Title: Participatory Forest Management in Arabuko Sokoke Forest in Kilifi County, Kenya

Target Audience: Forest adjacent communities, farmers, extension agents, learning and research institutions

Introduction

Participatory Forest Management (PFM) was started in Kenya on a pilot basis in Arabuko Sokoke Forest (ASF), Kilifi County in 1997. This management approach was adopted upon realization of continued over-exploitation and destruction the forest as forest adjacent communities were not involved in any planned forest resource use or participation in decision making. The PFM pilot project was initially started in three villages in Kilifi County, namely; Dida, Kahingoni and Kaftisoni. However, with time 18 other villages have incorporated PFM activities.

The pilot PFM was a collaborative undertaking between various institutions that included; Kenya Forest Service (KFS), Kenya Forestry Research Institute (KEFRI), Kenya Wildlife Service (KWS), National Museums of Kenya (NMK), Birdlife International (BI), Nature Kenya, USaid, local administration, traditional leaders, Arabuko Sokoke Forest Adjacent Dwellers Association (FADA) and forest adjacent communities.

The aim of the pilot project was to bring together forest adjacent communities in partnership with other stakeholders to manage the forest in a participatory manner under the PFM arrangement.

Objectives

The PFM objectives included:

- Participating in forestry conservation through sustainable utilization of forestry resources by the forest adjacent communities.
- Creating opportunity for livelihood improvement through on-farm forestry-based activities.
- Community involvement in forest protection and fostering sustainable socio-economic and environmental management of Arabuko Sokoke Forest.

Approach

In the past, communities living adjacent to Arabuko Sokoke Forest had inadequate knowledge on sustainable forest management, utilization and conservation, resulting to forest over-exploitation and consequent degradation. Forest was degraded mainly through wood over-harvesting for charcoal production, over-grazing in the forest, dumping of waste, as well as forest encroachment through settlements and farming activities. The aim of the initial PFM was to carry out participatory forest management on pilot basis. The pilot area covered a stretch of 14 km along the forest, 3 km inside and 5 km on farms adjacent to the forest. The pilot site covered 3 villages, namely; Dida, Kahingoni, and Kaftisoni. Each village set up a committee known as Village Development and Forest Conservation Committee (FCC), namely; Dida FCC, Kahingoni FCC and Kaftisoni FCC. These three villages formed a Community Forest Association (CFA) known as Dida Forest Adjacent Area Forest Association (DIFAAFA).

Participatory Forest Management processes and activities included the following:

- Identification of a forest area to undertake PFM activity.
- Carrying out stakeholder analysis to include; community, government agencies and development partners.
- Establishment of a planning committee.
- Formation of an organization structure.
- Formation of Participatory Forest Management team.
- Feasibility studies using Participatory Rural Appraisal (PRA) approach.
- Social mapping to understand the social setting of community through identifying livelihood status (rich and poor households), gender distribution of households, population data in terms of demography and density.
- Fuelwood consumption rate assessment.
- Identification of who uses the forest products.
- Identification of Income Generating Activities (IGAs) to be undertaken in the forest and on farms adjacent the forest.
- Undertake forest resource assessment in the 3 km inside the forest.
- Collect data on available resources on farms along a 5 km strip adjacent to the forest.
- Calculate off take levels using data collected, e.g. how much forest products can be removed every year.
- Draft a management plan detailing proposed activities to be undertaken.
- Periodically review the management plan.

Zonation of the PFM forest area

- The community user groups jointly with officers from KFS and KWS zoned the forest to demarcate it for use, based on consensus and available resources. Zonation was done by marking with the most preferable colour codes as identification criteria. The colours used were blue, red and yellow. Blue demarcated pole collection and butterfly trapping zone and distance from 1 km to the next inside the forest. Yellow demarcated utilization zones while red demarcated the monitoring and evaluation zones. User groups were allowed to utilize 3 km area inside the forest from the edge, where the first 1 km was used for pole collection. The second 2 km was used for firewood collection. The point from the third 3 km, to the rest of the forest was earmarked as

biodiversity conservation zone, which also marked the end of the PFM area. The three zones formed a Forest Management Unit (FMU).

- On farms, along the 5 km adjacent to the forest, forestry-based resources were identified and social mapping of the population undertaken.
- The combination of the three colours vertically starting with Blue, Yellow, and Red placed like a flag at the beginning of every kilometre is a signal the person carrying out any activity that the user is already in the PFM area and in a certain zone.
- Where the flag (combination) of the three colours is followed by a Red colour, then the user automatically knows that he/she is in a monitoring zone.
- If the three colours are followed by the Yellow colour, the user in the forest automatically knows that he/she is in the utilization zone.
- Combination of Red and Green colours demarcates the outer boundaries of the PFM zone.
- Zone 1 is used for pole cutting and the butterfly trapping as the principal activities. Pole wood is cut in any one FMU at any period and then piled in one central place for distribution to the community members for domestic or for commercial use.
- Participatorily agreed and designated areas are used for the hanging of beehives by beekeeper user group. Collection of the herbal medicine is done in the fuelwood collection and the pole wood cutting zones, but not in the Monitoring or the Biodiversity conservation zone. Herbal medicine harvesting is allowed but debarking or removal the roots is prohibited.
- Zone 2 is used for fuelwood collection as the principal activity. A specific FMU for use at any one time is allowed. Fuelwood for domestic use is collected on a mutually agreed day and only dead wood is allowed for collection. Fuelwood for commercial use is gathered at an identified yard in Dida or other villages. When the fuelwood is being cut from a central FMU the community operates from one FMU. When at the extreme ends the communities work from two FMUs to avoid the cases of walking over 10 km to collect the fuelwood.
- Zone 3 is used for biodiversity conservation where non-extractive use, such as eco-tourism activities e.g. bird watching and monthly bicycle riding are allowed.
- The Monitoring zone is for monitoring the effects of the authorized PFM activities on the biodiversity and general condition of the forest i.e. assess if PFM is improving forest conservation, productivity and the community livelihood. Monitoring transects were established, and the initial baseline data for poles and fuelwood status documented.

For on farm activities, community members created user groups aligned to various Income Generating Activities (IGAs) that included; beekeeping, butterfly farming, *Aloe vera* farming, fish farming, chili growing and tree nursery establishment and management as well as value addition enterprises on forest derived products.

Impact

- PFM have managed to bring together forest adjacent communities in partnership with other stakeholders to manage the Arabuko Sokoke forest in a participatory manner and arrangement.
- The communities have improved income from IGAs such as; beekeeping for honey production, agroforestry activities, butterfly farming where pupae were sold to

Kipepeo Butterfly Farming Project, tree nurseries, herbal medicine, Aloe farming, fish farming, mushroom farming and sericulture through silk worm rearing.

- On farm activities have also contributed to; soil and water conservation, improved soil fertility, enriched biodiversity, improved food security, improved resilience to climate change and improved livelihood. Trees have also improved microclimate, aesthetic value and act as windbreak.
- Community empowered through training and undertaking various activities.
- On-farm tree planting has been adopted thereby reducing dependency on the forest, consequently reducing forest degradation.
- Planting of indigenous species on the farms, has increased tree cover and biodiversity conservation.
- Community gained awareness on importance and processes of environment conservation.
- Eco-tourism created an alternative income generating activity.
- The pilot is a role model for neighbouring communities who may wish to start PFM.
- Created job opportunities for communities.

Innovations and Success Factors

- PFM has brought together the communities adjacent to Arabuko Sokoke forest in conservation through sustainable utilization of resources.
- Value addition of Aloe products by making cosmetic products such as; body lotion, hair shampoo, hair conditioner and soap, which are of good quality and serve as an income generating activity.
- Vetting all NGOs which have to be approved by Arabuko Sokoke Management team ensured working in groups with a common agenda.
- Benefit sharing – all categories of gender have access and benefit from forest resources.
- Documented PFM activities through video for wide scale use in other parts of country.

Constraints

Some of the constraints experienced by Arabuko Sokoke communities include:

- Challenges in undertaking forest resource quantification.
- Low wood volumes, which are not sufficient for off take as expected.
- Unclear policy on benefit sharing mechanisms for accrued revenue.
- Inadequate enforcement powers to prosecute illegal forest poachers.
- Insufficient reliable market avenues for various products.

Lessons Learnt

- When communities are involved in PFM, sustainable forest management can be achieved.
- Communities can be used to conserve natural resources thereby improving ecosystems and increasing plant species diversity.
- PFM forms an integral part in improving livelihood of communities through income generating activities.
- PFM is transforming the forest adjacent community from unlawful users of forest products to conservationists.
- PFM activities have created job opportunities for the community members.
- Involvement of the community led to a cordial relationship with government agencies such as Kenya Forest Service (KFS).
- Use of local knowledge to train the community is an effective capacity building approach.
- Success of PFM is dependent on IGAs, which provide immediate cash benefits to PFM community members.
- There is need to develop small and medium scale enterprises (SMEs) that provide immediate alternative incomes to ensure continued participation in PFM as the communities may not wait for a longer period for trees to mature and be harvested for income.

Conclusion

PFM is a good management tool for natural forest protection, conservation and sustainable utilization as long as forest adjacent communities are empowered and have alternative income generating activities. Participatory management through creation of user groups aligned projects such as beekeeping, *Aloe vera* farming, fish farming, chili growing and tree nursery are viable enterprises and has potential to; improve communities income, conserve environment, and enhance mitigation and adaptation to climate change.

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Compiled by: Michael Mukolwe, Josephine Wanjiku and Esther Njenga