CLIMATE CHANGE AND FORESTRY

PRACTICES FOR TECHNICAL LEVEL FORESTERS

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CHAPTER THREE

PFM and Climate Change: The Synergy

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Overview

This chapter is about the concept of, current status of, and factors influencing Participatory Forest Management (PFM). The link between PFM and climate change is also described. Some examples are provided of how PFM is implemented and some illustrations of various factors influencing PFM in the country. The challenges and successes of PFM implementation in the country are also explained.

Evolution of PFM

During the pre-colonial era, forests were mainly managed using traditional rules and taboos. At some point during the colonial era, a fortress approach was dominant in the management of forests. This is the period when forest ownership was centralized, and fines and rules were introduced with the aim to achieve sustainable forestry. To date, a significant portion of forests in Tanzania is still managed using this approach, which excludes local people in the management of forest resources. Change of forest ownership from a customary system to a centralized regime, among other things, caused customary rules that were regulating land tenure, production and distribution on a sustainable basis to weaken (Barraclough and Ghimire, 1995). Consequently, community interest in conservation of forests and woodlands declined (Akida and Blomley, 2006).

Setting aside forests and woodlands for protection (forest reserves) remains the management strategy for conserving these resources in Tanzania. Throughout the 1990s there was an evolution from conventional to participatory approaches that comprise Community Based Forest Management (CBFM) and Joint Forest Management (JFM). CBFM is a participatory forest management approach practised on village land whereas JFM is a participatory forest management approach on private or government land. Pilot cases of community

participation in forest and woodland management included the "*Hifadhi Ardhi Shinyanga*" (HASHI) soil conservation project in Shinyanga Region, the Land Management Project (LAMP) in Arusha Region, the "*Hifadhi Mazingira*" (HIMA) environmental project in Iringa Region, the Soil Erosion Control and Agroforestry Project (SECAP) in Tanga Region, the Forest Resources Management Project (FRMP) in Tabora and Mwanza regions, the Tropical Forestry Action Plan (TFAP) in North Pare in Kilimanjaro Region and the Mbinga District Agroforestry Project in Ruvuma Region (FRMP, 1995).

The formal inception of PFM in Tanzania began in Duru-Haitemba in the form of CBFM in the early 1990s. Later, following the forest policy of 1998, the approach was adopted in various places in the country with a purpose of creating a 'win-win' situation, i.e. to ensure sustainability of forest resources and generation of benefits to local communities (Monela *et al*., 2000; Adams and Hutton, 2007). The Forest Act of 2002 and CBFM and JFM Guidelines of 2007 and 2013 respectively have put in place a formal process for the establishment of JFM and CBFM in Tanzania. With support from development partners, local and central governments, establishment of PFM has reached almost every district in the country. To date, Tanzania is among the first countries in Africa to have introduced and practiced PFM and one of the places where implementation of PFM can be studied.

Current State and Challenges of PFM

The current status of PFM implementation in Tanzania is summarized in Box 3.1.

Box 3.1 PFM Implementation Status in Tanzania

Total area of forest covered by JFM arrangements	5,392,095 ha
Total area of forest covered by CBFM arrangements	2,366,693 ha
Percentage of total forest area under PFM	16%
Number of villages involved in PFM	2285
The percentage of the total villages in mainland Tanzania involved in PFM	21.5%
Number of villages with declared/gazetted village forests or signed Joint Management Agreements (JMAs)	580
The number of districts where PFM is operational	77
Number of village land forest reserves under CBFM	899
Number of national and local authority forest reserves under JFM	249

Source: MNRT (2012)

PFM is promoted by the Forestry and Beekeeping Division (FBD), and Tanzania Forest Services Agency (TFS), and is supported by a range of bilateral donors and non-governmental organisations (NGOs). The assumption underlying PFM is that forest areas that are under CBFM or JFM are likely to have lower levels of disturbance as compared to forests either under exclusive state management or open access regime. It is becoming increasingly clear that PFM is not a panacea, and does not perform equally under all conditions. Three key factors influence the likelihood of PFM producing both economic and environmental returns (MNRT, 2009; Pressure and Meshack, 2016; Makata *et al*., 2015). The factors include:

Economic factors

For many poor communities, long-term environmental rehabilitation has high opportunity cost they simply cannot afford, and is faced with potentially competing land uses such as small scale agriculture (Abdallah *et al*., 2014). This emanated from the fact that most PFM are established on highly degraded forests. Consequently, potential incentives, returns and incomes in the early stages are minimal.

Market forces for forest products vary enormously across Tanzania and can both drive or hamper PFM processes. Where market forces are extremely high (such as near large urban centres), it may be impossible for villages to prevent the relentless and illegal forest harvesting by outsiders for charcoal and timber, thereby undermining the whole PFM objective. Where markets are weak (for example, due to poor roads or large distances from centres of demand), villagers may be unable to sell their produce and may become discouraged, although forests remain largely intact with abundant high value species. Where PFM areas are located adjacent to open access forest resources, illegal extraction of forest produce in non-PFM areas (and the subsequent low cost to producers) may undermine attempts by villagers to market their produce at a reasonable price (MNRT, 2009).

Legal factors

Under current arrangements, the long term viability of many JFM agreements in catchment forests seems questionable because of tenure. The forest land is under the ownership of the government and the communities are vested with mandate to manage the forest. Nevertheless, in most of JFM, the use right has not been provided. Further, legal challenges, including the widespread failure to sign and formalise

JMAs appear to undermine the effectiveness of JFM to provide 'win-win' (MNRT, 2009). There are inconsistencies between the National Forest Act and Land legislations leading to trees located on village land but outside village land forest reserves being considered as open access resources. This results in the disempowerment of communities to conserve forest resources on their lands. Provision for exemption of reserved trees and royalties schedules in village land forest reserves is not uniformly enforced thereby preventing communities from realizing the full benefit of tenure over trees on village lands.

Capacity, coordination and governance factors

Under this broad heading, one particular issue that stands out most strongly is capacity constraints at the local government level. Through local government reforms, district councils are increasingly taking responsibility for PFM service provision. PFM performs best when there is an active and engaged focal person who has a clear vision regarding the steps required to establish it. Such individuals are often found in districts where former district-based PFM projects operated, such as Lushoto (German Technical Cooperation Agency - GTZ), Babati (Swedish International Development Agency - Sida) and Iringa, Mufindi and Njombe (Danida). Further, enabling factors include: a strong interdisciplinary team, good collaboration with District Forest Managers (who fall under TFS but operate at the district level), the availability of suitable transport and strong support from the TFS or District Executive Director (DED) and other senior staff, resulting in swift processing of payments and accounts and rapid approval of bylaws and management plans. Districts constrained by institutional and capacity issues tend to be those which are experiencing conflicts between the focal person and other local government staff (such as the District Natural Resources Officer, or Treasurer, Planners or even DEDs).

In addition, some villages split into two or more after PFM establishment. Splitting of villages is usually done by local government authorities with the purpose of bringing social services closer to villagers. Some villages lose membership in PFM after the splitting. In other places, for example Mwakijembe and Mbuta Villages in Mkinga District in Tanga Region, village splitting has caused boundary conflicts (WWF, 2014). Such conflicts emerge when a village loses a forest and its membership in a PFM forest even if it was involved in its establishment. Also, in some places, splitting is reported to frustrate

PFM implementation and gazettement of unreserved forest land. For instance, Daluni Village in Daluni Ward developed Village Land Use Plans (VLUPs) in 2007, where 1000 ha of forest were demarcated as a village land forest reserve (VLFR). The process was financed and facilitated by the Mkinga District Council. Later, it was politically decided to divide the village into two i.e. Daluni and Ng'ombeni. Through its village assembly, Ng'ombeni decided to change the PFM forest land into agricultural land (WWF, 2014).

Elite capture is another issue that should not be taken for granted, especially where leaders under CBFM, e.g. village natural resource committees or the Chairman, overstay. This challenge has not surfaced very much in PFM areas, perhaps because they have not started harvesting. In other places, e.g. Sunya, Lengatei and Dongo (SULEDO) in Kiteto district, poor governance associated with elite capture prevailed (Abdallah, *et al*., 2013). It has resulted in dissatisfaction regarding how benefits for timber harvesting are distributed, and how the Zonal Executive Committee operates in the area. The same scenario might occur in other areas of Tanzania when harvesting begins.

Weather and climate changes

The indicators of climate change and variability include unreliable rainfall, increasing incidences of droughts, drying of wetlands and failure to predict the on-set of rainy season using indigenous knowledge. This has caused forest resources to be targeted as a means of dealing with food shortage, thereby increasing deforestation and forest degradation.

Potentials of PFM for climate change adaptation

Existing literature does not provide enough information about potentials of PFM for climate change adaptation in Tanzania. But PFM has been reported to improve forest conditions resulting from improved management (Treue *et al*., 2014). As reported by RECOFTC (2014), CBFM is expected to increase household assets and networking. However, implementation of CBFM in most parts of Tanzania has not delivered tangible benefits to communities. For example, in SULEDO, where timber harvesting has started to take place, financial benefits have not been realised at household level (UNDP, 2012). In addition, most CBFM forests have not generated livelihood assets (financial, social and physical capital) for households. On the other hand, the social capital that includes trust, networking, reciprocity, and norms has been realised due to PFM. These are some of the challenges which reduce

the chances for communities to adjust to climate change stressors under CBFM. Mainstreaming implementation of the climate change initiatives into PFM can improve livelihoods, reduce food insecurity and enhance forest conditions.

The Congo rainforests, which are one of the biggest left in the world, face damage from growing climate change and other threats. Analysis of satellite data of the Congo rainforests has shown intensification in the forest's decline. This decline was consistent with lower rainfall, poorer water storage below the canopy and a gradual change in the composition of species.

Mainstreaming Climate Change to PFM in Tanzania

To successfully address climate change challenges, a number of institutional changes will be needed. In this context, institution refer to rules that govern management and use of natural resources. Macqueen and Vermeulen (2006) suggest institutional changes that will enable local ownership and access to forest resources; developing framework for local monitoring and analysis of climate change impacts, and building institutional responsibility for adaptation strategies. Agrawal (2008) emphasises the importance of assessing and strengthening local institutions, developing locally appropriate solutions and linking actors at various scales. Most fundamentally, land use managers at all levels will need to use any existing mechanisms that allow people in particular settings to adapt their own systems more effectively as their conditions change. The above mentioned institutional changes also contributes to improving PFM. Therefore, because PFM is already practised in Tanzania it can be used as an entry point to address climate change interventions. Some of the activities that are implemented under PFM include awareness raising and strengthening of forest institutions to enhance good governance.

The National Forest Policy, currently under review, maintains PFM as one of the priorities for promoting Sustainable Forest Management (SFM). Therefore, the easiest approach to tackling climate change problems through forestry-related solutions would be to mainstream adaptation and mitigation approaches to PFM. The revised Forest Policy stresses that climate change is seriously impacting forests and forest ecosystems and therefore the environment. On the other hand, forests are important sinks for removing CO_2 from the atmosphere and are currently used to mitigate future climate change. Deforestation, forest

degradation and other land use changes contribute to greenhouse gas emission. Thus, REDD+ is also being considered as a climate change mitigation measure. Tanzania is engaged in developing the capacity, knowledge and mechanisms to participate in REDD+ activities. The initiative currently provides incentives for afforestation and reforestation activities in developing countries. However, due to limitations in capital, technology and institutional capacity in Tanzania, this opportunity has to a large extent not been fully tapped (Muyungi, 2008).

Chapter Summary

Introduction of PFM was a result of the failure of the fortress approach to meet the goals of natural forest management in the country. The Forest Policy, the Forest Act, the National Forestry Programme and the majority of projects place emphasis on PFM. PFM is being implemented in about 16% of the total forest area in Tanzania, with JFM and CBFM as models of the PFM. The total number of villages involved in the PFM is about 21.5% of the total villages in mainland Tanzania. However, PFM has a number of challenges, some of which include fewer tangible benefits, climate stressors, and poverty in rural areas. The link between climate change and PFM is obvious because a well-managed PFM has potential to adjust and/or mitigate climate change effects. Some of the PFM challenges can be minimised through implementation of climate change initiatives. This chapter recommends more research on the link between climate change, forests and PFM. One topic could be sensitivity of forests and woodlands under PFM to climate change and resilience level. Elite capture in PFM is a problem that may be addressed through information and education so that the poor may enhance their share of forest incomes through democratic processes.

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