

Adaptive Collaborative Management in Forest Landscapes

Villagers, Bureaucrats and Civil Society

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4 Gender and adaptive collaborative management in forested Ugandan landscapes

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Introduction

While the concept of participation has been a part of development thinking and the political process for the last two decades, today it has become mandatory for planning any natural resource management and development project. Participation is viewed by development scholars and practitioners as a crucial element in enabling poor and marginalized groups to exert greater influence over institutions and decisions that critically affect their lives.

In forestry, participation has been promoted through approaches such as collaborative forest management and/or adaptive collaborative management where decision making by forest adjacent communities in making rules related to enforcement and benefit sharing has been formally acknowledged by the state (Mukasa et al. 2016). Developing countries adopt varied participatory approaches (Banana et al. 2013). Despite design differences, they all aim to ensure better forest governance and management as well as improved livelihoods. However, the question of who participates and why remains critical for those interested in sustainable forest management. The Government of Uganda has undergone reforms since the late 1990s, most of which have recognized gendered issues and the importance of people's participation in the management of development programmes. In 2016, the Ministry of Water and Environment developed the "Environment and Natural Resources Subsector Gender Mainstreaming Strategy, 2016–2021" to reduce unsustainable environmental resource management as well as reduce poverty resulting from inequalities in environmental resource use, access and management (GoU 2016).

In the forestry subsector, Uganda has developed different forest management regimes, with each regime having different effects on user communities and on gender (Banana et al. 2012, 2013; Mukasa et al. 2016). Although Uganda's forest policy highlights the need to ensure the integration of gender concerns and issues into the development of the forest sector, the National Forestry and Tree Planting (NFTP) Act does not provide measures to enforce the gender intentions of the policy; consequently, neither the National Forestry Authority (NFA) nor the Forest Sector Support Department (FSSD)

has any guidelines on how to mainstream gender in their respective programmes and activities (GoU 2001). The forestry subsector's specific strategies highlighted in the Environment and Natural Resources Subsector Gender Mainstreaming Strategy for the NFA and the FSSD have not been fully adopted (GoU 2016). Consequently, men still dominate the arena of planning and decision making regarding the use, access and management of forest resources, and women's views are often under-represented, implying that women's practical and strategic needs may not be addressed. Women's involvement in forest management and development – such as we see here – has been identified as crucial in achieving Sustainable Development Goal 5 (Lee et al. 2016). Better progress can be made towards this goal if participatory forest management initiatives such as ACM are institutionalized and implemented throughout the country.

In the mid-2010s, we applied CIFOR's adaptive collaborative management approach (ACM)¹ across several districts in Uganda to strengthen women's rights to forest and tree resources and to increase their participation and leadership in forest decision making (Mukasa et al. 2016; see also Chapter 5, this volume, where Mukasa et al. highlight the governance arrangements, practices and processes that are central to enhancing gender inclusion and the transformation of underlying values and norms in community forestry). Here, we discuss the results of a nationwide study looking at the gender gap in participation and representation in community forestry; we specifically examine the determinants and quality of men's and women's participation in forest management, gendered use of forest resources and factors that influence dependence on forestry resources. Although our initial emphasis was on women's involvement in forest management, we later realized we could analyse our data to assess the effectiveness of ACM in this regard by comparing ACM versus non-ACM sites. Here, we consider the policy implications of whether participatory forest management approaches such as ACM can help reduce the gender gap in forest management and decision making.

Methodology

Study area and sampling

We conducted a nationwide intra-household survey in 2016 to ensure that findings would be broadly relevant for different forest management regimes in Uganda and provide a robust basis for national/regional-level policymaking. Study sites were purposively selected to maximize sub-national variation in socio-cultural and ecological conditions. The survey covered eight districts of Uganda located in various regions of the country (Figure 4.1) and across four agro-ecological zones: Albertine Rift and Afromontane agro-ecological zones in western Uganda; the Lake Victoria basin in central Uganda; the Aswa river plain in northern Uganda; and the short grasslands agro-ecological zone in eastern Uganda.

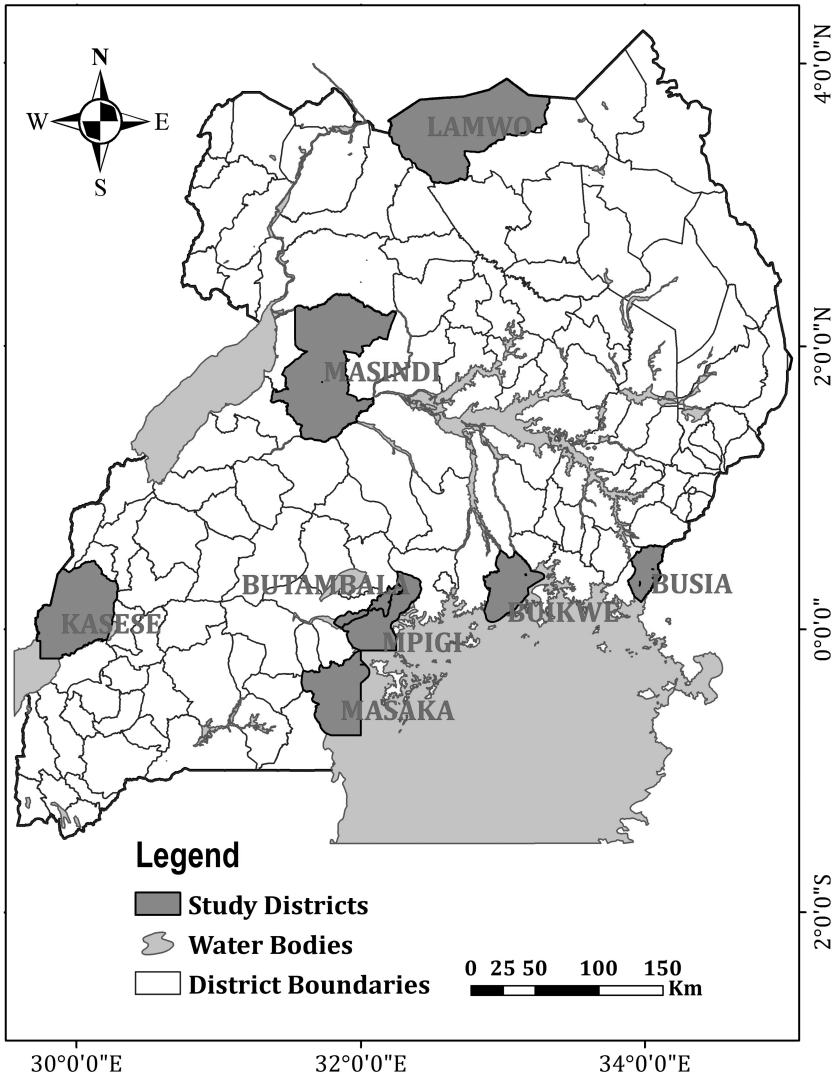


Figure 4.1 Study sites.

The Lake Victoria basin in central Uganda with six sites (including four ACM sites with an ethnically homogenous population and two ACM sites with ethnically heterogeneous populations) is dominated by tropical high forests and forest plantations under multiple tenure regimes and several forest governance arrangements (see Table 4.1). The region is also densely populated with primarily the Baganda and Basoga ethnic groups. The Afromontane region in western Uganda, with four sites (including two ACM sites), is

Table 4.1 Study areas (sites with ACM indicated by ★)

District	Village	Main ethnic group	No. HH	No. Respondents	Forest management tenure	Ecological zone
Kasese	Masure	Bakonjo	45	90	Rwenzori Forest National Park	Afromontane
	Kyambughho★	Bakonjo	44	88	Rwenzori Forest National Park	Afromontane
	Bunyandiko	Bakonjo	45	90	Rwenzori Forest National Park	Afromontane
	Maghoma★	Bakonjo	45	90	Rwenzori Forest National Park	Afromontane
Masaka	Kagologolo★	Baganda	45	90	Nabajuzi private Tropical High	Lake Victoria Basin
	Bukeeri★	Baganda	45	90	Private Tropical High Forest and Pine Plantation	Lake Victoria Basin
Butambala	Ntolomwe	Baganda	25	50	Kizikibi Tropical High Forest Reserve	Lake Victoria Basin
	Nkiinga★	Baganda	21	42	Nabajuzi private Tropical High Forest	Lake Victoria Basin
Mpigi	Mbazzi★	Baganda	45	90	Lwamunda Tropical High Forest Reserve –converted to plantation	Lake Victoria Basin
Buikwe	Nakalanga★	Baganda	30	60	Mabira Tropical High Forest Reserve	Lake Victoria Basin
		Basoga				
Masindi	Buvunya★	Baganda	30	60	Mabira Tropical High Forest Reserve	Lake Victoria Basin
		Basoga				
	Kyempundu	Banyoro	20	40	Bitamzire private Tropical High Forest Reserve	Albertine Rift
Masindi		Alur				
	Nyabigoma	Banyoro	20	40	Budongo Tropical High Forest Reserve	Albertine Rift
Lamwo	Orom West	Lugbara	27	54	Orom Gog savannah woodland communal forest	Aswa river plains of N Uganda
	Orom Central	Acholi	13	26	Orom Gog savannah woodland communal forest	Aswa river plains of N Uganda
Busia	Syaule	Basamia	26	52	Busitema forest reserve – Tropical dry forest with savannah woodlands	Short grasslands agro-ecological zone – E Uganda
		Banyole				
		Bagweri				
		Itsodi	526	1052		

dominated by the Rwenzori Forest National Park and the Bakonzo ethnic group. The two sites in the Albertine Rift in western Uganda are dominated by tropical high forests under state or private governance arrangements. The region is sparsely populated with several ethnic groups. The Aswa river plain of northern Uganda, with two sites, is dominated by savannah woodlands under customary governance arrangements. The region is sparsely populated with the Acholi ethnic group. The one site in the short grasslands agro-ecological zone of eastern Uganda is dominated by grasslands and few forests; it is densely populated with the Basomya, Banyole, Itesoti and Bagweri ethnic groups. ACM was conducted with Bakonjo, Baganda and Basoga peoples, with one site, in Mabira Forest, including some Bagisu. To understand the impact of forest tenure on women's participation in forests, we purposively selected multiple tenure regimes, including private and communal forests, as well as forests officially managed by different government agencies implementing co-management arrangements with adjacent or resident communities (Table 4.1).

Our study focused on 16 communities (eight with ACM) in these eight districts. Although the pairing of ACM and non-ACM sites was not possible, given travel and funding constraints, there are ACM sites located in five of these eight districts, providing reasonable geographic and ethnic distribution. Many demographic similarities (shown in Table 4.2) further support the legitimacy of comparing ACM and non-ACM responses.

We compiled a list of households residing in each selected study community, drawing upon information from village registers and lists provided by village leaders. Households were randomly selected from the village register. A total of 526 households were selected, and 1,052 respondents were interviewed (526 men and 526 women). Husband and wife were interviewed separately to generate broader-scale information on the following issues: factors that affect men's and women's participation in forest management; the quality of their participation; gendered forest use; perceptions on the abundance of forest

Table 4.2 Demographic characteristics of the respondents

Name of variable	ACM sites				Non-ACM sites			
	Men		Women		Men		Women	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Age								
18–35	17.5	13.8	23.5	18.5	18.4	15.3	25.5	20.4
36–59	17.5	10.7	8.1	7.3	18.8	11.2	10.4	9.7
60 and above	7.0	4	3.1	2.9	6.0	4	3.5	3
Education level (years)	6.7	3.8	3.9	3.8	6.5	3.2	3.6	3.9
Household size (persons)	8	4	8	4	8	4	8	4
Land size (acres)	1.4	1.9	1.1	1.7	1.5	1.8	1.0	1.5
Distance to forest (km)	1.6	0.6	1.4	0.2	1.5	0.5	1.5	0.4

resources; and factors that influence dependence on forest resources and generated use of income from forest resources across ACM and non-ACM sites. For women-headed households, we interviewed men living in such households aged 18 years and above.

Data analysis

Descriptive statistics were used to portray the respondents' socio-economic characteristics, while cross-tabulations were used to generate Pearson chi-square (χ^2) values. The latter were used to test any association between the men's and women's quality of participation in forest management and dependence on forest products, as well as the use of forest income in ACM versus non-ACM sites. We used an alpha level of 0.05 for all statistical tests.

Factor analysis was used to identify latent dimensions underlying indicators that measured men's and women's participation in forest management. Ten participatory indicators (level of husband's support + education / years in school + participation in ACM + distance to forest + dependence on forest resource + position/status of women in community + ethnicity + household income + knowledge of laws and policy + marital status) were considered based on theory and related empirical work (Ostrom 1990; Araral 2009; Dolisca et al. 2006; Lise 2000; Maskey et al. 2006) to influence participation in forest management. Principal component analysis (PCA) was used to extract factors using varimax rotation to ensure that the extracted factors were independent and unrelated to each other and to maximize the loading on each variable and minimize the loading on other factors (Bryman and Cramer 2005). The number of significant factors was determined by calculating the eigenvalue (variance accounted for by each factor). Factors with eigenvalues exceeding 1.5 were considered significant following Kaiser's criterion (Kaiser 1974).

Results and discussion

Here, we begin with a discussion of the household characteristics of our respondents, which shows the similarities between the ACM and non-ACM communities. We then examine the issues we considered important, both in terms of "normal" practice (non-ACM) and as influenced by ACM activities.

Household characteristics

Household characteristics are important in explaining the behaviour of respondents in most studies. In this study, they help in explaining the factors that influence the participation of men and women in forest management activities in Uganda. The age of the respondents ranged from 18 to 60 and above in both ACM and non-ACM sites (Table 4.2). The respondents across both study sites were relatively middle aged with an average of 42.1 years for men and 34.7 years for women. The years of education ranged from 0 to 12, with an average

of 6.65 years (men) and 3.75 years (women), indicating probable low levels of literacy among the study population. Girls in Uganda often drop out of school at an earlier age compared with boys. Households in the study sites had an average of eight persons. This is higher than the national average family size (five people per family; UBOS 2013). The size of landholding averaged 1.45 acres (0.59 hectares) according to men and 1.05 acres (0.42 hectares) according to women. Results across the sites also show the mean average of perceived distance to the forest as 1.6 km for men and 1.5 km for women. Interestingly, women reported relatively smaller sizes for the family's landholdings and shorter distances to the forest in comparison with their male counterparts.

Men's and women's perceptions of their own participation in forest management in ACM versus non-ACM sites

The study investigated the participation of women in public (community forest) versus private spaces (household farmland). In line with cultural norms, we expected that women would more likely be involved in decision making at the household level than in public. However, the results show that women rated their participation in forest management at the community level (96% in ACM sites and 76.2% in non-ACM sites) to be higher as compared with participation at the household level (72.4% in ACM sites and 52.2% in non-ACM sites; Table 4.3). Across both ACM and non-ACM sites, women perceived themselves to be more involved in establishing tree nurseries and tree planting at the community level than at the household level. In comparison, their male counterparts perceived themselves to be more involved overall at the household level as compared with the community level in both ACM (97.4% to 86%) and non-ACM sites (82% to 78.2%). The results also reveal that men's and women's perceived participation in forest management activities was higher in ACM sites as compared with non-ACM sites, implying that participation in ACM enhanced their levels of inclusion in forest management activities. Qualitative results suggest that women perceived their community-level participation more highly because at that level, as participants in women's groups, they had more control of the proceeds from forest products sales. At home, their husbands controlled such proceeds.

This finding further builds on the argument that women's participation in forestry activities increased with the formation of groups and participation in ACM. A chi-square test of independence was performed to examine the relation between gender and participation of men and women in private versus public spaces. The relationship between these variables was significant. Women were more likely to engage in forest management activities in public forested spaces (community forests) as compared with their involvement in private forested spaces (household level): $\chi^2(4, N = 526) = 8.9, p = 0.0032$. In contrast, men were more likely to engage in forest management activities at the household level as compared with their involvement at the community level: $\chi^2(4, N = 526) = 1.7, p = 0.0043$.

Table 4.3 Participation of women in forest management activities in ACM and non-ACM sites

Forestry management activity	Participation in ACM sites				Participation in non-ACM sites			
	Women		Men		Women		Men	
	Private forest spaces (household level) (%)	Public forest spaces (community level) (%)	Private forest spaces (household level) (%)	Public forest spaces (community level) (%)	Private forest spaces (household level) (%)	Public forest spaces (community level) (%)	Private forest spaces (household level) (%)	Public forest spaces (community level) (%)
Decision making in forest management	11.5	20.1	27.0	20.5	7.5	10.6	20.4	20.4
Participating in establishing nursery beds	20.7	25.0	11.4	15.5	14.2	15.4	8.2	6.3
Planting of trees	19.0	24.8	16.0	22.3	16.2	22.2	20.2	19.6
Participated in making laws	10.2	14.3	28.2	16.7	10.0	20.1	22.6	14.1
in forest management								
Monitoring and patrolling illegal activities	10.5	12.8	14.8	11.0	4.3	7.9	10.6	17.8
Total	72.4%	96%	97.4%	86.0%	52.2%	76.2%	82%	78.2%

Men's and women's perceptions of the quality of their own participation in forest management in ACM versus non-ACM sites

Having established men's and women's perceptions of their own participation in forest management in ACM and non-ACM sites, we were also interested in how men and women rated the quality of their participation (Table 4.4). The *a priori* expectation was that if women evaluated their quality of participation as poor, this could indicate a host of reasons: for example, lack of involvement, discrimination (unintentional or active) and a perception that the forests are a man's concern. Contrary to expectation, descriptive statistics reveal that a substantial number of men (37% in ACM sites and 46% in non-ACM) considered their own quality of participation as poor. This number was slightly higher in comparison with the women who rated the quality of their participation as poor (25% in ACM sites vs. 43% in non-ACM sites). This may well be related to cultural expectations that men *should* be involved in forest management, whereas there may be no such expectation for women. Interestingly, a slightly greater number of women (13% in ACM vs. 3% in non-ACM sites) reported that the quality of their own engagement was very good while only 6% of men in ACM sites versus 4% in non-ACM sites reported the quality of their own participation as very good.

In our study, both men and women perceived their quality of participation in forest management in ACM sites as above average (63.8%) as compared with their participation in non-ACM sites (33.1%). Women's participation in ACM sites was rated better (25% poor) as compared with 43.3% poor in non-ACM sites, implying that involvement in ACM played a significant function in improving women's participation in forest management in Uganda.

Table 4.4 Men's and women's perceptions of the quality of their own participation in forest management activities

Gender	Quality of own participation in ACM sites					Quality of own participation in non-ACM sites				
	Poor	Moderate	Good	Very good	Undecided	Poor	Moderate	Good	Very good	Undecided
Men	36.6	32.3	20.2	6.1	11.1	46.0	33.6	12.0	4.4	7.8
Women	25.0	42.4	22.3	13.2	10.7	43.3	36.4	13.7	3.0	13.6
Total	61.5	74.7	44.5	19.3	21.8	89.3	70.0	25.7	7.4	51.6

Factors for participation in forest management in ACM versus non-ACM sites

Factor analysis summarized the original ten participatory indicators² in three factors, which accounted for 68.5% in ACM sites and 51.8% in non-ACM sites of the total variance of factors influencing women's participation in forest management (Table 4.5).

Table 4.5 Factors that determine women's participation in forest management in ACM vs. non-ACM sites

Description	ACM sites			Non-ACM sites				
	Factor 1	Factor 2	Factor 3	Commonality	Factor 1	Factor 2	Factor 3	Commonality
<i>Socio-cultural indicators</i>								
Ethnicity	0.125	0.164	0.218	0.178	0.103	0.154	0.201	0.108
Marital status	0.185	0.036	-0.315	0.264	0.143	0.187	-0.275	0.205
Position in community	0.194	0.183	-0.633	0.560	0.145	0.213	-0.625	0.620
<i>Socio-economic indicators</i>								
Household income	0.212	0.825	0.164	0.787	0.310	0.801	0.154	0.801
Years in school	0.356	0.451	0.206	0.441	0.421	0.491	0.351	0.488
Level of forest dependence	0.063	0.883	0.331	0.855	0.143	0.822	0.411	0.820
Distance to the forest	0.321	-0.673	0.214	0.661	0.241	-0.635	0.318	0.621
<i>Forest management indicators</i>								
Involvement in ACM	0.940	0.083	0.181	0.884	0.410	0.045	0.179	0.440
Husband's support to women's participation	0.901	0.036	0.179	0.857	0.670	0.016	0.106	0.677
Participation in forest management activities	0.620	0.189	0.118	0.591	0.530	0.132	0.110	0.506
Knowledge of forest laws	0.685	0.298	0.287	0.634	0.603	0.245	0.197	0.600
Eigenvalue	4.91	3.11	1.47	9.49	3.91	2.19	1.34	7.44
Variance explained	30.3	24.7	13.5	68.5	23.3	18.7	9.8	51.8

Rotation method: varimax with Kaiser normalization. Rotation converged in five iterations and factor loading with a value larger than 0.50 in absolute terms are considered.

The dominant variables for the first factor (Table 4.5), which explained 30.3% and 23.4% of the variation in ACM and non-ACM sites, respectively, are mostly indicators related to inclusion in forest management. The level of participation in ACM and the husband's support to women's participation had the highest loading of 0.94 and 0.90 in ACM sites, while in non-ACM sites, husband's support and knowledge of forest laws had the highest loading of 0.67 and 0.60, respectively. Qualitative results indicated that husband's support to women's participation increased if the husband also participated in ACM.

The dominating variables for the second factor, which explained 24.7% and 18.75% of the variation in ACM and non-ACM sites, were related to the socio-economic characteristics of the respondents. The level of dependence on forest resources had the highest loading of 0.88 and 0.82 in ACM and non-ACM sites, respectively. The majority of the women were benefiting economically from the forest since it provided them with forest products for both subsistence and income. Household income had the second-highest loading with 0.83 and 0.80 in ACM and non-ACM sites, respectively. Furthermore, distance to the forest had a negative loading in both sites, suggesting that when the forest was distant, due to the various roles that women play and dangers they may experience, long-distance acts as a disincentive to participation in forest management.

The third factor explained 13.5% and 9.8% of the variation in ACM and non-ACM sites, respectively. The position of women in the community (leadership) had the highest loading of -0.63 and -0.62, implying that low status decreased the women's ability to express themselves and voice their opinions in forest management, leading to less participation.

Contrary to Lise (2000) and Owubah et al. (2001), who argue that education influences participation in forest management and conservation, in our study, the number of years spent in school did not influence women's participation in forest management. This may be due to the fact that most of the women had reported low levels of education (mean average of 3.75 years in school).

Factor analysis revealed that men's participation in forest management was influenced by three factors that accounted for 64.8% in ACM sites and 55.8% in non-ACM sites of the total variance of factors influencing men's participation in forest management (Table 4.6). Like the female counterparts, forest management factors had the highest loading for factor 1, followed by socio-economic characteristics and finally socio-cultural characteristics. The status of men in the community, unlike that of women, did not have a significant role in influencing men's participation in forest management.

The marital status of men and women across both ACM and non-ACM sites had no significant positive impact on participation in forest management; however, it had a negative loading, implying that married men and women were less willing to participate in forest management than those who were single. This could mean that younger women or men are more willing to participate in and contribute to forest management. This could be related to

Table 4.6 Factors that determine men's participation in forest management in ACM vs. non-ACM sites

Description	ACM sites			Non-ACM sites			Commonality	Factor 1	Factor 2	Factor 3	Commonality	Factor 1	Factor 2	Factor 3	Commonality	
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3										
<i>Socio-cultural indicators</i>																
Ethnicity	0.14	0.144	0.311	0.310	0.153	0.144	0.201	0.301	0.144	0.153	0.310	0.301	0.144	0.153	0.310	0.201
Marital status	0.160	0.110	-0.430	0.380	0.133	0.182	0.311	-0.340	0.182	0.133	0.380	-0.340	0.182	0.133	0.380	0.311
Position in community	0.145	0.126	-0.453	0.451	0.135	0.241	0.360	-0.370	0.241	0.135	0.451	-0.370	0.241	0.135	0.451	0.360
<i>Socio-economic indicators</i>																
Household income	0.210	0.781	0.132	0.780	0.311	0.882	0.831	0.140	0.882	0.311	0.780	0.140	0.882	0.311	0.780	0.831
Years in school	0.421	0.765	0.145	0.751	0.222	0.750	0.728	0.273	0.750	0.222	0.751	0.273	0.750	0.222	0.751	0.728
Level of forest dependence	0.061	0.670	0.324	0.660	0.145	0.621	0.601	0.410	0.621	0.145	0.660	0.410	0.621	0.145	0.660	0.601
Distance to the forest	0.434	0.701	0.101	0.700	0.421	0.681	0.670	0.110	0.681	0.421	0.700	0.110	0.681	0.421	0.700	0.670
<i>Forest management indicators</i>																
Involvement in ACM	0.851	0.012	0.112	0.840	0.310	0.134	0.290	0.197	0.134	0.310	0.840	0.197	0.134	0.310	0.840	0.290
Husband's support to women's participation	0.101	0.045	0.167	0.102	0.110	0.211	0.114	0.119	0.211	0.110	0.102	0.119	0.211	0.110	0.102	0.114
Participation in forest management activities	0.620	0.168	0.121	0.611	0.561	0.336	0.560	0.214	0.336	0.561	0.611	0.214	0.336	0.561	0.611	0.560
Knowledge of forest laws	0.785	0.291	0.245	0.751	0.591	0.443	0.571	0.394	0.443	0.591	0.751	0.394	0.443	0.591	0.751	0.571
Eigenvalue	5.89	2.11	1.71	9.72	3.51	1.84	6.43	1.04	1.84	3.51	9.72	1.04	1.84	3.51	9.72	6.43
Variance explained	28.56	18.74	17.54	64.8	22.4	17.7	55.8	13.7	17.7	22.4	64.8	13.7	17.7	22.4	64.8	55.8

Rotation method: varimax with Kaiser normalization. Rotation converged in five iterations, and factors loading with a value larger than 0.50 in absolute terms are considered.

the additional workload of married members, which can reduce their time available to participate in forest management compared with single members. In addition, ethnicity, like marriage, had no significant positive impact in forest management, implying that the ethnic background of respondents did not matter in forest management participation.

Dependence on forest products

In order to obtain insights on community dependence on forest products, we investigated the forest products harvested by men and women from ACM sites and non-ACM sites (Table 4.7). While the same range of forest resources is harvested by men and women across both ACM and non-ACM study sites for most products, there was increased charcoal harvesting in non-ACM sites as compared with ACM sites. In addition, there was more harvesting of honey by women in ACM sites compared with non-ACM sites. The difference may be at least partially attributed to the stricter forest law enforcement under ACM sites. But the fact that during ACM implementation sustainable harvesting of forest products such as honey production was emphasized while destructive harvesting practices such as charcoal production were discouraged (see Chapter 5) was another important factor. Results also show evidence of marked gender specialization in the collection of forest products. Men mostly harvested the following products: poles, charcoal, honey and sand. On the other hand, women's harvesting emphasized firewood, water, herbs and craft material (Table 4.7). A chi-square test of independence was performed to examine the relation between gender and products harvested from ACM and non-ACM sites. The relationship between these variables was significant in both ACM sites – $\chi^2(10, N=400) = 2.4, p = 0.0014$, and non-ACM sites – $\chi^2(10, N=652) = 1.06, p = 0.0027$. Men and women were likely to harvest different products

Table 4.7 Forest products harvested by women and men in ACM and non-ACM sites

Products	ACM sites		Non-ACM sites	
	Women %	Men %	Women %	Men %
Poles	10.7	1.6	29.1	4.2
Firewood	5.7	43.8	5.7	35.4
Carbon/charcoal	6.8	0.5	22.9	35.4
Wild animals	6.0	0.0	4.6	0.0
Craft materials	1.6	22.3	2.3	5.4
Herbs	3.8	28.0	8.0	21.4
Honey	21.6	0.0	10.9	0.0
Water	12.3	8.9	3.4	34.5
Sand	12.3	2.2	5.7	1.2
Fodder/grass	9.6	8.3	4.6	0.6
Fibre	4.5	2.1	10.5	2.9

from the forest. However, when the two site types were compared, results revealed that both ACM and non-ACM sites provided men and women with relatively similar amounts of products ($\chi^2 (10, N=1052) = 1.7, p = 0.0033$).

The results from this study support work by Sunderland et al. (2014) who report that there is significant gender differentiation in the collection of forest products – men and women play distinctive roles in the forest sector.

Having investigated the products harvested, it was important to further examine if the respondents considered the forest products to still be abundant within the forest in comparison with ten years ago. Results revealed that men and women had different opinions on the abundance of forest products (Table 4.8). Across both ACM and non-ACM sites, there is general agreement that forest resources have greatly decreased and are thus less abundant. However, when a comparison is made between the study site types, both men and women report that forest products are slightly more abundant in ACM sites than non-ACM sites. This could be attributed to a lower extraction of forest products from ACM sites compared with non-ACM sites by both men and women because of improved enforcement of forest rules, but also because of increased investment in alternative sources of livelihood-capacity as a result of ACM training.

The results also reveal that slightly more women than men were of the opinion that forest products were slightly more abundant; men considered the availability of forest products to be on the decline. This may suggest that forest products harvested by women, such as firewood, crafts material, water and herbs, remain abundant even when the forests are degraded. On the other hand, products harvested by men, such as poles, honey and timber, have become very scarce as forests have diminished. The relative perceived abundance of forest products in ACM sites may also be attributed to better conservation efforts due to ACM training and implementation.

Table 4.8 Perceptions on availability/abundance of forest resources

Products	ACM sites				Non-ACM sites			
	Women %		Men %		Women %		Men %	
	Yes	No	Yes	No	Yes	No	Yes	No
Poles	17.5	82.5	15.1	84.9	4.0	96	2.4	97.6
Firewood	22.1	77.9	19.1	80.9	17.7	82.3	16.8	83.2
Carbon/charcoal	2.2	97.8	1.9	98.1	2.3	97.7	16.8	83.2
Wild animals	1.6	98.4	1.6	98.4	0.0	100	0.0	100
Craft materials	7.9	92.1	37.1	62.9	1.1	98.9	0.6	99.4
Herbs	12.6	87.4	12.1	87.9	10.3	89.7	11.3	88.7
Honey	5.2	94.8	4.6	95.4	6.3	93.7	0.6	99.4
Water	61.7	38.3	13.7	17.6	13.7	86.3	13.7	86.3
Sand	2.9	97.1	1.3	98.7	1.4	98.6	0.6	99.4
Fodder/grass	4.1	95.9	3.8	96.2	0.0	100	0.6	99.4
Fibre	6.3	93.7	3.0	97	2.7	93.3	2.4	97.6

Gender dimension of forest product and income use

In order to understand how the forest contributes to the livelihoods of men and women, we first investigated how the communities use forest products. The results show that both men and women in ACM and non-ACM sites use forest products mainly to meet their domestic needs (Table 4.9). However, in ACM sites, a larger percentage of men (33%) and women (28%) reported using more forest products for income generation (commercial vs subsistence) as compared with non-ACM sites (22% men and 14% women). This could be attributed to the fact that during implementation of ACM, the community members were encouraged to participate in sustainable forest income-generating enterprises such as beekeeping for honey production and tree planting – contributing to global restoration efforts as well, on a small scale – for both domestic and commercial purposes (see Chapter 5).

Table 4.9 Gender dimensions of forest product and income use

Use type	ACM sites		Non-ACM sites	
	Men (%)	Women (%)	Men (%)	Women (%)
Forest product use				
Subsistence use	67	82	78	86
Commercial use	33	28	22	14
Expenditure item				
Food	15.3	17.9	15.5	14.3
Medical and school fees	22.1	23.7	18.3	20.7
Investments and savings	5.7	10.2	3.3	2.8
Mutual aid groups expenditure	9.2	16.0	6.5	5.0
Personal expenditure	23.5	12.2	18.5	8.2

For those who earned income from the use of forest products, we wanted to understand use patterns of this income as this could have implications for people's participation in forest management. Results reveal that utilization of forest income is gendered in ACM and non-ACM sites. In both ACM and non-ACM sites, women spent income along the same budget lines, though we observed that women had increased capacity to spend in ACM sites as compared with non-ACM sites. This is attributed to the fact that women were not only harvesting for subsistence but were engaging and investing more in income-generating activities than in non-ACM sites. ACM was crucial in building capacity for women to engage in income-generating activities. Women also had better savings in mutual aid groups in ACM sites than their counterparts in non-ACM sites. Again, these are capacities obtained during ACM where members identified income-generating projects they felt would help meet their needs for basic goods and services and thus lower their level of dependence on the forests. Exchange visits among the ACM groups exposed participants to investment opportunities while the ACM village banking programmes allowed them to pool resources (see Chapter 5).

Although qualitatively, it seemed that men spent most of their forest income on personal expenditures (as has been observed elsewhere) and women, on medicines, school fees and food, this was not borne out by our statistical tests. A chi-square test of independence was performed to examine the relation between gender and use of forest income within ACM and non-ACM sites. The relation between these variables was not significant: $\chi^2(4, N = 400) = 4.3$, $p = 0.22$ in ACM; and $\chi^2(4, N = 652) = 6.9$, $p = 0.37$ in non-ACM sites. In fact, both women and men contributed to the wellbeing of the family, along the same budget items. The results of this study suggest that forests, in addition to being important sources of subsistence foods and materials, make a significant contribution to rural household income and consequently to poverty reduction. However, the per cent contribution of income from the sale of forest produce to general household income was beyond the scope of this study.

Conclusions

Our findings indicate that factors related to forest management itself are the most important determinants of men's and women's participation in forest management in Uganda. More women in ACM sites reported enhanced participation and quality of participation in forestry management activities as compared with women in non-ACM sites. We consider participatory forest management approaches such as ACM as crucial for enhancing women's participation, particularly those whose livelihoods are directly and highly impacted by the forest. Additionally, women's participation in forest management is enhanced by participatory forest management approaches that open up public forested spaces as opposed to private forested spaces, implying that the probability of women participating at the community level (in community forests) is higher than that at the household level.

We also found that men's and women's participation in forest management can be influenced by their socio-cultural and socio-economic characteristics such as status in their community, income and level of dependence on forest resources. Women's personal and household attributes combined with socio-cultural norms and values may constrain or enhance their participation in forest management in Uganda despite their participation in ACM.

Lastly, the study reveals that there is a marked gender specialization in the collection of forest products from both ACM and non-ACM sites. While there is no significant difference between the products harvested from ACM and non-ACM sites, in each of these sites, men and women harvested different forest products; men and women also both harvested forest produce for subsistence and sale. However, more women in ACM sites harvested forest produce for income generation compared with women in non-ACM sites.

Policy recommendations

These results lead us to several policy recommendations: first, in order to increase men's and women's participation in forest management, we recommend that

participatory forest management initiatives such as ACM be institutionalized and implemented throughout the country. Forest adjacent communities should enter into collaborative forest management arrangements with the forest owners/managers (national forest authority, local government or the private forest owners) or be facilitated to form tree-planting groups or associations by NGOs and local government forestry officials. The latter kinds of activities could also contribute to more benign attempts to restore forests, in line with global efforts to do so more collaboratively (e.g., Butler and Schultz 2019; Mansourian 2020). The process should be simplified, adaptive and fast-tracked in order to increase the number of communities with collaborative forest management agreements.

Second, our study shows that the level of dependence on forest resources provides an incentive for both men and women to participate in forest management. However, present forest law allows limited use rights to forest adjacent communities. They can only legally harvest dry dead branches of trees for firewood in “reasonable quantities.” Thus, communities adjacent to rich forest resources are often poor. We recommend that the withdrawal and exploitation rights of these communities be improved but regulated so that they can exploit forest resources to improve their livelihoods on a sustainable basis through collaborative forest management approaches.

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Notes

- 1 CIFOR’s approach is described in a number of publications, archived at <https://www2.cifor.org/acm/>.
- 2 Level of husband’s support, education/years in school, participation in ACM, distance to forest, dependence on forest resources, position/status of women in community, ethnicity, household income, knowledge of laws and policy and marital status.

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