

ABSTRACT

Globally, community involvement in forest management has been hailed as an effective strategy to achieve both conservation and livelihoods improvement goals. Consequently, most developing countries in Asia, Africa and South America have adopted various models of community-based forest management approaches albeit with different labels. In Uganda, two main approaches have been embraced in the forest sector: collaborative forest management (CFM) and community forestry (CF) to achieve the twin goals. Uganda's CFM approach promotes co-management of a specified area of a state forest with an identifiable local community group while the CF approach grants *de jure* rights to community groups to manage and own proceeds from specified forest resources to enhance socio-ecological benefits. However, since their active promotion ushered in by the country's forest sector reforms of the late 1990s, there is paucity of empirical research evidence on conservation and livelihood outcomes that are attributable to these initiatives. To fill this gap, this study used a mixed methods research design incorporating a biophysical forest inventory, cross sectional household survey and key informant interviews to generate the conservation and livelihood outcomes of CFM and CF.

Forest inventory data were collected in compartments with similar management histories under different forest tenure forms (CFM, inactive-CFM and non-CFM) in Budongo Central Forest Reserve. The data were collected in 2003 and 2016. Inventory data were also collected from two *de facto* community forests located in the Budongo Forest landscape in 2006 and 2016. These data were used to assess spatial and temporal changes in forest structural attributes and vegetation characteristics under the different tenure forms in the Budongo Forest Landscape. The area has been a hub of experimentation of the community-based forest management initiatives in the country, rendering it as a suitable site to generate lessons for management, policy and research. Guided by insights from the Sustainable Livelihoods Approach (SLA), a cross-sectional survey of 423 households was conducted in 2018. This quantitative phase aimed to generate quantifiable effects of CFM and CF on household assets, livelihood strategies, perceived wellbeing and poverty levels. In addition, a qualitative phase involving 32 Key Informants Interviews was incorporated to gain insight into the lived experiences with the implementation of the community-based forest management initiatives to better explain the results generated from the quantitative phase. The livelihood outcomes were assessed using suitable counterfactuals after Propensity Score Matching (PSM).

Ordination results following a Non-Metric Multidimensional Scaling (NMDS) show significant changes in tree communities in the non-CFM compartment. The CFM compartment registered a net increase in basal area (Wilcoxon rank-sum test: $Z = 2.667$, $p = 0.008$), attributable to much lower rates of commercial charcoal processing (Kruskal-Wallis test: $\chi^2(2) = 6.967$, $p = 0.031$). There were no significant differences in the count of pit sawing sites (Kruskal-Wallis test: $\chi^2(2) = 0.511$, $p = 0.775$) recorded in the different tenure forms. Charcoal processing sites were mostly limited within a one-kilometre segment of the forest edge-interior distance while pit sawing sites occurred where ever there were human trails and target tree species of merchantable sizes. Illegal timber extraction was perpetuated by powerful outsiders while charcoal processing was dominated by

local area residents for cash income. In the community forests, net declines in the basal area of tree species locally preferred for poles and charcoal were recorded. The densities of those preferred for timber significantly increased as a result of their heightened protection by community members. However, the community members still faced challenges of apprehending rulebreakers due to the high costs involved and their informal recognition as responsible bodies since the two forests have not yet been declared “community forests” as required by law.

CFM has significantly enhanced household access to legally-sourced forest products from both the state forest ($p = 0.014$) and on-farm ($p < 0.001$). However, it has reduced the participants' dependence on forest environmental income ($p = 0.004$) while no significant changes in total household income were recorded ($p = 0.385$). CFM did not significantly impact on the vulnerability status and perceived wellbeing of its members. However, it reduced the proportion of member-households living below the poverty line from 60% to 45.9%. The *de jure* status of the CFM groups and Communal Land Associations (CLA) has served as a source of security for members to access credit and information. It has also offered a platform for conservation and development partners to promote alternative livelihoods schemes that target increased dependence on on-farm income through enhanced market access for non-traditional crops. Wealthier non member households had better access to illegally sourced valuable commercial timber and charcoal in the state forest compared to the less-wealthy households. Participation in CFM and CF have significantly improved household access to natural, social and financial capitals ($p < 0.05$). No significant improvements in social and human capitals were recorded ($p \geq 0.05$). In the CFM sites, higher levels of livelihood diversification were pursued by households where the household heads had resided in the village for longer periods and had household members belonging to other social groups in the village. In villages adjacent to the community forests, only household dependency ratio positively influenced the household livelihood diversification. Households in the study area mostly pursued survival-led livelihood diversification pathways as opposed to those with accumulation-led focus.

It is recommended that conservation and development agencies should enhance access to high return on-farm and non-farm livelihood income activities and enhance sustainable market access for farm produce. This could partly be achieved by building and promoting sustainable non-farm business models among the community-based forest management groups. In addition, deliberate management interventions should be instituted to curb illegal human activities and enhance regeneration and recruitment of target tree species *in situ*. The gains made by the community-based forest management initiatives despite the numerous institutional challenges faced reveal their potential to achieve conservation and rural livelihood enhancement goals in Uganda.