



TOWARD COMMUNICATION, EDUCATION AND AWARENESS RAISING FOR PARTICIPATORY FOREST MANAGEMENT: A CASE STUDY OF MUFINDI DISTRICT, TANZANIA

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Abstract

This paper is based on an analysis of the role of communication, education and public awareness raising (CEPA) for communities involved in Participatory Forest Management (PFM) in Mufindi District, Tanzania. Data were collected using household questionnaires, key informant interviews, personal observation, and PRA techniques. Qualitative data were subjected to content analysis while quantitative data were analysed by use of Statistical Package for Social Sciences (SPSS). Multiple regression model was developed to explore the relationship between community participation in forest management and socio-economic factors and CEPA. Results revealed that CEPA positively influenced community participation in PFM and it was statistically significant. A number of other socio-economic factors like availability of extension services and land ownership had also positive influence and were likewise statistically significant. Group methods such as village meetings and seminars were found to be more effective communication channels as opposed to mass media tools like Radio. Group methods were superior because of the high level of interaction and feedback opportunities. The study concluded that CEPA is an important tool in mobilizing conservation activities but not the only factor to encourage farmers or communities to effectively participate in forestry activities. Government and conservation NGOs may therefore continue using CEPA in scaling up PFM activities in other areas in Tanzania.

Keywords: *community participation, CEPA, PFM, socio-economic factors, Mufindi District, Tanzania.*

Introduction

Communication, education and public awareness raising (CEPA) are important tools in motivating and mobilizing individuals to build interest and

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adopt innovations (Hesselink 2007). They comprise a range of social instruments including information exchange, dialogue and education (Robinson and Maganga 2009). Moreover, CEPA is one of the major techniques available to forest management that play a significant role in better understanding among the people living adjacent to forests about the importance of Sustainable Forest Management (SFM). It has been suggested that the greatest and most depressing problem in forest conservation is not habitat loss or overexploitation, but human lack of concern (Balmford 1999). This lack of concern may partly be due to lack of or inadequate CEPA.

For many decades, Tanzania's forest resources have been controlled by the state with management policies being characterized by centralized decision-making processes (Ylhäisi 2003). State ownership of forests in which the local community were kept out of the resources has been a dominant feature of the Tanzania forestry programmes (Pendzich 1994, Zahabu et al. 2010). This management system did not lead to proper protection of the forests as illegal harvesting continued (Luoga et al. 2005). The reason behind is that, the government faced weak financial and human resources capabilities to manage forests resources to meet the increasing demand for forest products and services (FBD 2003).

To address this challenge, various programmes and campaigns have been conducted over the years to encourage communities to be involved in tree planting and natural forest conservation (Danicom 2002). The campaigns were organized whenever it was realized that forest extension messages were not communicated effectively. CEPA is an important tool in motivating and mobilizing individuals to build interest on participating in any innovations including forest management (FBD 2004). CEPA efforts in Tanzania started in the 1980s through several extensive campaigns in community forestry programme with Kiswahili language slogans such as "*Misitu Ni Mali*" (Forests are wealth) "*Moto Na Mazingira*" (fire and environment) and "*Misitu Ni Uhai*" (Forests are life) to mention few (Robinson and Maganga 2009).

The National Forest Policy (URT 1998) clearly recognises the role of government, private, and local communities as stakeholders in forest resources conservation. Therefore, Tanzania is now engaged in a new paradigm where participation of stakeholders at local and national level is a central strategy in forest management through Participatory Forest Management -PFM (MNRT 2001). PFM is taking place around the country as a strategy to improve management of forest resources, local livelihoods and governance (URT 1998). There are two approaches to PFM, including Community Based Forest Management (CBFM) and Joint Forest Management (JFM). Under CBFM, villagers can declare and gazette forest areas on village land as 'Village Land Forest Reserves.' The villagers take full management responsibility, setting and enforcing rules and regulations over forest

management and use. The second approach, JFM applies to the management of national or local authority forest reserves; in which villagers enter into management agreements with the national government through the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism or relevant district council. Under JFM, villagers may be given rights to collect forest resources such as timber and firewood within forests designated for production, but not those designated as protection reserves (Blomley and Ramadhani 2005). It is estimated that 1 780 000 ha of forests (mostly montane and mangrove forests) which represent 12.8% of the forest area under Central and Local Governments are covered by JFM and a total of 2 345 000 ha of forests that represent 11.6% of unreserved forests are under CBFM (MNRT 2008).

The National Forest Programme (NFP) of Tanzania emphasizes the need for awareness creation in forest management among all stakeholders to ensure effective involvement in the implementation of the National Forest Policy and Forest Act (Iddi 2003). The FBD is responsible for preparing guidelines to help improve the communication and coordination system in implementing the National Forest Policy to ensure that communities are well informed and therefore fully participate. The National Forest Communication Strategy to support the implementation of NFP indicates that, building capacity for implementation at local level must go hand in hand with communication efforts and education to increase acceptance and demand (FBD 2004). However, community involvement in forest management need be enhanced through increasing awareness, education and empowerment (Paulo et al. 2007).

Many authors (e.g. Mustalahti 2007, Raphael and Swai 2009, Mbwambo et al. 2012) have reported that PFM leads to improvements in forest condition including regeneration, increased water flow and reduced illegal activities such as encroachment and illegal harvesting in various places. However, to enhance local communities to participate fully in PFM, CEPA seem to be very crucial although their role is not properly studied (Robinson and Maganga 2009). It was therefore appropriate to analyze the role of CEPA in community participation in PFM. Specifically, the study aimed at identifying existing CEPA materials and channels available, assessing the level of awareness for community participating in PFM and determining the influence of socio-economic factors and CEPA in PFM.

Methodology

Study Area

Mufindi District is found in Iringa region, south of the United Republic of Tanzania (Figure 1) situated in the east of Africa, bordered by Kenya, Uganda, Burundi, Rwanda, Democratic Republic of Congo, Zambia, Malawi and

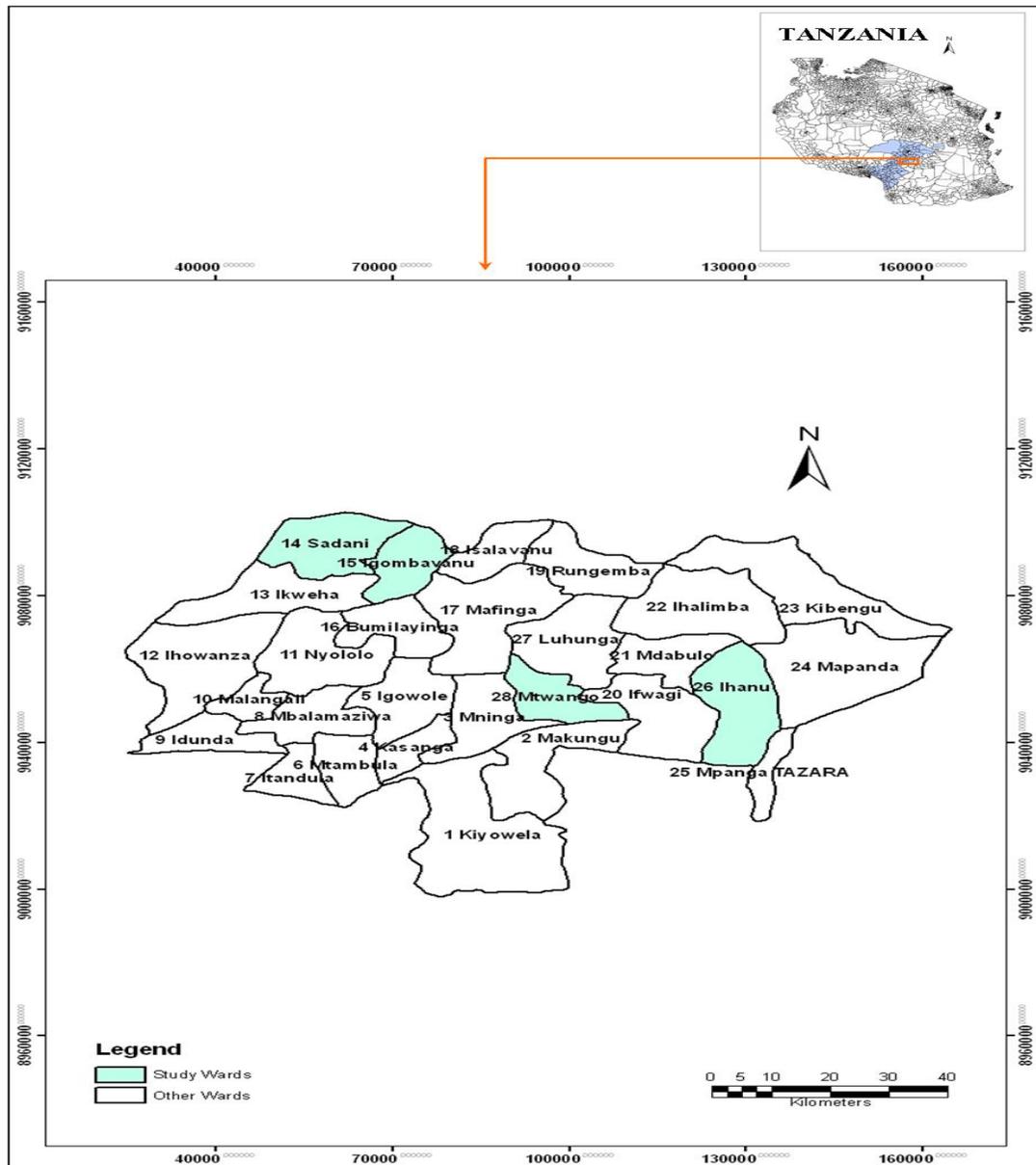
Mozambique. Mufindi is a district with important economic potential: it has more fertile soil than other districts in the region and has the possibility to move products along the Tanzam highway, which passes through the district and connects Tanzania with Zambia and Malawi. Also, the TAZARA-railway, connecting Tanzania with Zambia, passes through Mufindi district. The study was conducted in Tambarang'ombe, Igombavanu, Ihanu and Mtwango villages in the district. Tambarang'ombe and Igombavanu villages are found in the northwest part of the district in Sadani and Igombavanu wards respectively, where CEPA is implemented by government through the Mufindi District Council. These villages are adjacent to the Mandumbulu Village Land Forest Reserve (VLFR) with an area of 357.5 ha. Ihanu and Mtwango villages are found in south- east part of the district in Ihanu and Mtwango wards respectively, where CEPA is implemented by a local NGO, the Tanzania Forest Conservation Group (TFCG). Ihanu and Mtwango villages possess small VLFRs called Ilangamoto and Mnyangala with 6 and 5 ha respectively. These forests are found in a highland which represents unique habitats that host various plants, animals and has high catchment values and remarkable levels of biodiversity importance.

Data Collection and Analysis

Both primary and secondary data were collected. Primary data were collected using structured and unstructured questionnaires where 120 respondents were interviewed. Participatory Rural Appraisal (PRA) techniques and participant observation were also carried out to triangulate information obtained through questionnaires. Secondary data was obtained through a review of relevant documents including communication strategies, reports, office records, published and unpublished papers to supplement and discuss primary data.

Data collected using PRA was analyzed by involving the communities through group discussions where immediate feedback was produced. The components of verbal discussions held with key informants were subjected to content analysis whereby recorded dialogue with respondents was broken down into the smallest meaningful units of information and tendencies which enabled to ascertain values and attitudes of informants (Hassan 2007). Quantitative data was subjected to inferential statistical analysis. Further analysis was done by use of Statistical Package for Social Sciences (SPSS). In order to measure the level of awareness in the community on participation in forest management, the index scale method employed by Poucher (2001) was used. Five test questions weighing 25 points in total, each question carrying five points were designed and administered through questionnaire.

Figure 1. Map Showing Position of Mufindi District and Its Position in Tanzania (Location of the Study Sites).



The levels of awareness were determined by dividing the scores into four different categories namely no awareness, low awareness, moderate awareness and high awareness. Determination of the level of awareness of an individual group of respondents was made by adding total number of points in that group and then calculating its percentage. Thus, the level of awareness was determined using percentage of respondents.

Chi-square test was used to determine the significance worth of a relationship between two attributes. This was used to compare two

institutional relationships on community participation in forest management, namely government and NGO. A multiple regression analysis was used to show the relationship between socio-economic factors as independent variables and community participation in PFM as a dependent variable. The multiple regression equation used was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + e$$

Where; Y = dependent variable, i.e. community participation in PFM

X_1 to X_n = independent variables i.e. socio-economic factors

β_0 = a constant showing intercept for regression equation

β_1 to β_n = independent variables coefficients

e = error term

$i = 1, 2, 3 \dots n$

n = sample size (total number of respondents i.e. 120)

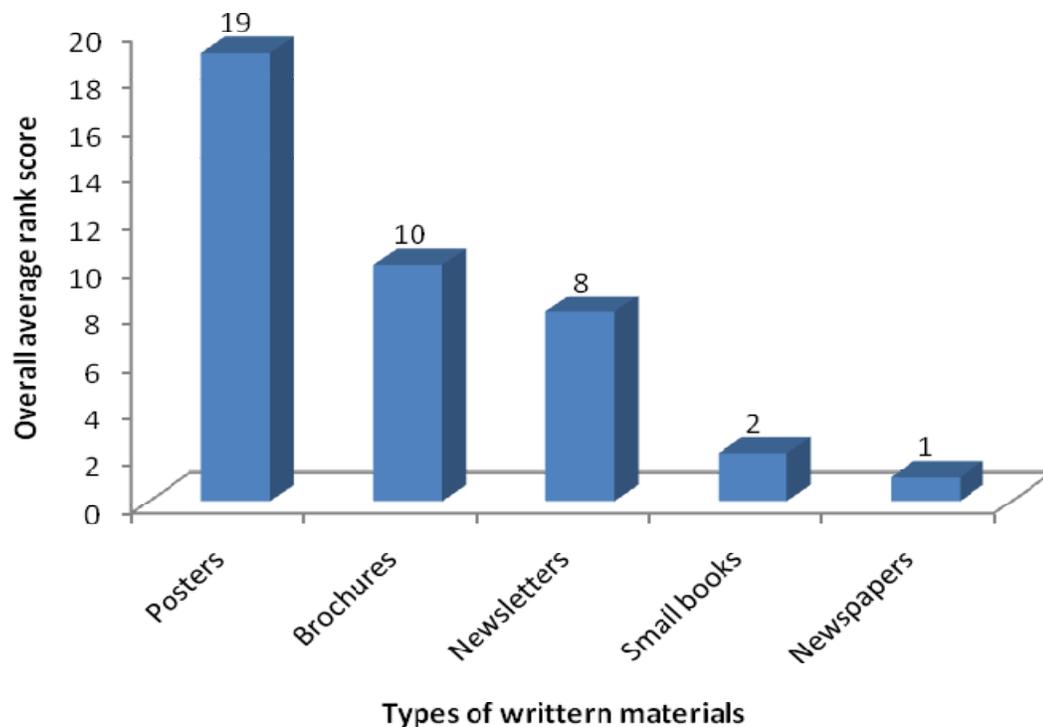
Results and Discussion

Types of Educational Materials and Communication Channels

The identified written materials include posters, brochures, newsletters, booklets and newspapers. Results revealed that posters were the most preferred and considered the best communication means among all (Figure 2) while newspapers were perceived the last and also the least in importance. These results are in line with previous studies (e.g. HIMADA project 2011). Posters, brochures and newsletters are given priority probably because of their form. These are normally colourful with illustrations including photos, diagrams and cartoons which attract literates and illiterates alike. Illustrations alone may enable even illiterate communities to have ideas on the key messages that need to be communicated. For instance, a poster with a fire prevention logo showing a forest burning and crossed with a red x letter will definitely enlighten an illiterate viewer that the poster is about fire prevention.

It was also revealed that the most important communication channels in the study sites include village meetings (100%) and seminars (95.8%). About 71% of respondents also acknowledged having received PFM information through cinema or video shows, while 55.8% receive such information from District Forest Officers (Government workers) and about 53.3% of them receive information via TFCG officers (NGO workers). About 31% of respondents received information through audiovisual methods, mainly radio. These findings are similar to those reported by HIMADA project (2011) for Kisarawe and Ilala districts with exception that in the latter districts radio ranked higher among audiovisual methods for communication.

Figure 2. Preference of Written Materials as Perceived by Respondents in Mufindi District, Tanzania



This disparity can probably be explained by the fact that the latter districts are located in urban and semi urban areas with good Radio transmission as opposed to study sites in Mufindi District (rural areas). In general, the results reveal a trend that PFM communication is facilitated through a range of media (Danicom 2002, FBD 2004). Village meetings were highly prioritized because they are mostly used as the main information channel in many levels at the district. This is probably because it was easy for extension workers to deliver information to more people in a village meeting or seminar compared to visiting individuals in field visits. The results show that public awareness can effectively be done by group methods. This is because they offer more opportunities for interaction than mass media such as radio which may reach quite a big number of audiences with no interaction or feedback mechanisms (MNRT 2005).

Awareness and Socio-Economic Factors Influencing Community Participation in PFM

Results showed high level (80%) of awareness among communities on PFM. This was also confirmed in focus group discussions and interviews. Most community members and heads of households were well informed and were able to express how they participated in various forest activities

including patrols in Village Land Forest Reserves, tree nursery management and tree planting.

Results also showed several socio-economic factors that had positive influence on promoting community participation in PFM. The factors observed to influence positively community participation in PFM include communication, education, public awareness, households annual income, duration of residence, land ownership and availability of extension agents (Table 1).

Table 1. Relationship between Community Participation in PFM and CEPA/Socio-Economic Factors

Xi	R ² = 0.649			
	B	SE	t value	P value
(Constant)	2.629	1.347	1.953	0.053
Education	0.912	0.171	5.348	0.000**
Age	-0.428	0.246	-1.743	0.084 ^{ns}
Duration of residence	0.002	0.006	0.266	0.791 ^{ns}
Major sources of income	-0.175	0.152	-1.152	0.252 ^{ns}
Farm size	-0.026	0.066	-0.386	0.701 ^{ns}
Households annual income	-0.432	0.171	-2.533	0.013**
Communication	0.840	0.292	2.880	0.005**
Public awareness raising	0.902	0.452	1.998	0.048*
Land ownership	0.564	0.331	1.703	0.091 ^{ns}
Availability of extension agents	0.456	0.237	1.922	0.057 ^{ns}

Dependent Variable: Community participation in PFM

Xi = Independent variables: (CEPA and socio-economic factors)

B = Regression coefficients

SE = Standard Error

T = Student's t-test

P = Significance level

R² = Regression of determination

* = Indicates statistically significance at 0.05 level

** = Indicates statistically significant at 0.01

*** = Indicates statistically significant at 0.001,

ns = Indicates statistically non-significant at 0.01, 0.001 and 0.05 levels

(a) Communication

Results (Table 1) show a statistically significant (p=0.005) and positive ($\beta=0.840$) regression coefficient between communication and community participation in PFM. This implies that, communities have adequate access to communication which leads them to participate more in PFM activities.

Effective communication enhances understanding and acts as an incentive for participation. These findings are in line with those reported by Danicom (2002) for Mkuranga, Morogoro and Muheza districts in Tanzania which showed that communication by itself promotes dialogue between stakeholders, which is the basic prerequisite for public participation in PFM.

(b) Education

Education showed statistical significance ($p = 0.000$) and positive ($\beta=0.912$) regression coefficient with community participation. This implies that sufficient education has been provided to local communities on PFM—something that builds interest and increases the willingness of people to adopt and participate in implementation. This observation is in agreement with the findings of Kajembe et al. (2004), who emphasized that to ensure full participation in PFM programmes, stakeholders at community level need essential skills and sensitization about their rights, responsibilities and expected returns. Mallik (2000) and TANGO (2004) also emphasized the importance of capacity building and attitude change among villagers. Furthermore, Kalineza et al. (2000) argued that knowledgeable farmers are expected to adopt new techniques quicker compared to those unknowledgeable.

These findings reveal low education level of forest adjacent communities with very few individuals having attained secondary education. This trend has also been reported by others including Mbwambo (2000). An increase in education level increases the level of awareness and thereby creates positive attitudes; this is crucial at all levels in order to enhance participation of all stakeholders (Katani 1999).

Table 2. Relationship between Education Level and Participation in PFM in Mufindi District, Tanzania

Education level of respondent	Participation in PFM		Total
	Yes	No	
No formal Education	18	2	20
Primary Education	85	7	92
Secondary education	4	0	4
Middle school	3	0	3
Adult education	1	0	1
Total	111	9	120

(c) Public Awareness

Public awareness was also statistically significant with positive regression coefficient. It indicated that as awareness increases in communities on a certain intervention, more people are able to participate. This signifies that participation in PFM activities will likely depend on community awareness, as also reported by Anim (1999) who concluded that awareness on land degradation and perception of the benefits to be accrued out of the forest management practices are crucial factors for investment and adoption of conservation measures. Furthermore, Matiko (2000) found that awareness on tree planting led to more trees being planted after the campaigns.

(d) Household Average Income

The signs on household average income (Table 1) imply that there was a strong association between household level of income and participation in PFM activities. The negative regression coefficient suggests that participation in PFM decreases with increase in income. Focus group discussions revealed that, households that are better-off have surplus income that could be diversified and invested in other investments including tea growing and processing or wood industry. It was further observed that high earning households engaged in tea business to have quick returns as tree growing took longer to realize profits. Dugilo (2009) also reported similar observation with wealthy households returning negative regression coefficients.

(e) Duration of Residence

Although duration of residence had positive ($\beta=0.002$) regression coefficient it was not statistically significant ($p=0.791$). The positive sign would mean that the longer an individual stays in a village (Table 3), the more he or she becomes interested in forest management.

Table 3. Duration of Residence for Respondents in Study Villages of Mufindi, Tanzania

Duration of Residence	Frequency	Percent
< 10 years	2	1.7
10 - 30 years	14	11.7
> 30 years	104	86.7
Total	120	100.0

This is probably due to the fact that people acquire land which enables them to plant trees. Luoga et al. (2000) also found that short-term residents were not very much committed to resource conservation as opposed to the local residents. However, the trends shown in Table 3 imply that most of the

respondents interviewed were born in the study areas and therefore might have no problems with land tenure rights for tree growing.

(f) Household Land Ownership

The positive regression coefficient for land ownership (Table 1) implies that forest activities are influenced by land and tree tenure in the study sites. In this study, 99.2% of the respondents owned farmlands and therefore had clear tree ownerships (Table 4). According to James (2004), there is a need to understand the issue of land and tree ownership on the same piece of land and to know who has the right to harvest some or all of the products at any time as these will determine the necessary incentives thereafter. It is also reported that high participation of the villagers in forest management in Iringa District was contributed by the fact that many people (87%) owned forest land (Mndolwa et al. 2009).

Table 4: Land ownership in the study sites, Mufindi, Tanzania

Land ownership	Frequency	Percent
Yes	119	99.2
No	1	0.8
Total	120	100.0

Adoption of Agro-forestry practices in western part of Uluguru Mountains in Tanzania is also reported to be contributed by land ownership for about 98% (Ruheza 2003).

(g) Availability of Extension Services

Results show statistically insignificant and positive regression coefficient between availability of extension services and community participation in PFM (Table 1). The positive sign denotes that farmers who received extension services were motivated to participate in PFM activities including tree planting. Such findings were also reported in Kilimanjaro Region, where availability of extension services motivated farmers in afforestation activities (Butuyuyu 2003). Generally, extension services in any sector are important incentives for farmers to adopt new innovations.

Conclusion

The study concludes that CEPA is an important tool in mobilizing conservation activities but not the only factor to encourage farmers or communities in forestry activities. Forest land tenure and availability of extension services are equally important factors. Group methods are important channels of communicating forestry activities like PFM and they

are trusted by local communities due to interaction and feedback opportunities compared to mass media channels.

Recommendations

For effective use of CEPA in forest management, the following are recommended:

- (a) A detailed comparative study is needed in different ecological regions of Tanzania to strengthen or verify the above conclusions.
- (b) Written materials should be published in adequate quantities, at least one copy per household and be distributed immediately after production. Posters and brochures with colour illustrations and local images are preferred.
- (c) At least one copy of the National Forest Policy, Forest Act and PFM guidelines should be provided to each village undertaking PFM for references.
- (d) Group methods such as village meetings are encouraged to promote awareness on new innovations at village levels especially in remote areas where illiteracy is high.
- (e) Government and Conservation NGOs are advised to enhance the use of CEPA in scaling up PFM activities in other regions across the country.

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