PARTICIPATORY FOREST MANAGEMENT: PERCEPTIONS AND OPINIONS OF FOREST-DEPENDENT COMMUNITIES IN TANZANIA

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Abstract

This study was initiated to provide information about people's perceptions and opinions about the implemented Participatory Forest Management (PFM) programmes in Tanzania. It also sought to find out the factors that influence households' perceptions about the success of PFM programmes. Data for this study was obtained from a random sample of 1,023 households in Morogoro and Tanga districts. Descriptive results show that households perceive the PFM initiatives as being successful with positive impact to the community but also feel that they are not given enough opportunity to participate in decision making. The Multinomial Logit regression results show that households' perceptions on the success of the PFM programme are influenced by spatial characteristics, livestock ownership and dependence on fuelwood. The findings in this article could be used by government and other stakeholders to improve on the way they deliberate on PFM issues and to address appropriate forest management practices.

Keywords: *participatory forest management, perceptions and opinions*

1.0 Introduction

Forest reforms are being carried out in many developing countries, typically involving devolution of forest lands to local people and communities, which has attracted a great deal of attention and interest (see for example, Deb, 2014; Willy, 2002; Kumar, 2002; Ngaga, 2013; Treue, 2014; Randy & Robinson, 2014). Linked to this is a growing appreciation that sustainable resource management can go hand in hand with poverty alleviation (Jodha, 1986; Kumar *et al.*, 2000; World Bank, 2001) and that the effectiveness of government as a resource manager is improved when it shares powers with different user groups. The reforms have succeeded in halting forest degradation in India. Literature has shown that the JFM regime reflects the social preference of the rural non-poor that the poor are net losers (Robinson & Lokina, 2011; Kumar 2002). Literature has further shown that the

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implications of these reforms for local forest management can often be more successful than top-down management of common pool forest resources (Randy & Robinson, 2014). Generally, the literature suggests that participatory forest management is sufficiently widespread and effective in Africa today to be recognised as a significant route towards securing and sustaining forests (Willy, 2002). Whilst each state is arriving at more participatory approaches to natural forest management, broad commonalities among processes and paradigms are notable. Root causes of failures in the 20th century forest management are relatively common. Prime among these is widening socio-political transformation on the continent towards more inclusive norms in the governance of society and its resources. Participatory forest management more that any other new strategy in the forestry sector most embodies this emergent democratisation.

PFM in Tanzania was started in the 1990's as a response to the high rate of degradation of national forests, which could not be managed and protected effectively by state forestry services (Wily, 2002). There are mainly two approaches to participatory forest management in Tanzania: Joint Forest Management (JFM) approach, and Community Based Forest Management (CBFM) approach. JFM is a collaborative management approach which divides forest management responsibility and returns between either central or local government and forest adjacent communities. It takes place largely on 'reserved land' such as National Forest Reserves and Local Government Forest Reserves. In JFM, forest ownership remains with the government but local communities are involved in the management of the forest by carrying out different forest activities (such as patrolling, fire fighting and boundary clearing). The communities in turn get user-rights and access to some forest products and services. In the CBFM model, the local communities own the forest, have rights over the forest and take full responsibility of managing the forest area within their jurisdiction and declared by the village and district government as a village forest reserve. CBFM takes place on 'village land'. Following this legal transfer of rights and responsibilities from the central to village government, villagers gain the right to harvest timber and forest products, collect and retain forest royalties and undertake patrols (including arresting and fining offenders). By 2006, 7% of villages had been involved in JFM, while 10% had been involved in CBFM (United Republic of Tanzania, 2006).

Over 10 years after the establishment of PFM, no known study has been undertaken to understand people's perceptions, opinions and experiences with PFM initiatives. This study was therefore initiated to provide government and other stakeholders with information about the opinions and perceptions of local residents which would enable them improve how they deliberate on PFM issues and address appropriate

forest management practices. Understanding local community perceptions of forest management is important for designing management policies that are sensitive to their needs (Guthiga, 2008). According to Chase *et al.* (2004), it is important to elicit and include people's perceptions and opinions about the management of forests in the decision-making processes. It is widely acknowledged that communities living within the vicinity of protected areas are critical to the success of conservation efforts (Agrawal & Gibson, 1999; Ferraro, 2002; Wiggins *et al.*, 2004) and therefore their cooperation and support is needed. Understanding how local communities perceive forest management is important for designing management policies that address the dual goal of community interest and conservation (Dolisca *et al.*, 2007). It could also shed some light on what the local people consider important. This may provide guidance to policy makers on the general areas that require intervention.

This article examines the opinions and perceptions of local communities towards policy and programmes implemented under the PFM approach in Morogoro and Tanga districts, Tanzania, based on a 2007 survey of 1000 households living around the forests. By considering peoples' opinions, perceptions and beliefs, forest managers can identify issues that are relevant to the public, and work to resolve any conflicts between these issues and other policy considerations, e.g. environmental conservation.

2.0 Methodology

The required data for the study was collected from 50 villages in two regions – Tanga and Morogoro – where PFM initiatives have been implemented, using both an individual household survey administered to 20-25 randomly sampled households per village, and village level focus group discussions. Two forest-rich districts (Morogoro and Tanga) were selected purposively because these districts were among the first regions to implement PFM in Tanzania. The survey was done in two phases. First, a pilot survey was conducted where the survey instruments were tested in two villages, and were finally modified accordingly. In total, 1000 households were interviewed in the two regions. Based on the feedback that was received, minor revisions were made to the questionnaire. Although the questionnaire sought to address a wide range of forest issues, the results reported in this article focus on communities' opinions and perceptions about PFM initiatives.

Several questions, each consisting of several statements were presented to the respondents. They were asked to indicate their level of agreement with each

statement on a varying point likert scale from 'strongly agree' to 'strongly disagree'; from 'very successful' to 'very unsuccessful'; from 'improved considerably" to 'worsened considerably' and had the option of indicating that they did not know, or it was too early to have an opinion about a particular statement. Information was also collected about respondents' demographic characteristics (age, gender, education level, economic activities, and household income). The questions addressed public opinion and perceptions about the PFM's level of success, local forest management issues such as their involvement in management, monitoring, enforcement and illegal harvests.

Quantitative data was obtained through structured questionnaires from 1,023 randomly selected households in the two districts of Morogoro and Tanga. Accordingly, 445 respondents from 20 villages in Morogoro and 578 respondents from 30 villages in Tanga were interviewed. Descriptive statistics were calculated for each question. For those questions that requested respondents to indicate their level of agreement, satisfaction or improvement, the proportion of responses was calculated for each question. Since Likert scale type questions were used, mean and standard deviations are invalid parameters for descriptive statistics. Frequency tables and graphs were thus used to summarise the results.

2.1 Results

A total of 1000 observations were used in this study. The results show that 65.9% of the respondents were male, mean household size was 5, which is slightly less than the national average of 6. The mean age of respondents was 43 years and the majority of these could read and write, as about 89% had completed primary education. Where questions were specific to CBFM or JFM villages, tables show both CBFM and JFM results, but explanation is specific only where there is a difference in people's views concerning the two approaches.

a) Sources of income – Livelihood activities

Respondents were asked to identify their main and secondary activities from which they get their income. Various sources were mentioned and Table 1 presents the data regarding the sources of cash income for the respondents' households.

Table 1: Occupation

	Main Occupation		Secondary	
Activity	Freq	%	Freq	%
Farming	914	89.4	90	8.8
Animal raising	8	0.8	697	68.2
Artisanal fishing/mining	6	0.6	26	2.5
Tourism	1	0.1	0	0.2
Wage labour	30	2.9	36	3.5
Business	52	5.1	268	26.2
Forest use			4	0.4
Others	11	1.1	46	4.5

As should be expected, the results in Table 1 show that the main economic activity carried out by the households is farming, as shown by a big percentage of 89.4%. An insignificant number of respondents reported that tourism, animal raising, wage labour and business were the main activities on which they depended. However, to supplement the main activity (farming), most respondents reported animal rearing and doing business as their secondary activities. None of the respondents reported forest use as the main occupation and even as a secondary occupation – the percentage is negligible (0.4%). The results therefore show that the majority of the local people were dependent on cultivation for their cash income rather than directly harvesting from the forests. These results are consistent with findings from previous studies that investigated on similar issues (See for example, Ngaga *et al.*, 2013; Trueu, *et al.*, 2014). The results from Table 1 should be interpreted with caution. Although forest use does not appear to be a primary or secondary activity for cash income among the respondents, this does not mean that households do not make use of forest resources at all. It was found out that 96.7% of the respondents use fuelwood as the main source of fuel for cooking. Apart from fuelwood, respondents also got vegetables, fruits, mushrooms, medicine, poles, ropes and grass from the forest. The main source of these forest products was their own land and other forested areas (not the PFM forests). Thus, it can be argued that the majority of the households might be depending on the forest products not for commercial purposes but rather for their own home consumption, and therefore not considering those benefits as income received or cash generated.

b) Awareness about forest management initiatives

Households were asked about their knowledge of the existing forest management systems in their villages. Although the majority (81%) of respondents were aware that their villages were involved in the PFM, the 19% who were not aware cannot be neglected. In addition, some of those who were aware of the PFM initiative could not differentiate whether it was JFM or CBFM. For example, some of the respondents who had JFM forests indicated that their forests were managed under CBFM, while those with CBFM said they were under JFM. Certainly therefore, raising community awareness should still be a priority such that people understand what types of forest management exist in their area and what their roles are in managing such forests. Awareness and sensitization should be a continuous process.

c) Views about the success of PFM

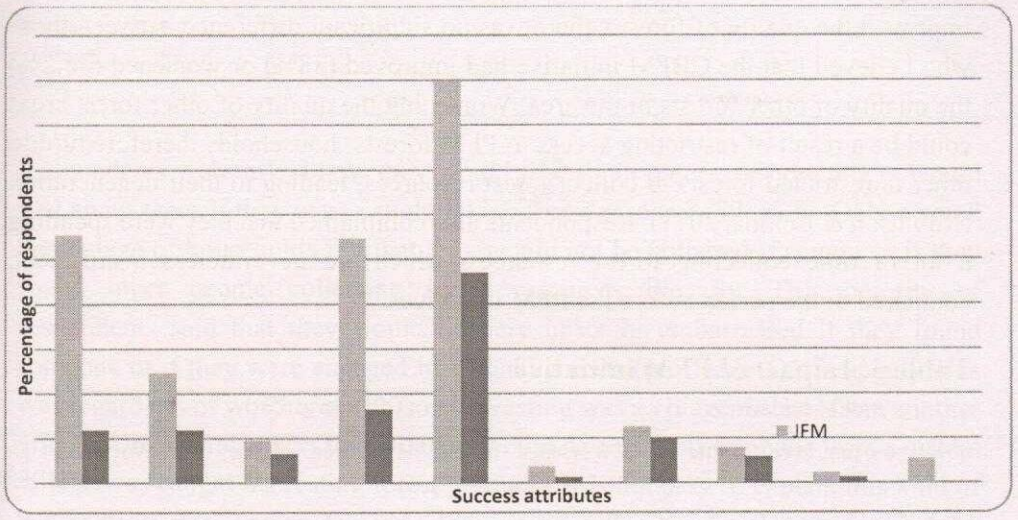
Respondents were asked to give their opinion about the success of PFM in their villages. The question asked was: "In your opinion, has the JFM/CBFM initiative been a success?" Their responses are presented in Table 2.

Table 2: Households' opinion about the success of PFM

	JFM (n=646)		**CBFM** (n=206)	
	Frequency	%	Frequency	%
Successful	537	83.2	154	74.8
Not successful	55	8.52	25	12.1
Don't know	51	7.89	26	12.62
Too early to tell	3	0.46	1	0.49

The results in Table 2 show that the majority of respondents believe that the PFM initiative has been a success. Asked why they felt that the initiatives were successful, the respondents reported that it was because there had been an increase in rainfall, reduction in illegal activities, improvement in water discharge, increase in natural vegetation, reduced incidences of fire and that people were able to plant trees in their own plots (see Figure 1). It is interesting to note that people measure success not because of personal benefits but look at it from a community or social point of view. For those who said the initiative had not been successful, the reason might be because of continued illegal activities. To them, their expectation was that with PFM, all illegal activities would cease.

Figure 1: Reasons why people think the PFM initiative has been a success



One measure of success which is of particular interest is the acknowledgement by the villagers that the initiative has encouraged them plant trees in their own land. Despite having small plots (majority reported having at most 2 acres), 77.6% of the households reported to have planted trees on their own land. However, given the fact that crop farming is the major occupation, trees were scattered to allow for more crops to be planted within the available land. The majority of households have therefore planted less than 100 trees on their land. These trees were mostly fruit trees. The most popular non-fruit trees planted were gravillea, cederrial, teak and eucalyptus. The households ranked the benefits they get from the trees they plant in their own land as: food, fuelwood, building materials and lastly shade and ambience. Most of the trees were planted less than 13 years ago and this could clearly be a result of the restrictions to the village forests. In other words, the introduction of PFM has improved tree planting in the villages.

d) Impact of PFM

Respondents were also asked to give their opinion about the impact of PFM on different aspects including livelihood, quality of forests and social aspects. The results are presented in Table 3. The majority of respondents reported improvement in quality of PFM forests, livelihood (both at village and household level), social relations in the village, conflict over forest resources within the village and a reduction in illegal activities. However, they reported that the initiative had worsened their access to forest resources. There were mixed views about the impact

of PFM on the quality of other forested areas. Whereas a higher percentage (42.3%) of the households in villages with JFM reported that the initiative had worsened the quality of other forests in the area, compared to 33.6% who said the initiative had improved the quality of forests, there was no significant difference between those who believed that the CBFM initiative had improved (38%) or worsened (36.2%) the quality of other forests in the area. Worsening the quality of other forest areas could be a result of restricting access to PFM forests; households therefore turn to other unrestricted forests to collect forest resources, leading to their degeneration (Robinson & Lokina, 2011). Respondents also complained that they were spending a lot of time collecting forest resources, which are nevertheless insufficient, compared to the period before the PFM initiatives.

Table 3: Impact of PFM initiative

	JFM Initiative n= 651				CBFM n=165			
	Improved	Little difference	Worsened	Don't know	Improved	Little difference	Worsened	Don't know
Quality of the JFM /CBFM	83.7	5.22	3.08	7.99	84.25	6.06	3.03	6.67
Quality of other forests around the village	33.6	17.26	42.33	6.63	36.15	21.69	37.96	4.22
Village livelihoods in general	46.7	24.7	21	7.7	54.2	28.9	13.9	3.0
Your household in particular	40.8	29.9	23.4	5.9	51.5	28.5	18.8	1.2
Your household's access to forest resources	17.3	18.6	59	5.2	18.7	21.7	56.6	3.0
Social relations in the village	61.6	14.2	9.1	15.2	75.2	13.3	3.0	8.5
Conflict over forest	52.6	14.3	9.9	23.1	60.2	18.7	4.2	16.9

resources within the village								
Reduction in illegal activities	86.2	6.5	3.7	3.7	72.5	5.4	4.8	7.2

Respondents were asked how they would feel about others, or how others would feel about them if they were caught taking forest resources illegally. Only a small percentage of households felt that they would not be bothered if caught or if they found other people collecting forest resources illegally. The majority of respondents said that they would be very upset or embarrassed if they found someone or if they were engaged in illegal harvests (see Table 4). Strangely, this was regardless of whether the person harvesting was a village mate or from another village. One would expect that villagers would be harsher if someone from a distant village was caught harvesting forest products. It is not easy to explain this kind of behaviour as it is contrary to norms and traditions. Thus, people's beliefs affect the way they behave and could be the reason why there are reduced illegal activities in the PFM forests.

Table 4: Peoples' perceptions about illegal harvests (PFM)

	JFM (n=317)				CBFM (n=170)			
	Very upset	Somehow upset	Would not be bothered	Don't know	Very upset	Somewhat	Would not be bothered	Don't know
How would other villagers feel if you took forest resources illegally from the JFM forest?	82.7	12	4.7	0.6	87.7	6.5	4.1	1.8
How would you feel if you took forest resources illegally	72.9	21.8	4.4	1.0	81.8	12.4	5.3	0.6

from the JFM forest?								
How would you feel if people in your village were collecting forest resources illegally from the JFM forest?	83	14.2	2.5	0.3	89.4	7.7	1.8	1.2
How would you feel if people from other villages were collecting forest resources illegally from the JFM forest?	86.6	11.2	1.9	0.3	91.1	7.7	0.6	0.6

Asked whether they were allowed in the forest, the majority of respondents said they were not allowed in the forest while some said they were allowed but with restrictions. The survey established that there is sufficient awareness of the existing rules concerning harvesting of forest resources. The households were barred from felling timber, collecting poles, hunting animals, and collecting other forest resources, except firewood. All these restrictions generally promote sound forest management. The majority of respondents perceive these restrictions to be reasonable. As far as rules concerning illegal harvesting are concerned, the respondents knew they would be fined if they were caught harvesting restricted forest products.

Table 5: Views on involvement in management of forests (decision making)

	JFM			CBFM		
	Yes	No	Don't know	Yes	No	Don't know
Do you think all of you could collect as much as you need from all forests around the village?	3.0	94.8	1.8		98.9	1.2
Do you have influence on policies for deciding how much forest products people can take from the PFM forest?	5.6	93	1.2	2.3	97.1	0.6
Do you help decide who the managers of the PFM forest are?	63.3	31.4	5.1	52.4	44.1	2.9
Are the managers of the PFM forest democratically chosen?	73.4	8.4	18.3	70.2	7.6	22.2
Are the managers of the PFM forest effective in controlling access and managing the common forest?	70.3	13.8	15.7	67.3	11.7	19.9
Is there careful monitoring of who takes products from PFM?	21.8	70.8	6.9	24.6	69.6	5.3
Do villagers generally watch who takes forest products from the PFM forest?	75.1	16.4	8.3	73.7	17.0	9.4
Are you either formally or informally involved in monitoring the PFM?	71.6	24.5	3.8	69.4	25.3	4.7

As far as management is concerned, the majority of respondents (>90%) felt that they did not have influence on policies to decide how much forest products could be taken from the PFM forests. Also, although the majority of respondents said they helped to decide who the managers of the forests should be, the percentage of those who said they were not involved in deciding the managers is quite big. Respondents also felt that there was lack of careful monitoring of who takes products from PFM, and this weakness might lead to continued practice of illegal harvest in the forests, hence threatening the sustainability of the initiatives and the already achieved benefits.

2.2 Econometrics model

Of additional interest was to identify factors that possibly determined the perceptions of the households on the performance of the PFM programme. In this regard, an attempt was made to identify those factors which were likely to influence the way the respondents judged the success of the PFM programme. To do this, a Multinomial Logit Model (MNLM) which is useful in analysing unordered qualitative variables was used. The model is based on the random utility model framework where the respondent makes a decision based on several options available. The perceptions are considered as unordered outcomes and therefore less restrictive models can be obtained using the Random Utility Model. In this model, the alternative with the highest utility is chosen, where utility from each alternative is the sum of deterministic and random components. The distinct choice model is based on the principles that an individual chooses, the outcome that maximises the utility gained from that choice. It deals with truly nominal and mutually exclusive categories.

Suppose a dependent variable y, has j categories that is $y = 1, 2, \ldots j$ with $P_1, P_2, \ldots . P_j$ as associated probabilities, such that $P_1 + P_2 + \ldots . + P_j = 1$. Normally, one category is designated as the reference. The probability of membership in other categories is then compared to the probability of membership in the reference category. Consequently, for a dependent variable with J categories, this requires the calculation of $J-1$ equations, one for each category relative to the reference category, to describe the relationship between the dependent variable and the independent variables. The choice of the reference category is arbitrary. The generalised form of probabilities for an outcome variable with j categories is the equation,

$$\Pr(y_i = j) = \frac{e^{\sum_{k=1}^{K} \beta_{jk} x_k}}{1 + \sum_{j=1}^{j-1} e^{\sum_{k=1}^{K} \beta_{jk} x_k}}, \qquad (1)$$

which gives $Prob(y = j)$, where $j = 1,2, \ldots, j-1$. Note that parameters β have two subscripts in the model, k for distinguishing x variables, and j for distinguishing response categories. The subscript j indicates that now there are $j-1$ sets of β estimates implying that the number of parameter estimates will be $(j-1)K$.

The equation,

$$Prob(y = j) = \frac{1}{1+\sum_{j=1}^{j-1} e^{\sum_{k=1}^{K} \beta_{jk} x_k}} \quad (2)$$

gives P(y=j). Alternatively, P(y=j)can also be derived by taking $1 - [Prob(y = 1) + \cdots + Prob(y = J - 1)]$.

Of importance to note is the fact that the Multinomial Logit Model is built on the independence of irrelevant of Alternative (IIAs) assumptions. The Hausman-McFadden is used for the tests of IIA. The procedure is to first estimate the full model with m outcomes, then a restricted model is estimated by eliminating one or more j. The test of the difference between the two, which is asymptotically distributed as chi-square with degrees of freedom equal to the rows in restricted model if IIA, is true. Significant $\chi 2$ values indicate violation of the assumption that the difference between the two models is not equal to zero (Cameron & Traved, 2006).

The Multinomial Logit was therefore used to analyse factors that determine perception on the success of the PFM programme using three perception categories, i.e. 'very successful', 'little impact/somewhat successful' and 'not successful', as dependent variables (McFadden, 1974). In using the multi-model, the emphasis is on the interpretation of estimated models. The marginal effect of a change in a regressor is more complicated than the usual impact on a single conditional mean. For multinomial data, there is instead a separate marginal effect on the probability of each outcome and those marginal effects sum to zero since probabilities sum to one (Cameron & Traved, 2006).

In order to estimate the MNL model, the coefficients of one perception category must be normalised to zero. The coefficients of the other perception categories are interpreted with reference to the normalised category. In our case the very successful category is the omitted category. The sign of a coefficient shows how the ratio of probability of the household in a particular category changes relative to the perceived category when a covariate changes. Furthermore, as pointed out earlier, the MNL model puts restrictions on agents' choices, i.e. the independence of Irrelevant Alternatives (IIAs) assumption. The Hausman specification test for the IIAs assumption is implemented and the results suggest that the null hypothesis of independent perception alternatives cannot be rejected (see Table A2 in Appendix A). Table 6 shows the changes in probability evaluated at the mean of the variable. We found that the majority of the spatial characteristic variables are

significant. We also found that the probability of a household perceiving that the PFM programme is very successful increases with Morogoro Rural and Mvomero Districts while it decreases with Muheza. If a household leaves in Morogoro Rural, it is likely to see the PFM programme as successful by 0.098 units while it decreases the probability of the household perceiving the programme as not been very successful. The results further show that if the household can at least read and write, it is likely to perceive that the PFM programme has been successful. For example, an increase in the level of education reduces the probability of belonging to the group that perceives the PFM as not successful by 0.027 units.

Table 6: Changes in predicted probabilities evaluated at the mean of the variable based on MNL estimates

	Very successful		Little impact/somehow successfully		Not very successful	
Explanatory Variable	Coefficient	z	Coefficient	z	Coefficient	z
Household characteristics						
Sex	0.0315	0.76	0.0059	0.16	-0.0374**	-1.96
Education	0.0406	1.19	-0.0134	-0.44	-0.0272*	-1.74
Lnage	-0.0158	-0.28	0.0183	0.34	-0.0025	-0.11
Spatial characteristics						
Morogoro Rural	0.0983**	2.45	0.0632	1.10	-0.1615**	-2.62
Mvomero	0.1095*	1.68	-0.1502***	-2.91	0.0406	1.05
Muheza	-0.1733**	-2.47	0.1773**	2.55	-0.0041	-0.13
Morogoro	-0.1683**	-2.49	0.1536**	2.53	0.0147	0.49
Qualityforest	-0.3344***	-8.87	0.1549***	4.14	0.1795***	7.42
Ffwoodforest	0.0472	0.83	-0.0783	-1.44	0.0312	1.42
Jfmpreseve	-0.4367***	-10.41	0.3563***	8.30	0.0804***	3.70
Nonjfmforest	-0.1694**	-2.64	0.1756**	2.62	-0.0061	-0.21
Cbfmforest	0.1637**	2.25	-0.2329***	-3.50	0.0692	1.29

cbfmjfm	0.1626***	3.87	-0.1450***	-3.85	-0.0176	-1.06
Gplantation	0.0888*	1.73	-0.0531	-1.13	-0.0357**	-2.12
Household forest dependence						
Fruits	-0.0720	-1.12	0.1043*	1.69	-0.0323	-1.51
Timber	-0.0402	-0.76	0.0471	0.96	-0.0069	-0.32
Livestocks	0.0412	0.81	0.0151	0.32	-0.0563**	-2.14
Fuelwobenefits	0.0520	1.13	-0.0087	-0.20	-0.0433*	-1.89
Fmedicine	-0.0041	-0.08	0.0230	0.48	-0.0190	-0.99

The results further show that the presence of a JFM preservation forest in the village increases the likelihood that the household will perceive the PFM as not been very successful. This could be due to the fact that in most cases JFM is implemented in the government reserve forest, which means it is 'a no-take-zone'. So the households may not really feel the benefits of PFM. On the other hand, the presence of a CBFM forest in the village increases the likelihood that the household will perceive the PFM as very successful. For example, if in the village there is either CBFM managed forest or both CBFM and JFM managed forest, this increases the likelihood that the household will perceive the programme as successful by 0.164 and 0.162 units respectively. This would suggest that the household perceives the programme to be successful if it accesses some direct benefits especially NTFP, which they cannot extract from the JMF forest.

It is surprising to find that the majority of the variables that characterise the households' dependence on the forest resources are not significant or are marginally significant under 'not successful' or 'somewhat successful'. Being rural communities and in most cases relying on natural resources for their daily livelihood, this could be the earliest signal on whether the programme is successful or not. Majority of the CBFM programmes were implemented in the forests which were already being severely degraded and therefore very little or sometimes none of the expected benefits could be extracted. This result appears to contradict the results in Table 2 which indicate that the majority perceived the PFM programme as successful. However, looking at more specific questions which addressed the issues of benefits from the programme, a different picture is portrayed. For example, there was the question: *Do you feel all of you in the village are able to*

collect as much as you need from all forests around the village? About 95% and 99% of the respondents under JFM and CBFM, respectively, gave the response '*NO*', thus indicating that the households have not been able to extract the maximum benefits as expected.

3.0 Concluding remarks

This article has highlighted the perception of communities and their opinion about the implemented PFM initiatives in Morogoro and Tanga regions. It has also highlighted the factors that determine households' perceptions on the success of PFM programmes. The majority of community members are aware of PFM initiatives in their villages but some of them cannot differentiate between the two PFM approaches (CBFM and JFM). Therefore, awareness campaigns must be a continuous process so that people get to understand their roles and responsibilities as far as the initiatives are concerned. Except for the reduced access to forest resources and the degeneration of other forests, communities feel the PFM initiative has had a positive impact especially increase in rainfall, which is an essential element in their primary activity (cultivation). Another important consideration is that the PFM has led households to plant trees in their own land as a survival mechanism given that they have restricted access to what they can harvest from the forests.

Community members however indicated that they were not being given opportunity to participate in decision making especially in deciding how much products to harvest from the forest. If participatory forest management is an approach aimed at both sustainable forest management and rural development, it must support and encourage participation of local people in setting priorities, defining their needs and decision making. Involving the public into natural resource decision making is advocated for because it is believed that (i) such decisions are more acceptable to the public and more likely to be implemented, (ii) relationship between management agencies and the public are improved, and (3) resource management conflicts are reduced (Lauber & Knuth, 1999; Buchy & Hoverman, 2000).

The big question that emerges from this analysis is the extent to which PFM can be sustainable under the current arrangement where the community does not have tangible benefits. Further, it is obvious that the protection of PFM forests cannot rely on voluntary restriction and community involvement if forest management does not automatically ensure that forests will be protected through voluntary restrictions. Even if villagers understand the benefits of less degraded forests for watershed protection, microclimates, or environmental services including biodiversity, they have immediate need for fuelwood, medicine, food, and income

which nearby forests provide at low cost. Outsiders have fewer incentives to voluntarily restrict their use.

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