

## **EXPLORING THE COLLABORATION OF LOCAL COMMUNITIES AND OTHER STAKEHOLDERS ON WETLAND CONSERVATION IN APAC MUNICIPALITY, UGANDA: CHALLENGES AND OPPORTUNITIES**

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### **ABSTRACT**

Wetland degradation is widespread throughout Uganda due to the dependence of communities on wetlands resources for their livelihood. The increasing population is a threat to wetland biodiversity and calls for concerted efforts to conserve it. Uganda for a long time has had laws and policies to conserve and manage its wetlands, but wetland degradation has not stopped. This study sought to understand how the current collaboration between local communities and government institutions could be improved with an emphasis on how these two bodies perceive the current management of wetlands, especially in Apac Municipality where the study was conducted. Qualitative methods were used in this study whereby 15 respondents, including nine wetland users and six representatives from the authorities, were interviewed with open-ended questions to obtain their opinion. The findings revealed that there is an established management framework and institutions for managing wetlands under a decentralised government system, but the management approach is majorly top-down where the government and municipalities make decisions for the communities on wetland use with little consideration of local initiatives. Other factors, such as climate change and low levels of awareness of wetland laws, were also found to contribute to wetland degradation. This study suggests that

engagement through bottom-up approaches coupled with increased levels of awareness among wetland stakeholders could improve wetland conservation.

**Keywords:** collaboration, stakeholders' perceptions, wetland conservation, Apac Municipality, Uganda

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## **1. INTRODUCTION**

### **1.1 Background**

Wetlands play a crucial role in numerous global natural cycles, offering a variety of products and services to both humans and nature, including regulatory services, provisional services, cultural value, and supporting services; hence, they are also an important biodiversity reservoir that should be maintained (Daigneault et al. 2012). They are among the most significant and productive ecosystems (Mitsch & Gosselink 2015).

However, wetlands are still being destroyed all over the world despite the benefits that most countries receive from them (Hus et al. 2017). This is manifested by the fact that wetlands around the world continue to be subjected to a variety of natural and anthropogenic stresses that continuously alter the physical, chemical, and biological traits that are essential for the wellbeing and functioning of their ecosystems (Kumi et al. 2015). Davidson (2014) revealed the alarming statistic that wetlands had declined by around 87% globally, a large portion of the deterioration occurring in the 20th and early 21st centuries. Bhowmik (2019) indicated that the detrimental destruction of wetlands is widespread throughout the world, and if actions are not taken to lessen it, there is a likelihood of threat posed to wetlands biodiversity and to communities depending on such ecosystems.

In Africa, wetlands are being destroyed and converted for developments upstream which are changing the quantity and quality of water in the wetlands (Schuyt 2005). The main cause of these actions is a lack of knowledge of the economic benefits of wetlands by decision makers. In Uganda, wetland coverage fell to 8.6% in 2015 from 13% in 1990 according to NEMA [National Environment Management Authority] (n.d). It is also predicted that there may be no wetlands left in the year 2040 if this pattern continues. Since 1995, Uganda has had clear laws and policies in place to conserve and manage wetlands but, so far, they have only had a limited impact as the degradation of wetlands is increasing at an alarming rate. The provisional services that wetlands provide to people's well-being have led to increased wetland encroachment, over-exploitation, and degradation.

The challenges of wetland management in Uganda seem to stem from policy decisions (MWE [Ministry of Water and Environment] 2016). For example, the Uganda National Environment Act no.5 of 2019, Section 54(10) permits local communities to: engage in traditional uses of harvesting wetland resources like papyrus, medicinal plants, trees, and reeds; fish using local tools; collect water for domestic use; and hunt. It further approves the issuance of wetland user permits for regulated activities that include commercial exploitation of wetland resources, brick production, cultivation, sand, and clay mining. These activities are, however, not permitted in wetlands that have been designated as protected wetlands of national and international significance as stipulated in National Environment Act (NEA) 2019 (Republic of Uganda 1995a). Article 237 Clause 2(b) of the Uganda constitution of 1995 states that the "government shall hold in trust for the people and protect natural lakes, rivers, wetlands, forest reserves, game reserves, national parks and any land to be reserved for ecological and tourist purposes for the common good of all citizens" (Kakuru et al. 2001, p. 9; Republic of Uganda Constitution 1995). This shows that wetlands in Uganda can be used by different communities within the vicinity of such resources for various purposes. However, their daily utilization of these resources causes the wetlands to be over-exploited because they are considered a common pool resource.

The wetland policy and laws were possibly effective when the Uganda population was low and manageable. According to the Uganda Bureau of Statistics (UBOS), the population of Uganda has been increasing over time, rising from 9.5 million in 1969 to 34.6 million in 2014 with an average annual growth rate of 3% (UBOS 2021). The rapidly growing population and associated livelihood activities are putting considerable strain on Uganda's wetlands (NEMA n.d.). According to Ostrom (1999), communities have little motivation to undertake resource conservation if these resources are accessible and resource-rich, which can lead to the tragedy of the commons. The phrase "tragedy of the commons" (Hardin 1968) explains the environmental degradation that can be anticipated whenever a limited resource is shared by many people. In the same article, Hardin (1968) explained that it is difficult and expensive to exclude potential users from resources that are shared by many people but provide limited benefits (such as firewood, fish, and water). The amount of resource units that are made accessible to other users is decreased by each person's use of a resource system (Ostrom 2008). Hardin (1968) argued that nationalizing or privatizing the common pool resources would be the sole means to prevent the tragedy of the commons. Ostrom (1999, 2008) has challenged this perspective by gathering empirical data to show that there are several instances of local communities successfully managing common pool resources through self-governing institutions. In other words, the strength of the institutional structure established to manage a resource but not necessarily who owns the resource determines whether successful management occurs or not.

## **1.2 Causes of wetland degradation**

In Uganda, extraction of usable materials, settlement, marram infilling, pollution from direct dumping of solid wastes, and incompatible farming are among the contributing factors to destruction of the wetlands (MWE 2016). Other factors leading to wetland destruction include: clearance of vegetation; poor agricultural practices, such as overgrazing and cultivation on hilly terrain; and use of agricultural chemicals (MWE 2016). Kabumbuli and Kiwazi (2009) revealed that nearly 70% of the poor residents in Kampala, Uganda, relied entirely on wetlands for their livelihood. This shows that poverty compels many people to use any resource, like wetlands, for survival.

Lack of understanding and information sharing between wetland users and the government has also been assumed to contribute to the destruction of wetlands (UBOS 2017). Degradation, especially in the forestry and wetlands sectors in Uganda, has not only been caused by the factors mentioned above but is also to some extent due to policies and laws that do not seem to be working well, as revealed by the National Environment Management Authority of Uganda.

## **1.3 Institutional and policy frameworks protecting the wetlands**

Uganda has ratified several international treaties and conventions including the Convention on Biological Diversity and the Ramsar convention which demand national action to create, implement and enforce policies and laws that adhere to international standards outlined in the conventions to achieve wise use and wetland conservation (Turyahabwe et al. 2017). The 1995 Uganda Constitution, the Uganda National Environment Management Policy (UNEMP 1994), and the National Environment Act no.5 of 2019 are among the policies and legal frameworks established for wetland management, aimed at resolving concerns such as ownership, access, and management of wetlands. Wetland management is further reinforced and explained by the Local Government Act, the Land Act of 1998, and the National Environmental (Wetlands, Riverbanks and Lake Shores) Management regulations of 2000. The Local Government Act

gives power to local councils to hold in trust and manage wetlands for the common good of the citizens. The role of the central government and agencies is limited to ensuring that national laws are being followed and providing general technical assistance to local authorities.

The following is the organizational arrangement of institutions in charge of managing wetlands in Uganda:

1. Uganda's wetlands are managed, safeguarded, and conserved under the direction of the Ministry of Water and Environment, a cabinet-level agency.
2. The National Environment Management Authority (NEMA), a semi-autonomous organisation under the Ministry of Water and Environment, is responsible for the coordination, supervision, and monitoring of environmental initiatives.
3. The Wetlands Management Department under the Ministry of Water and Environment has established regional technical assistance units in all regions, including Northern Uganda, and has wetland officers assigned to ensure sustainable management of wetlands by establishing wetland standards, conducting investigations, developing policies, and providing technical support.
4. The local government (Municipality) and lower local government (Divisions) have the responsibility to manage wetlands under their jurisdiction through raising awareness, developing wetland inventories, and upholding wetland laws.

#### **1.4 Importance of the study**

Wetlands are among the most important ecological and economic resources in Apac Municipality. The wetlands serve similar benefits as indicated above (Daigneault et al. 2012; Mitsch & Gosselink 2015) of regulatory, provisioning, cultural value, and supporting services, as well as biodiversity integrity. These vital ecological resources continue to be degraded despite the efforts made by authorities in the Municipality to create awareness of wetland conservation and enforcement of the laws.

The continued wetland degradation in Apac Municipality is an indication that the protection of wetlands, especially in urban areas, is still a challenge, pointing to inadequate policy implementation throughout time (Musaza & Marambanyika 2021). This suggests that Uganda's current policies and legislation may be insufficient to combat environmental degradation in the changing nature of developments or that there might be other reasons for the continuous degradation of wetlands. The continuous confusion of wetland administration and utilization between the local government and communities motivated the researcher to try to understand the existing collaboration between these two parties.

Having little understanding of the state of science and local conditions, planners create many strategies of local commons governance models whose outcomes are frequently tragic (Dietz et al. 2003). To prevent the large-scale resource destruction that will otherwise occur, humanity is challenged to quickly develop and apply an understanding of large-scale commons governance (Dietz et al. 2003). Chuma et al (2021) indicated benefits of improved wetland management by enabling the collaboration between the authorities and local communities to sustain the use of wetlands. Hence this study focuses on the collaboration between communities and local governments as this is deemed critical for wetland management. Mahyuni and

Syahrin (2021) attested that the government can carry out wetland environmental management initiatives with the help of communities, and the outcomes will most likely be positive. To understand if this is applicable in Uganda, this study seeks to understand how the current collaboration between local communities and government institutions can be improved with an emphasis on how these two bodies perceive the current management of the wetlands, especially in Apac Municipality.

### **1.5 Objectives and research questions of the study**

The main objective of this study was to examine how best to engage the local community and other stakeholders to collaborate and improve long-term wetland management.

Research questions:

- i. Who are the stakeholders (communities and authorities) involved in the management of wetlands in the Apac Municipality?
- ii. What are the perceptions of communities and authorities regarding existing wetlands management practices?
- iii. What are the challenges in the current processes and how can those be improved?

## **2. METHODS**

### **2.1 Description of the study area**

The study was carried out in the Northern part of Uganda in Apac District where Apac Municipality is located. The Municipality is between longitudes 32° West and 34° East and latitudes 1.59° North and 3° South (Fig 1). The Municipality has a total area of 231 km<sup>2</sup>. The Municipality is made up of four divisions: 20 Wards and 96 Cells (the lowest level of governance).

The municipality is covered by 15% of the Arocha wetland system (Apac Municipality Physical Development Plan 2021-2031). The Arocha wetland system, which is the study area, is the main permanent wetland that drains most of the municipality through its tributaries and which eventually drains into the river Nile (Fig 2).



Figure 1. Map of Uganda showing the location of the Apac District. (Source: From Wikipedia 2017)

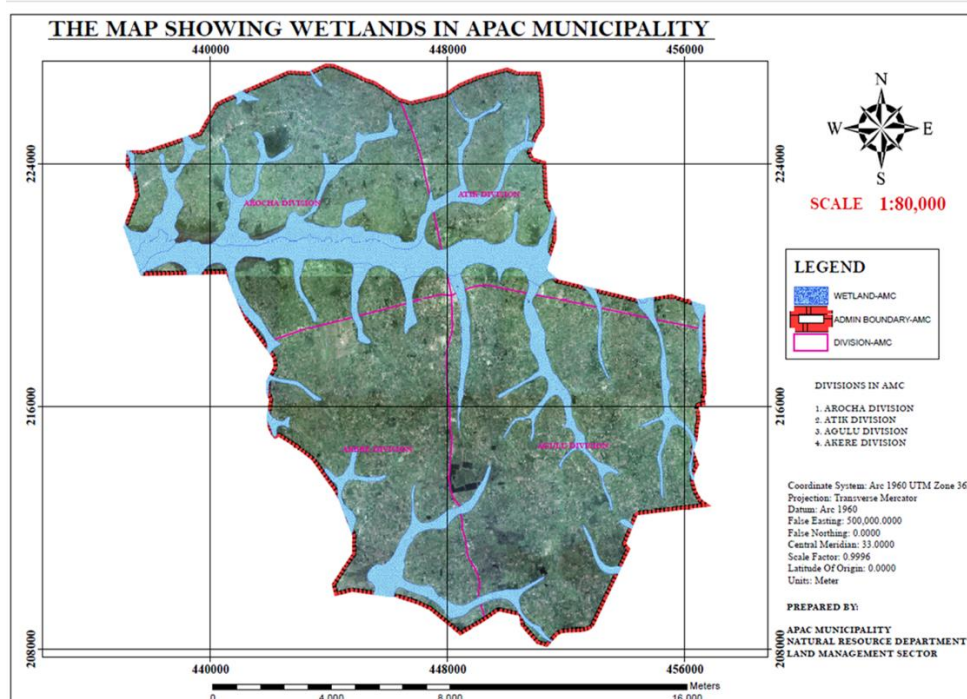


Figure 2. Map showing the wetlands in Apac Municipality. (Source: Apac Municipality Physical Development Plan 2021-2031).



## **2.2 Data collection**

The study used a qualitative methodology to gather data. Information was gathered by administering interview questions to 15 selected individuals who comprised of nine wetland users and six representatives from the authorities in charge of wetlands management in the study area. The wetland users were selected from all four Divisions of the municipality and at least one person at each level of governance to gain insight into the municipality wetland management.

The interview questions were translated from English to the Lango language to enable the local community interviewees to comprehend the questions. The interviews were conducted by four enumerators, of which two were permanent staff of the municipality (Municipal Lands Supervisor, Municipal Physical Planner), and two graduate trainees at the Natural Resources Department of the municipality. Three of the enumerators were males and one was female. The four enumerators were selected based on their knowledge of natural resources management and their proficiency in both English and Lango. To enable the enumerator to acquaint themselves with the interview questions, the questions were first pre-tested randomly by interviewing four staff members at the municipality before the commencement of data collection. This also enabled the enumerators to rephrase unclear words in the questionnaires.

The interview questions were divided into two sets, one set with 18 questions for the wetland users and the other with 11 questions for the authority interviewees. The interview questions were based on the research questions and covered a wide range of issues regarding wetlands, including stakeholder participation in wetland management, community awareness of wetland laws and regulations, community perception of wetland management in Apac Municipality and the authority responsible for wetland management. The questions also covered wetland management approaches used in Apac municipality (see Appendix 1). The interviewees were first briefed about the purpose of the study and assured of the confidentiality of their personal identity and the information provided.

The data collection was carried out using semi-structured questions and a voice recorder. The data collection was planned for one week but took three weeks due to the busy schedules of the respondents in authority and wetland users unavailable due to other commitments. The data collection was conducted from 11<sup>th</sup> to 29<sup>th</sup> July 2022.

The 15 respondents comprised four women and 11 men. There was only one woman among the authority interviewees, the rest were men.

## **2.3 Data analysis**

The collected data was first transcribed into English by the researcher. The data was then coded and analysed using thematic analysis (Nowell et al. 2017). Thematic analysis entails examining participants' replies and the underlying motivations for their responses (Maguire & Delahunt 2017). Similar quotes were coded and then grouped into themes. The personal information of the respondents was kept confidential.

### 3. FINDINGS

#### 3.1 Stakeholder engagement (communities and authorities)

The respondents were asked to outline how the wetlands in the municipality are managed, from the community level to the municipality level.

##### 3.1.1 Administration structures

The respondents from the authority in charge of wetland management revealed that the establishment of Ugandan institutions for managing wetlands had embraced decentralised wetland management since 1980 and that the legal framework was in place. The management structure at local government level for managing wetland use was as follows.

The lowest level of local government is Local Council one (LC 1) at Cell level and consists of one LC 1 elected chairperson. The second level is Local Council two (LC 2) at Ward level which also has one elected LC 2 chairperson. The third level is the local council three (LC 3) at Division level, comprising of elected LC 3 councillors, one LC 3 chairperson, and technical staff (government employees). The highest level is Local council four (LC 4) at Municipality level, consisting of LC 4 councillors, the mayor and technical staff. The municipality works closely with the Ministry of Water and Environment and the government agency NEMA.

Most of the respondents indicated that they were aware of the administration structures and commended the importance of these structures for wetland management but said that the main problem was coordination among the different levels of administration. They said for example, that the mayor and technical staff at LC 4 would sometimes communicate directly with the chairperson LC 1, and the other middle structures were thus left out of decision making. The wetland users felt they had not been given opportunity to share their views regarding wetland management and one of the wetland users expressed it this way:

*As a community member, we need our elected leaders at all levels to be involved so that our views are considered on wetland management. As for now we continue to use them the way we like because we are angry with these authoritative bodies who seldom consider us as the owners of these wetlands.*

On the same issue of coordination, the lower-level leaders expressed the need to bring synergy amongst the different levels of local government because, according to them, some decisions made at the two higher levels (LC 3 and LC 4) affect the wetland management at the lower levels. One chairperson of LC 1 expressed how this affected them by saying:

*It is sad that some of the decisions made from higher levels impact on us negatively, like giving wetland permits to non-community members who take our resources and leave us with holes and trenches dangerous to our children.*

##### 3.1.2 Communication structures

The respondents said that the same structures mentioned in section 3.1.1 above are used for communicating issues pertaining to wetland management except in situations where some people intentionally decide not to follow those structures. The majority of the respondents described the communication channels thus: the higher offices (municipality) develop the plans

for wetland utilization based on the government policies and mandates and then communicate with the lower structures on how the wetlands are supposed to be used. The local leaders communicate the government policies to communities and ensure that they are followed. The communication among the structures of administration can be said to be relatively well working but the linkage with the communities seems to be missing. To emphasise this gap, one municipality respondent said:

*We try to ensure that the wetlands are utilised in a sustainable manner based on the policies and laws, but the communities [wetland users] on the other hand want to do their things their own way which is not related to what is allowed in the wetlands.*

The medium of communication described by most respondents included public gatherings, radio talk shows, community and council meetings, as well as campaigns. The main messages carried forward in these platforms as described by local council leaders are: proper management of the wetlands; sustainable use of wetlands; conversion of degraded wetlands into other uses, such as through ploughing; and public concerns about the wetlands. Other types of communications are made through the issuance of warning letters to wetland degraders by the authority. One municipality respondent said:

*When we receive information about a wetland degrader in a certain area, we send our technical staff to carry out assessment of the activity and make a report which enables us to issue a warning letter to the identified degrader. The degrader is directed to stop the activities and restore the wetland.*

The majority of the local leaders at LC 1, LC 2 and LC 3 stated that there was need to communicate government policies and laws rigorously in order to bring harmony between the communities and authorities regarding wetland use before embarking on enforcement of the legal frameworks. To emphasize this point, one chairperson LC 2 said:

*It can be extremely dangerous to enforce the law before ensuring that communities are satisfied as they always complain about being denied using wetlands here when elsewhere people are given permits to use the wetlands.*

In terms of how frequently these different bodies communicate, the respondents indicated that there are no specific dates and times but that it depended on the prevailing situations and circumstances.

### 3.1.3 Legal frameworks

To understand if the actual wetland management is in line with the legal frameworks and how stakeholders perceive those frameworks, the respondents were asked to indicate the legal frameworks and strategies used in wetlands management in the municipality. The findings showed a clear division of awareness between the community, local leaders, and the authority regarding these legal frameworks. Some wetland users knew about the laws and some had no idea. The authority declared to be the custodians of the legal framework while the local leaders indicated that they knew about the laws and regulations governing the wetlands but had not been given a copy. One chairperson of LC 2 said:

*The problem is that we are only told about these laws during meetings and when there is a dispute, but no copy is given to us so that we also have it in our offices to sensitise our members during village meetings. As leaders we remain only knowing that there are those laws which we cannot see and read.*

When respondents were asked to indicate how effective the legal frameworks were in management of the wetland, the respondents from the municipality and ministry demonstrated optimism for the implementation of the law while the majority of wetland users and local leaders believed that the existing law were not effective in handling wetland degradation. One LC 2 chairperson said:

*I do not see the municipality managing to stop wetland degradation fully because of the existing legal frameworks. The authority on this side carries their mandate and communities, on the other hand, continue with their own practices.*

To understand if there were local initiatives from communities to manage their wetlands, local leaders and wetland users were specifically asked how they locally managed wetlands. Five respondents indicated that some communities had enacted by-laws which were used at the community level. The major challenge raised in relation to this was that none of the by-laws were legally binding, so as a result people continued to destroy the wetlands and they could not be prosecuted. One LC 1 Chairperson said:

*We came up with a local law stopping wetland degradation but when we get a wetland degrader, we are unable to prosecute because our bylaw is not legally binding, so now we only report to the higher authority to take actions using the national laws.*

All the local council leaders attested that the local frameworks are not considered part of the official legal frameworks if they are not approved by the government.

### **3.2 The perceptions of communities and authorities regarding wetland management**

The wetland users were asked how they interact with the wetland. They outlined that the wetland was used as a source of construction material such as sand, gravel, reed, poles, and thatch grasses. They also mentioned that the wetlands were used for grazing, as a source of clean water for domestic use, and for collecting fuelwood. They indicated that the conditions of the wetlands drove the focus on how the wetlands were used, for example wetlands which are degraded (dried-up) or drained are used to construct fishponds, plant trees, and even to cultivate fields. One wetland user said:

*Since I was born in this community, we used to get freshwater, building material, medicinal plants, and see beautiful birds from these wetlands, but now, you know, some of these areas are dried and we grow crops on them.*

To understand the value of the wetlands for the municipality, the respondents were asked which groups of people would be affected by the loss of wetlands in the area because of degradation. The majority of respondents said that the local community would be highly affected because most of them used wetland resources in different ways. The respondents indicated that women collect fuel wood from the wetlands, youths mine clay for making building bricks, girls collect

thatching grass and water for domestic purposes, and the elders graze cattle in the wetlands. One elderly wetland user said:

*We all use this wetland for our daily life and mostly because it is one of our important resources to earn our living. I use it for grazing my animals while these other young people, especially boys, make bricks with the mud and sell them. Its loss will affect us so much.*

Some respondents raised an important issue on the over exploitation of wetlands resources, and they believed that many wetlands had lost their original value. The symptoms of degradation outlined by wetland user respondents included the drying up of wetlands, low fodder or vegetation production, the disappearance of some bird life, and polluted water. Most respondents blamed cultivation, clay mining and brick making in the wetlands as the main sources of wetlands degradation. One LC 3 chairperson said:

*Cultivation is destroying these wetlands. The trees are cut down and tunnels made to dry the wetland. Everyone wants to cultivate in the wetlands.*

On the same issue, one LC 1 chairperson said:

*These people making bricks from the wetlands are a serious problem in our wetlands and I don't know how this administration gives them the permits to come into our natural resources even without consulting with us.*

The wetland users also clearly indicated that, though they were enjoying the benefits they derive from the wetlands, they were aware that the condition of the wetlands was deteriorating fast, and the challenging part was that they were unwilling to stop utilising them because they had no other options available.

### *3.2.1 Representation of both communities and authorities*

As indicated earlier, the wetlands administration starts from the Cell (lowest level), to the Ward, to the Division, and the Municipality. All respondents attested that they were well represented but feel their issues regarding wetland utilisation were not being heard. The major challenge mentioned was individual personalities in relation to the management of the wetlands. One of the ministry respondents said:

*To me, people are well represented at all structural levels, but my observation is that nowadays people [communities], when they don't like their representatives because their interests are not fulfilled, they turn to ignore him or her and complain that they are not represented in the administrative structures.*

Most of the wetland users however thought that the leaders whom they elected were not representing their views to the higher authority. The majority of local leaders also attested to having challenges in handling wetland issues with the same people who have a stake in re-election to their positions. One LC 3 chairperson talked about it saying:

*The fact that we are all elected to be in these administration structures indicates that the public elects people whom they trust to represent them. The only challenge*

*is that some of those elected tend to forget their mandate as they fear to lose votes in future.*

On a similar issue, most of the respondents also raised the issue of power dynamics which comes into play during the management of wetlands. The municipality at the higher level seemed to have more influence and power over the lower structures because the management of wetlands is a more top-down system. The government staff, like environment officers, are only present at municipality level. Since they give technical assistance and advice, they have more influence on how things are done.

### 3.2.2 Wetland conditions and drivers of degradation

Given that every respondent expressed how the wetlands was important to them by providing the necessary ecosystem services, they were asked to outline their perceptions about the current conditions of the wetlands by looking back and predicting the future potential conditions. Most respondents indicated that the conditions of the wetlands were deteriorating at an alarming rate when compared to the past. In an attempt to emphasize how drastically the changes had happened, one LC 2 chairperson said:

*I am 52 years old. When I grew up here, we used to see rainbows over our wetlands, but now the current generation cannot even picture how beautiful that was in those days. The wetland was mostly covered by mist in the morning and evenings. It's no longer happening.*

The respondents outlined many factors leading to wetland degradation in the municipality. These included cultivation, brick making, deforestation, conflicts between administrative structures, poor adherence to the legal framework, lack of or outdated guiding frameworks for management of the wetland, high ignorance amongst stakeholders, and high population growth leading to encroachment in the wetlands. One municipality respondent said:

*Though environmental factors contribute to the wetland degradation but the human impacts are the most significant as they contribute greatly to degradation. For example, if people use wetlands sustainably, we cannot have serious problems of wetland degradation from environmental factors.*

The main environmental driver of wetland degradation indicated by many respondents was prolonged drought which leaves farmers with no other alternative than cultivating the wetlands since they depend on rain to grow crops. One of the ministry respondent said:

*Lately, we have been experiencing climate change and its effects. This is noticed in the weather changes. The rainfall patterns have changed compared to the 80s and 90s. So the weather changed, and the drought is so pronounced that people tend to go to the wetland to do cultivation so that they can realise some food crops to feed their families.*

The local leaders and authority respondents also hinted at poverty as a social-economic factor contributing to wetland degradation. They said that community members who couldn't afford to buy more land for crop production resorted to cultivating the wetlands leading to degradation. One LC 1 chairperson said:

*In my community, there are some individuals who have little land and can't sustain their family on it but since they can't afford buying more land, they go and cultivate the wetland which is considered as land without owner.*

The other driver of degradation mentioned by most respondents was the issue of encroachment by people into the wetlands due to unclear/unmarked boundaries in some parts of the wetlands. The municipality respondents indicated that this was commonly done by people whose land is adjacent to wetlands.

### 3.2.3 Level of community awareness

The municipality and ministry respondents were asked to give their observations about communities' awareness of wetland management, the legal frameworks, and the value of the wetlands. One of the municipality respondents said:

*Yes, through some sensitization on radio and physically on the ground, these laws are being made known to them but, of course, I can say most people may not know in detail the laws. They may be aware that there are laws but what are the details in the laws may be a challenge to many of them.*

Likewise, one of the ministry respondents said:

*To some extent, the communities are aware about the wetland laws and management of them, even their importance to them, but in most cases, they tend to ignore them when carrying out their activities. This is noticed when we go for routine monitoring, when we arrive on-site, we find the degraders start to take off when they see the monitoring team.*

The municipality and ministry respondents were of the view that the communities were not fully aware of the proper use of the wetlands and the laws governing these wetlands and said there was need to educate them. The local leaders also indicated misunderstanding of the wetland laws by the wetland users. One local leader respondent said:

*The community is not aware of the ownership issues. In most cases you find the community claim ownership over these wetlands and yet the wetland is held in trust by the government for the benefit of whole community of Uganda.*

To complement these views from authorities, the wetland users were asked a similar question with different words. This time the questions were about their own awareness about management, laws protecting the wetlands, and the value of the wetlands to them. When asked about the value of wetlands to their livelihoods, the wetland users agreed with what the authorities said that they knew the importance of the wetlands. One of wetland user respondents said:

*These wetlands are very rich in nutrients and water hence vegetation grows fast in them for our animals, even when rangelands in most areas are poorly vegetated, we run to these wetland.*

Many wetland user respondents were very reluctant and hesitant to answer the question about their awareness of wetlands management laws. Their answers and explanations were quite contradictory. For example, one wetland user said with a happy voice that:

*I cannot say I know the law if I only heard someone talking about it. I need to have it and read it myself.*

### **3.3 Challenges in wetland management**

The respondents were asked to describe the main challenges hindering effective management of the wetlands and propose suggestions on what they considered best practice in wetland management in the municipality.

#### *3.3.1 Wetland ownership*

The main challenge described by the respondents was that the community whose land is adjacent to the wetland claimed ownership of the wetland since there were no clear boundaries. The wetland users also expressed dissatisfaction on how the wetland laws were not being enforced equitably, saying that in some areas wetlands are being utilised while in other areas they are not. One wetland user angrily said:

*If the government wants to stop wetland degradation, they should first stop everyone from using wetlands because if here in Apac we are stopped and we see people in other districts using the wetlands then we feel cheated and discriminated against. We also have needs that should be fulfilled and it is the wetland that provides us with them.*

The suggestion to improve management issues included: the development of community action plans where all community members can have a say on how they wish their wetlands to be used, demarcating the wetland boundaries, signing agreements between all wetland users and the municipality, regular awareness raising meetings for all related stakeholders, and compliance with the agreed plans. Emphasizing the significance of the community action plans, one of the ministry respondents said:

*Local communities have their indigenous knowledge, and we [the technical officers] have scientific knowledge, so I don't have a doubt that, if we can bring these sciences together using open platforms, we will achieve sustainable management of these wetlands.*

#### *3.3.2 Inadequate funds*

It also emerged that funds for carrying out activities regarding wetland management were not adequate. The municipality respondent said the institution didn't receive any grant from the central government to restore degraded wetland and that, due to various demands, much of the fund allocations are directed to other developments. This challenge was found to cut across all levels of administration and the worst affected were the lower levels that don't have any budget allocation for this purpose. One LC 1 chairperson put it this way:



*You can imagine, I have to monitor all the wetlands within my area of jurisdiction, but with no money given to me for transport or food, so I have no option but to just wait for complaints when they come from the community and follow up.*

When considering the possibility of managing these wetlands with respect to resources and materials, the respondents indicated that, with the help of small resources, the wetland could partly be managed and restored gradually. They cited the opportunity of having the ministry and municipality technical officers and local leaders willing to work with communities to restore the wetlands as a good starting point.

### 3.3.3 Population growth

It emerged that most respondents indicated that the population in the municipality had increased and the demand for wetland resources was high, hence a lot of pressure on the wetlands. They also believed that poverty was high in the communities, making them dependent on wetlands for survival. They suggested interventions which included: using wetlands within their capacity level, continuous assessment of the conditions of the wetlands, promoting family planning, regulating the number of resources harvested so that people harvest what is enough for them to survive other rather than harvesting to sell to other communities, and improving the regeneration of the wetlands. One of the ministry respondents suggested that:

*We need to promote the uptake of livelihood options, so that we encourage the community to engage in other activities that still generate some income for them other than cultivation in the wetland. There are other activities that are acceptable, like fish farming where someone can open a fishpond, can have an apiary, a piggery, and poultry.*

The communal land tenure system was indicated by all municipality representatives to be another challenge related to population growth. This has led to a situation resembling the tragedy of the commons where all people harvest resources from the wetlands, but none is willing to conserve it. As indicated earlier, the communities are using the wetlands for various purposes (grazing, cultivation, construction, planting trees, domestic use etc.) because these wetlands are open access, thus putting more pressure on the wetlands. The same issue of tenure was also mentioned by the municipality representatives who link that with the ownership of the wetlands as a serious social challenge leading to wetland degradation. One of the municipality representatives stated:

*Though the municipality holds the right to manage the wetlands, the law also allows traditional uses of the wetland by the communities harvesting plants, trees, and grazing and we are not always near to oversee the uses all the time.*

### 3.3.4 Capacity gap

The local leaders' respondents all acknowledged that there was a knowledge gap between them and the municipality official regarding wetland laws and policies. The authority respondents also agreed that there was a need to build the capacity of the local leaders and to inform the community of the importance of wetlands and the consequences of degradation. The suggestions of ways to support communities included holding regular meetings and intensifying enforcement without discrimination. One respondent from the municipality said:

*We need to build the capacity of government employees, political leaders, and the local communities so that they speak the same language from an informed point of view.*

#### **4. DISCUSSION**

The findings showed that there are laws in place for wetland management in Uganda. However, the communities are very dependent on wetlands for their daily existence and with the high rate of population growth, management of wetlands remains a big challenge that requires a better approach to engage the wetland users in sustainable wetland use.

##### **4.1 The wetland management approach**

The findings revealed that the management of wetlands in Uganda is legally protected by international and national regulatory laws, policies, and conventions such as the Ramsar convention, the Uganda Constitution, the National Environment Act, and the National Environment Management Policy (NEA 2019; NEMP 1994). In Apac Municipality, there are established administration levels charged with responsibilities in ascending hierarchical order as: LC 1, LC 2, Ward, Division, and Municipality. However, the findings from the local leaders and wetland users reveal that wetlands management is still a top-down approach where the government decides for the communities how the wetlands can be used without consideration of the value of local management initiatives, such as the formulation of by-laws. It was revealed that there were communication gaps among the stakeholders from lower to higher levels and vice versa. Imposing central government legislation on the community has limitations for monitoring and regulating natural resources (Hartter & Ryan 2009). The lack of information dissemination may prevent leaders and communities from being aware of challenges or solutions that can help them deal with environmental issues. It is then possible that people will not be aware of new laws, regulations, rights, or opportunities and, as a result, they continue to degrade the wetlands. Kakuba and Kanyamurwa (2021) suggested that one of the main approaches for managing wetland resources on a sustainable basis is to democratically incorporate all stakeholders into planning as a management function. The opinions of wetland users, decision-makers and environmental scientists on wetland use is necessary to strengthen policies and the overall legal framework (Nkonya et al. 2005; Omagor & Barasa 2018). Aaltonen and Kreutz (2009) stated that engagement should consider encompassing responsibility sharing and commitment of all stakeholders, and that these are functions of effective communication. This was found lacking in this study

The findings also revealed that according to the Uganda Constitution, the government holds in trust the wetlands for citizens but at the same time allows traditional use of wetlands to be carried out. The wetland users are not restricted from utilising the wetlands for traditional uses and therefore seem to consider the wetlands as a common pool resource. Different wetland users are also utilising the wetlands for various purposes such as: grazing; cultivation; harvesting construction materials, such as poles, and sand; extracting water for domestic use; and collecting fuelwood. The respondents confirmed that the population in the municipality is increasing and the demand for wetland resources is therefore high. An increasing number of individuals whose livelihoods depend on a declining resource base will lead to over-exploitation (Mitchell 2013). According to Hardin (1968), environmental degradation can be anticipated whenever a limited resource is shared by many people and the communities have little motivation to undertake resource-conservation activities. This phenomenon, called the

tragedy of the commons, was evident in the use of wetlands in the study area and complicates the administration of the wetlands as the findings indicate. Furthermore, some wetland users whose land is adjacent to the wetlands claimed ownership of the wetland. The authorities in charge of wetlands often have difficulty protecting the resource from actions that can cause degradation due to lack of restrictions (Kumi et al. 2015).

#### **4.2 Stakeholders' perceptions on wetland management**

The findings show that different stakeholders had different uses for and interests in the wetlands. The wetland users are interested in wetland resources like grass, trees, fish, sand, and clay. The authorities are more concerned with protecting and conserving the wetland resources. Most of the wetland users interviewed expressed great concern as to how the wetlands are being degraded and how this will affect their ability to support their families socially and financially. They did not, however, demonstrate willingness to protect the wetlands, though a few of them recommend sustainable utilisation of the wetlands for benefits of the current and the next generations. This demonstrates how the wetlands provide the population with their means of subsistence as well as being their primary source of food and water (Kumi et al. 2015; Kabumbuli & Kiwazi 2009). It shows that there may be pressure on wetland resources because they provide the surrounding community with both food and sources of income.

The findings on the perceptions of wetland users and authorities of the causes of wetland degradation showed that they ranged from natural to anthropogenic activities, which included climate change, pollution, cultivation, brick making, sand mining and deforestation. This indicates human-induced challenges, such as poor governance, conflicts of interest, the tragedy of the commons, over-exploitation of the wetland's resources like vegetation, soil, and aquatic animals. The most devastating activities mentioned in this study were brickmaking and crop production. Crop production leads to deforestation, draining, and pollution of the wetlands while brick making leads to deforestation and destruction of the wetland biodiversity. Some wetland users also revealed that the wetland laws are not being enforced impartially as they believe the rich are favoured to use the wetland since they can bribe the authorities.

The findings about community awareness of the legal frameworks of the wetlands revealed there were divergent views on the laws. Some of the wetland users claimed ownership of the wetland while others believed that it belongs to the government. The authority also acknowledges the low levels of awareness among the communities even though they have carried out many awareness-raising campaigns. Turyahabwe et al (2017) stated that the public in Uganda are wary of matters involving the use and management of resources that belong to a common pool, even where policies and regulations are understood.

#### **4.3 Challenges and opportunities in wetlands management**

The findings indicate that there are several challenges in wetland management in the study area at both the authority and community level. The main challenges that were found in the study include population growth. The high dependence of population on wetland resources for their livelihood also shows that most of the users don't have alternatives for survival. The wetland ownership issues were very profound as most community members who inherit land or buy land adjacent to the wetland expand their land boundaries into the wetlands and claim ownership. This phenomenon can be attributed to a lack of awareness of wetland policies and laws or to some extent greed to exploit the wetlands and deny others.

The study also revealed that local leaders are not empowered to manage the wetlands. The respondents all acknowledged that there was a knowledge gap between them and the municipality officers regarding wetland laws and policies. The authorities believed that the framework is adequate but requires cooperation between the technical and political leaders for its effectiveness. The local leaders revealed that their local initiative of developing bylaws was not embraced by the Municipality. The best management strategy for achieving sustainable wetland utilisation would involve integrating the bottom-up approaches into top-down regulatory frameworks and raising public understanding of the ecological values of the wetland (Bosma et al. 2017).

Furthermore, the study findings showed that climate change effects, such as prolonged droughts, have also impacted wetland conservation. The community surrounding the wetlands are subsistence farmers who rely on rain to grow their crops and, once drought sets in, they have no other alternative than to cultivate in the wetlands where soils are moist. According to Mitchell (2013), people become more sensitive to climate change effects because of widespread poverty as they are forced to use ecosystem services for their own gain.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

The purpose of this study was to examine how best to engage the local community and other stakeholders to collaborate and improve long-term wetland management in both Apac Municipality and Uganda in general. The findings manifest a clear hierarchical administration of the wetlands with representation of both communities and government stakeholders in this administration structure, which is characterised by poor engagement strategies for communities and administrative structures. Human-induced challenges such as cultivation, brick making, conflicts of interest, and the tragedy of the commons are causing wetland degradation. This is compounded by the fact that Uganda's wetlands policies give the government the authority to administer the wetlands as public property for all Ugandans.

To improve wetland conservation in Apac Municipality, the following recommendations are proposed in consideration of the findings of this study:

- ❖ A bottom-up approach should always be taken as a key consideration when new wetland policies and laws are being formulated or amended to enable the community and local leaders to fully participate in dissemination and implementation.
- ❖ Local leaders and communities should be empowered to enable them to develop bylaws for wetland management in their locality. Copies of policies and laws on wetland management should be made available to local leaders and communities in the local languages that they speak.
- ❖ Both central and local governments should prioritise the allocation of funds towards wetland management interventions for a better outcome on key management aspects, such as awareness creation, monitoring, wetland demarcations and enforcement.
- ❖ Consideration should be made by the central government, local governments, and civil society organizations to create alternative sources of income, such as fish farming, bee keeping, and piggeries, for Uganda's poor population who depend on wetlands. Increasing funding for programmes that encourage people to engage in non-farm

activities will give people optimism even if they don't intrude on wetlands, hence the population strain on wetlands will be relieved.

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## APPENDIX

### Appendix 1. Interview questions

#### QUESTIONNAIRE FOR THE WETLAND USERS

Dear respondent

I'm Samuel Otim, a student at the Agricultural University of Iceland pursuing a Postgraduate Diploma in Ecosystem Restoration and Sustainable Land Management. I'm working on the research entitled "exploring the collaboration of local communities and other stakeholders on wetland conservation in Apac municipality: challenges and opportunities". There isn't a right or incorrect response in this interview; I'm just interested in how you view the situation. Your personal identity and the information that you will provide in this interview will remain confidential and used for research purposes only.

This interview will be recorded so that I can listen, transcribe, and work with the data. Is that okay with you?

I truly appreciate your contribution.

#### SECTION I:

##### DEMOGRAPHIC INFORMATION (Tick the correct option)

1. Can you briefly describe yourself (Name, Occupation, Cell, Ward, Division Gender, Age, Marital Status, Level of Education)

.....

#### SECTION II:

##### STAKEHOLDERS' PARTICIPATION IN WETLAND MANAGEMENT

2. This study, as you are aware, is focused on wetlands. Could you perhaps explain to me how you interact with the wetland on a daily basis?

.....

3. Are there other wetland users who interact with the wetland?

.....

4. How successful do you think wetland management has been? Can you give me an example?

.....

5. In what ways do you play part in preserving the Arocha wetland as a local resident?

.....

b) Could you elaborate on the reason why you are not playing a part in this?

.....

6. What do you believe are the main difficulties with wetland management?

.....

7. can you describe to me the causes of the wetland degradation in your area?

.....

#### SECTION III

##### AWARENESS OF WETLAND LAWS AND REGULATIONS BY THE COMMUNITY

8. Can you tell me about any rules or regulations that are in place here regarding wetland management?

.....

b) Are there any informal rules in place as well? Or any habits on protecting the wetland?

.....

9. how have you been receiving environmental education and wetland management training?

.....

b) In your opinion in which other ways can the environmental education and training be done differently?

.....  
10. Can you come up with an example of how the wetland laws were implemented effectively?

.....  
b) Can you elaborate more on why it's not effective?

.....  
**SECTION IV**  
**COMMUNITY PERCEPTION ON WETLAND MANAGEMENT IN APAC MUNICIPALITY**

11. To you personally why is the preservation of the wetlands significant?

.....  
12. Can you tell me about the wetland changes that you have observed in the last few years?

.....  
13. Do you have any examples of how the wetlands in your area are being used sustainably?

.....  
14. In your opinion, do you believe that there are any management-related concerns that need to be addressed? can you give examples?

.....  
15. What suggestions do you have as a local for effective wetland management?

.....  
16. Upon the wetland's disappearance, who do you believe would be most impacted?

.....  
b) Why?

.....  
17. Have there ever been disputes in this wetland over who gets to use or control what resources?

.....  
b) And if so, can you tell me a bit about what these disputes were about?

.....  
18. Regarding wetland management, is there anything you feel I missed out on asking?

.....  
Thank you so much for participating in my study

**FOR TECHNICAL STAFF AND POLITICAL LEADERS**

Dear respondent

I'm Samuel Otim, a student at the Agricultural University of Iceland pursuing a Postgraduate Diploma in Ecosystem Restoration and Sustainable Land Management. I'm working on the research entitled “exploring the collaboration of local communities and other stakeholders on wetland conservation in Apac municipality: challenges and opportunities”. There isn't a right or incorrect response in this interview; I'm just interested in how you view the situation. Your personal identity and the information that you will provide in this interview will remain confidential and used for research purposes only.

This interview will be recorded so I can listen, transcribe, and work with the data. Is that okay with you?

I truly appreciate your contribution.

**SECTION I: DEMOGRAPHIC INFORMATION (Tick the correct option)**

1. Can you briefly describe yourself? (Name, Occupation, institution, Cell Ward Division Gender Age Marital Status Level of Education)

.....

**SECTION I: WETLAND MANAGEMENT APPROACHES USED IN APAC MUNICIPALITY**

2. What techniques are employed in Apac Municipality for wetland management?

.....

3. Why is it important to protect the Arocha wetland system?

.....

4. How often do you conduct monitoring and inspection of Arocha Wetlands?

.....

5. In your own opinion, do you think the community members are aware of the wetland laws?

.....

6. How is the Apac Municipality/District's management strategy perceived by the locals?

.....

7. Are there initiatives in place to improve community involvement in wetland management? If yes, what are the plans and strategies?

.....

8. What part, if any, do you play in wetland management implementation? Does it work?

.....

9. What do you think about the effectiveness of the mechanisms the Municipality has in place to manage its wetlands?

.....

10. What suggestions do you have for managing the Arocha wetland effectively?

.....

11. Is there anything that you feel I should have asked about wetland management that I missed out on?

.....

Thank you so much for participating in my study