

Transaction costs of Participatory Forest Management: empirical evidence from Tanzania.

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Introduction

In Tanzania, Participatory Forest Management (PFM) has become the most important approach within the forestry sector following its inclusion in the National Forest Policy in 1998 and the Forest Act 2002. The move towards PFM has been driven by two factors. Firstly, recognition that neither central government nor local government have the capacity to manage the nation's forest resources in a sustainable way without the support of communities living close to the forest. Secondly, there has been a political will to decentralize government functions to the lowest level of government. By the end of the year 2000, it was estimated that Tanzania had 319,730 ha of forests under CBFM and 28,255 ha under Joint Forest Management (JFM) mainly in catchment forest reserves. This figure is now considerably higher.

With the expansion of PFM, a question of equity in sharing the benefits from, and costs of, community forest management has been more demanding than ever before. In order to explore this issue further a study was carried out to assess the transaction costs and benefits of PFM. The study had three objectives:

- to identify costs and benefits of community forest management to the rich, middle and poor groups of users.
- to quantify costs and benefits for these sub-groups based on prevailing economic conditions.
- to assess the comparative flow of benefits and costs for each income group.

The overall aim of the study is to contribute to the understanding of transaction costs in PFM in Tanzania. This article serves to summarize findings from the study.

Levels of transaction costs in PFM in four selected communities adjacent to the Ambangulu mountain forests of North-East Tanzania were assessed through questionnaire responses from 120 households. A wealth ranking exercise was used to identify three economic groups according to locally perceived criteria. Costs and benefits of PFM to the rich, medium and poor groups of forest users were estimated. Costs of PFM were participation in forest monitoring and time spent in meetings. Benefits included all forest products consumed at household level.

The study area is important in terms of its biodiversity and local communities display a high degree of dependence on the natural resources.

Wealth ranking

Three economic groups, rich, middle and poor were identified by a range of criteria rather than a single criterion such as income (Table 1). Criteria that were considered important were area of productive land, business ownership, type of house, type of crops grown, livestock ownership and dependence on selling forest products and casual labour.

Table 1. Wealth criteria used to classify the three income groups in the study area.

Income group	Wealth criteria
Rich	Productive lands (2.8-4 hectares), business (kiosk, brew local liquor, restaurant) modern house roofed with corrugated iron, cash crops, and livestock.
Middle	Productive land (1.6-2.4 hectares), Half of the above criteria
Poor	Productive land (0.4-1.2 hectares), mud house with thatched grass, has one or two goats/sheep, sells forest products, and depends on selling casual labour for income.

Household and Source of income

The study revealed that, there were six main sources of household income in the study area: agriculture, livestock, business, labour, forest utilization and sale of forest products (Fig 1). Forest utilization values are the forest products that are collected freely from the forest and consumed at household level. Their monetary value was based on local market values and determined according to household consumption per year. Forest utilization included forest products such as fuel wood, thatch grass, building poles and fodder. Forest sale are the products collected freely from the forests for the purpose of selling them so as to obtain income. Forest utilization was found to be the main source of income with average annual income of about US\$ 150, US\$ 118 and US\$ 73 for rich, middle and poor income groups respectively (Fig 1). Relative to other groups, income from daily labour work was most important for the poor group with an annual average of US\$ 72. Poor groups also obtained income by collecting and selling forest products such as fuel wood and grass fodder to the people owning local

restaurants and livestock. This result is similar to what one would expect in most areas of Tanzania and African countries where free access to forest products by households provides an additional source of income in rural areas.

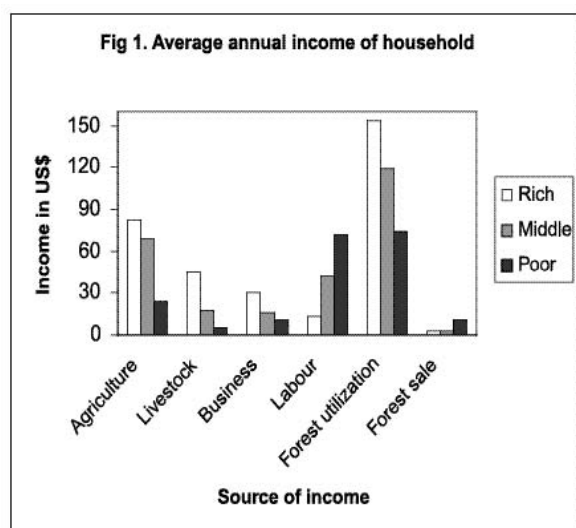


Figure 1. Sources and average amount of annual household income for each of the three wealth groups of rich, middle and poor.

Transaction Costs related to forest management

Table 2 shows the breakdown of transaction costs of forest management on the various forest management activities. There are two types of costs, firstly costs related to attending various meetings (transaction costs) and secondly, participation in voluntary forest management activities. It was found that the total annual averages for the transaction costs of forest management were higher for the poorer households than that of rich and middle groups (Table 2). This indicates that poor households participate more in forest management activities compared to their counterparts. Attending meetings such as environmental awareness, discuss of forest management plans, by law formulation account for high transaction costs in all of the three groups.

It is clear that time taken in attending various meetings related to PFM activities and forest protection through monitoring make up the bulk of the costs. Spending long periods in meetings is a typical process of PFM. For example experience from East Usambara forest in Tanzania found that settling conflicts related to forest boundary not only took a long time to be completed but also involved high cost.

Table 2. Quantification of forest management activities and Transaction costs of forest management for three income classes in US\$ (1 US\$ = Tsh 1000) per year. !Voluntary forest management activities, *These meetings include environmental awareness, conflict resolution, forest by law formulation, forest management plans etc and ** Include activities such as planting trees

Activities	Income groups			Total
	Poor (US\$)	Middle (US\$)	Rich (US\$)	
Protection (watching, monitoring etc.)!	15.4	6.3	16.1	37.8
Forest boundary clearing!	1.4	5.6	0.7	7.7
Tree planting!	2.1	2.1	2.1	6.3
Attending meetings*	30.8	34.3	30.1	95.2
PFM related development activities**	6.3	4.9	5.6	16.8
Fire line clearing!	3.5	0.7	0	4.2
Total Annual Average Costs	59.5	53.9	54.6	168

Benefits of forest management

Table 3 highlights the product type and monetary values of the benefits for each income class. None of the income groups benefit from timber harvesting, this is because timber cutting is no longer permitted in the Ambangulu forest. However, all groups obtain benefits from fuel wood. This means that the three groups compete for the same set of products from the forest.

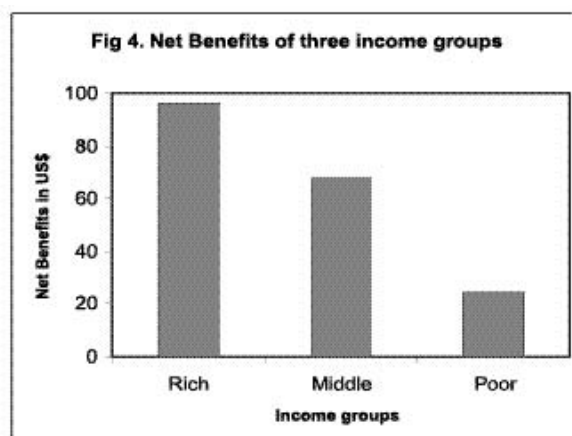
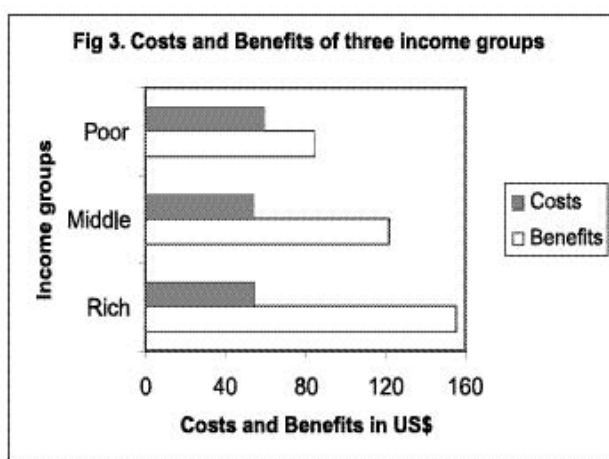
The rich group obtains more benefit from fodder grass than other groups as they feed their livestock and they own more livestock than their counterparts. Benefit from thatch grass was generally low for almost all groups, suggesting that most groups do not use thatch grass from the forest. Palm and banana plant leaves from their farms were instead used as roofing materials.

Table 3. Quantification of Benefits from forest utilization in US\$ (1 US\$ = TSH 1000).

Items	Income groups		
	Rich	Middle	Poor
Timber	0.0	0.0	0.0
Fuel wood	64.3	65.8	63.3
Fodder grass	86.4	50.5	7.5
Thatch grass	1.6	0.6	1.7
Bush meat	0.8	0.0	0.0
Medicinal herbs	0.0	0.0	0.0
Building poles (beams,withies)	0.0	2.4	1.2
Forest product sale*	2.6	2.6	10.4
Total Annual Average benefits	155.7	121.8	84.0

*Direct benefits from the sale of forest products. Other listed items are consumed without monetary exchange.

Costs and benefit of forest management



The relative balance between costs and benefits varies between income groups. The average costs for poor, middle and rich groups are US\$ 59.5, 53.9 and 54.6 respectively (Fig. 3). The average benefits are US\$ 84, 121.8 and 155.7 for poor, middle and rich respectively (Fig. 3). This means that, poor groups incur higher costs than other groups and benefits were low for the poorer groups where as the middle and rich income groups had high benefits. A similar trend was observed for the net benefits. The rich obtain higher net benefit compared to middle and poorer groups (Fig. 4). The observed higher net benefits of the rich and middle-income groups are due to these households having more livestock and consequently consuming more forest products. Higher income households also have diverse sources of income and for that case they use additional fuel wood for preparing local liquor and cooking in the restaurants. The Poor households see forests as an important resource to maintain their livelihood.

Policy Implication

The study observed that from the current practices of forest management, the lower income class bears the highest cost of forest management when all opportunity costs are accounted for in the assessment of costs and benefits. Any expectation that PFM would prove a cheap way of obtaining benefits has not been realized. Under the current forest laws in Tanzania, communities have none of the financial incentives from the forest products revenue collected. The existing example of revenue sharing is between the Wildlife Division and local communities and is hinged on revenue accrued from tourist hunting. The other example is a recent Joint Forest Management agreement between the Forest and Beekeeping Division (FBD) and the six communities adjacent to New Dabaga/Ulongambi national forest reserve in Iringa where it has been agreed that 100% of benefits from the forest should be retained in the communities. Experience from PFM in

the East Usambara forests observed that it is unrealistic to assume that villagers would take the burden of all forest management activities without any tangible benefits. Since these forests are important for biodiversity conservation, government should continue paying for the intensive labour activities such as forest boundary maintenance by casually employing community members especially from the poor groups to do the clearing. This would be considered as one of the tangible benefits from PFM.

Conclusion

Transaction costs for PFM were found to be higher for poorer households compared to medium and richer households. Higher income groups obtained the most net benefits followed by medium and poorer households. Community involvement in forest management may lower transaction costs incurred by government, but these costs are borne by poorer members in the community. Hence therefore transaction costs are critical factors in the success or failure of PFM and need to be incorporated into policies, legislation and regulation.



Medicinal plants are one of the benefits that people enjoy from West Usambara forests. Photo by Simon Mocha, TFCG