



Can Recognition and Respect of Forest Resource Rights save Echuya Central Forest Reserve? A Precursor for Appropriate Collaborative Forest Management

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Received date: 01 May, 2022, Manuscript No. JBMF-22-62375;

Editor assigned date: 04 May, 2022, PreQC No. JBMF-22-62375 (PQ);

Reviewed date: 18 May, 2022, QC No. JBMF-22-62375;

Revised date: 30 June, 2022, Manuscript No. JBMF-22-62375 (R);

Published date: 07 July, 2022, DOI: 10.4172/2327-4417.1000029

Abstract

Recognition and respect for tenure and forest resource rights has for long been considered essential for policy makers to promote forest conservation. Several initiatives have indeed been undertaken to promote recognition and respect for such rights. One such initiative was the introduction of Collaborative Forest Management (CFM) in Echuya Central Forest Reserve (ECFR) in Southwestern Uganda in 2007. The objective of this paper is to assess the role of recognition and respect for tenure rights in CFM for conservation of Echuya. This study used cross sectional and explanatory designs. Purposive and simple random sampling techniques were used to select respondents from local community members, District and local council leaders, National forestry authority officials and conservation organisations. These provided data which was collected using household surveys, focus group discussions and key informant interviews. Results showed that recognition and respect for tenure and forest resource rights significantly influence forest conservation ($P\text{-value} \leq 0.05$). However, poverty compels local community members to violate CFM agreements and forest policy restrictions and stealthy harvest forest resources to meet their household demands. It is therefore concluded that livelihood support among forest adjacent communities is critical in fostering recognition and respect for forest and tenure rights for conservation of Echuya. At the same time, it is essential to enforce stringent punitive measures on community members and government officials who degrade the forest reserve.

Keywords: Tenure rights; Forest resource rights; Collaborative forest management; Conservation; Unauthorized resource access; Governance

Introduction

Recognition and respect for tenure rights is one of the fundamental good governance principles outlined by the International Union for the

Conservation of Nature (IUCN) for greater conservation outcomes. The IUCN contends that recognition and respect for resource and land rights strongly contributes to equitable and effective governance of natural resources by supporting local stewardship of resources [1]. The noticeable recognition of tenure and resource rights as an essential component of good governance is also echoed in several international frameworks adopted on natural resource rights. Some of the international instruments that support recognition and respect for tenure and resource rights include the American Convention of Human Rights [2], the United Nations Conference on Environment and Development (UNCED) which took place in Rio-de-Janeiro in 1992 and the United Nations Declaration on the Rights of Indigenous Peoples (2007) [3]. This shows acceptance that recognition and respect for tenure and resource access rights is necessary for good governance and conservation of forest resources.

Recognition and respect for actors' rights refers to acknowledgement and honouring rights diversity of knowledge systems, identities, institutions and values of various actors. Tenure has been defined as the substance or content of rights and their security [4]. Forest tenure is concerned with ownership of forestland, who is permitted to use resources, how to use them, under what condition, and for how long. In defining tenure rights, we use the definition given by von Benda-Beckmann, et al. who define tenure rights to natural resources as social relations and institutions governing access to and use of natural resources [5]. We also define resource access rights using the Theory of Access, that access is capability to benefit from things. Ribot and Peruso argue that rights based means of access implies the involvement of a community, state or government that will implement a right [6].

It is important to note that failure to recognise and respect tenure and forest resource access rights causes conflicts between government and communities which may result into deforestation and/or forest degradation. Therefore, participatory programmes such as Collaborative Forest Management (CFM) programmes take into account this recognition and respect. The programmes focus on promoting CFM in order to end biodiversity loss, safeguard and prevent destruction of threatened species as recognised in the sustainable development goals (SDG 15).

Previous scholars defined collaborative forest management as collective action or structured collaboration between major stakeholders particularly community groups, government institutions, interested organisations and other stakeholders in the area of natural resources to jointly conserve the protected area and achieve sustainable forest use [7]. Here, we define CFM after and as a practice where major stakeholders sign a mutual agreement that defines their responsibilities, returns, rights and roles (4Rs) in the management of a protected area [8,9].

A recent study on community-based forest tenure noted that a fundamental premise for CFM is that respect for tenure rights of indigenous community members and access to forest resources enhance forest conservation [10]. However, effective CFM requires that the rights for all collaborating actors are recognised and respected. In a CFM arrangement, recognition and respect for tenure and resource access rights motivates local community members to engage in activities such as locally based monitoring which enhance conservation [11]. Nonetheless, actual results from the collaboration are contingent on the design of the shared system that is, who has

which rights over the property, for what and the duration. This shows that successful forest conservation depends on the assurance that other actors will respect the rights of local communities [12]. For instance, while examining rates of deforestation between 2000 and 2012 in Bolivia, Colombia and Brazil, Ding, et al. noted that within indigenous communities with secure tenure, the average annual rates of deforestation were two or three times less than the ones in similar forests that lacked security of tenure. Similarly, there is evidence that formalised communal rights to property offer an inducement for investment in restoration and sustainable management of forests [13]. A comparison of case studies from China, Ethiopia and Nepal where property rights were given to households or communities in the context of programs for restoration showed that in all the three countries, secure land tenure led to enhanced participation in restoration efforts and improved forest cover [14].

Although several African national governments have legal frameworks to facilitate recognition of local rights over land, Rights and Resources Initiative found that many of these laws only recognize control rather than ownership. Most governments have state forests to offer secure tenure under public ownership which sometimes causes conflict and insecurity between government and local communities. As Garnett, et al. noted, insecurity of tenure has adverse repercussions because it can create a situation of de facto open access and induce unsustainable resource use with a focus on short term benefits [15]. Tenure insecurity promotes illegal access which is referred to as enjoyment of benefits from things in a manner not formally approved by the society and state. Given that unauthorized access to forest resources in state owned forests is considered illegal under state law, some community members use conventional or customary access through social acceptance of a particular practice by which people gain benefits.

In Southwestern Uganda, when Echuya Central Forest Reserve (hereafter called 'Echuya') was first gazetted in 1939 and regazetted in 1964, the rights of all local community members to access forest resources were curtailed. Earlier violation of their rights to land was reiterated and their marginalisation reinforced by elimination of their rights to access and use the forest. This increased tension between National Forestry Authority (NFA) and community members, including creation of a negative attitude towards the forest. Coupled with high poverty levels among communities and lack of alternative sources of livelihood, community members began to engage in illegal activities and encroachment thus exerting pressure on forest resources, and this resulted into extensive biodiversity loss [16].

In attempt to mitigate the above condition, NatureUganda with financial support from the UK's DFID-Civil Society Challenge Fund (CSCF) through Royal Society for the Protection of Birds (RSPB) and in partnership with NFA and the District Local Governments of Kisoro and Kabale started a Collaborative Forest Management. The purpose of CFM was to facilitate communities neighbouring the forest to get benefits by exercising their rights to manage the natural resources in and around Echuya as well as influence institutions and forestry policies in Uganda. In October 2007, four CFM agreements similar to each other (see copy of one of the agreements, Appendix i) were signed between NFA (the government entity that manages central forest reserves) and four communities (Muko, Bufundi, Murora and Kanaba) adjacent to Echuya, offering an approach to sustainable access and utilisation of forest resource by communities around the forest [17]. Enrolment and participation of community members in CFM was voluntary and the program targeted all local community

members. However, some of them did not register for membership and do not participate in CFM group activities. This situation has led to two categories that are; CFM group members and Non CFM group members in communities adjacent to Echuya. Nonetheless, the CFM agreements restrict all community members from accessing forest resources without authorizations, whether they are CFM members or not. Though it is now more than one decade since Echuya's CFM was introduced, no studies have gauged whether tenure and forest resource rights have been recognized and respected in CFM for conservation of the forest reserve. This information is important for recognition and respect to remain a relevant and important governance principle in CFM and forest conservation. In this paper, we assess whether Echuya's tenure and resource access rights have been recognised and respected, and the influence they have had on conservation of the forest reserve. Our specific research questions are: Do community members recognize and respect governments' tenure rights over Echuya as stated in the CFM agreements? Are the forest resource access rights by community members recognised and respected as set in the CFM agreements? What forest resources do most community members access? How does recognition and respect for tenure and forest resource access rights contribute to conservation of Echuya?

Materials and Methods

Study area

The study was conducted in the field between March 2020 and February 2021 in eight parishes that form four communities adjacent to Echuya where CFM groups were formed, and CFM agreements signed between National Forestry Authority and the local communities. Echuya is located in Bufumbira County (20 percent of its area) in Kisoro District and 80 percent of the forest reserve is situated in Rubanda County, Rubanda district (curved from Kabale District in 2016), Southwestern Uganda, and East Africa. It covers an area of 34 km² (3,400 ha) with an altitudinal range of 2270-2750 m. Echuya is a unique Afromontane habitat and an area of high endemism. Specifically, it is a Key Biodiversity Area (KBA) and Important Bird Area (IBA) with around 137 bird species including the Albertine rift endemics and a substantial population of the globally endangered Grauer's swamp warbler (*Bradypterus graueri*).

Approvals and permission to conduct the study

The study was approved by Mbarara University of Science and Technology Research Ethics Committee (MUST REC), Ref: MUREC 1/7 in February 2020 and a research license obtained from National Forestry Authority (NFA) in March 2020, license No. 336 to conduct field work in and around Echuya. Approval was also got from Uganda National Council for Science and Technology (UNCST), registration number SS706ES in February 2021. Permission was also obtained from NatureUganda to access information about CFM from the organisation's staff members and CFM groups around Echuya. While in the field, the research team first introduced itself to the District Natural Resource Office (of Kisoro and Rubanda districts) where Echuya is located and Chairperson local council one of the surveyed villages to inform the officials about the study being conducted.

Data collection techniques

Household interviews: A total of 458 household members were interviewed from communities around Echuya using a semi structured

questionnaire. The interviews were carried out in the local languages of Rukiga and Rufumbira by one of the authors and three research assistants who understood the languages. Household members, who were the household heads and or their spouses interviewed were those found near or at their homes at the time of interviews. Out of the 458 interviewed respondents, 165 were CFM group members and 293 non CFM members in villages adjacent to Echuya. These categories were interviewed in order to obtain information about tenure and forest resource access rights in Echuya, whether their rights have been recognized and respected, and the influence recognition and respect for tenure and forest resource rights have on conservation of Echuya.

Key informant interviews: Key informant interviews were conducted with a total of 26 respondents. These included four (4) (NFA) officials who are mandated to manage all activities in Echuya on behalf of government, four (4) CFM group leaders because they play an oversight role in CFM groups, they are forest resource users and CFM beneficiaries, three (3) staff members from NatureUganda since they support implementation of CFM activities and advocate for conservation of the forest reserve, two (2) staff members from Institute of Tropical Forest Conservation due to their advocacy role in conservation of forests in the region. Other respondents were four (4) district staff members (Natural Resource Office) from Kisoro and Rubanda districts with two respondents from each of the districts because Echuya lies within their area of jurisdiction, they oversee forest activities on behalf of the district and coordinate NFA, NatureUganda and community members to implement the CFM program, and nine (9) Local Council One (LC1) leaders of the villages adjacent to Echuya since they are forest resource users and responsible for protecting the forest reserve at the village level. The interviews were in form of semi-structured questions focusing on recognition and respect for tenure and forest resource access rights under CFM and conservation of Echuya in terms of response to conservation threats by community members. Interviews were used to solicit in-depth information not possible to obtain with the aid of the questionnaire in order to meet specific objectives.

Focus group discussions: A total of four Focus Group Discussions (FGDs) were carried out with 42 respondents. Each FGD constituted between 8 to 12 participants who belonged to CFM groups. FGDs were conducted in order to understand people's views about recognition and respect for tenure and forest resource access rights, CFM and conservation of Echuya. A Focus Group Discussion guide with open ended questions was administered to FGD participants. FGDs were used to obtain collective views on pertinent issues [18]. Information sought from them included; government's tenure rights over Echuya, the resources most community members access from Echuya, whether their resource access rights are

recognized and respected and how recognition and respect (or lack of it) influenced conservation of Echuya.

Document review: CFM agreements and plans were reviewed to substantiate data from household surveys, interviews and FGDs. As noted by Patton, document review facilitates substantiation of data with other sources of information and gain detailed insights in the study area of interest rather than only relying on primary methods. It helped to build the study context and beef up discussion of study findings obtained from primary sources.

Data analysis: After collection of qualitative data from interviews and FGD groups, initial coding was done to summarise ideas from respondents. The data collected from the field was organised into categories and sub categories, sorted and arranged following themes of the study. Qualitative data was then analysed using content analysis where objectives were developed into themes and sub themes to facilitate easy interpretation of the findings.

Quantitative data was analysed using Multinomial Logistic Regression (MLR) and Linear Regression (LR) which formed part of the analysis for different processes. P-value was used to determine the level of significance between recognition and respect for tenure rights, forest resource rights and conservation. For significant results, P-values were reported as <0.05.

Results

Recognition and respect for tenure rights over Echuya

Results show that both CFM group members and non-CFM community members recognize government's tenure rights over Echuya since it has the mandate to allow or deny people access to the forest reserve. However, a higher percentage of CFM members compared to non-CFM members recognize government tenure rights over the forest reserve (Table 1) because they regularly attend CFM meetings organized by NatureUganda. In such meetings, community members are sensitized about government tenure rights, forest resources which community members can harvest and benefits of conservation of Echuya, as revealed by CFM group members during FGDs. Nonetheless, a small section of households (11.1%) consider local community members to have tenure rights over Echuya because they are the primary beneficiaries of forest resources and the ones who protect the forest. Through FGDs, indigenous community members reported that they still consider the forest reserve as theirs because it was their original home, and argued that they can harvest forest resources whenever they want. Therefore, they do not recognize and respect government's tenure rights over Echuya.

Respondent category	Perceived rightful forest owner					
	Local community		Government		Total	
	#	% (age)	#	% (age)	#	% (age)
CFM group members	18	3.9	147	89.1	165	36
Non CFM group members	33	7.2	260	56.8	293	64
Total	51	11.10%	407	88.90%	458	100%
Notes: Government constitutes National Forestry Authority and the District Local Government						

Table 1: Tenure rights as perceived by respondents.

Through key informant interviews, district natural resource officials asserted that the district local government has tenure rights over the forest reserve because it lies within the boundaries of their jurisdiction. Interviews with NFA staff revealed that citizens are the rightful forest owners although community members are not aware that the law provides for them. However, NFA staff also acknowledged that the government body (NFA) determines and regulates forest resource use, thereby asserting government's tenure rights over the forest reserve.

Recognition and respect for forest resource access rights

CFM group members and non CFM group community members largely agreed that their forest resource access rights are recognized and respected (Table 2) because they are allowed to harvest forest resources after obtaining authorisation from government authorities as revealed through FGDs and interviews. The right to harvest forest resources is enshrined in the CFM agreements that were signed between NFA and local communities in 2007 allowing community members to harvest forest resources on designated days. Document review of the CFM agreements show that bamboo harvesting is on

Tuesday and Thursday, Kabale/Rubanda district side, and Wednesday & Saturday for Kisoro district side; collecting fuel wood is once a week on Saturday, grass is harvested Saturday only during grass season for craft making grass and on the 15th day of every month only for thatching grass while ropes are supposed to be harvested from June to August on Saturdays only.

A substantial 42.6 per cent of the community members consider their forest resource access rights not respected because they are restricted by the signed CFM agreements. Remarkably, most respondents who consider their forest resource access rights not respected are CFM group members (Table 2). From interviews and FGDs, respondents revealed that CFM group members had hoped that after signing the agreements, they would access resources that satisfactorily meet their household needs. They had also anticipated that livelihood projects supported by NatureUganda would provide satisfactory alternative livelihood support and reduce their dependency on the forest reserve, which has not been the case. As a result local community members violate the CFM agreements and continued to graze animals in the forest reserve and harvest forest resources outside the designated days which has led to degradation of the forest reserve as revealed during interviews.

Respondent category	Are community members' resource access rights respected?					
	Yes		No		Total	
	#	% (age)	#	% (age)	#	% (age)
CFM group members	97	21.2	68	36	165	36
Non CFM group members	166	36.2	27	27.7	293	64
Total	263	57.4%	195	42.6%	458	100%

Table 2: Respect to forest resource access rights as perceived by respondents.

Community opinion about conservation status of Echuya

From the household survey, results (Table 3) show that Echuya has not maintained all the tree species ever since community members

knew about the forest reserve. Poor methods are used to harvest trees and other plants, young trees and other plant species are damaged during harvesting, tree species are of poor quality, and the forest has not maintained all animal species. The mean score for all responses was less than the average of 3.0 which reflects general disagreement, an indication that the forest reserve has been degraded.

Item	N	Min	Max	Mean	Std.Dvn
Trees are planted in Echuya Central Forest Reserve to ensure sustainability of different tree species	458	1	4	1.35	0.961
Trees are planted around Echuya Central Forest Reserve to minimize encroachment on tree species	458	1	5	3.17	1.883

In my opinion, Echuya has maintained all the tree species it has had ever since I knew about the forest reserve	458	1	5	1.87	1.149
The methods used to harvest trees and other plants in Echuya are good/appropriate	458	1	5	2.04	1.393
Trees and other plants in Echuya are properly harvested without damaging young species	458	1	5	2.59	1.499
Trees species in Echuya are of good quality	458	1	5	2.34	1.391
I always access forest resources only on designated Days	458	1	5	2.59	1.704
When I go to the forest, always harvest only those resources which I am allowed to access.	458	1	5	3.81	1.147
In my opinion, Echuya has maintained all the animal species it has had ever since I knew about the forest	458	1	5	1.73	1.069
There has been a decline in poaching levels in Echuya over the past ten years	458	1	4	2.52	1.413

Table 3: Descriptive statistics for respondents' opinions on forest conservation (n=458 respondents).

Forest resources accessed by most community members

The forest resources which communities members access most in their descending order were: firewood, bamboo, grass, medicinal herbs, ropes and honey (Figure 1). Results from both interviews and FGDs show that firewood is the most accessed resource because it is harvested for sale by indigenous community members (the Batwa) to earn income, and local community members use it for fuel wood. Non-timber forest products such as bamboo are harvested and used for construction materials such as building poles and ceilings, fencing materials, bean steaks as well as making baskets and granaries. Grass is used for thatching houses and making granaries. Medicinal herbs are used to treat various illnesses (Table 4). Ropes are used during construction to tighten poles with other construction materials, while honey is sold for income generation.

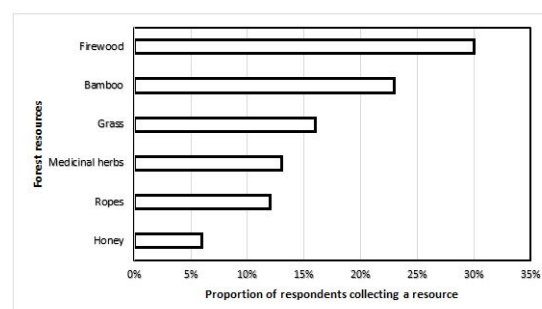


Figure 1: Forest resources accessed from ECFR.

Notes: In ECFR, a ban was imposed on the harvest of bamboos, but community members continue to harvest it without authorization from NFA/Government authorities.

Local name=Rukiga	Botanical name	Disease treated
Omuna	<i>Sericorstachys scandens</i> .	Prevents abortion
Omuhurura	<i>Achyranthes aspera</i>	Treats Kidney disease

Empunika	<i>Galinsoga parviflora</i>	Treats febrile seizures
Echururu	<i>Adenia sp</i>	Prevents intestinal worm that make suckling babies from vomiting suckled milk
Omujuma	<i>Vernonia lasiopis o</i>	Treats worms, cough and stomachache
Omushambya	<i>Dodonaea angustifolia</i>	Treats Diarrhea
Omubirizi	<i>Vernonia amygdalina Delile</i>	Treats Malaria

Table 4: Medicinal plants in Echuya Central Forest Reserve.

Results show that all CFM group members and majority non CFM group members interviewed do not have adequate access to forest resources (Table 5). Here, adequate access means that the harvested resources can satisfactorily meet the livelihood needs of local

community members. Only 5.2 per cent non CFM group members have adequate access to resources from the forest reserve. This indicates that generally, community members are not satisfied with the amount of forest resource they are able to access.

Respondent category	Do community members have adequate access to forest resources?					
	Yes		No		Total	
	#	% (age)	#	% (age)	#	% (age)
CFM group members	0	0	165	36	165	36
Non CFM group members	24	5.2	269	58.7	293	64
Total	24	5.2%	434	94.8%	458	100%

Table 5: Access to forest resources as perceived by respondents.

Through interviews, NFA and CFM group leaders noted that implementation of the CFM program has not been able to stop forest degradation because both CFM and non CFM group members violate the CFM agreements. Focus group discussions also revealed that due to poverty, both CFM and non CFM group members are compelled to violate government restrictions and CFM agreements regarding the amount of resources community members can harvest. They thus stealthily access the forest reserve outside the designated days to harvest more resources to supplement their livelihoods. Document review of the CFM agreements that indigenous community members are to harvest the acceptable forest resources for free. As a result, other community member's use that opportunities send them to harvest the resources at fee lower than the official government fee as revealed during FGDs. They access forest resources outside the designated days, and indiscriminately harvest forest resources thereby deteriorating the forest reserve.

Recognition and respect for tenure and forest resource rights in CFM and forest conservation

The role of recognition and respect for tenure rights was evaluated in terms of its contribution towards ownership and sustainable utilization of forestland and resources. Interviews and FGDs showed that respect for tenure rights motivates community members and other CFM partners to control deforestation by outsiders. Additionally, forest resource access rights obtained through CFM agreements encourage local community members to engage in sustainable practices such as ecotourism and beekeeping. This promotes forest conservation in terms of solid response to conservation threats by

community members thereby controlling unauthorized forest use and protecting forest resources from depletion. CFM partners draw the responsibility to control deforestation from their mandate of conducting joint patrols and participatory monitoring of Echuya as enshrined in the CFM agreements. However, results from FGDs and interviews show that sometimes, government officials from NFA misuse government's tenure rights over Echuya. The officials connive with community members and traders from other parts of the country to harvest resources (mostly bamboo) for sale despite the ban that was imposed on bamboo harvesting to allow regeneration. This has escalated unauthorized forest resource use and exacerbated conservation threats towards the forest reserve. At the same time, other community members stealthily access the forest reserve outside the designated days as per the CFM agreements, and indiscriminately harvest forest resources, thereby deteriorating the quality of non-timber forest products such as bamboo and other tree species, thereby undermining conservation efforts. Failure to fully recognize and respect tenure and forest resource rights results into forest depletion while their recognition and respect can lead to forest conservation (Figure 2).

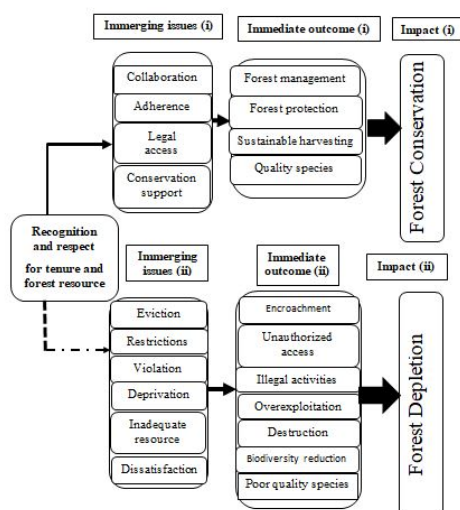


Figure 2: Summarized information on how recognition and respect for tenure and forest resource rights in CFM influences forest conservation.

Notes: Recognition and respect for tenure and forest resource rights results into ‘immerging issues (i)’ which lead to ‘immediate outcome (i)’ whose impact is forest conservation. Conversely, lack of recognition and respect for tenure and forest resource rights results into ‘immerging issues (ii)’, which lead to ‘immediate outcome (ii)’ and the impact is forest depletion.

Linear regression analysis for recognition and respect for tenure and forest resources access rights and forest conservation

Data on community members’ opinions about recognition and respect for tenure and forest resource rights and forest conservation were further analyzed to determine whether recognition and respect for tenure and forest resource access rights are significant predictors for forest conservation. Regression analysis shows that the coefficient of determination (adjusted R Square) value is 0.688 (Table 6).

Model	R	R ²	Adjusted R ²	Std. Error of the estimate
1	0.830a	0.689	0.688	0.38122
Predictors: (Constant), tenure rights, forest resource rights				

Table 6: Model Summary.

This implies that recognition and respect for tenure and forest resource rights explain 68.8% variation in conservation of ECFR. After running linear regression, tenure rights and forest resource rights

were all significant (P-value ≤ 0.05). Thus, tenure rights ($\beta = 796$; Sig.<.000) and forest resource rights ($\beta = 068$; Sig.<.018) are significant predictors of forest conservation (Table 7).

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.265	0.066		19.155	0
Tenure rights	0.451	0.016	0.799	27.751	0
Forest resource rights	0.058	0.025	0.068	2.374	0.018
Dependent variable: Forest conservation					

Table 7: Multiple regression analysis.

Discussion

Recognition and respect for forest tenure rights

Results from the current study show mixed reactions regarding tenure rights and ownership of Echuya. Whereas results from household surveys and FGDs indicate that Government/NFA has tenure rights and is the rightful owner of Echuya, interviews with NFA staff and CFM leaders indicate that the forest reserve belongs to local communities, signifying that NFA is only mandated to manage it on behalf of the community. Nonetheless, most CFM and CFM group members recognize government’s tenure rights over the forest reserve.

Results from our study are consistent with studies conducted elsewhere in Indonesia, Brazil and Guatemala which have also shown that state controlled forests (protected areas) are owned by government [19]. Our findings show that government has tenure rights and is the rightful forest owner because it determines who should access the forest and the amount of forest resources to harvest. This means that tenure rights are held by institutions or people who have power and authority to determine modalities of forestland and resource use. As shown in earlier studies, rightful owners of forest tenure determine who is permitted to use which resources, the way in which to use them, for how long and what conditions [20]. Results from the present study are in accordance with findings of previous studies and reiterate that as rightful owners of forest tenure, government determines who can rightfully access forest resources, the duration, in what way and the conditions under which the forest

resources can be used. While both CFM and non-CFM group members recognize government's tenure rights, some of the community members fall short of respecting the rights given that they stealthily access the forest and harvest resources without government authorization. Thus, recognition of tenure rights without respecting them undermines conservation efforts.

Our results are in agreement with rights and resources initiative that government only recognizes control, rather than ownership of forest resources. In Echuya, under CFM, government recognizes that communities have the right to control forest resource use through forest monitoring and joint patrols, but they do not own the resources they control. Government's control over forest resources in Echuya can be attributed to the forest's biodiversity significance. However, the issue of CFM group members and other community members controlling resources owned by government, cognisant that some government officials use such resources for personal enrichment is barely effective because community members feel that they do not gain from protecting resources that benefit government individual officials.

Moreover, previous studies show that although communities and indigenous people occupy and utilize a substantial portion of forests, a small part of the forest land is recognized officially by national laws, and even less is securely held and protected by them. Consequently, most communities and indigenous people have insecure tenure and weak rights over their forests [21]. Similarly, our study found that the rights of indigenous people are weak and their tenure is insecure. They lost their forest tenure rights after exclusions and evictions from forests primarily to create protected areas [22]. Nonetheless, our findings indicate that despite the evictions, a group of indigenous community members continue to consider themselves owners of Echuya. These findings are in agreement with results from a study by that indigenous people who live inside or near protected areas such as the Kadam in Mt. Kadam CFR, the Benet in Mt. Elgon conservation area, the Ik in Timu CFR and the Tepeth in Moroto CFR consider them as their land and have the right to access resources therein [23]. This indicates that while government evicted the local people and gazetted forests, indigenous people still have strong attachment to the forests and claim their ownership.

Our study findings show that indigenous people and other local community members (CFM and non-CFM group members) continue to stealthily harvest forest resources without authorisation from government authorities which has led to forest degradation. This is in line with the theory of access, that access is often intermediated by social identity including groupings by ethnicity. Results from the current study are consistent with those from previous studies which show that in the context of disenfranchised local population and absence of secure tenure, community members are unlikely to protect resources or use them sustainably. This renders forests prone to open access, uncontrolled exploitation and degradation.

Forest resource access rights

Our results show that community members have a right to access forest resources (with restrictions) based on the CFM agreements signed between NFA and communities adjacent to the forest reserve. This is consistent with Ribot and Peruso Theory of Access, that rights-based access is approved by custom, law or agreement. However, controlled resource access with limited alternatives to forest resources is hardly effective because local community members continue to rely on forest resources to meet their household needs and violate

restrictions enshrined in the signed agreements. Household interviews showed that firewood was the most accessed resource, followed by bamboo. Other resources which community members have the right to access are; grass, medicinal herbs and honey. Previous studies around Echuya also found that bamboo and firewood were the resources mostly accessed by community members [24]. Although this study used household surveys, face to face interviews and focus group discussions and despite the methods' limitations, there were slight variations between our study and that of Barahukwa who used questionnaires and interviews, and found that bamboo was most accessed resource followed by firewood [25].

However, our results indicate that almost half of respondents, most of whom are CFM group members considered their rights to access resources not respected because they expected to continue harvesting resources that satisfactorily meet their household needs even after signing the agreements. Because of poverty conditions community members consider the resources they are allowed to access as inadequate, and engage in subversive activities like grazing in the forest reserve and harvesting forest resources outside the designated days in order to meet their household needs. This is corroborated by the theory of access that inadequate access leads to illegal access which is known as the use of things in a manner not permitted by society or state. Whereas it is difficult to determine the amount of resources adequate for individual community members, provision of alternative sources of livelihood is a viable solution to controlling over harvesting forest resources by community members. This is because alternative sources of livelihoods reduce poverty conditions and contribute to meeting community members' household needs.

Recognition and respect for tenure and forest resource rights in CFM, and conservation of Echuya

Multiple regression analysis in the current study showed that tenure rights ($\beta=796$; Sig.<.000) and forest resource rights ($\beta=068$; Sig.<.018) significantly influence forest conservation. FGDs revealed that local communities' forest resource access rights obtained through CFM agreements encourage local community members to engage in sustainable practices such as ecotourism and beekeeping. Our results are consistent with a recent study on CFM in Uganda, that CFM agreements create incentives for communities to engage in sustainable practices like ecotourism, bee keeping and collection of non-timber forest resources [26].

Similar to the findings of German et al. and Larson and Springer our findings reveal that security of forest tenure and greater recognition help to protect the forest against the risk of negative impacts on ecosystems, thereby promoting forest conservation [27]. Consistent with results from a study by Ssemmanda, et al. findings from our study indicate that through CFM agreements, beneficiaries are granted rights to manage and use certain forest resources as specified in the CFM agreements. Results from our study concur with previous studies. That recognition and respect for tenure and forest resource rights motivates community members to control deforestation by outsiders. The current study confirms that CFM members conduct routine forest patrols and regular monitoring, and some groups have instituted a network of informers who report illegalities in the forest reserve to NFA. Through CFM, recognition and respect for community members to access forest resources has to enable forest adjacent communities to claim their rights to manage their natural resources in and around Echuya.

Even though a large number of empirical works have shown that CFM has led to a decline in illegal resource access and reduced pressure on the forest, our study showed that CFM has been unable to halt forest degradation and deforestation. Indigenous community members who consider the restrictions enshrined in CFM agreements as infringements on their rights continue to harvest the resources and graze in the forest reserve without authorisation, and this has caused forest degradation. Our results are in accordance with whose studies showed that CFM has not stopped forest degradation in Uganda and elsewhere in Cameroon, Ghana and Kenya where areas managed by local communities and indigenous people are increasingly under pressure. These studies do not imply that CFM is not effective in reducing deforestation rates. Rather, they indicate that outcomes in terms of forest conservation differ from case to case, and also depend on the level to which the actors' rights are recognized and respected. Whereas in some instances recognition of forest resource rights contributes to conservation objectives, in other instances, it offers an incentive for the local community members to harvest forest resources. Nonetheless, in whatever context, insecurity of land tenure and restricted forest resource access rights may explain the observed general degradation of the forests throughout Uganda and elsewhere such as Ghana and Burkina Faso across the world [28,29].

Conclusion

In this paper, we explored the role of recognition and respect for tenure and forest resource rights in CFM on forest conservation in terms of response to conservation threats by community members. While collaborative forest management has been implemented and there is growing recognition of community rights in relation to protected areas, due to poverty conditions community members consider the resources they are allowed to access as inadequate and continue to overharvest forest resources without authorisation from government. Besides, staff in government institutions misuse government's tenure rights and engage in subversive actions to connive with community members and overexploit forest resources which contributes to degradation. There is need for government to implement strong punitive measures for officials and community members who engage in illegal harvesting of forest resources. However, implementation of livelihood projects to provide alternative sources of livelihoods for communities adjacent to the forest reserve is essential for effective recognition and respect of tenure and forest access resource rights. Until the rights of government and communities are fully recognized and respected by protected by managers of protected areas, forest reserves will continue to be overexploited.

Acknowledgements

We would like to give special thanks to Management at National Forestry Authority in Uganda, NatureUganda, District Leadership of Kisoro and Rubanda districts, CFM group leaders and community members adjacent to Echuya Central Forest Reserve who provided their time, permission and knowledge for this research.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or non-for-profit sectors.

References

1. Springer J (2016) Initial Design Document for a Natural Resource Governance Framework. International Union for Conservation of Nature and Natural Resources, Gland, Switzerland, 1-49.
2. Crawshaw R, Holmström L (2001) American Convention on Human Rights. Essential Texts on Human Rights for the Police. Pact of San Jose Costa Rica. Organization of American States, Washington, USA, 165-193.
3. United Nations (1992) United Nations Conference on Environment and Development, June 3-14. Rio de Janeiro, Brazil.
4. Larson AM (2012) Tenure rights and access to forests : A training manual for research: Part I. A guide to key issues. Center for International Forestry Research (CIFOR), Bogor, Indonesia, 1-24.
5. Benda-Beckmann VF, Benda-Beckmann VK, Wiber M (editors) (2006) Changing properties of property. Berghahn Books, New York (NY), 1-112.
6. Ribot JC, Peluso NL (2003) A theory of access. *Rural Sociol* 68:153-181.
7. Roviana M (2015) Collaborative Forest Management: Community's Livelihood vs. Forest Conservation. A Case Study of Sebangau National Park, Indonesia. Institute of Social Studies, The Hague, Netherland.
8. Beck P (2000) Collaboration and Credible Commitments: Experiments with Collaborative Resource Management in Uganda. Indiana University, Bloomington.
9. Kazoora C, Irumba D, Smith N, Mutamba M, Nkabiheebwa P, et al. (2019) A review of collaborative forest management in Uganda. Ministry of Water and Environment, Kampala, Uganda.
10. Rights and Resources Initiative (2018) At a Crossroads. Consequential trends in recognition of community-based forest tenure from 2002–2017. Rights and Resources Group, Washington, USA.
11. Kusters K, de Graaf M (2019) Formalizing community rights to forests: Expectations, outcomes and conditions for success. Tropenbos International: Wageningen, the Netherlands, 1-68.
12. Tauli-Corpuz V, Alcorn J, Molnar A (2018) Cornered by protected areas. Rights and Resources Initiative, Washington, USA, 1-14.
13. Ding H, Veit P, Blackman A, Gray E, Reyta K, et al. (2016) Climate Benefits, Tenure Costs: The Economic Case For Securing Indigenous Land Rights in the Amazon. World Resources Institute, Washington, USA.
14. Cronkleton P, Artati Y, Baral H, Paudyal K, Banjane M, et al. (2017) How do property rights reforms provide incentives for forest landscape restoration? Comparing evidence from Nepal, China and Ethiopia. *Int For Rev* 19:8-23.
15. Garnett ST, Burgess ND, Fa JE, Fernández-Llamazares Á, Molnár Z, et al. (2018) A spatial overview of the global importance of Indigenous lands for conservation. *Nat Sustain* 1:369-374.
16. Mugisha A, Byaruhanga A, Opige M (2012) Enhancing the livelihoods of local communities dependent on a montane tropical forest: a case of Echuya forest, Uganda. *Nature Uganda*, Kampala, Uganda.

17. National Forestry Authority (2007) Community forest management arrangement agreement. Republic of Uganda, Kampala, Uganda.
18. Creswell JW (2009) Research design: Qualitative, quantitative, and mixed methods approaches. (3rd edition) Sage Publications, California.
19. Gray E, Veit P, Altamirano JC, Ding H, Rozwarka P, et al. (2015) The economic costs and benefits of securing community forest tenure: evidence from Brazil and Guatemala. World Resources Institute, Washington, USA, 1-40.
20. Siry JP, McGinley K, Cubbage FW, Bettinger P (2015) Forest tenure and sustainable forest management. *Open J For* 5:526-545.
21. Food Agricultural Organisation (2014) State of the World's Forests 2012. Rome, Italy.
22. Kidd C, Zaninka P (2008) Securing Indigenous Peoples Rights in Conservation: A review of south-west Uganda. Christopher Kidd, Forest Peoples Programme (FPP) and Penninah Zaninka, United Organisation for Batwa Development in Uganda (UOBDU), 1-27.
23. Food Agricultural Organisation (2015) Enhancing Forest Tenure and Security in Uganda - The turning point. A policy brief. Thinking beyond the forest cover and canopy, Rome, Italy.
24. Larson AM, Springer J (2016) Recognition and Respect for Tenure Rights. NRGF Conceptual Paper, International Union for Conservation of Nature and Natural Resources (IUCN), Gland, Switzerland, 1-18.
25. Barahukwa A (2015) The impacts of collaborative forest management on the livelihoods of forest adjacent communities, of Echuya Central Forest Reserve. Kampala International University, Kabale-Kisoro, Uganda.
26. Ssemmanda R, Kiyangi G, Opige M (2020) Collaborative Forest Management in Uganda — Recommendations for CSOs. Tropenbos International. Wageningen, the Netherlands, 1-3.
27. German L, Schoneveld G, Mwangi E (2011) Processes of large-scale land acquisition by investors: case studies from sub-Saharan Africa. Paper presented at: ICGLG 2011. Proceedings of the 38th international conference on global land grabbing, April 6-8, Bogor, Indonesia.
28. Stevens C, Winterbottom R, Springer J, Reyta K (2014) Securing Rights, Combating Climate Change: How Strengthening Community Forest Rights Mitigates Climate Change. World Resource Institute, Washington, USA, 1-56.
29. Twinamatsiko M, Rugunda GK, Basheka B, Herdt TD (2015) Can governance in revenue sharing be a pathway for a win-win situation between people's livelihood improvement and conservation?. *J Soc Sci Res* 8:1-19