduction:

The present document contains inputs to the National Forest Policy process in Tanzania based on our reading of the 'National Forest Policy 2016 - Final draft'. In it, we outline and discuss some of the general themes in the National Forest Policy (NFP) and provide recommendations.

Fire:

The NFP mentions 'fire', 'wildfire' and 'uncontrolled fire' in several places and often as contributing to forest degradation, desertification, CO2 emissions and other undesirable outcomes. However, this treatment of fire overlooks the fact that fire is an integral component in the ecology of dryland forest resources – such as miombo woodlands (Frost 1996; Homewood & Brockington 1999; Ryan & Williams 2011). Thus, the suppression of fire – which is clearly promoted in the NFP – is counterproductive in miombo woodland ecosystems and can even backfire in the form of buildup of biomass that leads to more violent and uncontrollable fires in the long term, which is, for instance, the US and Australia experience with a century of fire suppression policy (van Wagtendonk 2007).

Recommendation regarding fire: The NFP should clearly distinguish between different forest types in discussing the risks associated with different fire management approaches.

Grazing:

The NFP mentions 'grazing' and 'overgrazing' in a number of places and often as contributing to forest degradation, desertification, and other undesirable outcomes. However, this overlooks that a major and important use of woodlands by rural residents is for seasonal grazing, and that this is becoming increasingly important as other sources of seasonal (especially dry season) grazing are enclosed for purposes of conservation (e.g. wetlands, some WMAs, GRs, etc.) and agriculture is expanding. There is no clear evidence that grazing leads to forest degradation (Saberwal 2006; Reid et al. 2014), nor that domestic livestock competes with wildlife (Goldman 2009; Niamir-Fuller et al. 2012). There is, however, evidence that CBFM villages have obtained significant forest revenues from allowing for dry season grazing, and that this has been an important mechanism to finance local management and control – without any discernable negative consequences to the forest ecosystem (Green & Lund 2015; Lund et al. 2015).

Recommendation regarding grazing: The NFP should promote grazing in CBFM forests as a means to garner local revenue to finance sustainable forest management

Unreserved forests: The NFP notes how unreserved forests undergo more deforestation and are largely unmanaged. We agree and note how there is potential for legislative reforms that would garner stronger incentives for local actors to sustainably manage and possibly reserve such forests. However, for this to happen, such legislative reforms must deal with a number of thorny issues. First, the forest and land legislation – in particular its interpretation in practice – allows central government forest officers to allocate licenses to harvest trees with minimal benefits accruing to villagers (Sungusia & Lund 2016). This clearly works as a disincentive for local forest management. Second, the current emphasis on detailed planning and harvesting regulations within CBFM forests – and the absence of such considerations for non-reserved forests on village land - concentrates harvest to satisfy the demand for timber on unreserved forest areas, which diminishes the value of reserving forests in the eyes of villagers, while increasing pressure on unreserved forests that are harvested without any considerations for sustainability (Sungusia & Lund 2016). Third, the costly and bureaucratic planning requirements for CBFM – and the unclear legal implications for local autonomy to decide future land uses associated with CBFM – creates disincentives for CBFM locally (Green & Lund 2015) as well as hindering its wider application by making its implementation prohibitively costly to support for forest officers (Lund 2015; Scheba & Mustalahti 2015). Finally, the rapid growth in wildlife (and forest) conservation initiatives, as well as initiatives to facilitate investments in plantations and agribusiness, that all target apparently 'unused' village lands – and the rushed and manipulative land use planning process characterizing these initiatives (Homewood et al. 2015; Bluwstein & Lund 2016) - compel rural residents in Tanzania to protect their authority over village land by clearing unreserved forests (Sungusia & Lund 2016). Thus, in sum, a number of fundamental land and forest legislative issues currently stand in the way of local sustainable management of unreserved forests.

Recommendation regarding unreserved forests: The NFP should support clear and unambiguous rights to villages to manage and benefit from (the harvesting and sale of) trees on unreserved parts of village land. This includes acknowledging the status of village land – as set out in the Village Land Act of 1999 – and respecting the rights of villages to veto harvesting of trees on non-reserved areas of village land.

Village land use and forest management planning: The NFP mentions that many forests are managed without a management plan and calls for more widespread use of planning. Following the above discussion of planning requirements in relation to 'unreserved forests', we note that the issue of forest management planning should be considered carefully to prevent a de facto promotion of cumbersome, overly detailed as well as costly planning requirements and procedures that may be of limited relevance to actual uses of many forests in Tanzania. Rather, emphasis should be on minimum planning requirements that aim to (i) safeguard overall resources sustainability and (ii) support rather than burden local forest managers. Further, there are many examples across Tanzania of village land use planning processes that villagers perceive to be rushed and manipulative, and which have resulted in contestation and confusion, rather than clarity, concerning land tenure (Homewood et al. 2015; Bluwstein & Lund 2016). In the current context of the rapid growth in wildlife (and forest) conservation initiatives, as well as initiatives to facilitate investments in plantations and agribusiness, all of which target apparently 'unused' village lands, such

rushed village land use planning processes compel rural residents in Tanzania to protect their authority over village land by clearing unreserved forests (Sungusia & Lund 2016). Accordingly, a truly participatory and locally-driven village land use planning process is needed.

Recommendation regarding village land use and forest management planning: We recommend that planning and harvesting regulations pertaining to CBFM forests are radically simplified to make their implementation affordable for forest offices and villages alike, and to align planning requirements (including costs) with the uses and benefits obtained from forests. For dry miombo forests that are used mainly for woodfuel extraction and grazing, this would imply a very simple and cheap management approach, whereby overall sustainability of management is ensured by, for instance, periodic forest walks coupled with analyses of freely available GoogleEarth imagery for the forest in question. Concerning village land use planning, we recommend that legal guidelines are issued, specifying clear minimum requirements which ensure that suitable time and effort is put into a thorough consultation process that empowers village communities to steer and guide, rather than being steered and guided, towards a land use plan.

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