DOES PARTICIPATORY FOREST MANAGEMENT PROMOTE SUSTAINABLE AND EQUITABLE FOREST MANAGEMENT IN TANZANIA?

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Recommendations

- The Government of Tanzania and donors should continue and enhance support to the PFM Programme because, once established, PFM forests do not require high maintenance costs to continue delivering benefits to society on a sustainable basis.
- Environmental incomes should be part of official national statistics
- Elite capture in PFM should be addressed through information and education such that the Poor may enhance their share of forest incomes through democratic processes.

Background

Historically, centralized forest administrations in most developing countries have failed to fulfill their official policy mandate of conserving national forest resources for the benefit of people and to preserve intrinsic nature values. In response, and based on emerging theories of common pool resource management theory, forest management in these countries has, over the past 20-30 years, been decentralized, with a view to achieve the dual-objective of sustainable forest utilization and equitable economic rural development (Hobley 1991, Ostrom 1998, Sunderlin et al., 2008). However, the outcomes appear mixed which has sparked off a debate on the effectiveness of forest decentralization as a development and forest conservation concept. This debate is complicated by the existence of different kinds for forest decentralization, numerous vested interests, and a scarcity of empirical evidence.

Objective and methods

This project has investigated the biophysical and socioeconomic effects of the two kinds of Participatory Forest Management (PFM) applied in Tanzania; Community Based Forest Management (CBFM) where the democratically elected village governments get full ownership to hitherto unreserved forest on village land, and Joint Forest Management (JFM) where village governments manage existing government owned forest reserves together with district-level forest authorities. Seven CBFM, three JFM, and two non-PFM forests in Eastern Tanzania were investigated (Figure 1). Across the 12 sites, bio-physical data were collected from 348 randomly laid out temporary sample plots and socioeconomic data was collected through detailed interviews with 480 households identified through proportional random sampling within three wealth categories, poor (lowest 40%), medium ('mid' 40%), and rich (top 20%) measured by the value of their assets.

Results

PFM conserves forest resources –but only where outsiders can be effectively excluded

Based on literature, the sustainable harvesting limit is estimated at 1.5 m^3/ha/year. Against this, the harvest in each site was estimated through forest inventories (measurement of fresh stumps where the volume of removed trees is calculated on the basis of live trees' measured stump diameters and volumes) and socioeconomic data on all households' stated extraction of woody biomass from the concerned forests. As depicted in Figures 1and 2, the three forests near Dar es Salaam (one CBFM, one JFM and one non-PFM) are, according to the stump-data, overharvested. Here, local people complained that well-connected charcoal gangs entered the forests and, under threat of violence, cut trees as they pleased. With the exception of Kijango, where people's total wood consumption seems to have mistakenly been attributed entirely to their CBFM forest, there is a reasonably good overlap between the stump and socioeconomic survey data. Local leaders in Ayasanta claimed that no harvesting took place within the forest but our socioeconomic and biophysical data showed that the forest was harvested at about twice its growth. This imbalance appeared to be a result of internal forest governance disputes. All other CBFM and JFM forests seemed to be harvested at sustainable levels, which was even the case for Mfyome where public revenue was generated through production by commercial charcoal contractors. However, all interviewed households also extracted wood products (firewood in particular) from non-PFM forests (see below). When comparing our observed average annual per capita wood consumption of 0.7 m^3 with the PFM forest areas in 116 wards where this and population census data were available, we found that in less than half of the wards people would have access to enough PFM forest to satisfy their need for wood on a sustainable basis (Treue et al. 2014).

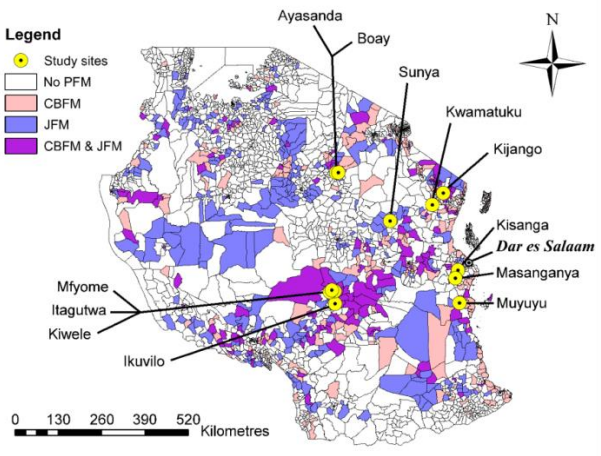

Figure 1. Location of field sites and the status of PFM at ward level in Tanzania

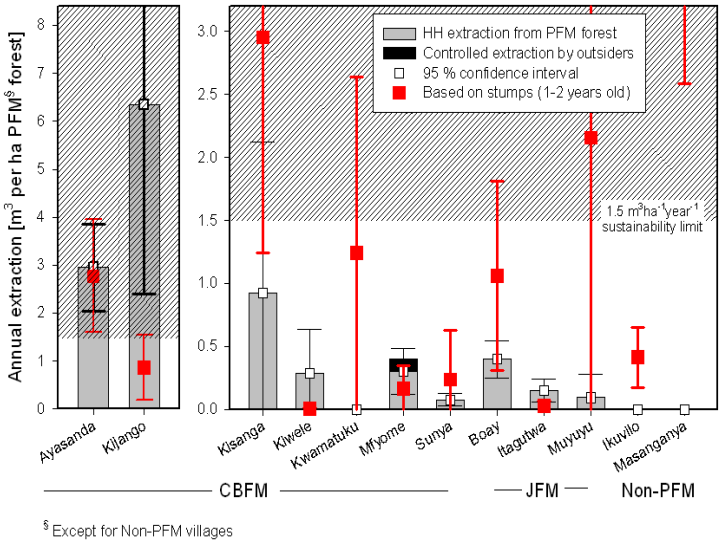

Figure 2. Estimated growth and harvest

Environmental incomes are very important but CBFM incomes are inequitably distributed

As shown in Table 1, agriculture was generally the most important economic activity. Nevertheless, environmental incomes accounted for 9-34% of the households' total incomes while in absolute terms all household categories derived almost similar annual values (USD ppp 25-40/aeu). For the poorest households, environmental incomes were the second most important income source making up 21-34% of their total annual income. Across all household categories, 94% of the environmental incomes were used for subsistence (firewood accounting for 95%) and thus not represented the national accounts. The actual economic use-value of the environment in Tanzania is therefore grossly understated.

Table 1 Annual *size and importance of income sources*

Wealth group	Forest regime	Agriculture		Livestock		Wage		Business		Environmental[2]		TOTAL
		USD[1]	%	USD[1]	%	USD[1]	%	USD[1]	%	USD[1]	%	USD[1]
Rich (Top 20%, n=96)	*CBFM*	301	48	162	7	35	7	345	53	40	16	883
	JFM	194	34	213	16	14	14	151	22	33	14	605
	Non-PFM	96	36	15	26	1	3	124	26	25	9	261
	Mean	**240**	**42**	**150**	**13**	**24**	**8**	**260**	**41**	**36**	**14**	**710**
Medium (Mid 40%, n=192)	*CBFM*	161	48	46	6	24	9	102	19	35	18	368
	JFM	90	34	35	9	24	12	103	28	32	18	284
	Non-PFM	126	50	34	12	27	10	41	13	35	16	263
	Mean	**137**	**45**	**41**	**8**	**24**	**10**	**92**	**20**	**34**	**17**	**328**
Poor (Low 40%, n=192)	*CBFM*	99	39	23	13	37	14	58	13	37	21	254
	JFM	56	29	14	8	23	14	69	19	37	34	199
	Non-PFM	91	38	12	24	24	8	16	9	37	20	180
	Mean	**87**	**36**	**19**	**14**	**31**	**13**	**54**	**14**	**37**	**24**	**228**

[1] Measured in purchasing power parity (ppp) USD (UNstats 2010) per adult equivalent unit (aeu) (OECD 2005) to allow comparison across households and sites.

[2] The value (cash and subsistence) of collected environmental products, which include products that are not the result of deliberate cultivation but rather the result of natural processes in cultivated as well as uncultivated areas.

When the environmental incomes were analysed by source we found that CBFM and JFM forest resources accounted for just below one third while non-PFM forests and the non-forest environment (fields, fallows and open grassland) accounted for similar or considerably higher amounts depending on which forest management regime the interviewed households were subjected to. Overall, however, forests accounted for more than 50% of the environmental incomes which underscores the social importance of forest conservation. No clear pattern was found for the distribution among wealth classes of environmental incomes from non-PFM and non-forest resources. Yet, for all CBFM sites, except Kijango, the rich benefited more than the poor, especially in Kisanga and Kiwele, while the picture was the opposite for the three JFM sites where on poor household in Muyuyu got almost all the PFM income, while in general the poor got a bit more than the rich Boay and Itagutwa (Figure 3).

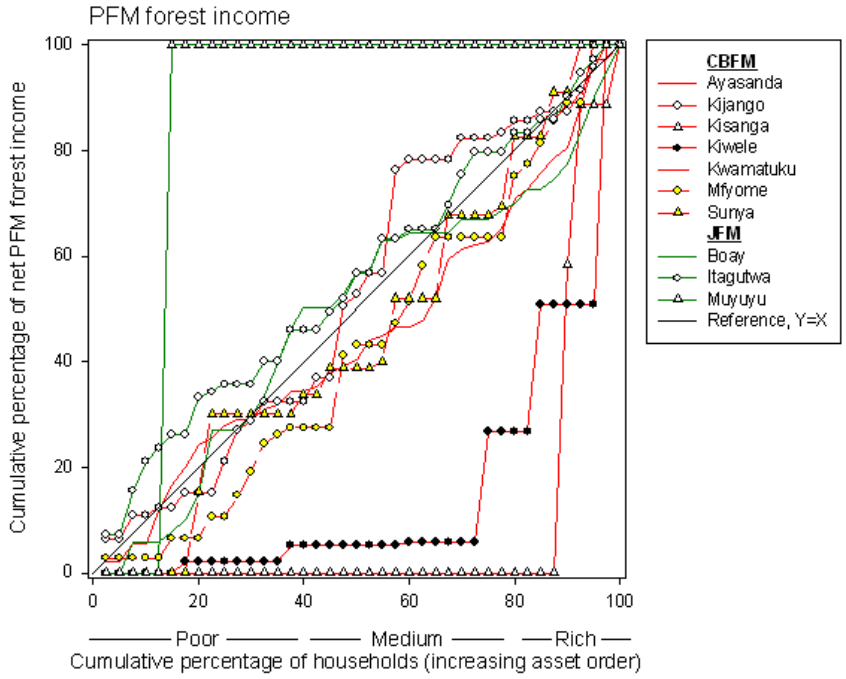

Figure 3 Distribution of PFM forest income

Reasons for the inequitable distribution of CBFM incomes

All households in the CBFM and JFM sites answered a series of questions concerning their own involvement in forest governance, monitoring of decision-makers, and perceptions of their own knowledge level as well as whether they were 'connected' in terms of being members of the village environmental committee, the village council, a political party, or held a civil society position. In JFM sites, no pattern of elite capture was found. By contrast, the results for CBFM forests showed with statistical significance that:

- Rich households were more involved in decision-making, knew more about and were more satisfied with PFM rules than other households.

- Poor households were less involved in decision-making, knew less about and were less satisfied with PFM rules than other households.
- Rich households were significantly more connected than Poor and Medium households.
- Poor households were significantly less connected than the Medium and Rich households

Conclusions

- PFM can and does result in forest conservation. If the Government of Tanzania wants to further promote and expand PFM, pragmatically this might be done most cost-effectively and efficiently in relatively remote areas where:
  - Local CBFM or JFM institutions are able to control access to the forests.
  - PFM forest can be large and close enough to the village settlements to make the economics of sustainable utilization attractive.

  However, the success of PFM depends on the willingness of the Government of Tanzania to guarantee and protect local forest owners' and managers' rights to exclude outsiders (why accept lawlessness in forestry when this is not the case for e.g. agriculture?).
- Where the forest to people ratio is too small to establish large enough PFM forests, plantations of highly productive (exotic) species could be promoted.
- Forests and the non-cultivated environment are of vital economic importance to ALL rural households and especially the poorest.
- Elite capture in PFM is a problem that may be addressed through information and education such that the poor may enhance their share of forest incomes through democratic processes.

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