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# Linking Local Communities Livelihoods and Forest Conservation in Masindi District, North Western Uganda

A. Kugonza, M. Buyinza and P. Byakagaba
Forestry and Nature Conservation, University of Makerere,
P.O. Box 7062, Kampala, Uganda

**Abstract:** A study was carried out in Masindi district, north western Uganda to establish the role played by local people in the management of forests outside protected areas and determining local forest resource use and conservation practices. A sample of 160 (98 men and 62 women) respondents was selected from 16 parishes in 4 sub-counties of Masindi district. Participatory Rural Appraisal (PRA) tools which, included direct interviews and questionnaires were used in data collection. The results obtained from the chi-square ($\chi^2$) and cross-tabulations tests suggest that both men and women play an important role in Community-based forest management with varying proportions. Willingness to participate in forestry management is affected by gender, ethnic background and literacy level. Indigenous conservation practices by local communities in different parishes mainly focused on tree growing practices. Community-oriented forest management systems should be an integral part of the national forest plans and therefore, communication linkages should be established between government agencies and user groups such as the rural women and low-income households, who heavily depend on forest resources for their livelihoods.

**Key words:** Forest management, gender, land ownership, participation, Masindi district, Uganda

## INTRODUCTION

In the past decade, the management of natural resources in general and forests in particular has been characterized by extensive state control without involvement of the local community (Turyahabwe *et al*., 2007). The National Forestry Authority (NFA) in Uganda like any other national government forest institution in the developing countries has been notably un successful in the efforts to design an effective and uniform set of rules to regulate forestry resource use across a broad domain (Banana *et al*., 2007). The government lacks both financial and human resource to monitor the use of these resources effectively mainly because the forest patches are small and scattered over a large area (Buyinza and Nabalegwa, 2007). This has compelled them in the current forest policy to shift control of forest resources especially, those outside protected areas to the community level in an attempt to improve management. This lowers monitoring costs and it is more effective.

The trend of current forest management and conservation is moving towards the approach of Community Based Forest Management as probably, the best means of reducing global forest management and conservation problems (Banana *et al*., 2007). In Uganda, the Forestry Policy of 2001 promotes development and sustainable management of natural forests and tree components on the non protected areas through promotion of the best practices such as promotion of participation in forest management on government or customary and private land (Buyinza and Naguula, 2007). Despite the existence of several natural resource management practices in most regions of Uganda, there is still an increasing rate of natural habitat loss through practices like charcoal burning and for agricultural expansion (Turyahabwe *et al*., 2007). There is need therefore to identify the best management practices in order to reduce forest management and conservation problems.

Given the increasing interest in forestry resource management currently experienced in Uganda and with local communities as key stakeholders, their roles in CBFM are important elements for policy formulation, review and decision making (Banana *et al*., 2007). This study therefore, focused on establishing the role played by local people in promoting community management of forests outside protected areas and determining local forest resource use and conservation practices in Masindi district.

**Corresponding Author:** M. Buyinza, Forestry and Nature Conservation, University of Makerere, P.O. Box 7062, Kampala, Uganda

## MATERIALS AND METHODS

**Study area:** The study was conducted in Masindi district, located approximately, 31018°-32°21'E and 1° 21°-2° 34'N in the North-western part of Uganda. It's bordered by Gulu, Apac and Nebbi districts in the North, Nakasongola and Hoima in the South and South western and the Democratic Republic of Congo in the West. The district has 4 counties namely Buruli, Kibanda, Buliisa and Bujenje with a total area of 9326 $km^2$. The total geographical area of the district is about 9326 $km^2$ out of which, 1031 $km^2$ is gazetted as forest reserves. This constitutes about 8.8% of the total land mass. There are 17 Central Forest Reserves, of which Budongo forest is the largest (79% of total area under forest). The district has an abundant Savanna grassland resource. This vegetation ranges from forest-savanna mosaic to dry savanna.

The rainfall pattern is generally bimodal having 2 growing seasons. The highest rains are normally received in March-May and August-November. The maximum rainfall recorded is 1200 mm. The district is predominately agricultural with a biggest percentage (95%) of the population having their source of livelihood from agriculture. Fishing is also, a major source of income from the population leaving around Lake Albert and Kyoga. The 2002 Uganda population and housing census indicated that the population of Masindi district was 260,823 with 50.6% male and 49.4% women. Of the total population 46.2% was child population (0-14 years). The district has an annual population growth rate of 2.4% per year with a rich cultural heritage. It has multiethnic population composed of the indigenous Banyoro and immigrants like the Alur, Lugbara, Madi, Lendu, Baruli, Bagungu and Luos from the north.

**Research design:** The study was a survey, qualitative in nature and a cross-sectional design was used to collect data on relevant variables only once from a variety of people. Survey techniques like questionnaire, review of existing documents, key informant interviews and observations were used in data collection.

Random sampling was employed to select four of the sub-counties that are out of the gazzetted/protected area and then four parishes were selected out of the identified sub-counties randomly. Random sampling technique generated a sample without systematic bias hence, better quality empirical data. Forty respondents were selected from each sub-county to make a sample size of 160. A sample of 160 respondents was desired because it was representative and could be based on to generalize the study findings. Ten other key informants were purposively selected for the study. These included local leaders, government officials and the staff of NFA. The reason for their inclusion is that they are believed to be more knowledgeable about the management of the forest and can be used to triangulate some of the information provided by the local respondents.

**Data management:** Qualitative methods of data collection were used in the study. Semi-structured questionnaires administered to obtain specific information on a number of variables. This was used since, some of the respondents in the study sample are illiterate. Two group meetings were organized by the interviewer. In this the relevant areas of interest were discussed among the local people with guidance from the interviewer/researcher. This was used since it was thought to generate more detailed information about the topic of interest.

With the aid of SPSS (Ver. 10.0) computer package, chi-square ($\chi^2$) test were run to determine whether there was any association between willingness to participate in CBFM and social-economic factors in the different parishes of the respondents. Cross tabulations were used to determine the most dominant responses on indigenous knowledge practices among local communities in forest resource use and conservation.

## RESULTS

**Gender distribution of roles in CBFM in Masindi District:** The roles played by men and women in promoting community forest management varied according to gender (Table 1).

Tree planting and management was the most mentioned role, followed by responding to fire emergencies and promoting other alternative income generating activities to reduce pressure on forest resources was the least mentioned. The number of men and women who participated in each of the roles mentioned in Table 1 varied significantly apart from those

Table 1: Gender-based distribution of roles in CBFM

| Role | Men (N = 98) | Women (N = 62) |
|---|---|---|
| Tree planting and management | 76 (78) | 49 (79) |
| Nursery establishment | 37 (38) | 25 (40) |
| Monitoring forest activities, planning, formulation of policies | 29 (30) | 9 (15) |
| Responding to emergencies such as fires | 55 (56) | 23 (37) |
| Refraining from illegal activities | 32 (33) | 16 (26) |
| Protected area management | 13 (13) | 4 (6) |
| Participate in community conservation education and activities and biomass conservation technologies | 17 (18) | 4 (6) |
| Other alternative sources of income (Apiary, fishing….) | 12 (12) | 1 (2) |

Figure in parentheses indicate the percentage of each category

Table 2: Factors influencing willingness to participate (N = 160)

| Factors | Willing | Not willing | Total | $x^2$ calculated | $x^2$ tabulated |
|---|---|---|---|---|---|
| **Age** | | | | | |
| Young | 57 | 26 | 83 | 2.453 | 3.841 |
| Old | 49 | 28 | 77 | | |
| **Education level** | | | | | |
| Literate | 100 | 47 | 147 | 7.629 | 3.841 |
| Illiterate | 6 | 7 | 13 | | |
| **Distance from forest sites** | | | | | |
| Adjacent/bordering | 23 | 16 | 39 | 1.221 | 3.841 |
| Not adjacent | 83 | 38 | 121 | | |
| **Gender** | | | | | |
| Male | 80 | 18 | 98 | 26.764 | 3.841 |
| Female | 26 | 36 | 62 | | |
| **Income level/month** | | | | | |
| High (>50,000) | 28 | 8 | 36 | | |
| Medium (10,000-40,000) | 40 | 18 | 58 | 4.552 | 7.815 |
| Low (<10,000) | 38 | 28 | 66 | | |
| **Source of livelihood** | | | | | |
| Main source | 10 | 3 | 13 | | |
| Alternative | 93 | 47 | 140 | 2.377 | 7.815 |
| Others | 3 | 4 | 7 | | |
| **Land ownership** | | | | | |
| Private | 91 | 40 | 131 | 3.342 | 3.841 |
| Government | 15 | 14 | 29 | | |
| **Background** | | | | | |
| Indigenous | 76 | 24 | 100 | 11.338 | 3.841 |
| Immigrants | 30 | 30 | 60 | | |

Participation level's $x^2$ calculated ($p>0.05$) $<x^2$ tabulated ($p>0.05$), hypothesis accepted

involved in tree planting and nursery management. In all the different roles identified men participated more than women.

**Factors influencing community participation in forest management:** The attitude of people towards community forest management is dependent on literacy level, gender and background as illustrated in Table 2.

In respect to age, the hypothesis was based on the assumption that community participation is not affected by the age of participants. For this analysis, respondents were categorized as young and old. The ages below and above 35 years were considered as young and old, respectively. The results of the chi-square ($\chi^2$) analysis showed that, there was no significant difference between the age groups and their participation. In other words, both age groups had equal level of participation.

The assumption was that there is no association between literacy level and willingness to participate in CBFM. The findings showed that 82% of the literate respondents willingly participated compared to only 46% of the illiterate. The chi-square ($\chi^2$) analysis indicated that willingness to participate in community forest management was significantly affected by the respondents' literacy levels. The assumption was that community participation is not affected by the distance respondents cover to access the forest sites. No significant relation was observed between the respondents' accessibility to forest sites and extent of participation. Respondents' adjacent/bordering the forest site however showed a higher degree of participation (62%) compared to only 37% of respondents living in villages far from the forest sites.

It was assumed that gender does not affect participation in CBFM. High degree of participation was observed among the men (82%) compared to 42% women. A chi-square ($\chi^2$) analysis indicated a significant difference between men and women towards participation in other words; men and women had unequal levels of participation.

**Respondents annual gross income and extent of participation:** The respondents were categorized into three income groups; high, medium and low. The assumption was that annual income of respondents was not associated with willingness to participate in CBFM. It was observed that all the three groups willingly participated. The only difference was in the degree of participation among the high, medium and low (78, 69 and 58%), respectively. The chi-square ($\chi^2$) test indicated that difference in income levels of people has no significant impact on their willingness to participate in community forest management.

**Respondent's source of livelihood and willingness to participate:** It was hypothesized that the respondents' source of livelihood has no association with their willingness to participate in forestry management. The

respondents' source of livelihood was characterized into three, forests as main sources of livelihood, forests as alternative source others (do not depend on the forests).

Both respondents who mainly depended on forest (75%) and those who considered forests as an alternative source of livelihood (66%) showed a higher level willingness to participate in CBFM compared to respondents who never depended on forests for their livelihood (43%). The results of the chi-square ($\chi^2$) test showed that source of livelihood had no significant impact on willingness to participate in CBFM.

**Land ownership status and participation:** The assumption was that secure land ownership in form of private ownership had no effect on the extent of community participation. The majority (87%) of the respondents were on private land compared to only 13% on Government land. A high percentage of non-participation was observed from respondents on Government land (48%) compared to 24% of respondents on private land. The chi-square ($\chi^2$) test showed no significant relationship between the extent of participation and land ownership.

**Respondents' background and participation:** It was assumed that community participation depends on the respondents' background. For this analysis, respondents were categorized into 2 groups as indigenous and immigrants. A high level of participation was observed among the indigenous (71%) compared to 50% of the immigrants. The chi-square ($\chi^2$) test indicated that there is a significant difference in their willingness to participate in CBFM.

**Role of policies and sectoral legislation in promoting community forest management:** The Land Act, National Environment Statute, Local Government Act, Wildlife Statute and the Forestry Policy were the laws and policies, respectively identified to have an influence on CBFM. Table 3 shows opinions, number and percentage of respondents on private and government land on whether the identified laws and policies are being implemented.

There was no significant relationship between land holding type and opinion on whether the National Environment Statute, Local Government Act, Wildlife Statute, Uganda Forestry Policy and the Land Act were being implemented in Masindi district or not. Majority of the respondents mentioned that the Local Government Act, Wildlife Statute, Uganda Forestry Policy and the Land Act were being implemented. Respondents only varied in their opinions on whether the National Environment Statute was being implemented or not.

Table 3: Laws and policies to CBFM under private and government land holdings

| Policy/laws | Private | Government | Total | $x^2$calculated |
|---|---|---|---|---|
| **National environment statute** | | | | |
| Yes | 38 (29) | 9 (31) | 47 | 0.047 |
| No | 93 (71) | 20 (69) | 113 | |
| **Local government act** | | | | |
| Yes | 104 (79) | 21 (72) | 125 | 10.945 |
| No | 27 (21) | 8 (28) | 35 | |
| **Wildlife statute** | | | | |
| Yes | 67 (51) | 14 (48) | 81 | 0.780 |
| No | 64 (49) | 15 (52) | 79 | |
| **Uganda forestry policy** | | | | |
| Yes | 80 (61) | 15 (52) | 95 | 0.860 |
| No | 54 (39) | 14 (48) | 65 | |
| **Land act** | | | | |
| Yes | 107 (82) | 27 (93) | 134 | 2.277 |
| No | 24 (19) | 2 (7) | 26 | |

$x^2$calculated ($p>0.05$) $<x^2$tabulated ($p>0.05$), hypothesis accepted. Figure in parentheses indicate the percentage of each category

Table 4: Indigenous forest conservation practices in Masindi District

| Indigenous practices | Parishes adjacent (N = 60) | Not adjacent (N = 100) |
|---|---|---|
| Inter cropping | 37 (62%) | 84 (84%) |
| Boundary marking | 52 (86%) | 92 (92%) |
| Cultural taboos/myth | 49 (78%) | 48 (48%) |

Figures in parentheses indicate percentage of each category

**Indigenous conservation practices used by local communities:** The local people in this area carry out intercropping, boundary marking and employ taboos in conservation of forests or trees (Table 4).

The 84% of local people in parishes not adjacent to forest and game reserves had integrated tree components in their farming systems compared to 62% in adjacent parishes. Also, 92 and 86% reported boundary marking, respectively and the most common species used was *Dracaena fragrans*. Cross tabulations showed that, people on farmlands far from forest sites have integrated agro-forestry practices more than those on farmlands bordering the forest sites. And more indigenous knowledge on cultural values that is attached to forests thus, resulting in forestry development was observed among people living in parishes adjacent to the forests than those in parishes not adjacent.

## DISCUSSION

**Roles of men and women in community-based forest management:** Various roles are played by both men and women in CFM. However, in all the roles identified, men were dominant and some reported constraints to women's participation included; women's needs differ from those of men, many programmes tend to over look women's specific needs regarding forestry. This has resulted in political, cultural and economic barriers that restrict women participation. Buyinza and Naguula (2007)

also, noted that policy makers lack data, information and methodologies to address these constraints, He added that if community forestry management approach is to succeed then local people especially women should be stakeholders in policy formulation and decision-making.

Some women also, reported inaccessibility to tree resources like timber, imbalance in sharing revenue accruing from tree products, unequal opportunity to conservation education and training and the general under valuation of women's roles in sustainable forestry management. This corroborates with Muhereza (2006) who reported that women tend to be more dependant than men on trees and small scale forest industries for income. They sighted one case in Uttar, Pradesh, India, where women derived 34-45% of their income from forests and common land, compared with only 13% of men. Although, a significant proportion of the forestry industry work force is made of women, their roles are not fully recognized or documented.

**Factors that influence communities willingness to participate in CBFM:** A wide range of social economic factors that influence participation by local communities in a Community Forestry Management were reported. Regardless of age, many people were willing to participate in CBFM because they had realized the importance of forestry in their livelihood strategies. As scarcity of forest functions was already reflected for example as firewood, both age groups reported energy crisis for domestic use, brick making and brewing while, others reported shortage in timber and poles that had resulted into decreased employment opportunities in pit sawing, construction and craft materials and reduced income from sales. All of these factors could explain the similarity in opinion as regards to willingness to participate in CBFM.

Higher percentage (54%) of illiterate respondents was unwilling to participate in CBFM mainly because they miss out on necessary information and training on sustainable tree conservation. Others reported that the sources of information and training centers such as NFA, NEMA and the department of lands had not integrated local languages into their extension dissemination that would have helped the illiterate group in understanding community forestry programs. Buyinza and Nabalegwa (2007) also, made similar remarks that education is significantly related to the source of information (in terms of language, media) from which, farmers sought knowledge on plant conservation.

Respondents adjacent to forest sites and those far away did not significantly vary in terms of willingness to participate in CBFM probably because both categories had similar attachment and value of forest resources in the area. There was a significant difference among men and women in terms of willingness to participate in CBFM. This could because there is always gender imbalance between the rights and responsibilities over the forest resources. Women normally have multiple, often, disproportionate responsibilities, little ownership or control over productive resources.

This imbalance in the ownership and control over resources places women in a subordinate and disempowered position relative to men and therefore, they are forever dependent.

As a result, both men and women have contrasting perceptions, priorities and goals. Due to social discrimination, a big proportion (40%) of women in Uganda are illiterate, they have a minimal role in decision making, men are not willing to share power and community leaders may not invite women to meetings related to tree resource management (Buyinza and Nabalegwa, 2007). However, women are very willing to participate effectively if the situation is improved as suggested by Lise (2005).

A variation in income did not significantly affect the level of participation of local people in CBFM. This probably is because government support through NFA and other donors targeting the poor as a way to eradicate poverty have continuously supported local people in terms of input supply, in form of quality tree seeds, access to rural finance and marketing information and support on contractual issues such as legal agreements on CBFM.

Source of livelihood and participation in CBFM was not significantly related. This probably was due to similar value that the respondents attached to CBFM. Rural people tend to share a lot in common interms of occupation and source of livelihood hence, opinions on management of their Natural resources is most likely to be similar. Even some of them who reported that they had small plots of land that was only enough for their subsistence farming, nevertheless there was considerable evidence that these respondents had interest in CBFM.

Most respondents in the study area are tenants or (*Kibanja holders*). Very few own land tittles but most have written agreements and therefore could not adopt any tree planting practices for example farmers on government land reported that trees are seen as fairly permanent investments and so they are not willing to plant them on their farms unless they are sure of owning them. It was also noted that although, the land act (1998) provides tenure rights on land, absence of a national use policy directly or indirectly impacts on CBFM practices sighting that some land tenure types like customary tenure discourages tree planting and is always associated with conflict of interest.

A significant difference in participation among the indigenous Banyoro and immigrants was mainly because the immigrants were insecure about the land and tree tenure and difference in cultural values each attached to forests. A higher positive attitude by indigenous people was because of the indigenous knowledge about tree management they had acquired over generations.

**Role of policies and sectoral legislation in promoting CFM:** Among the laws and policies that influence effectiveness of CBFM; the Land Act was the most mentioned. The number of respondents who thought that the land act was not being implemented was significantly higher than those who thought it is being implemented. This probably is because of poor sensitization on this law.

The majority of the respondents were of the opinion that the local Government Act had been implemented. This could have been because through the decentralization system of governance in Uganda, the local government of Masindi has district local councils (from LC5-LC1)) which, deal with functions such as resolving tenure conflicts. The district environmental services include sensitizing local communities on environmental issues. Muhereza (2006) also, noted that the local government structure is an ideal tool for the participation of the ordinary people in governance and decision-making that help conserve the biodiversity or those affected by a particular effect of conservation or otherwise.

Few people thought the Uganda Forestry Policy, Wildlife Statute and National Environment Statute were implemented in this area. Some respondents reported that, the local environmental committees that emerged under the National Environment Statute have mobilized the community and encouraged them to have a voluntary self–help in planting trees and managing them on their private lands. Also, traditional/cultural practices that are compatible with principles of sustainable management are acceptable. However, the statute has not integrated local communities in its policy and decision-making process.

Further more, members adjacent to the forest and Game reserves (Game parks) thought that the wildlife policy had been implemented. They reported that the policy introduced benefit sharing where the board pays 20% of the park entry fees collected back to the local communities surrounding wildlife areas through the local government. This money has been used to build health centers, classrooms, protected water sources and many more. This allows local communities to have interest in protecting wildlife. Some also, reported that, after payment of a prescribed fee a person can acquire wildlife use rights, which would entitle them to among other things to farm (grazing), trade or use wildlife for education and general extraction (food, poles). However, they also criticized the policy of not including the local communities on the UWA board in Masindi district. They see the resource benefit such as employment opportunities going in the hands of outsiders and for this local residents have some times shown little cooperation with the conservation authorities.

**Indigenous knowledge held by the local communities in forest management:** Many organizations in community forestry management have integrated indigenous knowledge into their regulatory framework. They demonstrated a desire to utilize and protect indigenous knowledge and species in the management of the forest resource. Tengele forest communal land association members expressed a desire to protect mother trees (large indigenous tree species) for timber production while, other cited use of indigenous knowledge was Agro-forestry practices such as boundary planting to delineate the community forest area. Indigenous species planted include the valuable colonizer timber trees species such as *Terminalia, Maesopsis, Khaya* and *Acacia.* So, far 8 ha out of the 100 ha of the degraded forest have been rehabilitated.

An alternative to indigenous species is planting of locally non-indigenous fast growing pine trees (for timbers) and Eucalyptus for fuel wood and building poles) but have additional risks such as forest fires. The lack of indigenous knowledge among some locals was attributed to the knowledge having not been dynamic enough to meet local needs and the great influx of immigrants who have failed to capture and share the knowledge of the indigenous Banyoro but have still continued with illegal destructive timber harvesting and poaching on gazetted forest and game reserves.

The attitude towards agroforestry differed with distance of households from the park and the natural forest boundary. A negative attitude was shown by people residing in parishes adjacent to the park and natural forest. The farmers reported that they incurred economic losses from crop damage by wild animals.

## CONCLUSION AND RECOMMENDATIONS

This study has revealed that public awareness on community forestry management has been created in Masindi District and the local people (user groups) have now been integrated at some stages of community forestry development irrespective of their social, cultural

and economic characteristics. Gender, ethnic background and literacy are the factors that influence willingness to participate in CBFM in this area and men are the key plays in forest management.

The indigenous conservation practices focused mainly on tree growing. It was also, observed that indigenous knowledge in management of forests is necessary since, it is based on shared norms and behavior pattern of the entire population of the geographical area in a system of common obligations. However, the influxes of immigrants who do not share the same norms and beliefs can and have led to the weakening of community participation in forest management.

Community management systems should be an integral part of the national forest plans, therefore, communication linkages should be established between government agencies and user groups for example, the rural women and low-income households, often most heavily dependent on forest resources need a much greater voice in management decision-making.

International agreements and Donor programs supporting this sector should reflect the importance of integrating forest-dependent communities into the planning process. It is necessary to develop policies and programs that recognize customary and traditional systems. This is based on the fact that resource-use regulations are often best applied by primary users living in the area, who possess long term goals supportive of sustainable forest management based on socio-cultural and ecological values as well as on economic needs. Further studies, should be carried out in other district to find out the effect of land size in promoting forestry development in Uganda.

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