

## Emerging Values of Forests: The Case of Kenya

M.T.E. Mbuvi<sup>1</sup>, P.O. Ongugo<sup>2</sup>, J. O. Maua<sup>3</sup> and C.K. Koech<sup>4</sup>.

### Abstract

Kenyan gazetted forests cover a mere 1.7% of the country's surface area which is far below the recommended 10% forest cover for ecological stability. Hence, forest management approach is for environmental and biodiversity conservation. This approach is likely to compromise the PFM objective of improving livelihoods of the Forest Adjacent Communities (FAC). The methodology involved a case study of five sites, representing various ecological zones and cultural diversity in Kenya. Tools used included semi-structured questionnaires and Rapid Rural Appraisal. These were complemented by focused group discussions and in depth interviews. Emerging values of forest range from water for irrigation and sale, to eco-tourism, dry season grazing and non-resident cultivation among others. PFM however faces challenges and constraints. Timber and pole exploitation have been banned and firewood collection has been facing resistance from special interest groups like bird watchers who view this as destruction of habitat for specific taxa, some of which are endemic. Therefore, PFM in most forests in the country is likely to be shunned by the community who view the forests as their bridge to improved livelihoods. This bleak future for Kenya's PFM has been brightened by ever emerging values of which have witnessed communities' link forest management through PFM to: butterfly farming, Aloe vera farming, and silk moth farming, among many other livelihood improvement activities that have been linked to their participation in forest management. Resultant community capacity building coupled with organizational development has resulted in PFM community based organizations access forest management, community livelihoods project funds which the communities are using to further enhance their well-being status and ability to manage the forests better. Thus, the emerging forest values are a blessing to PFM implementation in Kenya without which it would be a challenge to introduce PFM in most forests in the country.

### 1 Introduction

Kenyan gazetted forests cover a mere 1.7% of the country's surface area which is far below the recommended 10% forest cover for ecological stability. Hence, forest management approach is for environmental and biodiversity conservation. This approach is likely to compromise the PFM objective of improving livelihoods of the Forest Adjacent Communities (FACs). There has been a ban on timber exploitation in all forests since 1982 including plantation forests, most of which are past the

---

<sup>1</sup> Senior Research Scientist, Kenya Forestry Research Institute, Kitui Regional Research Centre, P.O. Box 892, Kitui, Kenya. Tel 254 44 22311; 05 733 908 951; e-mail [mtembuvi@hotmail.com](mailto:mtembuvi@hotmail.com).

<sup>2</sup> Principal Research Scientist/Assistant Director and National Programme Coordinator, Kenya Forestry Research Institute, P.O. Box 20412, Nairobi, Kenya. Tel 254 02 32891/2 05 722 820660; e-mail [paulongugo@msn.com](mailto:paulongugo@msn.com).

<sup>3</sup> Senior Research Scientist, Kenya Forestry Research Institute, Muguga Regional Research Centre, P.O. Box 20412, Nairobi, Kenya. Tel 254 02 32891/2 05 721; e-mail [mauajo@yahoo.com.com](mailto:mauajo@yahoo.com.com).

<sup>4</sup> Research Scientist, Kenya Forestry Research Institute, Maseno Regional Research Centre, P.O. Box 25199, Kisumu, Kenya. Tel 254 053 251164; e-mail [koechkjprono@yahoo.com](mailto:koechkjprono@yahoo.com).

maturing age. Indigenous forests which would have provided multiple products have also been affected by a presidential ban.

Therefore, even if PFM is to be introduced, this calls for off-forest activities supported by forest-based activities that will provide benefits to the communities within what is allowable ecologically and by law.

## 2 Methodology

Field surveys were conducted in five forest sites representing various ecological zones and cultural diversity in Kenya. The information was collected through Rapid Rural Appraisal tools which included focus group discussions and community feedback to validate the findings through a community general assembly. Semi-structured questionnaires were used on a sample of the community which represented different community ability-to-live categories. The categories were developed through a participatory process where communities developed the ranking criteria and categories, and assigned each household a rank. This was further reconfirmed in assembly. The survey sought to answer the following questions:

- Can PFM contribute to poverty reduction by providing rural people with a sustainable and equitably distributed stream of net benefits greater than those obtained under a non-PFM situation?
- If yes, how significant are the benefits (in relation to other income-generating activities and sources of livelihood) for different well-being groups? If no, what are the key negative impacts of PFM – and on whom do they fall – and are there ways of minimizing, mitigating or reversing these?
- How do the impacts (both positive and negative) on poverty and equity of different forms of PFM compare? What changes in policy, institutions and legal frameworks have the potential to enhance the contributions of PFM to poverty alleviation?

The forests where the study sites were located included the Arabuko-Sokoke forest, Abedares, Kakamega, Loita and the Imenti forest section of Mt. Kenya.

## 3 Results and Discussion

In all forests visited it was evident that the Forest Adjacent Community with very close forest interaction is the one living within a distance of 0-1 km of the forest. This was also common with pastoral communities some of whom even live in the forest but have interests extending several kilometres away from the forest. PFM should involve these communities directly while putting in place mechanisms for providing materials to forest-users who are not members and distant users.

In Kereita, communities living more than 1 km away have very little interaction with the forest but still rely on the forest for different products (Fig. 1). Those within 1 km radius should be involved in participatory forest management because they also make most use of the forest, whether legally or illegally, depending on the cost of conserving or destroying it compared to the benefits they derive from it.

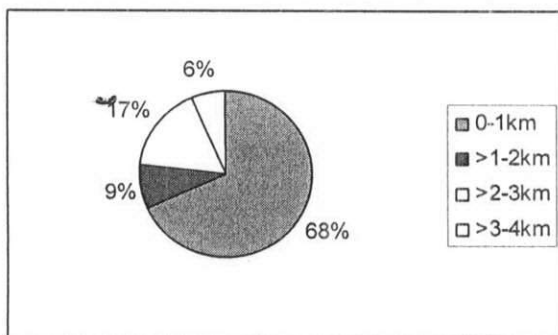


Figure 1 Kereita forest adjacent community: distance from home to the forest edge

### 3.1 Emerging values

The emerging values of forest are varied and range from water for irrigation and sale of seedlings, to eco-tourism, dry season grazing and non-resident cultivation among others.

In Kenya, forest exploitation has been banned, except for the non-timber forest products that communities can exploit. These activities are known to generate income for forest adjacent communities. They include sale of seedlings from private nurseries, *Aloe* spp. farming, butterfly farming and apiculture among others.

### 3.2 Grazing and milk production

Across the wealth ranks there is a marked reduction in income from milk between 2005 and 1995 as a result of the ban on grazing in the forest. Fodder and grass from the forest determine the yield of milk (Fig. 2) and milk production in the Kereita Forest is therefore directly related to access to grazing in the forest.

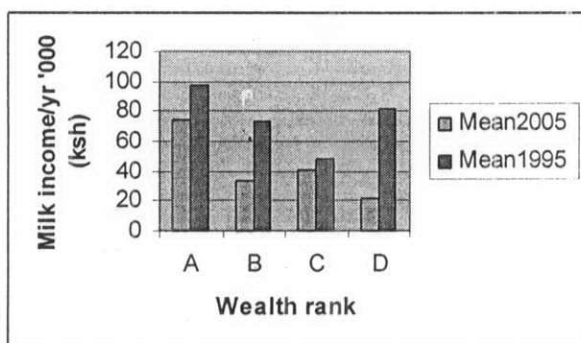


Figure 2 Comparing incomes from milk in 1995 and 2005 in Kereita site

### 3.3 Issues related to settlement and cultivation in the forest

Forest areas are becoming prime areas for settlement and farming such crops as maize, beans and vegetables. This is emerging prominently among pastoral communities as a forest-based livelihood source that leads to high yields and results in quick returns since crops take a shorter time to provide returns than livestock (3 to 8 months against 3 years). This is a food insecurity coping strategy but the high crop yields and cash returns are posing a major threat to the forest ecosystem. Crop

farming has raised the value and importance of land especially in Loita, where fencing of plots and demarcation are now evident. PFM however faces challenges and constraints.

Timber and pole exploitation have been banned in all forests. Though firewood collection is allowed in high biodiversity forests like Arabuko-Sokoke and Kereita forest, the communities have been facing resistance from special interest groups like bird watchers, who view this as habitat destruction of specific species, some of which are endemic. Therefore, PFM in most forests in the country is likely to be shunned by the communities, who view the forests as their bridge to improved livelihoods because of their high potential for income-generating activities.

In other forests, communities rely on forest water to grow horticultural crops like potatoes, carrots and flowers. Peri-urban communities from Kereita and Meru (Upper Imenti) forests have markets in Nairobi and Meru towns respectively. The impact of the ban on non-residential cultivation on communities living adjacent to the forest is illustrated by the reduction in income in 1995 and 2005 (Fig. 3). The Forest Act No. 7 of 2005 allows cultivation but poses a challenge, given that it is not allowed in the forest and that PFM therefore has to provide similar levels of benefit.

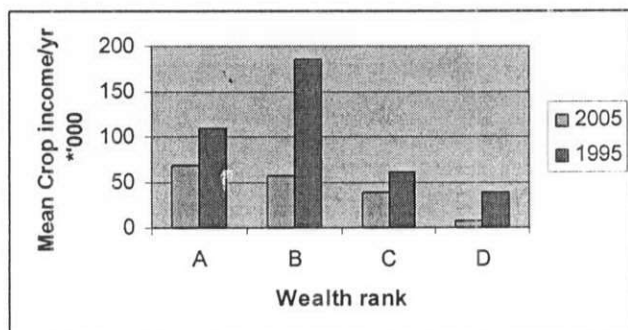


Figure 3 Income from vegetables produced in Kereita, 1995 and 2005

### 3.4 Water for domestic use and irrigation

Figure 4 shows various sources of water used by the Kereita community. The majority (33%) of the local communities derive water from streams and rivers emanating from the forest. Piped water has its source from dams in the forest. This is now attracting levies that communities feel should be ploughed back for protection and rehabilitation of water catchment areas.

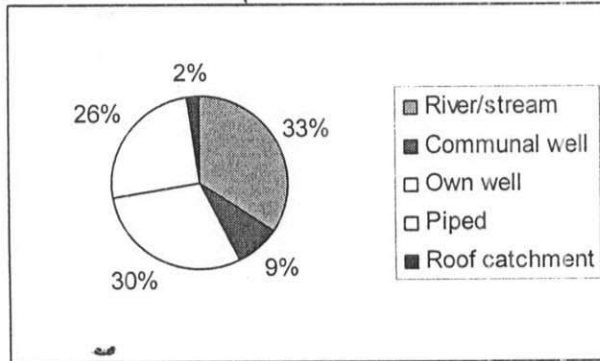


Figure 4 Sources of water used by the Kereita community

### 3.5 Eco-tourism

It is an important activity in forest areas with diverse flora and fauna. The uniqueness of some of the species attracts tourists, for instance for bird watching in the Kakamega and Arabuko-Sokoke forests.

Trekking is a potential tourist activity in the dryland hill top forests whose potential for exploitation is very low. Forest cycling along forest roads and trails is becoming common, especially in the Arabuko-Sokoke and Kakamega forests but also in the Kereita Forest, and there is a recognised potential in the Loita Forest.

The community in the Kereita Forest has constructed a community resource centre and owns camping tents in Kakamega and Arabuko-Sokoke forests. Proceedings from these activities directly benefit the community, contrary to mainstream tourism which benefits established hotel chains.

### 3.6 Aloe farming

Emerging global interest in herbal-based products has revived interest in aloe farming. In Kenya, indigenous *Aloe* species exploitation has been going on for decades albeit illegally as there is a presidential ban on its exploitation in the country to date. Exotic *Aloe* farming is being introduced as its exploitation is not affected by the ban. Communities have started its exploitation for local use through making soaps, shampoos and insecticides for external markets.

### 3.7 PFM challenges

Though the emerging forest values portray a bright future for PFM, at the same time the PFM process faces challenges that need to be addressed concurrently.

The challenges are due to the fact that in Kenya PFM requires communities to join through a membership subscription fee. This is likely to keep out the poor because they rely on casual labour which is unreliable unlike A, B and C who have alternative sources of income. Agriculture, livestock and business in Kereita are reliable sources of income since they are within the Kenyan highlands and peri-urban community salaries for category B and C are reliable as they are employed. Unless there are deliberate PFM programmes that target the poor, they are not likely to benefit. Also PFM involves a lot of meetings and members being assigned responsibilities like

patrolling, forest boundary road clearing, holding awareness meetings, etc. the poor who live a hand-to-mouth lifestyle cannot afford.

Despite the above challenges, PFM is improving the livelihoods of the participating communities, which is reflected by those communities participating in the emerging forest activities in Arabuko-Sokoke Forest where PFM has been practiced since 1997 (Fig. 6). In well-being category A, PFM related income is contributing 34.5% of the PFM participating total income and also about 13% for category D.

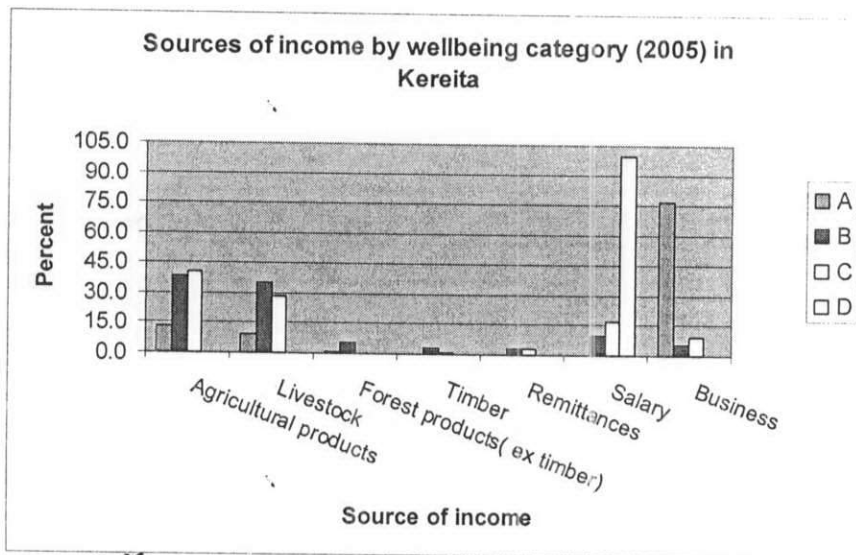


Figure 6 Sources of income for Kereita community by well-being categories in 2005

The PFM related income that the community are getting in Arabuko-Sokoke Forest include sale of *Casuarina equisetifolia* seedlings, sale of poles from the same species on their farms, and beekeeping. In addition, there is butterfly farming and *Aloe vera*. Wealth categories C&A had the highest contribution of income from PFM related activities (Fig. 7). The highest PFM related income is Ksh 50,000 for category A while category D gets an average of Ksh 2,500 per year in Arabuko-Sokoke forest.

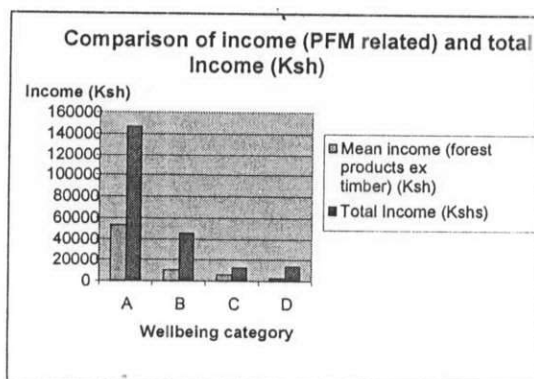


Figure 7 PFM and general income data for Arabuko-Sokoke Forest Dida PFM site community



The benefits are not uniform within the community and the poor are still getting the least though in real terms it is a very important income to them (Fig. 8).

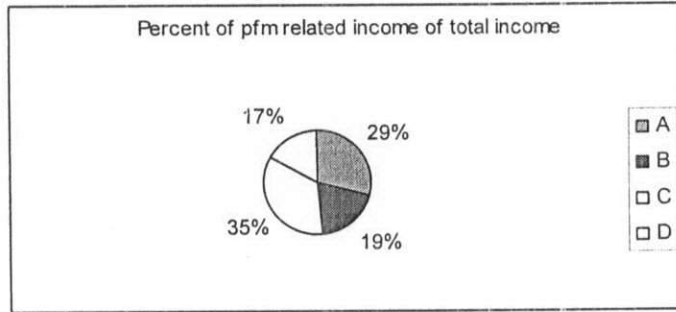


Figure 8 Percent of PFM related income to total income to different well being categories

This income is even very different in different parts of the country. When comparing Kereita Forest to Arabuko-Sokoke Forest, the incomes disparities are very high (Table 2 and Fig. 9).

Table 2 General income data for Kereita Forest adjacent community

Well-being cat.	Average income/year (Ksh)	Average expenses/year (Ksh)
A	84,318,333.30	81,212,666.67
B	402,849.00	228,241.00
C	78,450.00	101,044.50
D	9,450.00	12,575.00

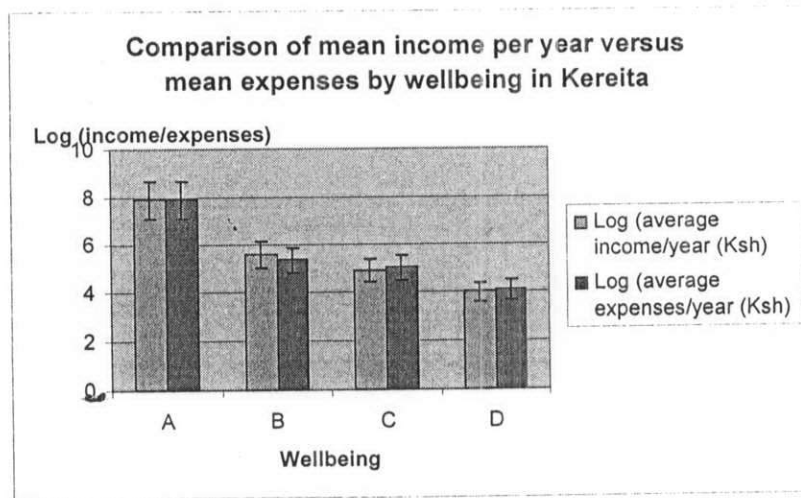


Figure 9 Mean incomes for Kereita community across well-being categories

The other PFM process challenges are i) increasing the income to compensate opportunity costs, ii) expanding the IGAs in terms of volume and numbers (types), iii) providing markets for the products, iv) maintaining a link with the emerging values

with the forest, and PFM, and v) maintaining a stream of benefits to the poor and other disadvantaged group in the society.

## **Conclusion**

PFM is contributing to the livelihoods of participating communities and the general community through the provision of public services like environmental products, like water, etc. to enhance the benefits, mechanisms are required to ensure the poor and other vulnerable members of the community access benefits. In some cases, this will require deliberate actions like provision of beehives to HIV/AIDS affected/infected households free or in kind. The PFM process costs like membership fee to join community forest associations, and time spent in meetings which is keeping away the poor may require further deliberation so that they do not serve as a barrier to the poor inclusion in the PFM process. Though the benefits are low, they require partnerships to be built with non-PFM actors like business people, service providers like marketers, agriculturists, entomologists, mycologists, etc., to increase the emerging values in both volume and numbers for PFM to be instituted well in Kenyan forests.

## **Acknowledgements**

We are grateful to the European Union through Care International and the Government of Kenya for providing funds for this study, and the Overseas Development Institute and Humboldt University for technical support. Special thanks go to the forest adjacent communities from all the study sites.

## **Literature Consulted**

- Government of Kenya. 2002. Arabuko-Sokoke Forest management plan 2002–2027.
- Koech, C.K., Maua, J.O., Ongugo P. O., Mbuvi, M.T.E. and Othim, R.A. 2007. Isecheno Forest adjacent community rapid rural appraisal on participatory forest management – Kakamega Forest. KEFRI/EMPFORM-ARPIP Report No. KEFRI/NF/3/(a) 2007.
- Maua, J.O., Ongugo, P.O., Koech, C.K. and Mbuvi, M.T.E. 2007. Kereita Forest block adjacent community rapid rural appraisal report on participatory forest management. Kenya Forestry Research Institute. KEFRI/EMPFORM-ARPIP Report No. KEFRI/NF/1(a) 2007
- Mbuvi, M. T. E., Ongugo, P. O., Koech C. K., Maua J. O., Othim R. A. 2007. Naimina-Enkiyo Forest and Loita Maasai Community Participatory Forest Management Rapid Rural Appraisal Report KEFRI/EMPFORM-ARPIP Report No. KEFRI/NF/4/ 2007.
- Mbuvi, M.T.E, Ongugo P.O., Koech, C.K., Maua, J.O. and Othim, R.A. 2007. Upper Imenti Forest adjacent community rapid rural appraisal report on participatory forest management, Meru Central District Mt. Kenya. KEFRI/EMPFORM-ARPIP Report No. KEFRI/NF/5/2007.