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# LOCAL PERCEPTIONS ON THE ALTERNATIVE LIVELIHOOD APPROACH FOR WETLAND RESTORATION IN BUHWEJU DISTRICT UGANDA: A CASE STUDY OF THE KYENJOGYERA-MUSHASHA WETLAND SYSTEM

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## ABSTRACT

Wetlands are among the most critical resources in Uganda and a fundamental element of riparian zones. However, they continue to face encroachment induced by the desire to attain livelihoods, establish settlements and develop industries. This study therefore focussed on assessing the perception of local communities on the use of alternative livelihoods as a strategy to restore the Kyenjogyera-Mushasha wetland system in Buhweju district. Semi-structured individual interviews were conducted to obtain the perceptions of local communities on the alternative livelihoods strategy for wetland restoration in Buhweju district. Interviews from individual farmers and key informants indicated that several approaches have been used by the government to restore wetlands in Buhweju, including: enforcement of wetland laws, creating community awareness on wise-use of wetlands, demarcation of wetland boundaries, and promotion of alternative livelihoods. Efforts to restore the wetlands have been hindered by political influence and limited monitoring. The promotion of alternative livelihoods involved farmers in identifying their desired livelihoods, where women opted for more instant and less labor-intensive options while men preferred options that generated profit. The findings of the study indicate that the desired livelihoods have never been delivered. However, there was confidence that increased household income, job opportunities and a mended relationship between farmers and authorities can be delivered. Despite the growing optimism, some farmers and key informants found these alternative livelihoods insufficient to meet farmers' needs. The findings of the study revealed ongoing crop cultivation along wetland boundaries. Based on the study's outcomes, the researcher recommends prioritizing wetland monitoring activities by the government, empowering farmers with skills to obtain other sustainable livelihoods and promoting livelihoods that are sufficient to have an impact on the farmers.


**Key words:** wetland restoration, alternative livelihoods, wetland encroachment, community perceptions, Uganda

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# 1. INTRODUCTION

Wetlands cover about 6% of the earth's land surface (Dixon et al. 2016; Spalding et al. 2010). In East Africa, Uganda has the largest percentage of wetland cover, accounting for about 11.1% of the entire land (Government of Uganda 2016), with Tanzania and Kenya having 7% and 4% of the land surface (Rebelo et al. 2009; Sakané et al. 2011; Beuel et al. 2016).

Wetlands are among the most essential resources in Uganda and fundamental elements of riparian zones that filtrate sediments from overflow, thereby reducing water pollution. Nevertheless, wetlands are constantly jeopardized by human activities, including the upscaling of farming activities due to their potential to support food production during dry weather conditions. As the population increases and pressure on ecosystems rises, wetlands continue to face encroachment induced by the desire to attain livelihoods, establish settlements and develop industries (Namara 2023). Therefore, balancing the socio-economic needs of local communities and wetland conservation is still a significant challenge to the continued existence of wetlands and hinders wetland restoration attempts.

In Buhweju district, there is increased clearing and altering of wetlands for crop cultivation and other purposes, such as cattle grazing and mining of gold (Namara, 2023). Such degradation and loss of wetlands deprives most surrounding areas of essential ecological services (Gardner et al., 2015). Combined with elongated dry spells, regular water flow, erosion and sedimentation, wetland disappearance and deterioration also spark ecosystem destruction and the reduction in storage and supply of water for the people (MWE [Ministry of Water and Environment] 2017). During prolonged droughts, rural households use wetlands for agricultural crop farming as well as overharvesting wetland products to sustain livelihoods, thereby contributing to the drainage of numerous wetlands that used to act as water sources (Turyahabwe et al. 2016).

A recent study on the causes of wetland degradation in Buhweju district (Namara 2023) indicated that wetlands have been heavily encroached on by community members for cattle farming, cultivation of crops, mining and settlements. The fundamental driver of the destruction of wetlands is connected to the desire of both the wealthy and the poor to obtain a living from wetland ecosystems. The study identified that local communities were still using the wetlands because they do not receive any tangible benefits from conserving them. Instead, the people living in Mbarara city are the main beneficiaries of conserving the wetlands (from River Rwizi). Hence, the local communities are unwilling to starve for the benefit of those living in the city. Limited funding to support restoration actions and lack of alternative livelihood diversification options for local communities further constrained wetland conservation and restoration (Namara 2023). The study therefore recommended provision of alternative sources of livelihoods as a boost to restoration of degraded wetlands in the district. Alternative livelihoods, such as irrigation farming for crops formerly cultivated in wetlands, in all wetland restoration projects would help reinforce efforts for sustainability (BMAU [Budget Monitoring and Accountability Unit] 2022).

The Government of Uganda, in coordination with Green Climate Fund (GCF) and the United Nations Development Programme (UNDP), embarked on a wetland restoration project in eastern and southwestern parts of the country to be completed in 2025 (UNDP 2017). The project intends to reclaim wetland ecosystems through better farming practices and provision of alternative opportunities to earn a living in the wetland drainage area (UNDP 2017). The objective is to restore heavily degraded wetlands in order to improve ecosystem services, such

as replenishing ground water, enhancing flood control, and improving the livelihoods of subsistence farmers in catchment areas, through fishing and agriculture. The wetland-dependent community beneficiaries were expected to be supported with alternative livelihoods including piggery, improved goats and cows, apiculture, poultry and vegetable seeds for gardens adjacent to the wetlands. These interventions are anticipated to boost incomes, allowing the inhabitants to advance from subsistence agriculture to commercial enterprises.

The impact of this approach on livelihoods was expected to enhance local involvement (Beck, 2000), which in turn, with the commitment of affected communities, would regulate access to wetland resources, thus limiting illegal activities. Kyenjogyera-Mushasha wetland system was among the first beneficiaries of this project in Buhweju district. However, the efforts appear to have been futile. The inhabitants were asked to halt cultivation in the wetlands but since no livelihood alternatives were provided, they returned to the wetlands to derive their livelihoods, even after restoration.

While several studies have strongly recommended the use of alternative livelihoods to help restore wetland ecosystems in communities that depend on wetlands (Namara 2023; BMAU 2022; Rebelo et al. 2010), there is still insufficient knowledge on the perception of the local communities regarding these advocated substitute livelihoods. Based on the findings by Namara (2023), this study therefore explored the perception of local communities on the use of alternative livelihoods as a strategy to restore the Kyenjogyera-Mushasha wetland system in Buhweju district. The findings have the potential to promote informed wetland conservation strategies and restoration actions in the district.

## 1.1 Purpose of the study

In this study, I assess the perception of local communities on the use of alternative livelihoods as a strategy to restore the Kyenjogyera-Mushasha wetland system in Buhweju district.

### *1.1.1 Specific objectives*

i. To examine the wetland restoration approaches used in Buhweju District.
ii. To assess local community perception on the alternative livelihood restoration strategy.
iii. To determine the impacts of the alternative livelihoods on the communities in Buhweju District.

## 1.2 Significance of the study

Without conceptualizing local community perspectives on the approaches deployed to restore wetlands Buhweju District, it would be challenging to protect this wetland system and close to impossible to manage it properly. This study might aid the district in formulating a participatory wetland management plan. The Office of Environment at the district level in Uganda is mandated to guide the central government on all matters related to environment management (NEA 2019). With the study findings easily accessible, the Environment Officer might be able to provide evidence-based recommendations that could be a basis for policy formulation at national level.

The government of Uganda is implementing Vision 2040 aimed at attaining a green and clean environment through the restoration of degraded wetland ecosystems, hilly areas and extra fragile ecosystems. Access to this study through district submission to the ministry and presentations at regional environment workshops could contribute to the achievement of Vision 2040, by identifying viable area-specific approaches to wetland restoration and curbing wetland degradation.

As environment officerers are mandated by law to partake in the evaluation of acts and, where appropriate, in the formulation of bye-laws or regulations on environment management (NEA [National Environment Act] 2019), this study has the potential to provide a basis for the formulation of area-based wetland laws and ordinances within the district as the report will be readily available in the office of environment.

The Uganda National Development Plan 2020-2025 (NDPIII) advocates for reduced gender inequality through expanding livelihood support, supporting gender equality and equity budgeting in local governments. This study provides gender-based findings that have the potential to inform environment managers at local government level on practicable alternative livelihoods that can boost wetland conservation through identifying livelihood options that fit the needs of both men and women.

### 1.3 Wetlands in Uganda

Wetlands alone in Uganda are estimated to contribute over US$1 billion per annum to national income, and more than 80% of the people living adjacent to wetland areas directly use wetland resources for their household food security needs (UNEP [United Nations Environment Programme] 2021). Immediate wetland uses include both marketed value and non-profit-making activities, whereas contingent benefits, such as retaining nutrients, controlling floods, protection against storms and recharge of ground water, are non-commercial and are only obliquely linked to commercial activities. These values of wetlands are key in sustaining human livelihoods and other forms of life (Mitsch et al. 2012).

Uganda has suffered a noteworthy decrease in wetland area, from 15.6% in 1994 to 8.9% in 2017 (BMAU 2022). Wetlands in Uganda were lost at a frequency of 2% per annum between 2009 and 2019, and wetland vegetation has deteriorated at a rate of 8.9% over the previous three years (BMAU 2022). Wetland ecosystems are threatened by scarcity and expantion of land for cultivation, reduced land for grazing, public access, and extreme use of ecosystem services triggered by a high population increase (Zekarias et al. 2021). Degradation of soil, the fragmentation and diminishing size of land, and inconsistent precipitation reduce agricultural productivity in the hilly areas, forcing farmers to move to the lowlands for crop production (Sakané et al. 2013). Many farmers in Buhweju district prefer to carry out crop production in lowlands which are more fertile than tilling on the hills in order to provide livelihoods. According to Lwasa (2013), the magnitude of encroachment on wetlands can be correlated with community closeness to settlements and infrastructure, size of the population, access and influence of the market.

The Government of Uganda has over the years implemented initiatives to restore, improve and manage wetland ecosystems. The statutory mandate of wetland management lies mainly with the Ministry of Water and Environment (MWE) and the National Environment Management Authority (NEMA). At district level, District Land Boards and Area Land Committees, District Environment and Natural resources departments and Lower Local Government (LLGs)

Councils are responsible for management of wetlands in their jurisdiction. The compromise on the wise use of wetlands which leads to conflicts between protection and development has seldom been resolved. Many times, policies on wetlands are steered by protection as a priority, hence restraining the contribution of wetlands to livelihoods (McCartney et al. 2010). The NEA [National Environment Act, 2019] requires a person who wishes to carry out an activity in the wetland to carry out a mandatory environmental impact assessment for large scale developments, like mining of minerals, or to obtain a wetland use permit for small scale activities like crop farming. However, according to The Independent (2020), the NEMA in Uganda halted issuance of permits in wetlands because several people with permits have failed to adhere to the guidelines. The process of acquiring permits was lengthy and too costly for rural farmers to undertake and therefore only favoured the wealthy section of the community. The connection between wetland ecosystems and livelihoods of farmers is hardly acknowledged by policy makers despite the importance of the diverse services wetland ecosystems offer to people and nature (CBD [Convention on Biological Diversity] 2015).

The promotion of alternative livelihoods was intended to help reduce pressure and restore wetlands and their eco-system services, based on wise-use principles and guidelines as outlined by the Ramsar Convention on Wetlands, including: sustainable land management practices, support to resilient agricultural practices, and alternative livelihoods for communities living in these areas (GCF 2017). Alternative livelihoods are crucial in mitigating the potential impacts of reducing wetland dependency (Kabumbuli & Kiwazi 2009; Namara 2023). However, according to Gautam and Andersen (2016), even when diversification of livelihood is proposed as a feasible buffer to ecosystem disasters and unpredictability, the vulnerability of livelihoods within the wider viewpoint of ecosystem-based modifications and dependable livelihood strategies ought to be evaluated. The frequency at which wetlands are destroyed has exceeded efforts to restore these wetlands, as is demonstrated by deteriorating wetland coverage and government action to restore destroyed wetlands, which have generated diverse outcomes (BMAU 2022).

The agreement of wetland-dependent farmers is fundamental for the success of wetland restoration, however, advocating for wetland restoration can be challenging due to the potential financial loss it may bring to farmers due to lost farmland (Zhu et al. 2016). Local ecological knowledge has the potential to help understand and respond to reactions from nature and lead the way for the management of natural resources in traditional management systems across different scales and sectors (Tarakini et al. 2018). Unless wetland resources are managed in a sustainable manner, Uganda's goals for transformation, both socially and economically, as indicated in Vision 2040, the National Development Plan III, the Water and Environment Sector Development Plan, the Green Growth Strategy and the Sustainable Development Goals, cannot be attained (GCF 2017).

## 2. METHODS

### 2.1 Description of the study area

The study was conducted in Buhweju district, located in the southwestern part of Uganda. It covers a land surface area of 802 km$^2$ with an elevation of 1,800m and a population of roughly 120,720 people (UBOS [Uganda Bureau of Statistics] 2015). About 80% of the land in this district is hilly and mountainous with plateaus formed by volcanicity and faulting and there is

evidence of U and V shaped valleys with intact wetlands (Buhweju District Environment Report, 2015). The Kyenjogyera-Mushasha wetland system is located in Mushasha parish, Buhunga Subcounty which boarders Mbarara district. This wetland system is the main catchment source of the River Rwizi which is the key source of water for Mbarara city (MWE, 2017). As mentioned earlier, the wetland was the first beneficiary of the GCF and the UNDP implemented through the project, "Building Resilient Communities, Wetland Ecosystems and Associated Catchments in Uganda", in Buhweju District in 2017.

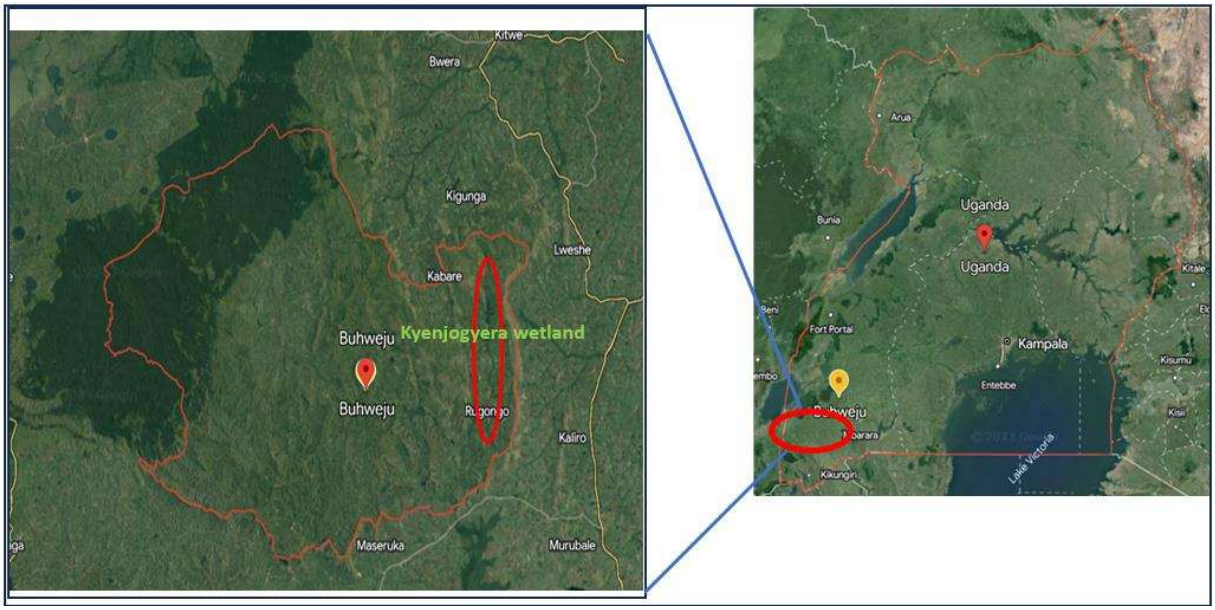


Figure 2: Map showing the location of Kyenjogyera-Mushasha wetland and Buhweju District, south-western Uganda (Base map: Google Earth 2023).

## 2.2 Sampling procedures and research design

A qualitative research approach was employed in this study because it enables the collection of rich, detailed data. Qualitative research has the potential to produce a deep and intense study of context (Gray 2009). The study focussed on interviewing individual participants using semi-structured interview guides (Merriam & Tisdell 2016). Dopp et al. (2019) noted that this kind of research focuses on quality rather than quantity. This approach therefore helped obtain in-depth information on the perceptions of these local communities regarding restoration strategies.

The study used purposive sampling to select 15 respondents: 10 locals who were offered alternative livelihoods (five men and five women) and five key informants at the district headquarters and Subcounty leaders of Buhunga and the village level. Both men and women were considered to promote gender inclusiveness and further improve the quality of data collected. Purposive sampling was preferred for key informants because it gathers individuals knowledgeable about wetland issues. Local community participants were selected from the two villages of Mushasha and Kyenjogyera in Buhunga Subcounty due to their awareness about wetlands and readiness to contribute to the study.

Interviews were carried out by three research assistants: an Agricultural Extension Officer, a Community Development Officer and a trainee from the Office of Environment, due to their

knowledge about the area as well as being fluent in the local language. Interview guides were based on the objectives of the study. The head of the Agriculture sector at Buhweju district local government supervised research assistants during the data collection process. This is due to his institutional experience and expertise in natural resources management. Data collection commenced on 27th of June and ended on 2nd of July, 2023. The shortest interview from one of the key informants lasted 20 minutes while the longest, from one of the farmers, lasted for one hour. The farmers interviewed were asked for their consent after clarifying the purpose of collecting data from them. The research team assured the respondents of the confidentiality of the information collected from them, and they guaranteed that this data will only be used for analysis in this study.

Secondary data was obtained through a search of relevant wetland-based reports, such as the District State of Environment Report (2017). Buhweju district has four major wetland systems which have more less been threatened by human activities, however Kyenjogyera-Mushasha was purposively selected due to notable efforts by the government to restore this wetland.

## 2.3 Data analysis

Qualitative data was received in the form of recordings and handwritten notes. The researcher listened to the received recordings in the local language numerous times until she became familiar with them. They were later transcribed into English text and compared with the written English notes from the research assistants to ensure that all the individual interviewee responses were appropriately captured. It took an average of two hours (shorter interviews) and three hours (longer interviews) to transcribe one interview recording into the local language and an average of two hours to translate it into English. The contents were then analysed based on related themes for the study objectives and narratives generated.

Thematic analysis was used to analyse the qualitative data following the objectives of the study (Braun & Clarke 2006; Schreier 2012). Initial ideas were identified, recorded and coded using Microsoft excel. A matrix for the various coded data was generated according to the study objectives. After coding, the researcher was then able to read through the coded data in order to identify analysed data as per the study objectives.

## 2.4 Challenges

Several challenges were encountered during data collection, some of which were influenced by the rural setting of the study area; the area has no electricity supply hence the research assistants had to travel long distances to re-charge the batteries of recording devices. The internet network was so poor which made it difficult to send some of the interview recordings, especially from key informants, to the researcher hence the researcher had to carry out direct phone call interviews with the key informants. The research assistants also observed that some farmers were hesitant to release certain information that might implicate the authorities, hence they could not freely provide honest views.

This research captured narratives on the views of farmers on alternative strategies. The analysis sought to identity all primary perceptions discussed through qualitative interviews (Hansson et al. 2012).

# 3. FINDINGS

Findings in this section represent interviewee responses regarding wetland restoration approaches that were adopted to restore wetlands as well as the perceptions of wetland-dependent farmers on the alternative livelihood wetland restoration strategy in Buhweju District. The themes derived from the interview data and direct quotes, presented in italics, were translated by researcher from the local language, Runyankore, into English.

## 3.1 Wetland restoration approaches used in Buhweju District

All the farmers were well aware and knowledgeable about wetland restoration. The majority understood it as planting indigenous trees within the wetland boundaries. Others understood it as stopping all wetland degrading activities by refilling ditches and ponds, avoiding bush burning, halting crop cultivation and stopping the planting of eucalyptus trees in wetlands to allow wetland regeneration, while the rest related it to community sensitization.

The district local government has adopted several kinds of approaches to restore wetlands in Buhweju including enforcement of wetland laws, community sensitization, demarcation of wetland boundaries and the most recently adopted alternative livelihood strategy. There was some kind of development throughout these approaches. First it was a top-bottom strategy, mainly law enforcement through forced evictions, but the government is now putting a lot of emphasis on community involvement in its wetland restoration approaches. These were effective in the short run, with a number of farmers halting cultivation activities in the wetlands. The success of these approaches however remains limited as a lack of resources makes them unsustainable and, while rule enforcement is a legal but confrontational approach, it creates fear and distrust among the locals.

### *3.1.1 Forced evictions*

From the interviews it becomes clear that wetland restoration in the district is characterized by evictions and arrests of wetland users by the police as a form of enforcing wetland laws and regulations. The key informants mentioned that these evictions are backed by the wetland laws and regulations. One of the key informants explained that:

> *We have wetland laws and regulations in place and the National Environment Act which regulate the activities that should be carried out in the wetlands. These laws also emphasize that wetland resources should be utilised in a sustainable way corresponding to the continued presence of wetlands and their ecosystem functions. If farmers or anyone drain the wetland with no written approval from the authorities, they have committed an offence and are liable to imprisonment. The police therefore help to enforce these laws through evictions and arrests where possible.*

One of the farmers from Kyenjogyera village mentioned that:

> *The government officials first came and demarcated the wetland boundaries and immediately after carried out evictions, cutting down all the banana plantations, eucalyptus trees, destroying all the farmers' gardens and filling all the ditches in the wetland. In addition, about three months ago, the GISO (Gombolola Internal Security Officer) arrested two male wetland encroachers who were*

> *growing millet in the wetland, confiscated their working tools and they spent four days in police custody. And as a result, it has created fear within local community members and most of them have since vacated the wetland."*

Some farmers also indicated that these evictions, prior to adoption of the alternative livelihood strategy, created tension in the community which created a gap between government officials and the community. Finding a balance between abiding by wetland laws and obtaining a livelihood from wetlands was challenging for farmers. There were retaliations from the community due to harsh evictions by the police. One of the farmers from Mushasha village responded that there were two attempts to kill whistleblowers in the past by some of those who degrade the wetland, and this terrified most of those who are willing to report wetland encroachers, leading to illegal re-encroachment on the wetland. Another female farmer also stressed that even though these evictions were in line with the law and it being the right direction for the law enforcement team, it is a frustrating experience on the side of the farmers who obtain their livelihood from these wetlands.

> *I understand that the evictions and arrests by the law enforcement team are within the laws as per the wetland regulations, however, this was not considerate of the farmers like me who earn their living from this wetland. We had not even been trained on how to use the wetland wisely. In the long run, since they could not afford to monitor these wetlands frequently, we went back and resumed our activities in the wetland.*

### *3.1.2 Community sensitization*

Community sensitization and engagement of the communities by government officials to willingly halt wetland degradation was another key approach that has been used to restore the wetlands in Buhunga Subcounty. These engagements however were limited to a few times per year as the government budget was not enough to facilitate them and further facilitate the monitoring of these wetlands. There were efforts to involve communities in wetland restoration but not sufficiently to achieve the objective. All the key informants stated that community sensitization is the commonly used approach in the district to restore wetlands. The Community Development Officer also explained that:

> *There are efforts to engage and train communities on the values and wise use of wetlands, however the budget allocated to wetland restoration projects by the central government is not enough to accommodate frequent community engagements and monitoring of wetlands in the district. In addition, the distance from the district headquarters to this wetland is very long, combined with poor roads, making it difficult for the district officials to frequently monitor activities in the wetlands.*

The Agriculture Extension Officer further admitted that monitoring is easier in places that are easily accessible.

> *The part of wetland in Mushasha village is more degraded than one in Kyenjogyera village. This is attributed to the fact that the distance between the Subcounty headquarters is farther from Mushasha compared to Kyenjogyera, where the main trading center and also headquarters are located. Since we receive limited funds from the government to monitor these wetlands, it is easier*

> *to monitor those that are close to the road [easily accessed]. Therefore, the part of the wetland that is not close to the road or trading center is easily degraded because we cannot easily monitor it.*

The farmers recognize that there have been efforts by the authorities to create community awareness on the wise use of wetlands and are aware of the wetland laws, interpreting them as wetlands being a no-go area for the local community. However, they are hesitant to follow the instructions of the government officers as they feel they may be in danger if they report anyone.

> *Sometimes government officers invite the whole village for meetings, which are usually held especially in the afternoons at the Subcounty headquarters. They inform us to report anyone encroaching on the wetland and stop people from encroaching on the wetlands… But there have been attempts to kill the people who report to authorities, and this has scared most of us, so we continue to cultivate in the wetland without the authority's knowledge.*

Other activities like demarcation of wetland boundaries using branded all-weather pillars were identified as part of the interventions by the government to reclaim the wetlands. However, according to the majority of the farmers, these approaches have not been effective and were unsustainable to the wetland users, with evidence of most of the wetland users re-encroaching on the wetland to practice cultivation and illegal gold mining. A female wetland user stated that:

> *I could not stop cultivating in this wetland because I have grown my crops here for a long time, it is the only part of my land that gives me high yields of Irish potatoes. The other part of the land is hilly and very dry, therefore I cannot get enough harvest to help me obtain income to pay school fees for my children. If I left the wetland, my children would not go to school.*

### *3.1.3 Alternative livelihood approach*

Promotion of alternative livelihoods was another approach mentioned by all farmers as the most recently adopted strategy to restore wetlands in the district. This approach had a high level of community involvement with most farmers taking part especially during implementation. Most farmers stated that this is a more effective approach as it incorporates the interests of local farmers and they are confident that it will improve their livelihoods. A female respondent explained:

> *In my opinion, the approaches used in the past were not friendly at all, because at the time this wetland was so useful to me as I would grow crops there which helped to sustain my family. At first, they used a strong hand through evictions and arrests which frustrated us, but the government officials later trained us in how to utilize the wetland wisely and also assured us of providing alternative livelihood options. Most of us have slowly vacated the wetland with the hope that we shall be compensated.*

## 3.2 Local community perceptions on the alternative livelihood restoration strategy

### *3.2.1 Alternative livelihood options*

When asked about what they do for a living, all the farmers were either still farming or have previously practiced farming in the wetland, growing crops like beans, millet, banana, sweet potatoes and cabbages for home consumption and surplus for sale. The majority of the farmers are still carrying out crop cultivation (bananas and beans), followed by small scale animal grazing and obtaining materials for mulching from the wetland. Most of these farmers were hesitant to inform the interviewer that they were still cultivating in the wetland. However, a small section (three) of the farmers have since vacated the wetland and halted farming activities. Some of the key informants also affirmed that some of these farmers have supplemented farming with other income earning activities. One of the key informants mentioned that, *"some female farmers practice personal agriculture activities in the morning hours and use the afternoon hours to do casual jobs like house maids and cultivating other people's gardens for daily pay [Omiziizi] to improve their household income."*

A male farmer from Kyenjogyera village explained:

> *I am now brewing local alcohol [waragi] as a regular job because the water in the wetland has increased ever since people started to vacate. The water from the wetland helps in the distillation of the alcohol in order to produce a finer product. I am making good profits out of this profession and it supports the survival of my household.*

None of the farmers had received any of the alternative livelihoods at the time of the interview, which has subsequently created uncertainty among the farmers. Alternative livelihoods were to be given only to wetland users who had been practicing farming (crop cultivation) in the wetland. One of the key informants mentioned that alternative livelihoods have not yet been given out to the farmers due to the bureaucracy in the procurement of these livelihoods at ministry level, implying that not even local authorities are aware of when farmers will receive these promised livelihoods.

The Agriculture Extension Officer however stated that:

> *The tree seedlings of indigenous trees like musizi, avocado, mangoes are available to be distributed to farmers. However, I advised that distribution and planting should wait until the rainy season when they can easily grow without any hindrance. Eucalyptus trees, which are the commonly grown trees in the area, were discouraged due to their high intake of water that might drain wetlands. The seedlings shall be given out to every farmer willing to plant them along the wetland boundaries.*

One of the female farmers explained:

> *I last heard from the government officials when we had a meeting at the Subcounty. I can never be satisfied with this restoration approach but since it is a government initiative, I do not have an option, I will take what I am given. Moreover, we can never be sure of when alternative livelihoods will be given to*

> *us because many times the government has failed to fulfill promises they make with us.*

The provision of livestock, mainly goats for grazing to wetland users, was the most popular alternative livelihood sought in the district as indicated by the majority of the farmers and key informants. Other livelihoods included fish farming (construction of fishponds and provision of fish), beekeeping (provision of beehives and handling equipment) and tree planting (provision of native tree seedlings). The Agriculture Extension Officer mentioned that planting indigenous trees like musizi, mangoes and avocado and other leguminous trees along the wetland boundaries was promoted for all farmers whose land is adjacent to the wetland to provide fruits to the community and also protect the wetland.

Training these communities in sustainable land management techniques and other climate resilient technologies, like terracing and contour ploughing, was also promoted and all the farmers acknowledged having already been trained. Most of the female respondents desired to keep goats, explaining that goats are easier to maintain, multiply quickly and can easily increase household income. Most male respondents sought fish farming and bee keeping, indicating that these activities bring in more income and they are mainly male activities as they labor intensive. A female farmer explained:

> *As a woman, I would have found it hard to construct ponds and carry out fish farming. I therefore opted for goats which I can easily graze in the wetland without altering its functionality and at the same time, the goats have the potential to give me organic manure that might increase the fertility of my non-productive land. I will be expecting to harvest high yields.*

### *3.2.2 Community expectations of alternative livelihoods*

Key informants described the provision of alternative livelihoods as an initiative meant to diversify the livelihoods of farmers and to make agriculture more resilient to climate change in order to reduce encroachment on wetlands. One of the key informants stated that:

> *These alternative livelihoods are simply meant to supplement the farmers' activities and persuade them to vacate the wetlands so that the vegetation can easily regenerate. I do not think they are enough to sustain the farmers' livelihoods solely. For instance, in our neighboring district where farmers have already received their livelihoods, not more than two goats were given to each farmer that had asked for goats.*

The farmers, on the other hand, appeared over-optimistic and seem confident that these alternative livelihoods would create a significant impact on their wellbeing, in spite of the fact that these livelihoods have not even been delivered yet. Some of the farmers from Mushasha village mentioned that this approach might be an absolute solution to their financial problems, and they will be able to permanently vacate the wetland. This might have been based on active involvement in the implementation of this approach creating an anticipation that these livelihoods will be enough to solely satisfy their needs. One of the male respondents from Mushasha stated that:

> *I have been growing millet and Irish potatoes to support my family and also sell some of the crops to get money for medical bills and school fees. I stopped using the wetland because they trained us about the alternative livelihood strategy to*

> *help us vacate the wetland and pledged to give us other livelihood options. If they give me the goats as promised, I will have been paid compensation for what I was getting out of the wetland, and I will be contented.*

Many of the farmers believe that this alternative livelihood approach will be sustainable in terms of improving household livelihoods and at the same time maintain the integrity of the wetland. Some of the male respondents indicated that fishponds will not degrade the wetlands compared to gold mining as they are established in wetland boundaries, similarly goats would be grazed in wetland boundaries and further provide manure which facilitates crop farming; with the wetland restored, water sources remain permanent. A male farmer explained:

> *When I am given the beehives, the bees will be able to obtain nectar from the wetlands which will be used to make delicious honey. Therefore, I cannot destroy the wetlands again because I will be tampering with the food for the bees which will later affect honey production.*

Most of the farmers related the alternative livelihood approach to an increase in rainfall formation that will support farming. Additionally, two farmers looked at it as an opportunity to obtain mulching materials when the swamp finally regenerates while one farmer reminisced on the old days when *Cyperus papyrus* generated a cool morning breeze in the surrounding area. Two male farmers further mentioned that once the wetland vegetation regenerates, the monkeys that formerly lived there would return, hence boosting tourism which would job opportunities for locals through selling agricultural products to tourists. A male farmer from Kyenjogyera village explained:

> *We used to have monkeys that lived in this wetland, but they disappeared because the farmers would want to kill them when they destroy their crops grown in the wetland. If alternative livelihoods are given to us and we leave the wetland, the monkeys will return to the wetland, and they will then attract tourists. I can also have a chance to sell my agricultural produce to them and increase my income.*

Nevertheless, there are also more critical voices to be heard when it comes to alternative livelihoods. Some farmers are not certain if these livelihoods will be worth what they have been benefiting from the wetland. This could also be attributed to the distrust in government initiatives ignited by the ruthless evictions of wetland users. Some of these farmers have not hesitated to re-encroach on the wetland. One of the key informants explained:

> *The farmers whose pieces of land are adjacent to the wetland keep cultivating beyond the established boundary pillars. They later fence off the cultivated land and claim it as part of their own land. They dig drainage channels at the end of the fenced land to act as the new boundary. These channels are also meant to stop water in the wetland from invading the farmers' gardens. In the end, the portion of the wetland encroached on is part of their land. Some of them go ahead and obtain land titles to claim legal ownership.*

One of the male farmers stressed that:

> *I am not willing to entirely leave this wetland because the alternative livelihoods they offer are not enough for me to have enough income for my family's daily survival, have sufficient food and obtain enough land to carry out different agricultural activities yet as I don't have a decent job.*

### 3.2.3 Community involvement

The farmers indicated that they were engaged to a great extent both in identifying preferred livelihoods and in training on the use of alternative livelihoods by government officials, the office of environment at district level and extension workers at Subcounty level. One of the key informants explained that the engagements were to create a consensual relationship between local communities and wetland management. Community involvement could have created optimism among the farmers. One of the key informants explained that:

> *We divided the farmers into groups according to the affected villages. Each group comprised of five farmers, a chairperson of the Local Council II, a youth representative, representatives for men and women, councilors and a representative for water and environment. Through these groups, farmers were able to give their opinions on the alternative livelihoods that they desired. These identified livelihoods were meant to ensure wise use of wetlands. The farmers were encouraged to express their views in order to appreciate the strategy.*

The farmers further explained that they were actively involved in identifying alternative livelihoods with which they were comfortable, and the government officials took note of their views. A male farmer commented:

> *Unlike the previous strategies which were implemented without actively engaging the communities, this time around we were invited for several meetings at the Subcounty headquarters where government officials trained us in the use of alternative livelihoods and later asked everyone what activities we can practice from the wetlands without destroying them. Several activities were identified with the guidance of the trainees, and we were divided into groups in which we shall receive these livelihoods.*

### 3.2.4 Constraints

While there seems to be an overall optimism for the alternative livelihood approach, some of the key informants and some of the farmers noted, however, that these approaches have been constrained by corruption and political influence. The Community Development Officer stressed that:

> *On several occasions, I inform the police about the on-going illegal activities in the wetlands, and they respond through engaging with the culprits and making arrests after several warnings. Sometimes the law enforcement team is instructed not to execute their duties as they say, "It is the order from above." This leaves me handicapped, demoralized and unable to control these illegal activities in the wetlands. It has been one of the greatest challenges we are experiencing as a Subcounty.*

A female farmer explained

> *Most of us have been cautioned to vacate the wetland after several meetings and warnings from the Office of the Environment. However, some political leaders and police officers receive money [ebituga] from farmers who are well-off, and they grant them permission to illegally return to the wetlands to carry out their*

*activities with no restrictions. The local police do not even bother evicting them because they connive with these politicians.*

## 3.3 The impacts of alternative livelihoods on the communities

### *3.3.1 Future prospects*

There was mounting optimism among farmers about these alternative livelihoods with high expectations that they will have an immense impact on both wetland status and the communities. This, however, can be ambiguous considering that farmers have not received these livelihoods.

The majority of the farmers were hopeful that the alternative likelihoods are likely to improve their household income and standards of living, mainly through increased sources of income and asset base. They explained that with the acquisition of goats and beehives and the establishment of fishing ponds, they will be able to sell honey, fish and even goats and earn a living. They added that this would make them self-reliant. A male respondent further mentioned that these livelihoods can also be used as securities to obtain financial services from the local micro finance institution to cater for basic needs:

*My fishponds will help me acquire loans from muhame SACCO [Savings and Credit Cooperative Organization] to pay my children's school fees and also expand my new fishing business. I will also have the capacity to buy a piece of land and increase my asset base.*

Most female farmers mentioned that they will be able to easily obtain organic manure from the goats which will increase crop yields. One female respondent mentioned that goat manure is an excellent fertilizer when used in banana and coffee plantations. Some of the farmers also added that both goat keeping and fisheries would be a source of food ~~as meat and fish respectively~~ for both home consumption and surplus for sale.

Some of the farmers believe that the relationship between communities and government officials will blossom after the successful implementation of this alternative livelihood approach to restore wetlands in the Buhunga Subcounty. Due to the threats, arrests and eviction of wetland users from wetlands, there appeared to be tension between these communities and government officials. The communities believed that the government does not take their needs into consideration. With the alternative livelihood approach, the farmers were organized into livelihood groups depending on the livelihood they expected to receive and these groups created a sense of belonging. Some of the key informants also mentioned that, through frequent interaction with the beneficiaries, they have created a relationship with the communities which might lead to the success of future government projects. This was observed during the interviews as the majority of farmers indicated limited to no conflict between the community and the technical officers (Subcounty officers). An Agriculture Extension Officer explains:

*I am regularly interacting with these community members, training them in sustainable land management techniques and other climate-smart agricultural practices so that they are able to utilize the land they had abandoned and was termed unproductive and to protect the wetland. With the alternative livelihood*

> *approach, they now have confidence in me that I too think about their needs and this good friendship is likely to help in the implementation of subsequent projects. I am so hopeful that it will bridge the gap that exists between community and government officers.*

A male farmer explained that, "there are prospects of transforming these livelihood groups into VSLAs [Village Savings and Loans Association] to improve our incomes in the future, once we receive these livelihoods." This, however, may possibly be far-fetched with uncertainty regarding when the alternative livelihoods will be delivered as promised.

There is high anticipation of a number of job opportunities once these livelihoods have been attained, as stated by most of the male respondents. They expect that opportunities will be created mainly through fishing and beekeeping and also transforming from subsistence farming to commercial farming. One of the male farmers from Mushasha village highlighted that:

> *I had established my fishponds in this wetland earlier, which were destroyed and filled by the environmental police while they were restoring the wetlands. I am not privileged enough to easily get a decent job in this district. Obtaining these fishponds again as an alternative livelihood will render me a full-time fish farmer and this will greatly restore my source of livelihood.*

Most of the key informants stated that the wetland is still under threat of degradation by both locals and non-community members. Nonetheless, there were minimal agricultural activities being practiced by locals on a small scale and limited mostly to the wetland boundaries. The farmers illegally encroached on the wetland boundaries through cultivating mostly beans, bananas and millet. Crop farming in the wetland is still the main threat from local communities, while large scale gold mining is the most significant threat from a licensed international mining company. According to the responses from these informants, this encroachment has been on a small scale with most of the crops cultivated for home consumption. One of the key informants stated that:

> *Encroachment on wetlands from the communities is still on going, however, at a reduced rate compared to that before the introduction of the alternative livelihood strategy. I believe it is because the wetland enforcement team has tried to ensure that no one returns to the wetland to carry out their activities. Some of the farmers are very stubborn and sneak back into the wetlands to resume cultivation. Most of the farmers have other pieces of land for cultivation other than the wetland, yet they still cannot seem to heed the wetland laws and regulations.*

The Community Development Officer further explained that:

> *The rate of wetland encroachment has now been reduced, especially in Kyenjongyera village, compared to when the project started in 2021 as the farmers are hopeful that the alternative livelihoods will be delivered soon, and they will not have to depend on this wetland for planting their crops anymore. However, most farmers are still encroaching on the boundaries of the wetlands growing bananas, beans and millet.*

Contrary to the responses from key informants, the majority of farmers seem to believe there is no ongoing wetland encroachment caused by the beneficiary wetland users. Most of the farmers indicated that currently, large scale gold mining is the major activity that has led to the destruction of wetland vegetation and yet the government has paid more attention to small scale wetland degraders than the larger problem. The majority of the wetland users seem to believe that their attitudes towards conservation of this wetland have adequately changed as they can now co-exist without destroying the wetland. One of the male farmers explained:

> *For the first time in about ten years, Kyenjogyera village has been able to receive heavy rains in the month of June which, together with July, are the driest months in a year. I think this is due to the fact that most of us have left the wetland vegetation to grow. In the wetland I was able to grow beans and sweet potatoes because there was enough water to support cultivation..*

## 4. DISCUSSION

The objective of the study was to assess the perception of local communities regarding the use of alternative livelihoods as a strategy adopted to restore the Kyenjogyera-Mushasha wetland system in Buhweju district.

The government has adopted various approaches to restore wetlands in Buhweju including enforcement of wetland laws, community sensitization, demarcation of wetland boundaries and the most recently adopted approach of promoting alternative livelihoods among wetland-dependent farmers. Initially, it was a top-down strategy with the government enforcing wetland laws while communities have limited say on decisions, but gradually the approaches have tended more to community-based wetland management. Shrestha (2013) observed that local community reliance on wetland resources, together with limited participation in their management and un-diversified livelihoods dependent on the direct exploitation of wetland resources, hinders conservation of wetlands. Involving communities in restoration of wetlands might ensure sustainable utilization of wetland resources.

The findings revealed that both key informants and farmers are in consensus that the communities are aware of wetland values and familiar with the restoration strategies used by the government to restore wetlands in the district. This implied that the farmers were aware of the impact of their farming on the status of the wetland, however they continued to encroach on these wetlands regardless of the strategies used with the excuse that they have no alternative source of livelihood. Zhu et al. (2016) similarly found that knowledge about government wetland restoration policies has no significant impact on willingness of farmers to participate in restoration of wetland. The farmers depended on this wetland for their livelihood which corresponds to a study by Aazami and Shanazi (2020) which indicated that wetlands have great potential to provide varied resources that act as livelihood opportunities. The dependency of farmers on the wetland was mainly driven by poverty and food security needs as indicated by most of the farmers optimistic that household income will be increased. Bakema and Iyago (2000) observed that farmers' perceptions of wetlands depends more on the benefits they obtain from them rather than their ecological functions.

The key informants revealed that the restoration strategies were executed according to the wetland laws and regulations. This follows Section 55 of the NEA (2019) of Uganda which indicates that a person who illegally destroys any wetland in a manner that has an adverse effect

on the wetland ecosystem, commits an offence and is liable on conviction to a fine or imprisonment not exceeding twelve years or both. The farmers yet find these strategies applied in the past to be characterized by threats, evictions, and arrests of wetland users by the wetland enforcement team as a form of implementing wetland laws and regulations. Even with the promotion of alternative livelihoods, the evictions and arrests are still ongoing. This echoes with Kabumbuli and Kiwazi (2009) who noted that government approaches to the dilemma of wetland encroachment have largely failed because they are aggressive, and are rarely sustainable. This creates tension and fear within the farmers who depend on the wetland for their livelihoods. These wetland-dependent communities retaliated through death threats on the whistleblowers and re-encroachment on the wetland. Zhu et al. (2016) found similar results that, when restoration programmes are enforced in highly controversial ways, such as forced relocation, it often creates tensions and confrontations between farmers and enforcing agencies. This was evidenced by the interviewees' reluctance to freely comment negatively about the restoration strategy.

The study findings indicated the various strategies that were used to restore wetlands in the district. These strategies included sensitization of wetland-dependent communities to the value of wetlands, demarcation of wetland boundaries, enforcement of wetland laws and regulations and promotion of alternative livelihoods to wetland-dependent communities. The effectiveness of these strategies had farmers vacate the wetlands, however, it was short-lived due to gaps in the implementation. The interviewees point to similar methods as Tumwebaze (2018). Key informants revealed that limited funding to monitor the implemented strategies and poor roads hindered the success of these strategies. Glass (2007) also discovered that without adequate monitoring of wetlands in remote areas, it is challenging to ensure the wise use of wetland resources and the protection of these wetlands. The farmers had access to land other than the wetland, however some of the farmers indicated that it is located on hilly areas which are not fertile enough to support their farming activities. This is contrary to Kabumbuli and Kiwazi (2006), who noted that encroachers know the ecological implications of their activities, but their excuse is limited or no access to any other land. The farmers who had limited livelihood options were motivated to return to the wetlands by limited surveillance from the authorities.

Wetland-dependant farmers were involved in the process of identifying alternative livelihoods as confirmed by all the interviewed farmers and key informants. This implied that farmers were able to identify livelihoods that were desirable to them. Community participation is a prerequisite to the management of natural resources, and to the achievement of alternative livelihoods (Kabumbuli & Kiwazi 2009). However, these alternative livelihoods had never been extended to the farmers at the time of the study. This might have created uncertainty among the farmers forcing some of them to re-encroach on the wetland pending government fulfilment of the alternative livelihood pledge. In addition, these alternative livelihoods may require the transition of farmers from cultivation to other activities which might be a big challenge for many of the farmers as it requires new skills, attitudes and even material inputs to be adopted which might be costly.

Goat keeping, bee keeping and fish farming were the alternative livelihoods that were sought and collectively selected by the wetland-dependent farmers through several engagements with government officials. Women sought goat keeping in order to improve their incomes. Saadullah (1997) similarly found that goat rearing is now regarded as an appropriate intervention in situations when capital is scarce. However, men and women may have different rights over livestock in a household, for example a study by Valdivia (2001) indicated that women had the capacity to control products from livestock only when it is used for home consumption,

however they could not sell the livestock and keep the income. The goats provided might not produce enough to improve income. The women, therefore, might be deprived of the overall right to sell and obtain income from goats, since they are mainly involved in crop cultivation.

The study revealed an overwhelming optimism by the respondents towards the alternative livelihoods even when they have not yet been extended to them. The key informants are keen to have a restored wetland and to restore community trust in government projects to boost the success of future initiatives. This might be due to the fact the that the alternative livelihoods approach puts into consideration the needs and livelihoods of wetland users. Farmers, on the other hand, are confident of improved household income and employment opportunities. The alternative livelihoods are unlikely to be solely sufficient to meet some of their financial needs, such as school fees, however farmers are very hopeful that this strategy will be very effective and will improve their livelihoods considerably. A neighbouring project revealed farmers received no more than two goats to start with, though this can hardly be considered sufficient. This may indicate that farmers are not interested in alternative livelihoods to improve their livelihoods and the wetland's status, but rather in compensation and a sense of fulfilment from the government. Such overwhelming optimism might be attributed to active community participation in the implementation of this wetland restoration strategy similar to findings by Shrestha (2011) that community participation promotes self-confidence and self- reliance at all levels of the community structure.

The idea of government promoting alternative livelihoods may also be an attractive an effortless solution to farmers in wetlands where their only input is to wait on the government to deliver. It could also be associated with the fact that the farmers are trying to conceal their ongoing cultivation in the wetlands. The findings indicate that several farmers require alternative livelihoods to create a common ground between wetland conservation and cropping to compensate for the loss of productive areas in the wetland. The alternative livelihoods may undermine the real objective leading to a decline in behaviour of the farmers towards restoration of wetlands (Gneezy et al. 2011) or it could be a wakeup call that their agricultural activities in the wetlands are undesirable since they deserve compensation.

The key informants attributed the government delaying delivery of alternative livelihoods to farmers due to bureaucracy within government agencies. For example, the project is implemented by MWE however, the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is in charge of acquiring and distributing these livelihoods. Despite the delay, the key informants indicated a noticeable reduction in the destruction of the wetland by farmers in terms of vegetation cover, i.e. degradation was limited to only wetland boundaries. This demonstrates the willingness of farmers to vacate the wetlands and devise other options to earn a living. However, the farmers have not been equipped with skills to pave way for a sustainable life outside the wetlands and have resorted to casual jobs that may not provide sustainable livelihoods in the long run. This is in line with research by the IUCN (2004) on alternative sustainable livelihoods for coastal communities. The introduction of alternatives alone may not necessarily lead to the change that is desired by the government - establishing an enabling environment that supports people to live their lives in a sustainable manner.

The findings of the study revealed that there is ongoing wetland encroachment taking place with key informants indicating illegal small-scale crop cultivation by farmers in the wetland boundaries and by large-scale gold mining activities that are legally recognized. The unfair wetland laws that favour large-scale wetland activities, like gold mining, but undermine small-scale cultivation by wetland-dependent communities are likely to force the farmers to return to

the wetlands for their survival. A section of farmers also indicated that the alternative livelihoods offered were not worth what they derived from the wetlands. This is similar to the prior voices from the farmers who indicated that they would not lose their livelihoods in order to save the river, which is the main source of water in the neighbouring city. Wetland degradation was more evident in areas further from the trading centres and administrative units compared to those closer to the trading centres. This demonstrates that with alternative livelihoods like the grocery shops in the trading centres, there is less reliance on wetlands in such rural areas. This contradicts research by Lwasa (2013) who indicated that the magnitude of encroachment on wetlands is directly correlated with community closeness to settlements and infrastructure. This can also be attributed to the efficient monitoring of the wetland by local authorities in areas close to the administrative units compared to those further away. However, this echoes with the findings of Zhu et al. (2016) who noted that the likelihood of farmers' participation in wetland restoration declines when farmers are farther away from urban areas due to limited government outreach activities.

From the study, the alternative livelihood approach is concurrently used with forced evictions by the enforcement team to eliminate wetland encroachers from the wetland. The threat to the farmers' continued crop cultivation in the wetlands is not only from the promise of alternative livelihoods from the government, but also from possible eviction by the government. The evictions follow a presidential directive to the Ministry of Water and Environment to apply force where necessary and evict people who have invaded the wetlands, swamps and rivers across the country (NilePost 2020). These forced evictions are sometimes discriminatory and affect the poor, which might stir up inequality within the community. The UN (2014) noted that minorities in communities often face forced evictions because of discrimination.

Political interference and corruption were indicated by farmers and key informants as a hindrance to adopting the alternative livelihood strategy. Politicians tend to determine who utilizes the wetlands and when and these decisions rarely favour the poor wetland-dependent farmers but instead favour the small section of the rich in the community. Rwakakaba (2009) in his research on the effectiveness of Ugandan environmental programs, also detected political interference and corruption as a reflection of weakness in implementing existing government strategies. This leaves the hopes of vulnerable wetland-dependent communities at the mercy of politicians for their survival. Namara (2023) obtained similar results, finding that politically vested interests constrain wetland restoration in Uganda.

## 5. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

Bureaucracy among different stakeholders like ministries has obstructed the delivery of alternative livelihoods as indicated by the key informants. Despite the delay, there was strong optimism in the community that, if they are provided, most farmers can be convinced to move out of the wetland and grow their crops in other available land due to the potential to improve their household income. However, this positivity is dependent upon the effective and timely advancement of these livelihoods to farmers. The government should therefore streamline and accelerate the process of delivery in order to eliminate uncertainty among farmers and prevent further re-encroachment.

The study revealed that most farmers have a positive attitude and are willing to support the restoration of the wetlands; however, compared to the crop cultivation, alternative livelihoods such as goat keeping often have lower and less immediate returns. While livelihood diversification can provide for household needs, it is not guaranteed that maintaining these livelihoods will provide an adequate livelihood option for a household. Alternative livelihoods such as irrigation farming, especially for crops formerly grown in the wetlands and use of organic fertilizers, should be encouraged to increase sustainability efforts (BMAU 2022).

Creation of awareness on the wise use of wetlands, demarcation of wetland boundaries, enforcement of wetland laws and regulations and promotion of alternative livelihoods to wetland-dependent communities have been used to restore wetlands in the district. The success of these approaches was attributed to the monitoring of activities carried out in the wetlands by the authorities. However, the success story was short-lived due to limited funding for regular monitoring, political interference and limited livelihood options for wetland-dependent farmers. According to the key informants, the findings have demonstrated that awareness of communities about the wise use of wetland resources does not guarantee a conserved wetland. Funding shortages, especially at the local government level ought to be addressed to sustain adequate monitoring of wetlands in order to avert re-encroachment on restored wetlands.

Most female farmers sought goat keeping and most of their male counterparts opted for fish farming and beekeeping, which were regarded as labour intensive. However, the dilemma of who possesses the overall right in a household to sell and obtain income from these goats might force women to re-encroach on wetlands for crop cultivation to improve their incomes. Therefore, alternative livelihood options that fully accommodate both male and female farmers are more likely to increase the success of this strategy and consequently a restored wetland. For sustainability, the government through MAAIF should provide diverse options like improved seeds and organic fertilizers for crop farmers to sustain their livelihoods since most women are involved in crop farming in poor wetland-dependent communities.

The key informants established that corruption and bribery initiated by political interference has strongly affected all efforts by the government to restore wetlands. Due to selfish interests, those in power make decisions to encourage selected farmers in communities adjacent to wetlands to illegally utilize them, leading to discrimination among the communities. Notwithstanding the strategies implemented to restore wetlands, if such actions by politicians are not checked, efforts to restore wetlands might be in vain.

The study revealed that the government has continuously forced farmers out of wetlands through threats and evictions, and arrests which has created tensions and confrontations between farmers and implementing agencies. There is need for farmers in poverty-stricken wetland communities to be prepared for the likelihood of being evicted from the wetland by the government. If farmers are evicted from the wetlands by the government to quickly restore their ecology, they are subject to increased poverty as they would be deprived of a livelihood. Farmers should therefore be prepared for life after wetland utilization through the provision of new skills and the opportunity to use existing skills in order to improve household livelihoods.

There was continuous wetland encroachment by farmers as pointed out by the key informants. The unfair wetlands laws that have failed to incorporate the livelihoods of wetland-dependant farmers but favour those who have the capacity to afford legal documentation, are most likely to have contributed to ongoing illegal crop cultivation in the wetland. The district environment

committee should derive a management plan specific to this wetland in order to incorporate the grievances of these farmers.

### 5.2 Recommendations

The following recommendations were derived based on the findings of this study:

i. The government should work according to a clear time schedule to avoid uncertainties and distrust from communities. The alternative livelihoods intended for wetland restoration should be delivered as soon as possible in order to take advantage of the existing optimism for these livelihoods.

ii. The government should prioritise wetland monitoring activities by increasing local government funding to facilitate activities such as establishing a wetlands officer position at Subcounty level, providing vehicles to wetland monitoring officers for regular inspections and improving road infrastructure in rural areas. Environment committees at Subcounty level should be re-instated, trained and facilitated to ensure adequate monitoring of activities carried in the wetlands. These committees should be able to provide basic knowledge on wetlands to the communities.

iii. The government should empower farmers that depend on wetlands to obtain other sustainable alternative livelihoods through training communities and equipping them with skills like tailoring, welding, carpentry while also creating markets for their products. The farmers obtaining the livelihoods mentioned in the findings of this study should equally be trained on how to manage them and provide a platform for sustainable income flow.

iv. Alternative livelihoods and gender concerns should be prioritized by emphasizing gender integration in wetland restoration training and community meetings at parish, Subcounty and district levels by the Community Development and District Environment Officers. Alternative livelihoods in which women have full control should be encouraged to ensure that livelihoods that women pick are beneficial in the long run. They should be sufficient to have an impact on the beneficiaries, e.g. providing improved seeds, organic fertilizers for crop farmers to sustain their livelihoods since most women are involved in crop farming in the study area.

v. The district environment committee should formulate by-laws that incorporate the needs of communities depending upon the wetlands in order to create harmony between the authorities and the community. Community-based wetland management plans to guide the restoration and sustainable management of wetlands at district level should be prepared and implemented.

vi. The District Council, through the Department of Production at the district, should consider motivating farmers who willingly vacate the wetlands through awards like fertilizers, hand hoes, watering cans, seeds for planting every per quarter per year to inspire other farmers to voluntarily halt their activities in the wetlands. This might reduce forced evictions by the enforcement team.

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# APPENDICES

## APPENDIX I

### INTERVIEW GUIDE LOCAL COMMUNITIES

I am ……. a research assistant collecting data on behalf of Brendah Namara who is in Iceland for GRO - Land Restoration Training programme and therefore not here to do the research herself, I will send her the data from this interview. She is conducting research on "local perceptions on the alternative livelihood approach for wetland restoration in Buhweju district Uganda: A case study of Kyenjogyera-mushasha wetland system." You are among some of the key community members in this area who have been selected for this study. I will need to record the interview so that Brendah back in Iceland can analyze the data and hear what you have to say. Is it okay if I asked you questions about your experience regarding wetlands and the alternative livelihoods that were offered?

**SECTION A: DEMOGRAPHIC INFORMATION**

1. What do you do for a living?
2. How would you describe your typical workday?

**SECTION B: Wetland restoration approaches used in Buhweju District**

i. Tell me about your understanding of wetland restoration.
ii. What do you know about the restoration approaches that have been used in the area? (Sensitizing communities, enforcing restoration orders, demarcating wetlands, and ensuring wetland compliance monitoring, promotion of alternative livelihoods)
iii. What are your experiences with these restoration approaches?
iv. Do you think these approaches have been effective and if not, why?
v. In your opinion what would be the reasons for protecting and restoring this wetland?

**SECTION C: Local community perception on the alternative livelihood restoration strategy**

i. What activity were you carrying out in this wetland before the restoration strategy?
ii. Are you still utilizing this wetland? If yes, what activity are practicing?
iii. Have been using any alternative livelihood options? If yes, which ones?
iv. Are there any other alternative livelihood options you would be interested in (list them)? If yes, why?
v. Can you tell me about your own experience with the use of alternative livelihoods?
vi. In what ways were you involved in the process of identifying these alternative livelihood options?
vii. Do you think these alternative livelihoods are sustainable?
viii. If you were given powers to protect this wetland, what would you do?

**SECTION D: The impacts of the alternative livelihoods on the communities**

i. Have you noticed any changes in the wetland size since the implementation of this approach? If yes, give examples (Is the wetland still degraded?)

ii. What do you think about the conservation of the wetland? Has your perception changed in any way?
iii. Do you think these alternative livelihoods would improve your household income? If yes, how?
iv. In what other ways do you think you would benefit from these alternative livelihoods?
v. How would you describe your relationship with the local authorities in terms of wetland utilization?
vi. Have you had the desire to encroach on this wetland again? If yes or no, why?
vii. Do you think there is any encroachment ongoing in this system? If yes, why?

**Thank you.**

## APPENDIX II

## KEY INFORMANT INTERVIEW GUIDE

I am …… a research assistant collecting data on behalf of Brendah Namara who is in Iceland for GRO - Land Restoration Training programme and therefore not here to do the research himself, I will send him the data from this interview. She is conducting research on local perceptions on the alternative livelihood approach for wetland restoration in Buhweju district Uganda: a case study of kyenjogyera-mushasha wetland system. You are among some of the key stakeholders in this area who have been selected to provide me with information to accomplish this study. This is therefore to request you to provide honest information by answering these questions and the information provided to me will be kept anonymous and will only be used for this research. There are no right or wrong answers to this because it is all about your experiences. I will need to record the interview so that Brendah back in Iceland can analyze the data and hear what you have to say.

**SECTION A: Wetland restoration approaches used in Buhweju District**

i. What is your position in this subcounty? (Technical officer or political leader)
ii. What restoration approaches have been used to restore Kyenjogyera wetland?
iii. How does the community perceive the above (interviewer should state out the ones mentioned earlier by the interviewee) wetland management approaches in the district?
iv. In your opinion, do you think these approaches have been effective and if not, why?
v. Do you think the communities are aware of the need to restore this wetland?

**SECTION B: Local community perception on the alternative livelihood restoration strategy**

i. Which alternative livelihoods have been extended to the community in relation to wetland restoration?
ii. Which of the above options has been more effective in helping communities vacate the wetlands to allow restoration?
iii. In what ways are wetland communities involved in the process of identifying these alternative livelihood options?
iv. Were there any community engagements to identify livelihood options that fit the needs of both men and women?
v. In your opinion, do you think the use of alternative livelihoods as a strategy to restore this wetland has been effective? If yes, explain.
vi. What challenges have been encountered in the implementation of this approach?

**SECTION C: The impacts of the alternative livelihoods on the communities**

i. Are there any noticeable changes in the wetland size since the implementation of this approach? (Is the wetland still degraded?)
ii. Do think the community attitude towards conserving this wetland has changed?
iii. Do you think these alternative livelihoods have improved household incomes in this area? If yes, how?
iv. In what ways have the communities benefitted from these alternative livelihoods?

v. Has the relationship between the local authorities and the communities contributed to better wetland management and restoration?
vi. Is there any wetland encroachment still on going on this wetland?
vii. How would the challenges encountered be addressed?

**Thank you for accepting to participate in the study.**