AGRICULTURE, LIVELIHOODS, AND CONSERVATION PROJECT BASELINE SURVEY IN LULI KAYONGA CENTRAL FOREST RESERVE AND NEARBY FISHING VILLAGES DEI SUB-COUNTY, PAKWACH DISTRICT

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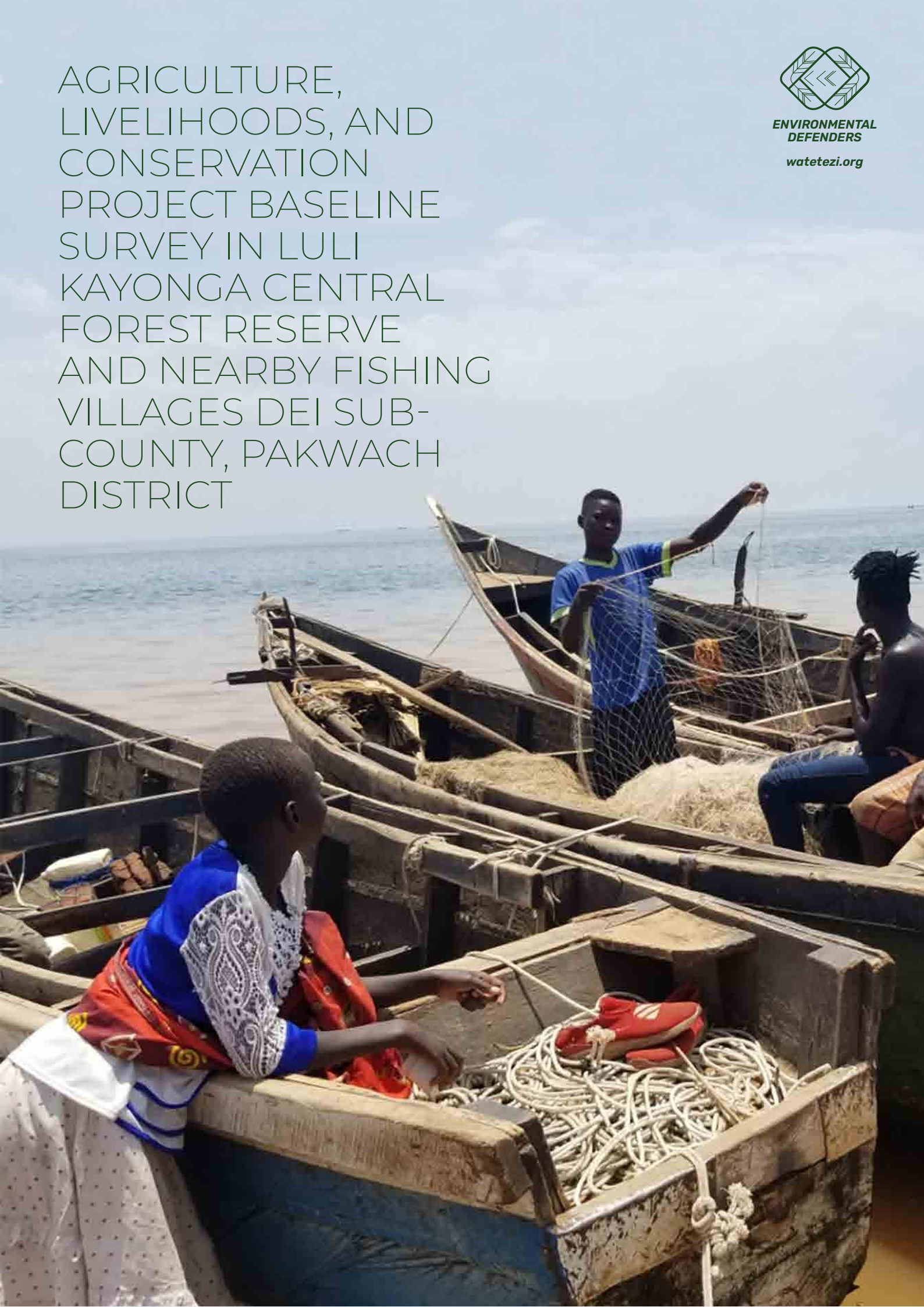

Environmental Defenders,
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Cover image > **Pamella Lakidi Achan**

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EXECUTIVE SUMMARY

The mission of Environmental Defenders (ED) is to *protect the natural environment and the people and wildlife that depend upon it, helping marginalized indigenous communities make a sustainable living, and protect their water sources and the local environment*. This is done through trees planting, restoration of degraded land and watersheds, livelihood support and community capacity building, seed banking and propagation, protection and accompaniments of conservation activists, tree nursery production as well as environmental awareness and education at local level. The organisation works with local government agencies, farmers' groups, private land owners, community-based groups, smallholders, fisher communities and local farmers to implement its various conservation and livelihoods programs on trees planting, village loan and saving, environmental awareness, women empowerment and defense of environmental activists in Lake Albert region in Uganda.

In February 2022, ED starded an Agriculture, Livelihoods, and Conservation Baseline Survey with the main objective of understanding and documenting the prevailing conditions of communities living adjacent to Luli Kayonga Forest Reserve and those living at the shore of the Dei Landing site in Pakwach district. Environmental Defenders will use the study's findings to develop and carry out initiatives and programmes that safeguard forests and the Lake Albert Biodiversity and improve livelihoods in the study areas where smallholder agriculture is linked to the loss of forests and biodiversity.

The Baseline study was implemented through a mixed methods approach in which both quantitative and qualitative data were collected to investigate the various themes as elaborated in the study objectives. For the quantitative data collection, a mini-survey involving 100 respondents was carried out. The respondents were divided into three groups according to the three beneficiary groups of ED's current work in the community, that is, forestry (30 participants), Fisheries (30 participants) and Agriculture (60 participants). A household survey tool was developed, shared with ED, and then finalized and used to collect quantitative data through a mobile-based data collection application. The qualitative data was collected through targeted focus group discussions with men and women in Got Rau Parish and Hoima Parish that represented the 3 categories of beneficiaries of ED's work. Noteworthy, is that all respondents were participants in ED's work. A limited number of key informants was also engaged in order to provide appropriate triangulation of the information being gathered. Last, but not least, an extensive literature review was undertaken of national, district, sub county as well global level relevant literature pertaining to the subjects of forestry /environmental conservation, fisheries management and agricultural production. A first draft report was prepared and submitted to ED to make input. After ED's input, a validation workshop with selected stakeholders in Dei sub county was conducted. This is the final report after integration of all stakeholders' input into the study findings, conclusions and recommendations.

In utilizing the findings of this study some limitations are worth keeping in mind. The small numbers of forestry and fisheries respondents presented a challenge in data analysis. However, limitations of resources resulted in such small number targeting. Secondly, the respondents were all beneficiaries of ED's work in the community. Hence, high levels of certain indicators do not mean that the community in Dei is necessarily at that high level of knowledge or practice of any program indicator.

The findings are presented as per the Baseline Study objectives in brief. More detailed information is found in the body and conclusions/recommendations sections.

SOCIAL SCORECARD INDICATORS

CLIMATE CHANGE ADAPTATION AND SUSTAINABLE LAND MANAGEMENT

The Baseline study sought to investigate this through establishing the knowledge and practices around environmental degradation. The investigation found that ED's efforts with the forestry groups may have yielded a high knowledge (79%) of tree cutting as an environmental degradation practice; and a moderate knowledge (66%) of tree planting as an environmental protection practice amongst other practices. Amongst agriculture respondents, 46% had the knowledge that cutting down trees for fish smoking; 20% that overgrazing the grasslands; and, 19% that burning of bushes would degrade their environment. Within the fisheries respondents, 60% had the knowledge that prohibited fishing gears degrade the fisheries resources and only 40% identified sensitizations against the illegal fishing methods as important in protecting the fisheries resource.

The District had undertaken the plantation of 1500 teak trees in Oguta catchment area, the training of trainers on Lorena stove and charcoal briquettes production; while National Agriculture Advisory Services (NAADS) / Operation Wealth Creation (OWC), Third Northern Uganda Social Action Fund (NUSAF-3) and others have distributed fruit trees in the community to promote agroforestry in the community. All these efforts, together with ED's initiative in tree seeds collection, banking and storage as well as the projects restoring 450 acres of land near Lake Albert in the Pakwach district would contribute to climate change adaptation The downside is that a very small number of the 1500 teak trees survived the drought of the past years, hence only about 100 trees are estimated to be growing in the Oguta catchment area.

COMMUNITY LIVELIHOODS AND ANNUAL INCOMES OF SUGGESTED OPTIONS

51.9% of the forestry respondents report crop farming for subsistence as their main source of livelihood against 3.7% that mentioned commercial crop and tree planting as a main livelihood source. 66.6% of the fisheries respondents had crop farming for subsistence as their main livelihood source against 26.7% whose main livelihood is fishing/fish trading. This shows that a bulk of the forestry and fisheries respondents are agriculturalists who have diversified their household incomes by undertaking either forestry or fishing as an additional livelihood source.

With regard to annual incomes, 48.1% of forestry respondents had earned on average 100,000UGX (USD28.6) per month which translates to a maximum annual income of 1,200,000UGX (USD 342.8) while 36.7% of the fisheries respondents had earned income in the range of 100,000UGX(USD 28.6) and above. While only 7% of the forestry respondents earned an income in the rage of over 6,000,000UGX (USD 1714); 16.7% of the fisheries respondents were in the above range. The data analysis of the agriculture respondents' incomes was improperly done, hence could not be used. From the forestry and fisheries data, it can be deduced that diversification into fisheries livelihood source is more economically advantageous for household than doing so into forestry.

CONFLICT ON FISHERIES AND FORESTRY RESOURCE USE

In the last three (3) years 82% of the forestry respondents did not experience any forest-based conflict while 80% of the fisheries respondents affirmed the existence of fisheries-based conflict. The Government of Uganda (GOU) strict regulations which are at the root of the conflict over the fisheries resources has brought with it an increased cost of investment into fishing. And, this coming at the heels of the COVID-19 Pandemic which had already left in it's track economic breakdown at all levels. And yet, current GOU projects and programs at the district and sub county have no provision for the affected fishing community to access the necessary financial investment for complying with the GOU regulations.

Article 19 of the **United Nations Declaration on the Rights of Indigenous Peoples** which requires that *States shall consult and cooperate in good faith with*

the indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them. If GOU had complied with this requirement, all this feedback from fishermen on the amounts of finances they need to comply with the regulations would have been made directly to GOU. And GOU would have put in place a long-term plan for meeting these financial needs of the fishing community as it also phased in it's enforcement. And by the way, the funds GOU is spending in enforcement may well be enough to help fishing communities adopt the required boat sizes, fishing nets etc., if GOU gave this money to fishing groups.

GOU chose to invest in military-based enforcement. However, GOU must keep in mind that during the colonial days, the same approach was adopted but it failed to achieve the desired objectives; and that this current approach is also bound to fail. There is need to reconsider the current GOU action.

ACCESS TO, USE OF, LAKE AND FOREST RESOURCES

92.6% gave a 'No response' to the question on access to forests but 4% did mention that National Forestry Authority (NFA) hindered access to the forest. The latter data can only mean that the respondent(s) were referring to Luli Central Reserve Forest which NFA has a mandate over. The high 'No Response' may be related to the fact that most of the so-called forests in Dei are privately owned 'forests' in which case the issue of access becomes irrelevant. The above notwithstanding, the validation exercise illuminated that NFA and the community have good relations and that the former has licensed 3 farmer groups and 2 individuals to plant trees in the forest.

63.3% of the fisheries respondents said they lacked access to the fisheries resources of the Lake Albert. The main reason is the current GOU restrictions and the related financial implications such as: expensive equipment required e.g. an engine for a boat is 9,000,000UGX (USD 2574); not having the required boats size and net sizes. These are in addition to other challenges in fishing/fishing trade including: loss of lamps during night fishing; loss of nets due to water hyacinth; strong winds that break boats; nets need replacement after every 3-4 months; a mandatory fishing license of 200,000UGX (USD 57.2) per annum and 50,000UGX for laborers on the boats; theft of the nets by other fishermen; and the absence of a financial facility that fishers/fish traders could access to meet their higher fishing investment costs.

In this regard, it is pertinent to invoke ***Article 5*** of the **United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas**, Subsections 1, states thus *peasants and other people working in rural areas have the right to have access to and to use in a sustainable manner the natural resources present in their communities that are required to enjoy adequate living conditions, in accordance with article 28 of the present Declaration…* Subsection 2, goes on to require that *States shall take measures to ensure that any exploitation affecting the natural resources that peasants and other people working in rural areas traditionally hold or use is permitted based on, but not limited to: (a) A duly conducted Social and Environmental Impact Assessment (SEIA); (b) Consultations in good faith, in accordance with article 2 (3) of the present Declaration; and, (c) Modalities for the fair and equitable sharing of the benefits of such exploitation that have been established on mutually agreed terms between those exploiting the natural resources and the peasants and other people working in rural areas*.

Certainly this article has been violated; there has not been a duly conducted SEIA; no consultation in good faith and no modalities for the fair and equitable sharing of the benefits of such exploitation. Indeed, right now fishing continues on Lake Albert but it is for the rich who can afford to foot the huge financial investment required if one is to comply with GOU regulations.

GENDER EQUALITY

FORESTRY VALUE CHAIN

Altogether 59% of the respondents identified women and youth's role as typically in the production segment of the tree value chain where they provide labor for various activities including digging, weeding, watering trees as well as tree planting. This happens mostly under contexts of privately owned forests whereby such owners seek labor services from the community. In Luli Kayonga Central Reserve Forest where community groups consisting of both male and female farmers have tree planting projects through license from NFA, women are more equitably participating in the tree value chain.

TREE SEEDS COLLECTION, BANKING, STORING AND RELATED ACTIVITIES

Under this ED intervention, 67% of the respondents said that roles in tree seeds collection are being done by either husband or wife. This implies that ED has undertaken a household level approach to implementing this activity. However, apart from the potential positive benefits of this approach, it must be kept in mind that, where the husband becomes engaged in other household related livelihood activities, this responsibility is likely to fall squarely on the woman's shoulder. In such a circumstance,

the woman's workload is increased since she already has other existing household roles assigned to her as a woman under the African customs and norms of gender roles.

- LAKE ALBERT FISHERIES MANAGEMENT

  Women and youth are reported to participate in activities related to legal compliance; and, hygiene and sanitation. The GOU has adopted the Beach Management Unit (BMU) as a structure for management of water resources in Uganda that are established at each Landing site. Formerly, inter alia, the BMU role included :(a) monitoring, control and surveillance; and, (b) improving the sanitation and hygiene at landing sites. Women and youth's participation in legal compliance and hygiene and sanitation highlights their important contribution to the above roles of the BMU currently replaced by the Landing Site Committee.

- THE FISHING/FISH TRADE VALUE CHAIN

  Women are reported and self- report to participate as follows: (a) boat owners; (b) fish processors; and, (c) fish traders/mongers. On a positive note their "hard work" in fish processing earned them two funding support from NUTRIFISH and National Agricultural Research Organization (NARO) towards purchase of fish drying machine, NARO, and modern fish smoking kiln, NUTRIFISH. However, the NARO was a co-sharing arrangement that left the women with a machine without a housing structure. Women are supposed to build the house for the fish drying machine. That was in 2018. But in 2020 COVID-19 brought a halt to all economic activity and the after effects are still with us to date. In addition, with the advent of GOU restrictions on Lake Albert the women groups' access to fish greatly reduced. Consequently there is now a problem that the current fish quantities are too small to be processed in the machine.

  On a negative note, the current GOU enforcement that involves boat and nets confiscation and burning has left the women boat owners without their capital. So, while the women are participating actively in the fish value chain, there is no enabling environment for them to perform and realize their maximum potential. Until these obstacles are removed, their participation in the fish value will remain of no consequence at all.

- AGRICULTURAL PRODUCTION

  There are two contrasting scenarios:

  (a) In Luli village, it emerged that most women were married to men who self-reported as landowners. In the discussion about women's participating in a future tree planting project women raised the issue of lack of land as the first constraint that needs to be addressed. These women are similar to women in other parts of Uganda, where under a customary land tenure regime, women can use land but the major decision making (that is, control) remains with their husband, brother or father. For these women, access to land is not limited to seasons.

  (b) In Hoima village, there is a mixed community of landowners (majority are indigenous customary land owners) and immigrants from other parts of Pakwach and other districts e.g. Buliisa. The women here, married or not, emphasized the problem of land scarcity which has prompted majority of them to rent land per season in order to grow food for their households. Rented areas are between 0.5 to 1.0 acres and cost between 40,000UGX (USD 11.4) to 120,000UGX (USD 34.3) per season. It also emerged that for those women, who were mostly fish mongers; they were using the income earned from fish business to undertake the crop production activities on the rented land. Hence, with the current negative impacts of the GOU restrictions on fishing/related activities, coupled with persistent droughts in the past two years these women have been left without income source consequently, are no longer able to continue with crop production.

In other organization's work, it was noted that NAADS/OWC outreach seemed to be gender blind while NUSAF-3 approach was very gender sensitive. For lack of gender disaggregated data in the sub county and district reports on beneficiaries served, it is difficult to gauge their gender equality actions.

LAND USES AND ENVIRONMENTAL DEGRADATION/BIODIVERSITY LOSS

On Land uses, 50% self-report that they use land for biennial crop production, 20% use it for perennial crops; 16% for fruits and vegetables; and only 3% for tree planting and wetlands conservation. However, respondents identified the main land uses causing environmental degradation as follows, in order of importance: grazing the land above it's holding capacity, perennial crop production, wetland conservation; and, use of land for infrastructure development activities. With this data, it is up to the Technical specialists in environmental conservation education programs to tailor their content appropriately in order to address any information gaps in the community.

RESTORATION OPPORTUNITIES, STRATEGIES AND POTENTIAL FOR FOREST LANDSCAPE RESTORATION-LULI KAYONGA CFR AND SURROUNDING FISHING VILLAGES

EXISTING OPPORTUNITIES IN FORESTRY

The groups formed in the community with the aim of improving/management of forests and its resources are an opportunity to build on. These groups are carrying out various activities including: tree seeds collection, banking and storage; tree nursery beds establishment; selling of seedlings; collection and sale of forest products; as well as some advocacy for forests conservation. These groups are entirely the initiative of ED.

The district and sub county efforts including *the training of two(2) nursery operators; training on Lorena stoves and briquettes making; and mobilization of the community to undertake tree planting in Oguta catchment area* are also opportunities. However, community report that the 1500 teak tree project was mismanagement by the District so currently only about 100 trees are surviving. Under the Forest Landscape Restoration (FLR) approach, a number of interventions are implemented at a landscape level with various stakeholders participating. ED therefore, has the opportunity to mobilize and collaborate with various stakeholders (sub county, and any Non-government projects and programs) involved in promoting agroforestry, woodlots establishment, natural trees regeneration and related activities to implement an intentional FLR project in Dei Sub County. In doing so, ED must avoid a repeat of the mistakes that some of these stakeholders have made while implementing forest restoration activities in the same communities.

EXISTING OPPORTUNITIES IN FISHERIES MANAGEMENT

Some of the groups initially formed, have gone into dysfunction due to various challenges, key amongst which are: the COVID-19 pandemic and related control measures; and the GOU restrictions that followed immediately after the lockdown was lifted up. Those groups had been involved in: *sanitation activities*; *sensitizing communities of hygiene and sanitation*; and *enforcing rules and regulations*. A challenge currently, as shared at the Validation meeting is that the BMU's were scrapped due to mismanagement and are currently replaced by the Landing site committee. Apparently, investigations are still ongoing to date.

APPROPRIATE STRATEGIES IN FISHERIES MANAGEMENT

Is to consider the revival of the fishing groups/ associations and to work with them and the Landing Site Committees and Dei local government to improve fisheries resource management on Lake Albert.

APPROPRIATE STRATEGIES IN AGRICULTURE

70% were planting trees as individuals against 30% doing so in a group context. 62% of these respondents were planting the trees on their own land, 15% had planted trees as laborers on a public land; 10% as laborers on private land. This shows that agroforestry is well established in the community, this is one of the FLR options recommended under the FLR assessment of Uganda in 2016.

Of great importance in the implementation of FLR, is the need to address the following issues *tree seeds should be readily available; there is need to scale up the capacity ED has built on tree management because currently it is very small*; and there appears to be a low level of knowledge of seeds of native tree seeds. The Pakwach District Performance Report, 2020 identified drought a key binding constraint to progress in agriculture and forestry thus *prolonged drought which has always affected the planting and performance of crops. There was a severe drought especially in first season 2019 which affected mainly the farmers planting oranges and mangoes because it did not allow the mangoes and oranges to establish properly in the field and eventually they dried off.* The community and leaders of Dei have put emphasis on irrigation schemes to support production.

Related to drought, the District report did not capture anything on water for production to mitigate the negative impacts of climate change as manifested in great rainfall variability. Dei Sub County leader clarified that large scale irrigation projects are impossible as Lake Albert is a transboundary water body. It has legal implications. Therefore, only small scale irrigation models are possible, if at all irrigation is to take place.

RECOMMENDATIONS

LIVELIHOODS

In Got Rau support Cassava, groundnuts and maize but it should be the local Cassava variety. For Oguta Parish, first identify with the community and Dei Sub County the appropriate commodities to support. In the latter parish, encourage farmers to dedicate at least one (1) acre to a woodlots/forestry project. For both parishes consider availing irrigation support to mitigate the unreliable rainfall; and, agroforestry should be promoted in all crop production plots. The community indicated that the preferred timber tree species are Mbeni and Kalafuru; fruit trees are mangoes, oranges and jack fruit; and, important biodiversity tree species are Cwaa, Otyep, Too, and Ogal.

Hoima Parish is unique in population and geography: in the words of the sub county leaders *it is estimated at 80% Congolese*; and, *sandwiched between a mountain and water*. Given the high human rights violations, which even the Dei Sub county leadership has attempted to challenge government's negative actions to no avail, ED's main environmental rights defenders work is here. First, support the Dei Sub county leadership to advocate with the Pakwach District leadership on where government livelihood support programs including Youth Livelihood Programme (YLP) and Uganda Women Entrepreneurship Programme (UWEP) grants get allocated so that the youth and women in Dei Landing site are given priority consideration. Secondly, ED should work with the Dei Sub County to amplify the plight of the fisherfolk at the regional and international spaces of engagement on how GOU's actions have dispossessed locals of their livelihoods without any safety nets for them. Thirdly, back up this advocacy with projects and programs that directly address the financial hurdle that women, men and the youth at the Dei Landing site are grappling with. Fishing is the mainstay of this parish as well as the economic backbone of Dei Sub County.

VALUE CHAINS

The sustainable development of the fish value chain should be given high priority as it is the one which has been most neglected. Next in priority is the sustainable development of the forestry value chain since it is central to efforts in stemming environmental degradation which happens under agricultural value chains. Moreover, agriculture sector overall has had the most funded projects and programs from both government and non-governmental entities while the first two were not adequately supported.

On specifics, in Hoima Parish there is a women group struggling with the machines they were supported with for fish drying: ED consider supporting them to complete it. The GOU restrictions have left the women without capital to continue their businesses, support them to revive. Similarly, the men and youth (in groups) are also in dire need of financial assistance to revive their livelihoods in fisheries. With regard to crop production, Hoima Parish is the best place to implement the planned kitchen gardens as land is a big constraint there.

In Got Rau and Oguta parishes farmers are challenged with lack of millet, Simsim and local Cassava variety: ED should include these food and cash crops as a priority in the native seeds collection, banking and storage project. As ED promotes Cooperatives in Got Rau and Oguta parishes the guidance in the section on livelihoods should suffice on what commodities to develop.

If ED would establish private woodlots in Oguta Parish, then it can also implement it's planned forest owners' trainings on tree management etc. If it also works with the three (3) farmer groups and two (2) individuals that have got licenses from NFA, perhaps they can help to develop the timber value chain.

In all the three parishes consider the training of women, youth and men groups on the Lorena stoves, charcoal briquettes making as income generating projects so as to popularize these energy saving techniques while the groups earn an income simultaneously.

RESTORATION AREAS

Amani, Dei, Dei forest, Dei B/Border are the villages to give highest priority in land restoration efforts in Hoima Parish while Got Olando, Luli, and Olando are the villages to consider in Got Rau.

During NUSAF 3 Tree Project implementation, the practice was that a community member offered land for the group activity of tree planting. After establish the tree plantation, each household also benefited five (5) seedlings to plant in their own land. At a certain maturity level, the trees would be handed over to the landowner (who offered the land for the project) to continue with its maintenance etc. During the validation event, a second account of NUSAF 3's implementation approach highlighted that the community was not being empowered while implementing the tree planting project activities. In view of which the community specifically requested that, in future projects, they should be empowered to manage their own tree planting project; and, that the role of GOU should be that of providing advisory services.

A direct recommendation from the sub county leadership is that if there is enough land, ED should consider promoting pine tree production amongst tree farmers. The leadership also requested that schools and institutions be supported with fruit trees.

INTRODUCTION

ABOUT ENVIRONMENTAL DEFENDERS

The Environmental Defenders (hereafter referred to as ED). The mission of Environmental Defenders is to protect and defend the natural environment, the people, and the wildlife that depend upon it., helping marginalized indigenous communities make a sustainable living, and protect their water sources and the local environment. This is done through trees planting ,restoration of degraded land and watersheds, livelihood support and community capacity building, seed banking and propagation, protection and accompaniments of conservation activists, tree nursery production as well as environmental awareness and education at local level.

The organisation works with local government agencies, farmers groups, private land owners, community based groups, smallholders, fisher communities and local farmers implement its various conservation and livelihoods programs on trees planting, village loan and saving, environmental awareness, women empowerment and defense of environmental activists in Lake Albert region in Uganda.

OBJECTIVES OF ED

The ED's mission is to protect the natural environment and the people and wildlife that depend upon it, helping marginalized indigenous communities make a sustainable living, and protect their water sources and the local environment. ED envision secure, healthy, and ecologically sound environment for people and biodiversity.

In the period 2021 through 2025, ED will focus on four programs including: a) Climate resilience/ Biodiversity; b) Protection of Women Environmental activists and other human rights defenders; c), Community Livelihoods Support; and d) Organizational Development.

In February 2022, ED began an Agriculture, Livelihoods, and Conservation Baseline Survey that is included in the Strategic Plan of the period 2021-2025. The Baseline Survey focuses on two of the four thematic areas: Climate resilience/biodiversity and community livelihood support.

BASELINE STUDY PROFILE

BASELINE STUDY OBJECTIVES

The main objective of the proposed Agriculture, Livelihoods, and Conservation Baseline Survey is to understand and document the prevailing conditions of communities living adjacent to Luli Kayonga Forest reserve and those living at the shore of the Dei Landing site in Pakwach district.

Specific objectives included:

1) Provide up-to-date baseline data on the following social indicator scorecard that will be the basis for program impact monitoring: (a) Knowledge and practices on climate change adaptation and sustainable land management; (b) Community livelihood options and annual incomes from suggested options; (c) Conflict over fisheries and forests resource use; (d) Access to, and use of, Lake and forest resources; and (e) Gender equality.

2) Identify different land uses and their contribution to natural ecosystems, environmental degradation, deforestation, and biodiversity loss in the study areas.

3) Identify restoration opportunities, strategies, and map potential for forest landscape restoration around Luli Kayonga Central Forest reserve and surrounding fishing villages.

4) Analyze and interpret the collected data and provide recommendations on livelihood options, value chains, and restoration areas the Environmental Defenders should focus on per villages or parishes/landing sites.

BASELINE PURPOSE

Environmental Defenders will use the study's findings to develop and carry out initiatives and programmes that safeguard forests and the Lake Albert Biodiversity and improve livelihoods in the study areas where smallholder agriculture is linked to the loss of forests and biodiversity. The approach taken by ED to address this development challenge is to provide assistance to communities, households, and individuals by showing how conservation and development goals can be more successfully attained through smallholder interventions that promote sustainable local development while preserving vital ecosystems and biodiversity.

DEVELOPMENT CONTEXTUAL ANALYSIS

NATIONAL DEVELOPMENT CONTEXT

NATURAL RESOURCES MANAGEMENT

Chapter nine(9) of the Third National Development Plan (NDPIII) 2020/21 - 2024/25 is on natural resources, environment, climate change, land and water. The chapter begins by acknowledging that *there is poor management of natural resources including land, water, and environment coupled with the worsening effects of climate change due to: (i) poor land use and insecurity of tenure; (ii) limited capacity for climate change adaptation and mitigation; (iii) low disaster risk planning; (iv) rampant degradation of the environment and natural resources caused by low enforcement capacity, limited environmental education and awareness, limited alternative sources of livelihoods and limited research, innovation and adoption of appropriate technology; (v) limited access and uptake of meteorological information (inaccuracy in information) due to low technology and equipment for early warning and preparedness and ineffective systems and mechanisms for addressing vulnerabilities (vi) poor coordination and institutional capacity gaps in planning and implementation; and (vii) absence of appropriate incentives for good environmental management practices*.

NDPIII Programme **Area nine**(9) therefore proposes to pursue the reduction of *environmental degradation and the adverse effects of climate change as well as improve utilisation of natural resources for sustainable economic growth and livelihood security through, inter alia, working towards achieving the following key results over the next five years are: Result (iii): Increase land area covered by forests from 9.1 percent to 15 percent; Result (viii): Increase the percentage of titled land from 21 percent to 40 percent; and Result (ix): Reduce land related conflicts by 30 percent.*

The specific Programme objectives relevant to this study are:

Objective two(2) Increase forest, tree and wetland coverage, restore bare hills and protect mountainous areas and rangelands; **Objective three**(3) Strengthen land use and management; **Objective five**(5) Promote inclusive climate resilient and low emissions development at all levels; and, **Objective seven** (7): Increase incomes and employment through sustainable use and value addition to water, forests and other natural resources.

ED's strategic Plan 2021-2025 is fairly well aligned with the National level development objectives under Natural Resources Management. However, there are also gaps which can be considered and integrated in the mid-term review of the Strategic Plan implementation or into the next strategic plan development. There are also opportunities for ED to expand it's current planned programs, which is achievable through projects that may be funded under each of the broad themes. The ***Table 1*** captures well these issues.

AGRO-INDUSTRIALIZATION

Chapter five(5) of NDPIII states that *given the dominance of agriculture as a source of livelihood, Agro-Industrialisation (AGI) offers a great opportunity for Uganda to embark on its long-term aspiration of increasing household incomes and improving the quality of life*. NDPIII affirms that Uganda has an *opportunity to exploit its agro-industrialization agenda in order to feed the global value chain* but is constrained by *a high proportion of the population dependent on subsistence agriculture majority of whom are rural women and youth.* Causal factors of this state of affairs include: *(i) low agricultural production and productivity; (ii) poor storage infrastructure; (iii) poor market access and low competitiveness for products in domestic, regional, continental and international markets; (iv) low value addition; (v) limited access to agricultural financial services and critical inputs; and (vi) poor coordination and inefficient institutions for planning and implementation of agro-industrialization*.

Programme **Area five**(5) therefore aims to *increase commercialisation and competitiveness of agricultural production and agro-processing*. The following selected key results to be achieved over the next five years are relevant to ED's work: *(i) increase the total export value of processed agricultural commodities; coffee, tea, fish, dairy, meat, and maize (and its products) from; USD 0.935 Billion to USD 2.7 billion; (vi) reduction in the percentage of households dependent on subsistence agriculture as a main source of livelihood from 68.9 percent to 55 percent; and, (vii) increase the proportion of households that are food secure from 60 percent to 90 percent*.

KEY STRATEGIC ACTIONS UNDER THE STRATEGIC OBJECTIVES	ALIGNMENT/GAPS AND OPPORTUNITIES FOR ED
OBJECTIVE 2: INCREASE FOREST, TREE AND WETLAND COVERAGE AND RESTORE AND PROTECT HILLY AND MOUNTAINOUS AREAS AND RANGELANDS	
• Strengthen conservation, restoration of forests, wetlands and water catchments and hilly and mountainous; • plantation development and tree planting including the local and indigenous species; • scale up agroforestry as a climate smart agriculture practice; • establish dedicated fuel wood plantations necessary to contribute to achieving or exceeding net biomass surplus levels; • ensure the protection of rangelands and mountain ecosystems; • Implement national targets on threatened/endangered species, restoration of natural habitats, with support and participation of local communities and indigenous peoples; • Identify and declare special conservation areas to raise the conservation status of areas outside protected areas that are important biodiversity areas; and, improve the management of districts and private forests; • Assure a significant survival rate of planted tree seedlings.	• ED Strategy Plan indicates that it is already aligned on: restoration of forests; promotion of tree planting including local/indigenous species; restoration of natural habitats. • ED Strategic Plan lacking on agroforestry, fuel wood plantations; protection of rangelands. • ED strategic plan lacking in Advocacy- which could address the declaration of special conservation areas if any as biodiversity areas; and improved management of district forests if any; • ED has to watch out for this challenge when it undertakes it's tree planting projects
OBJECTIVE 5: PROMOTE INCLUSIVE CLIMATE RESILIENT AND LOW EMISSIONS DEVELOPMENT AT ALL LEVELS	
• Review Uganda's 2015 Nationally Determined Contributions in light of local emerging issues and new global climate change action ambition; • Mainstream climate change resilience in programs and budgets with clear budgets lines and performance indicators; • Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.	• ED has opportunity to engage with relevant institution in the process of review so as to make input into Uganda's new NDC. • ED may want to review the sub county programs and budgets for mainstreaming of climate resilience; and/or support the sub county to do so in case it lacks capacity in this • ED already supporting education, awareness raising but may also include institutional capacity support to its sub county and other relevant community structures to build up local capacity on CCA, CCM and Early warning hence early response systems.
OBJECTIVE 7: INCREASE INCOMES AND EMPLOYMENT THROUGH SUSTAINABLE USE AND VALUE ADDITION TO WATER RESOURCES, FORESTS, RANGELANDS AND OTHER NATURAL RESOURCES	
• Increase awareness on sustainable use and management of environment and natural resources; • undertake targeted sensitization campaigns with information packaged in forms tailored to the information needs of recipients; and • build strategic partnerships with other players such as; private sector, cultural institutions, media and politicians • Support local community-based eco-tourism [1] activities for areas that are rich in biodiversity or have attractive cultural heritage sites	• ED already has running Radio programs in which communities are being sensitized on sustainable use and management of natural resources. • ED has opportunity to expand the existing program by producing other IECS especially simple posters in local language that can be displayed in public places like markets, churches etc. • ED may elaborate specific activities it will undertake in creating an eco-tourist site in Luli Kayonga Central Reserve Forest

[1] Ecotourism has several activities that are carried out for example nature walks, bird watching, village/community walks, forest walks, butterfly watching, sport fishing, mountaineering / hill climbing, gorilla tracking, chimp tracking, game viewing, boat cruises, caving, scenery viewing /nature photography, primate watching to mention but a few. Source: https://ugandatourist.com/ecotourism-sites/

Table 1. How ED Strategy relates with the National level NRM strategic objectives and actions

The following development objectives of Programme **Area five**(5) are relevant to ED's work: **Objective one**(1): Increase agricultural production and productivity; **Objective three**(3): Improve agro-processing and value addition; **Objective four**(4): Increase market access and competitiveness of agricultural products in domestic and international markets; and, **Objective five(5)**: Increase the mobilization, equitable access and utilization of Agricultural Finance.

Table 2 captures how well ED's current strategy feeds into the national level development objectives; where there are gaps as well as opportunities for ED to consider in either strengthening it's interventions or identifying areas of new interventions.

KEY STRATEGIC ACTIONS UNDER THE STRATEGIC OBJECTIVES	ALIGNMENT/GAPS AND OPPORTUNITIES FOR ED
OBJECTIVE 1: INCREASE PRODUCTION AND PRODUCTIVITY	
Strengthen the agricultural extension system: • Scale-up innovative extension models such as nucleus farmers in all agro ecological zones; • Strengthen the research-extension-farmer linkages to increase uptake of new climate smart technologies.; and, • Develop and equip youth with knowledge, skills and facilities for access and utilisation of modern extension services.	
Strengthen the agricultural inputs markets and distribution systems to adhere to quality standards and grades: • Setup and equip farm service centres within the public service e-service centres for bulk input procurement, storage and distribution.	If established, ED may facilitate farmers to access this e-service centres.
Increase access and use of water for agricultural production: • Develop solar-powered small-scale irrigation systems for small holder farmers outside conventional irrigation schemes. • Promote water use efficiency in agricultural production.	Projects proposals under climate resilience or agricultural production for provision of solar-powered small-scale irrigation systems can help ED support on this Strategic action.
Increase access and use of digital technologies in agroindustry: • Empower youth to use ICT in developing agro-enterprise innovations.	
Improve land tenure systems and land security mechanisms that promote inclusive agriculture investments: • Promote the policy of non-fragmentation of agricultural land among family members in all agro-ecological zones; • Promote innovative land lease models to enable youth access and sustainable use of land.	There are proved mechanisms for enabling youth access to land, viz. allocation of community or public land, under a lease arrangement, for youth-organized in groups-to work on; and, provision of finances to enable youth rent or purchase land and use it. ED could consider these options in it's work on access to land for youth as well as well for women.
Strengthen farmer organizations and cooperatives: • Sensitize farmers on the benefits of cooperating; • Support up-coming farmer groups and cooperatives to effectively manage themselves; • Engage cooperative colleges and colleges of commerce to inculcate cooperative and entrepreneurial skills to the farmers and farmers groups; • Empower youth to form cooperatives.	ED already has programs and plans for strengthening cooperatives under agricultural production and marketing interventions. Perhaps of importance to note is the idea of youth forming cooperatives.
Promote sustainable land and environment management practices in line with the agro-ecological needs: • Strengthen land, water and soil conservation practices; • Introduce and upscale agro-forestry for mitigation and climate resilience; • Reduce and mitigate emissions from agricultural systems through converting waste to energy and other green technologies; • Build the capacity of youth to practise climate smart agriculture.	ED is already engaging youth and women in activities as seed monitors, seed collectors, nursery workers, and restoration plots managers. These are paid individuals. ED could consider transforming these tree planting beneficiaries, if it is possible into groups- organized as men, women, youth- that are given relevant capacity building on acting together as cooperatives.

KEY STRATEGIC ACTIONS UNDER THE STRATEGIC OBJECTIVES	ALIGNMENT/GAPS AND OPPORTUNITIES FOR ED
OBJECTIVE 3: INCREASE AGRO-PROCESSING AND VALUE ADDITION	
Establish new and rehabilitate existing agro-processing industries to minimize negative environmental impacts for processing of key agricultural commodities: • Establish 2 Starch and 3 ethanol processing factories from cassava in Gulu, Tororo and Lira • Establish fish processing factories in Mukono, Jinja, Kamuli and the establishment Serere • Establish youth led agro processing facilities focusing on incubation and demonstration centres	Cooperative capacity building for production of quantities that can be processed at the Gulu facility. However, this target can be achieved with investment in transportation costs to Gulu, storage etc. The fish facility in Mukono is not useful to Dei Landing site fishing community. ED could consider mobilizing resources from other avenues to support the establishment of a facility that will benefit it's fishing community. ED's intervention *conduct appropriate value additions study and select viable options for support such as value addition infrastructures, training in value addition (including quality control, and policies)* could target youth as a priority group.
OBJECTIVE 4: INCREASE MARKET ACCESS AND COMPETITIVENESS OF AGRICULTURAL PRODUCTS IN DOMESTIC AND INTERNATIONAL MARKET	
Strengthen enforcement and adherence to product quality requirements including; food safety, social and environmental standards, grades, etc.	ED could consider capacity building program for farmers to create awareness on and build capacity for adherence to relevant commodity quality standards.
Digitalize acquisition and distribution of agricultural market information: • Develop and implement an integrated agriculture market information system; • Empower and institutionalise youth participation in the agro-industry value chain especially focusing on packaging and marketing.	ED already has interventions addressing this e.g. Support cooperatives to develop business and marketing plans and support with product marketing (including branding, packaging, advertising, and contracting), market information, and market linkages to input suppliers, produce traders, and finance.
Improve transportation and logistics facilities for effective product marketing and distribution: • Provide incentives for the acquisition of refrigerated trucks and warehouses at boarder points and landing sites	Since the fish factory is miles away, could ED lobby/advocate for the relevant government agency for the fulfillment of this provision *Provide incentives for the acquisition of refrigerated trucks and warehouses at boarder points and landing sites*
OBJECTIVE 5: INCREASE THE MOBILIZATION, EQUITABLE ACCESS AND UTILIZATION OF AGRICULTURAL FINANCE	
Support women farmers to transition to agro-business, export trade, and more profitable agricultural enterprises, including skilling and financial incentives (e.g. reduced credit interest rate and finance)	ED's intervention *Retrain Lead Framers in selected commodities and farming as a business; and Cooperative Executive members on governance and management, business planning, financial management, collective group marketing, and risks management addresses agribusiness*. By directly targeting women farmers ED can align with the national strategic action.

Table 2. How ED Strategy relates with the national level Agro-industry strategic objectives and actions

CLIMATE CHANGE MANAGEMENT

Uganda's Intended Nationally Determined Contribution (INDC) as elaborated in October 2015 shows that Uganda committed both adaptation to climate change and mitigation of the impacts of climate change. Specifically, on Climate Change Adaptation (CCA), the national overarching objective *was to ensure that all stakeholders address climate change impacts and their causes through appropriate measures, while promoting sustainable development and green growth*. The following key sectors were prioritised: agriculture and livestock, forestry, infrastructure (with an emphasis on human settlements, social infrastructure and transport), water, energy and health as targets for the reduction of vulnerability. Disaster risk management was a crosscutting theme for adaptation. The ***Table 3*** captures key actions proposed by Uganda in 2015 under it's INDC.

PROPOSED CCA ACTIONS UNDER INDC, 2015	PROPOSED CCM ACTIONS (POLICIES AND MEASURES TO SUPPORT LOW-CARBON DEVELOPMENT) UNDER INDC, 2015	HOW ED'S STRATEGY ALIGNS WITH INDC, 2015
Agriculture sector: (i) expanding extension services, climate information and early warning systems, Climate Smart Agriculture (CSA); (ii) diversification of crops and livestock; (iii) value addition, post-harvest handling and storage and access to markets, including micro-finances; (iv) rangeland management; (v) small scale water infrastructure; (vi) Research on climate resilient crops and animal breeds; and, (vii) expanding electricity to the rural areas or expanding the use of off-grid solar system to support value addition and irrigation.	(i) Promote Climate Smart Agriculture techniques for cropping.	ED's intervention *Conduct training in good agricultural and climate-smart practices (mulching, intercropping, crop rotation, soil and water conservation, and agroforestry)*. ED could consider adding: small-scale water infrastructure and expanding the use of off-grid solar system to support value addition and irrigation. By implementing CSA, ED will be addressing both CCA and CCM since this technology is useful to both.
Forestry: (i) the promotion of intensified and sustained forest restoration efforts (afforestation and reforestation programs, including in urban areas); (ii) the promotion of biodiversity & watershed conservation (including re-establishment of wildlife corridors); (iii) encouraging agro-forestry; and, (iv) encouraging efficient biomass energy production and utilization technologies.	(i) community forest management groups; (ii) forest law enforcement and governance; and, (iii) strengthening forest institutions responsible for forest management and development	ED's interventions including *Purchasing a minimum of 3,000 hectares of the selected parcels for forests planted with native tree species*; and *private lands devoted to reforestation with indigenous tree species* airings its strategy with INDC. ED also has plan for restoration of habitat corridors through the intervention *identify and select strategic parcels of land that offer the greatest leverage in connecting habitat fragments*. ED has no actions in mitigation in this area.
Energy: (i) increasing the efficiency in the use of biomass in the traditional energy sector; and, (ii) promoting renewable energy and other energy sources amongst others.	(i) Integrated Sustainable Energy Solutions which enhance sustainable energy solutions in public buildings such us hospitals and schools; (ii) promotion and wider uptake of energy efficient cooking stoves[2] or induction cookers; and, (iii) promotion and wider uptake of solar energy systems.	ED's intervention 'Providing kitchen gardening kit and solar dryers for home-based food processing" makes a contribution to INDC on the promotion of solar energy systems. ED may consider expansion to cover use of solar on hospital and school facilities; and/or increased uptake of the energy efficient cooking stoves.

[2] Approximately 40% efficiency saving over traditional cooking stoves.

Table 3. How ED Strategy relates with the INDC, 2015 commitments

The analysis on ED's alignment with the current INDC, shows that there is still a lot of opportunity for ED to strengthen its programming under Climate resilience through undertaking more interventions in both CCA and CCM. Otherwise, as it stands right now ED is strong on forest landscape restoration interventions but not climate change adaptation and climate change mitigation as a whole.

The current INDC is under review since it's timeframe lapsed by October 2021. However, a comparison of the NDP III program areas 5 and 9 shows that to a large extent Uganda has integrated it's commitments under INDC, 2015 into the national development agenda. Only a few areas have not been integrated but this may be due to the fact that implementation of these commitments is/was contingent upon the international community fulfilling their obligations, especially in terms of financial support to the developing countries as per the Paris Agreement [3]. ED should keep updated of developments in the INDC review to be able to re-align as necessary taking into account the recommendation in the previous paragraph.

[3] The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. The Paris Agreement provides a framework for financial, technical and capacity building support to those countries who need it. The Agreement reaffirms that developed countries should take the lead in providing financial assistance to countries that are less endowed and more vulnerable.

FOREST LANDSCAPE RESTORATION

Forest landscape restoration (FLR) is a long-term process of regaining ecological functionality and enhancing human well-being across deforested or degraded landscapes. It is carried out to build a forest-based landscape that can improve biodiversity conservation, ecological functioning and livelihoods (IUCN, 2016). FLR prioritises both biodiversity conservation and human livelihoods. It is about using land sustainably in a variety of ways, such as new tree plantings, protected wildlife reserves, regenerated forests, ecological corridors, agroforestry, and river-side plantings to protect waterways, managed plantations, and agriculture. This mosaic of interacting land uses takes place within and across entire landscapes – a scale where ecological, social and economic priorities can be balanced.

The Forest Landscape Restoration approach which world leaders agreed upon in the Bonn challenge is what Uganda intends to apply in her restoration efforts. The Bonn Challenge is a global goal to bring 150 million hectares of degraded and deforested landscapes into restoration by 2020 and 350 million hectares by 2030[4]. Uganda made a commitment to restore 2.5 million hectares of deforested and degraded land, as a pledge towards the Bonn Challenge [5].

In 2016, Uganda with the support of IUCN undertook a Forest Landscape assessment to guide it in efforts toward meeting it's commitment under the Bonn Challenge. The sections that follow capture the key highlights of this study which are relevant to ED's planned interventions towards achieving climate resilience/biodiversity.

FINDINGS OF THE FOREST LANDSCAPE ASSESSMENT IN UGANDA

In the study report, Pakwach and many of the districts in Northern Uganda lie in what is termed as the *northern moist landscape*. This landscape is characterized by: unimodal low to high rainfall (1000–1200mm/yr); and, majorly grow cereal & tuber crops, cotton and legumes. They found that this landscape along with southwest rangeland and western mid altitude were the most deforested and degraded landscape zones between 2005 and 2015 both in terms of coverage and magnitude (IUCN, 2016). Causal factors for this high degradation included: high population pressure that results into uncontrolled conversion of forests into other land uses; uncontrolled bush burning; poor agricultural practices; illegal saw logging activities; unregulated charcoal burning; poor land tenure system; weak enforcement of forestry laws and inadequate funding of the forestry sector (IUCN, 2016).

However, it was the second least degraded, after Karamoja region, in terms of land degradation. Land degradation in these regions is manifested through exposure of land surface, erosion scalds, gullies, and decline in soil fertility and spread of invasive plants which potentially can affect the composition and distribution of plants and animal species (IUCN, 2016).

LANDSCAPE ZONATION	DEFORESTED LAND (HA)	DEGRADED LAND (HA)
Afro-montane	133,613	8,997
Lake Victoria crescent	706,376	205,640
Northern moist [6]	4,553,045	932
South East Lake Kyoga flood plain	193,094	9,002
Southwest rangeland	1,506,253	347,428
Western mid-altitude	1,890,117	554,055
Karamoja	684,161	0

Table 4. Source: IUCN, 2016. Finding on forest and land degradation in Uganda

PRIORITY AREAS FOR FLR

The study prioritized the Northern moist farmlands amongst the top three landscapes for FLR.

FLR OPTIONS

The study proposed: (a) afforestation (for sites that have not been under forest for the last ten years), (b) reforestation, (c) agroforestry and (d) natural regeneration (passive restoration) as appropriate options for the above landscapes. However, it was emphasized that *sites being proposed should have previously been under forest cover but had been degraded* (IUCN, 2016). Riparian vegetation restoration/ and natural regeneration were unique to a few landscapes.

[4] https://www.bonnchallenge.org/ Accessed on May 05, 2022.
[5] Ibid.
[6] Unimodal low to high rainfall (1000–1200mm/yr) and majorly grow cereal & tuber crops, cotton and legumes

TREE SPECIES FOR FLR

It was noted that indigenous tree species were widely preferred for restoration because of their high ecological value while the exotic trees were considered for their higher commercial value. *Albizia spp*, *Maesoposis eminii*, *Markhamia lutea* and *Cordia spp* were the most highly regarded indigenous species and Pinus caribaea and Eucalyptus grandis for commercial trees restoration (IUCN, 2016).

PROFITABILITY OF SELECTED FLR OPTIONS

Based on stakeholders's consensus over values enterprise budgets were made for agroforestry, woodlots and natural regeneration. The material costs of each activity included seedlings and small farm equipment such as hand hoes. See ***Table 5*** on the profitability of selected enterprises budgets.

Analysis of the net incomes from the three options show that agroforestry is the most profitable enterprise followed by woodlots.

	AGROFORESTRY VALUE (UGX/HA)	WOODLOTS VALUE (UGX/HA)	NATURAL REGENERATION VALUE (UGX/HA)
VARIABLE COSTS			
Pruning	20,000	50,000	–
Seedlings	50,000	555,500	–
Planting	10,000	222,200	–
Thinning	–	300,000	–
Timber harvest	3,000,000	6,000,000	–
SUBTOTAL VARIABLE COSTS	**3,080,000**	**7,127,700**	–
FIXED COSTS			
Site preparation	300,000	300,000	
Weeding	60,000	360,000	
Protection / Patrolling *	10,000	10,000	10,000
SUBTOTAL FIXED COSTS	**370,000**	**670,000**	**10,000**
REVENUE			
Crop yelds	1,250,000	–	–
Timber	35,000,000	10,500,000	–
Firewood	250,000	400,000	
Firewood from second thinning	–	400,000	–
Firewood from third thinning	–	10,800,000	–
Above ground biomass carbon	840,000	1,680,000	1,680,000
Below ground biomass carbon	1,400,000	1,400,000	1,400,000
Watershed protection (quantity and quality)	346,000	346,000	346,000
SUBTOTAL REVENUE	**39,036,000**	**25,526,000**	**3,526,000**
NET REVENUE	**35,586,000**	**17,728,300**	**3,516,000**

The enterprise budgets for agroforestry, woodlots, and natural regeneration. Source : IUCN, 2016.
Analysis of subtotals and Net revenue are from the Author.

* The costs of protection/patrolling were calculated based on information from Namatale Central Forest Reserve, where efforts are in place to protect it and enhance restoration of the reserve through natural regeneration. The 662-hectare reserve is employing six guards to protect the forest from both fires and encroachers at a total cost of UGX 5.76M. When the total cost is divided by the number of hectares the total cost of protecting each hectare is found to be UGX 8,700 Ha-1 Year-1. To be conservative the estimate was rounded off up to UGX 10,000 Ha-1 Year-1.

Table 5. IUCN, 2015 finding on FLR options enterprise budgets

DISTRICT BACKGROUND

DEMOGRAPHICS

Pakwach District is one of the districts in the West Nile region of Uganda. It is bordered by Nebbi district in the West, Nwoya and Amuru districts in the East, Democratic Republic of Congo (DRC) in the South West, Arua in the North West and Buliisa to the South. Pakwach lies between altitudes 2289ft to 5224ft above sea level. The coordinates of Pakwach district are 2027'43.0"N, 31029'54.0"E (Latitude 2.461944; Longitude 31.49833). The district has a total area of about 1,008.6 Sq. Kilometers of which 83.19% is arable land while 2.91% is occupied by game reserve, 6.4% wetlands and open water, and 7.5% is occupied by forest reserves. Pakwach District headquarters are situated in Pakwach Town Council which is approximately 370km from Kampala, the Capital City of Uganda (Pakwach DLG, 2022) [8].

According to the 2014 Uganda Population and Housing Census, Pakwach is estimated to have a population of 158, 037, with more females (51.7%) than males (48.3%). Until 2018, it consisted of the sub counties: Alwi, Pakwach, Pakwach Town Council, Panyango, Panyimur and Wadelai (UBOS, 2014). Of the six sub counties, Panyimur has the highest population of 7,983 households of 43,366 persons which accounts for well over one quarter (27.4%) of the total district population.

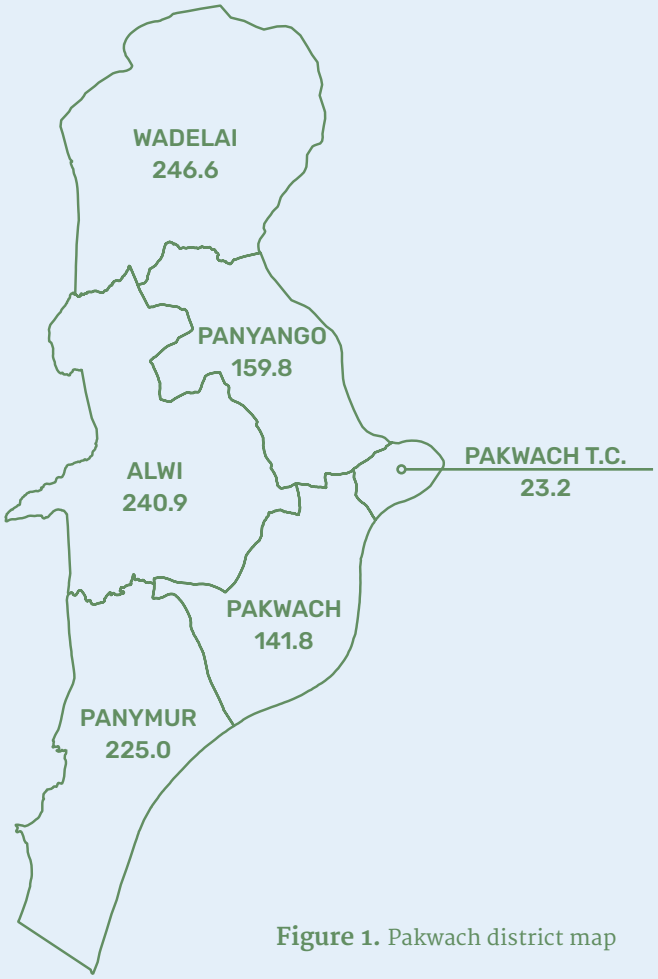

Figure 1. Pakwach district map

[8] Pakwach District Local Government. Location and size. Accessed at https://pakwach.go.ug/lg/location-size. On February 17, 2022.

DISTRICT	MALES	FEMALES	TOTAL	HOUSEHOLDS	%OF FEMALE HEADED HOUSEHOLDS	% OF TOTAL POPULATION
Alwi	8,946	9,315	18,261	3,419	23.2	12.0
Pakwach	10,142	10,763	20,905	3,981	26.0	13.0
Pakwach T.C.	10,876	12,164	23,040	4,602	33.9	15.0
Panyango	13,502	14,817	28,319	5,309	26.7	18.0
Panyimur	21,1111	22,255	43,366	7,983	19.9	27.0
Wadelai	11,795	12,351	24,146	4,570	21.5	15.0
TOTAL	76,372	81,665	158,037	29,864		

Note: Percentage populations are calculations of the Author

Table 6. Pakwach district population per sub county (UBOS, 2014)

DISTRICT	MALES	FEMALES	TOTAL	% OF TOTAL POPULATION
Alwi	11,800	11,800	23,600	12.0
Pakwach	13,300	13,700	27,000	13.0
Pakwach T.C.	14,300	15,400	29,700	15.0
Panyango	17,800	18,800	36,600	18.0
Panyimur	27,800	28,200	56,000	27.0
Wadelai	15,500	15,700	31,200	15.0
TOTAL	100,500	103,600	204,100	

Note: Percentage populations are calculations of the Author

Table 7. Pakwach district population per sub county as projected for 2021 (UBOS, 2014)

NATURAL RESOURCES MANAGEMENT [9] IN PAKWACH DISTRICT

According to the district performance report for the period of 2017/18 to 2019/2020, district achieved the several outputs under tree nursery, tree planting, environmental law enforcement, forest and water conservation, environmental education and, climate change adaptation/mitigation. See ***Table 8***. The implications of all the achievements for Dei sub county is that: (i) a pool of 6 resource persons in nursery operation, Lorena stove making; and charcoal briquettes making is available in Dei sub county; (ii) there is a reference activity of tree planting in the community which all can learn from; (iii) initiatives around energy saving solutions that contribute to climate change adaptation and climate change mitigation such as construction of an energy saving stove in a school have been initiated. Moreover, there are initiatives around maintenance of trees in a Central forest reserve which can be learned from in efforts to restore Luli Kayonga forest reserve.

Over the three years, the district NRM Department reported that the challenges faced included: (a) limited number of staff; (b) limited means of transport for the NRM Department staff; (c) a negative attitude of communities towards environmental protection and conservation; and (d) harsh weather that affected the survival rate of planted seedlings.

DISTRICT LEVEL ACTIVITIES	DEI SUB COUNTY BENEFITS AND OPPORTUNITIES
Tree Nursery/seedlings • Seedlings raised at the District nursery for distribution; • A refresher training was conducted for 20 nursery operators with at least two from each sub county on how to raise and manage nurseries for income generation.	Dei sub county has 2 nursery operators trained on nursery operation
Tree planting • District compound and boundary were demarcated with 1000 trees and grass; • 2km of River Oraa demarcated with a 30m-buffer zone of trees to act as live markers; • 1500 teak tree planted in Oguta Catchment area; • Farmers were mobilized for tree planting.	1,500 teak planted in Oguta catchment area
Environmental law enforcement • Charcoal was impounded from several illegal dealers and auctioned at the District; • Quarterly Environmental Compliance Monitoring meetings were held to ensure compliance to environmental laws, identify illegal activities/encroachers and asses the general use of the environment.	Unknown
Forest, land and water conservation • Tree farmers provided technical support; • Three (3) sub county wetland action plans Panyimur, Wadelai and Pakwach SCs and these were harmonized to form the District Wetland Action plan; • Community level meetings of resource users were also conducted with Juba wetland users in Dei, brick makers along River Oraa, sand miners in Ragem Local Forest Reserve and farmers along River Oraa bank; • Ragem Local Forest Reserve boundary was re-opened; and, the maintenance of trees planted at Pakech Jukaal Local Forest Reserve under NUSAF-3 continued.	Dei can use the Panyimur wetland action plan to develop it's own wetland action plan. Outcomes of the meeting with Juba wetland users should be accessed from the district and used at the sub county for wetlands management Dei sub county can learn from the forest restoration activities ongoing at Ragem and Pakech Jukaal for use in Luli Kayonga Forest reserve.

[9] Source: Pakwach District Achievements Report, 2020. Accessed at: https://pakwach.go.ug/sites/default/files/ACHIEVEMENTS%20FOR%20PAKWACH%20DISTRICT.pdf, on May 05., 2022.

DISTRICT LEVEL ACTIVITIES	DEI SUB COUNTY BENEFITS AND OPPORTUNITIES
Environmental Education • Radio talk shows on tree planting and afforestation wetlands management and protection were used to disseminate information	Unknown because coverage depends on the Radio stations used-whether they cover Dei sub county
CCA/CCM • 20 T.O.Ts with at least two from each sub county were trained on how to construct the Lorena energy efficient cook stove; and 20 trained on making of charcoal briquettes; • One institutional level energy-saving stove was constructed at Pajobi Primary school.	Dei has 2 Lorena energy stove trainees which be used to train members of the community; and 2 trainees on charcoal briquettes who are also a resource. Dei can learn from Pajobi Primary school on the cost of the energy saving stove and use this information to replicate such stoves to other schools in Dei.

Table 8. Pakwach district NRM performance and it's implications for Dei sub county NRM efforts

PRODUCTION MANAGEMENT [10] IN PAKWACH DISTRICT

AGRICULTURE

One (1) walking tractor acquired to promote mechanization of agriculture (PG); one (1) small scale irrigation to promote growing of high value crops i.e. tomatoes, water melons; and one (1) apiary site for sharing good practices (DDEG); Rehabilitation of three (3) roads in areas of high production (ACDP). FIEFOC II trained farmers on financial literacy while NUSAF-3 trained farmers on community procurement.

NAADS/OWC distributed 4,665 bags of Cassava cuttings, 30 bags of NAROCAS 1 variety of cassava distributed for multiplication under DDEG; 12 acres of cassava -NAROCAS1-demonstration gardens to show the high yielding varieties (ACDP);
1,000kgs of rice seed and fertilizer were distributed to promote rice growing in areas currently not engaged in its production (PG); NAADS/OWC distributed: 63,905kgs of Maize, 7,500kgs of beans, 42,000 seedlings of mangoes, 35,818 seedlings of oranges, 1,625 seedlings of cashew nuts.

ANIMAL INDUSTRY

Production grant supported the introduction of Artificial Inseminations for cattle in the district; Six (6) acres of Napier grass demonstration plot were established to promote the technology for feed production for dairy cattle; and, Four (4) tsetse fly surveys and control were carried out in all the lower local governments. Thirty (31) Youth were trained in dairy production and management at Kiruhura, AGDI Dairy Farm. 28,000 heads of cattle were vaccinated against FMD, Black Quarter, Lumpy Skin Disease and CBPP; and, 6,180 goats vaccinated against PPR. There is ongoing construction of three (3) valley dams in Pakwach Sub County, Alwi and Panyango sub counties (DDEG). The Restocking Project distributed 330 heads of cattle; NAADS/OWC distributed 180 Boer goats while DDEG distributed 40 Boer billy goats. NAADS/OWC also distributed 55 Dairy cattle.

Observation: the district focus is mostly on cattle and goats.

FISHERIES

Production grant and DDEG each procured one (1) fish cage tank established to promote the rearing of catfish; LEAF II Project enabled the construction of a modern fish handling facility and access road at Dei landing site; the Embassy of Iceland supported the expansion of Panyimur fish market; and NAADS/OWC distributed 29,040 Tilapia fingerlings.
Trade: Production grant supported the formation of Rural Producer Cooperatives (RPOs) and Area Community Enterprises (ACEs); and the construction of three (3) cassava processing facilities and stores at Abongo Women Group (Pakwach sub county), Pokwero Cassava Producers Cooperatives (Panyango

[10] Ibid.

sub county) and Pamitu Cassava Growers Cooperative (Panyago sub county).

30 cooperatives were monitored and audited; and the leaders and members of cooperatives were trained. Six (6) West Nile Federation of Agricultural Cooperatives were formed and registered with the Registrar of Cooperatives; and the fourth Annual General Meeting of Wadelai Produce Marketing Cooperative Society Ltd held.

ACDP trained farmers' groups & cooperatives in all the sub-counties and town councils on business plan development, and 5 business plans were submitted to the ACDP Secretariat for evaluation and approval of grants.

Micro-industrial operators were given incubation support; and, mentoring on working capital management. Tourism sites were monitored; and, the e-profile of tourism sties on Pakwach District website was developed. Trade conferences and LED meetings have been ongoing as well as the collecting and publishing of market information.

Overall challenges faced during the delivery of these results included: (a) long dry spells affecting crop performance and planting in some areas e.g. Panyimur; (b) roaming animals destroying crops especially – cassava, citrus, oranges; (c) floating suds destroying fish cages; (d) Pests and disease affecting crop productivity; (e) animal disease and parasites; (f) unorganized marketing of produce [11]; (g) inadequate funding to undertake development projects/ infrastructure i.e. construction of markets, and animal crushes.

◇ TRADE, INDUSTRY AND LOCAL ECONOMIC DEVELOPMENT DEPARTMENT

The COVID-19 affected the following: (a) massive anticipated trade conference; (b) collection of the market information; (c) no of micro industrial operators to participate in the mentorship activities; transport and facilitation for conducting EMYOOGA field activities; and, E-profiling of tourism sites & facilities is being delayed by non-operationalization of the Pakwach District website.

SUB COUNTY CONTEXT

Panyimur Sub County is bordered by Akworo and Parombo sub counties in Nebbi district to the west, Alwi and Pakwach sub Counties to the North. To the south is the Democratic Republic of Congo (DRC), and Lake Albert lies to the East which is shared by Buliisa District. The sub county has 5 parishes, namely, Boro, Dei, Kivuje, Ganda and Nyakagei with a total of 58 villages (Panyimur, 2015) [12]. However, in 2020, Dei Sub County was curved out of Panyimur Sub County.

The landscape is hilly especially at the escarpment of the Great Western Rift Valley and gently sloping plains to the Lake shores. The major natural resource is the Lake Albert that is rich in fish of different species, some smaller seasonal rivers, and wetlands namely Oguta on the shores of the Lake. Land use in Panyimur include, Fishing activities on Lake Albert; Cultivation of crops such as cassava, sim sim, maize, groundnuts, cotton both for food and cash; livestock rearing (cattle, sheep, poultry and goats) is also practiced (ibid).

DEMOGRAPHICS OF DEI SUB COUNTY

In the last three years, three (03) Administrative units of: Pokwero, Ragem and Dei Sub Counties and Panyimur Town Council were created. Formerly, Panyimur Sub County was made up of six parishes including Dei. Dei Parish consisted of 12 villages: , Luli, Munduriema, Olando, Dei C, Dei Central, Dei A, Dei B, Dei, Nyamutagana , Kayonga, Awulu, and Nyamutagana B. In creating Dei sub county, Dei Parish was retained with additions and subtractions as shown in the ***Table 9***. Kayonga and Nyamutagana were added to other villages to form Oguta Parish, while two other parishes absorbed the remainder former villages of Dei Parish (See ***Table 9***).

Analysis shows that at the Parish level, Hoima (28%) and Oguta (27%) together hold over half of the sub county population, Dei is third (24%) of the households and Got Rau is the least with 22% of the total households. At the village level, 26 villages individually hold only 3% of the total sub county households. The villages with larger households are Avugu Lower (6%) anew village in Dei Parish, followed by Dei (4%) an old village in Hoima Parish.

[11] Farmers sell produce individual instead of bulking

[12] Panyimur Development Plan, 2015-2020

PARISH	VILLAGES	STATUS	NO OF HOUSEHOLDS	PARISH % OF TOT. HOUSEHOLDS	VILLAGE % OF TOT. HOUSEHOLDS
Dei	DeiA	Old	70		3.0
	DeiC	Old	70		3.0
	DeiCentral	Old	78		3.0
	DeiCentral East	New	70		3.0
	Avugulower	New	148		6.0
	Murumbi	New	63		2.0
	Murumbu Lower	New	61		2.0
	Furber	New	68		3.0
			628	24.0	
Oguta	Kayonga	Old	79		3.0
	Kayonga A	New	64		2.0
	Kayonga C	New	71		3.0
	Kayonga West	New	68		3.0
	Awulu	Old	82		3.0
	Nyamutagana A	Old	76		3.0
	Nyamutagana B	New	69		3.0
	Nyamutagana Central	New	64		2.0
	Nyamutagana Juba	Old	69		3.0
	Omuka	New	63		2.0
			705	27.0	
Got Rau	Athwoga	New	62		2.0
	Avugu Upper	New	68		3.0
	Got Rau	New	74		3.0
	Oguta	New	75		3.0
	Luli	Old	78		3.0
	Manduriema	Old	76		3.0
	Olando	Old	64		2.0
	Tengo	New	78		3.0
			575	22.0	
Hoima	Dei	Old	96		4.0
	DeiB	Old	82		3.0
	Dei Central West	New	80		3.0
	Dei Hoima	New	79		3.0
	Dei Forest	New	68		3.0
	Dei Amani	New	85		3.0
	Dai Lower	New	86		3.0
	Dei Upper	New	84		3.0
	Kwonga	New	76		3.0
			736	28.0	
TOTAL			2,644	100.0	

Source: Statistics of population from Pakwach District Achievements Report, 2020; Percentage calculations are from the Author.

Table 9. Analysis of Population distribution in Dei sub county by household numbers

SOCIAL AMENITIES

Schools within the Sub County and town council: The Sub County has four primary schools, three of which are government aided and one is a community supported school. The latter also has a nursery section. There is no Secondary school in the sub county. The schools included:

- Dei Primary School (Government Aided)
- Kayonga Primary School (Government Aided)
- Oguta Primary School (Government Aided)
- Dei Community Nursery and Primary School (Community initiative)

Health facilities: Dei Health Center II serves an estimated population of 850 people in Dei town board with more patients coming from the Democratic Republic of Congo (DRC) [13].

Water facilities: There is no piped water in Dei Sub County.

NATURAL RESOURCES MANAGEMENT IN DEI SUB COUNTY

In addition to the activities implemented by the Natural resources management department of Pakwach district in Dei, WENDA and NUSAF projects also carried out activities as follows:

WENDA [14] Project.
Of the 15 total beneficiaries in the former Panyimur Sub-county about half (46.7%) were drawn from the former Dei Parish, hence are the current beneficiaries of the project in Dei sub county. All farmers received mango seedlings, each getting 25 pieces although orange seedlings were distributed in the other parishes of Kivuje, Ganda and Boro. The details of beneficiaries and location within the sub county are in ***Table 10***.

NUSAF Project.
NUSAF beneficiaries were drawn from Awulu and Kayonga villages (see ***Table 11*** below). They were

FRUIT TREE BENEFICIARY NAME	VILLAGE	QUANTITY OF SEEDLINGS RECEIVED
Agness Ongiera	Luli	25 Mangoes
Anyoli Gilbert	Luli	25 Mangoes
Ogen Raphael	Luli	25 Mangoes
Okumu Oyiko	Luli	25 Mangoes
Openji Bernard	Dei	25 Mangoes
Berocan Patrick	Nyamutangana	25 Mangoes
Pithua Supe	Luli	25 Mangoes

Source: Statistics of input quantities from Pakwach District Achievements Report, 2020

Table 10. Fruit tree seedlings beneficiaries in Dei sub county from WENDA project

	FEMALES	MALES	TOTAL	VILLAGE	PARISH	AMOUNT
TREE NURSERY ESTABLISHMENT	8	7	15	Awulu	Oguta	17,500,000
	8	6	14	Kayonga	Oguta	17,500,000

Table 11. NUSAF distribution of fruit tree seedlings in Dei Sub county

[13] https://www.westnileweb.com/news-a-analysis/pakwach/dei-community-urges-gov-t-on-medical-staff

[14] WENDA is a project implemented by ACAV that aims at promoting fruit growing in West Nile region.

trained in nursery establishment. NUSAF project was gender sensitive in that in both villages the ratio was 1:1 between females and males. The amount for the nursery establishment is given but it is not clear whether farmers were given the money as cash, or the items for the project were purchased and then delivered to the beneficiaries.

NAADS/OWC

NAADS/OWC also distributed fruit tree seedlings to the community (See ***Table 12***). However, they targeted more males than females e.g. in 2017 (First and second season), only 19% of the 16 beneficiaries that got mango seedlings were females. In 2018 (first and second season) all the beneficiaries were males. The NAADS/OWC data captures the acreage planted. This may be the reason for more males than females, i.e. that males own land on which the fruit trees were planted. Analysis shows that mango beneficiaries each received 24 seedlings in 2017 and planted it on a third of an acre then the beneficiaries of 2018 received about a double portion (51.3) and planted it on just over half of an acre of land each. In 2017, orange seedlings beneficiaries received about 60 seedlings per head and were planting it on average on a half-acre but in 2018 their counterparts received almost double (94) seedlings per head and yet they planted it, on average, on less than an acre (0.80acre).

PRODUCTION MANAGEMENT IN DEI SUB COUNTY

Dei Sub County in 2019/2020 financed the following:(i) purchase of two (2) acres of land purchased in Dei Parish, dei village for the construction of Dei modern market; and the construction of market sheds at the Dei modern market which is currently ongoing.

LIVESTOCK SUBSECTOR

In 2018/2019 NUSAF-3 funded the distribution of 14 goats under the Olando goat rearing project while the Restocking Program supported the distribution of a total ten (10) Friesian bulls; and 100 zebu heads of cattle in all parishes in the FYs 2018/19 and 2017/18. NAADS/ Operational Wealth Creation (OWC) distributed three (3), four (4) and two (2) in-calf heifers in all parishes in 2018/19, 2017/18; and 2016/17, respectively. They also gave out nine (9) and 15 boar goats in all parishes in 2018/19 and 2017/18, respectively.

FISHERIES

MAAIF in 2018/19 through it's LEAF II project funded the completion of one (1) fish handling facility in Dei A village; and the completion of renovations in the fish modern market. NUSAF-3 funded 8 groups with fish cages (See ***Table 14***); and constructed a fish shed at Keka.

	SEASON	QUANTITY	FEMALES	MALES	TOTAL	QUANTITY PER HEAD	ACREAGE EXPECTED	AVERAGE ACREAGE
MANGO SEEDLINGS (PCS)	2017 (First and second season)	385	9	7	16	24.1	5.0	0.31
	2018 (First and second season)	410	-	8	8	51.3	5.0	0.63
	2019 (First season only) *	-	-	-	-	-	-	-
ORANGE SEEDLINGS (PCS)	2017 (First and second season)	527	2	7	9	58.6	4.5	0.50
	2018 (First and second season)	470	1	4	5	94.0	4.0	0.80
	2019 (First season only) *	-	-	-	-	-	-	-

* No inputs were received because of prolong drought which affected the sub-county.

Table 12. OWC distribution of fruit tree seedlings and the acreages planted between 2017/18 and 2019/20

	FEMALES	MALES	TOTAL	VILLAGE	PARISH	AMOUNT
GOATS REARING PROJECT	9	5	14	Olando	Got Rau	17,900,000

Table 13. NUSAF distribution of goats in Dei Sub county

	FEMALES	MALES	TOTAL	VILLAGE	PARISH	AMOUNT
FISH CAGE ESTABILISHMENT	8	7	15	Awulu	Oguta	17,500,000
	9	6	15	Kayonga	Oguta	17,500,000
	8	4	12	Nyamutagana A	Oguta	17,500,000
	7	5	12	Nyamutagana B	Oguta	17,500,000
	9	6	15	Nyamutagana C	Oguta	17,760,000
	9	6	15	Nyamutagana D	Oguta	17,760,000
	8	6	14	Luli B	Got Rau	17,760,000
	8	6	14	Luli	Got Rau	17,500,000

Source: Statistics of input quantities from Pakwach District Achievements Report, 2020.

Table 14. NUSAF beneficiaries of fish cage distribution in Dei Sub County.

◇ CROP SUBSECTOR

NAADS/OWC cumulatively delivered the agriculture inputs as shown in ***Table 15***. An analysis of the service data reveals that, over the 3-year period: on average, a farmer received 6-6.5 kgs of Maize and planted it on just over half (0.63-0.65) of an acre; On average each cassava cuttings beneficiary received 7 bags of cuttings and planted it on average on just about an acre (0.90acre). On average each beans farmer received 13 kgs of seeds and planted it on average on less than half (0.44) of an acre. There was a 1:0.8 ratio between females and males on maize distribution. All the cassava beneficiaries were males while 1:1.1 female to male ratio in the distribution of bean seeds.

The Uganda Multi-Sectoral Food Security and Nutrition Project (UMFSNP) focused on 7 schools in Panyimur Sub County three (03) of which are located in the current Dei Sub County that is, Dei, Oguta, and Kayonga Primary schools. The UMFSNP established 2 lead farmers per Primary school and implemented the following activities through them:

- Establishment of vegetable and fruits gardens in the schools consisting of: Amaranthus, egg-plants, jute mallow, cow peas; and, mangoes, jackfruit, brother heart fruits varieties;
- Provision of 3 startup equipment kits containing the following: slashers, saucepan, plates, hoes, watering cans, measuring tapes and others
- Provision of 3 demonstration kits containing the following items: spray pumps, wheel barrows, seeds, hoes, planting materials and relevant pesticides
- Extension advisory services were given to parents' groups in each school, every season.
-

NUSAF-3 was implemented in the FY 2017/2018 period. Project activities included: the establishment of fish cages, tree nurseries, and goats rearing projects. In total, 155 farmers benefited under NUSAF-3 from an investment of UGX 193,680,000. NUSAF-3 was

	SEASON	QUANTITY	FEMALES	MALES	TOTAL	QUANTITY PER HEAD	ACREAGE EXPECTED	AVERAGE ACREAGE
MAIZE SEEDS (KGS)	2017 (First and second season)	1425	103	115	218	6.5	142.5	0.65
	2018 (First and second season)	1435	104	122	226	6.3	143.5	0.63
	2019 (First season only) *	-	-	-	-	-	-	-
CASSAVA CUTTING (BAGS)	2017 (First and second season)	-	-	-	-	-	-	-
	2018 (First and second season)	29	-	4	4	7.3	3.6	0.90
	2019 (First season only) *	-	-	-	-	-	-	-
BEANS (KGS)		470	19	17	36	13.1	16.0	0.44

* No inputs were received because of prolong drought which affected the sub-county.

Source: Statistics of input quantities from Pakwach District Achievements Report, 2020; Quantity per head and average acreage is analysis by the Author.

Table 15. OWC cumulative and average inputs distribution and the acreages planted between 2017/18 and 2019/20

reasonably gender responsive as 59% of fish cage (see ***Table 14***), 55% of nursery project (see ***Table 11***); and, 64% of goats project (see ***Table 13***) were female (women) beneficiaries. Fish cage project took up 73% of the investment followed remotely by nursery (18%) and goats rearing (9%). At the Parish level, most activity was implemented in Oguta Parish in eight (8) villages against three villages in Got Rau Parish.

The Agriculture Extension Department also accomplished the following activities: One (1) model farmer was established in each of the 5 parishes including Dei Parish. The Dei Parish Model farmer was supported with a demonstration kit for post-harvest handling which contained: one (1) plastic silo, 15 hermetic bags for storage, and five (5) Tarpaulins for drying. They were also provided with Demonstration kits, each package consisted of: one (1) tape measure of 100 metres, one (1) planting string, and one (1) pruning scissor. They also received inputs as follows: five (5) bags of NARCOCAS1 cassava stems for multiplication in the second (2nd) season of 2018; and, another five bags of the same in the first (1st) season of 2019.

The Government Youth Livelihood Program was last funded in the sub-county in FY 2018/2019. In total the sub county benefited from UGX 30,100,000 which supported one goats rearing project, one motor boat engine project and one Bodaboda (passenger motorcycle) project.

Under the Women Entrepreneurship Program (UWEP) no women group from Dei Parish was supported. However, noteworthy is that one women group known as *Merber Kuyello Fish Mongering Group* located in Singla A village of Nyakagei Parish received UGX 7,100,000 under UWEP grant. *Dikiri Lalo Can* women group in Kiyaya West and *Can Nyayo Ryeko* in Boro Central East Village, both from Boro Parish are produce buying and selling groups that each received UGX 7,100,000 and UGX 6,350,000, respectively.

Northern Uganda Resilience Initiative (NURI) is one of eight development engagements under the Denmark-Uganda Country Programme (2018–2022). In Pakwach district the farmer groups participating in the program are captured in ***Table 17***. However, only two parishes-Oguta and Hoima-in Dei Sub County are covered in NURI program. Two groups - *Wagen Yesu* and *Kwiocwiny* - are being supported on sesame and cassava enterprises, respectively.

Infectious Diseases Institute (IDI) is an organization supporting People Living with HIV/AIDS (PLWHA). IDI is supporting 100 beneficiaries in crops production through provision of inputs, specifically, cassava stems cuttings, groundnuts and vegetables seeds such as egg plants, tomatoes, Amaranthus, etc.

CHALLENGES IN DEI SUB COUNTY'S PRODUCTION SUBSECTOR

The key challenges as identified by the Pakwach district report on it's achievements in 2020 are listed as below:

- Prolonged drought which has always affected the planting and performance of crops. There was a severe drought especially in first season 2019 which affected mainly the farmers planting oranges and mangoes because it did not allow the mangoes and oranges to establish properly in the field and eventually they dried off;
- Poor timing of the season by NAADS/OWC input

NAME OF YOUTH GROUP	PROJECT TYPE	VILLAGE	AMOUNT (UGX)
Munduriema Youth Group	Goats Rearing	Munduriema	5,400,000
Nyamutagana Youth Group	Motor Boat Engine Project	Nyamutagana	12,200,000
Awulu Youth Group	Bodaboda	Awulu	12,500,000

Source: All data from Pakwach District Achievements Report, 2020

Table 16. YLP groups in Dei Sub County from 2018/19 funding

NAME OF THE GROUP	VILLAGE	PARISH	ENTERPRISE
Wagen Yesu	DeiB	Hoima, Dei SC	Sesame
Kwiocwiny	Nyamutagana	Hoima, Dei SC	Cassava

Source: Groups, village and enterprise from Pakwach District Achievements Report, 2020. Parish/Sub county from Author

Table 17. NURI program beneficiaries in Pakwach district

suppliers whereby some inputs were brought when the planting season is over and has entered dry season;
- Land fragmentation which affects most community;
- Stray animals especially goats and cattle which have always destroyed crops during dry season especially cassava field; and citrus farms whereby most of the seedlings planted have always been destroyed and failed to recover eventually dying off under the prolonged drought;
- Most of the farmers cannot plant reasonable acreages due to fragmented land especially with mangoes and oranges;
- Pest and diseases mainly affecting the maize fields consequently reducing the maize yields. The major pest army fall warm has been persisting during the last three years of 2017/18 till 2019/20.
- Poor attitudes of farmers towards cost sharing especially for program ACDP which has made low rate of registration of farmers.

◇ OTHER DEVELOPMENT ISSUES IN DEI SUB COUNTY

A consultative meeting was held with the Dei Sub county leadership to give them opportunity to make input into the Baseline study. This engagement with the sub county leadership brought forth several pressing issues in the development of the two year old sub county. The following were highlighted:
- There is challenge on transport to access the areas
- A high population *vis.a.viz* facilities that are limited means there is a lot of pressure on the existent facilities
- A high crime rate, specifically murder e.g. in less than 12 months more than 10 deaths are recorded; and this involves mostly youth. Suspected causes of these crimes include relationship failures; lack of finances as well as ignorance of the law. On the latter, the leaders clarified that nearly 80% of the population, especially in Hoima Parish are of Congolese origin. "*here, killings are in the norm in the 'No-Man's land*", they said.
- There is also challenge of water pirating. In this they report that The Congolese cross the border into Uganda, where they confiscate boats and abduct Ugandans then they demand ransom. Although there have been bilateral meetings to dialogue on the matter, the sub county leadership has not yet been directly involved. The abductions continue.
- Concerning fisheries the leadership shared that initially the landing site had 500 boats and this was generating a lot of revenues for the local leadership. But with the GOU restrictions currently, and the water pirating activities of the Congolese, they now have less than 200 boats.
- Other challenges highlighted included: high rates of teenage pregnancies, poor road network; and, they had no market, although they already have the land where the market could be constructed, if they are supported to construct the market stalls.
- In education, there is a high rate of children dropping out of school after primary because the sub county has no secondary School; the nearest Secondary being located in Panyimur which is far.
- The Sub County is renting Office premises. There is need to support the sub county through advocacy with the District and central GOU authorities for this to be given priority in funding.
- In agriculture, they reported a great change in the weather patterns (that is climate change). As such, though they have fertile lands the unreliable rainfall makes farming difficult. They pointed out that the unreliability of rainfall is related to deforestation.
- They further emphasized that agriculture and fishing are the main contributors to deforestation through: use of trees for smoking fish for its preservation; harvesting of trees for brick laying and burning; trees for charcoal making to support domestic cooking; and harvesting trees for use as firewood in domestic cooking.

METHODOLOGY

INCEPTION

The study kicked off with an inception meeting held at ED offices located in Luli village, Dei Sub County. This meeting achieved the planning for, and implementation of, the community mobilization for participation in the Baseline Study. On the same day, the Baseline study team was introduced to the leadership of Dei Sub County and information was shared on roles and responsibilities for the fulfillment of the Baseline study objectives. The sub county was very receptive and cooperative.

ENUMERATOR TRAINING

Enumerator training was conducted with 2 females and 2 male enumerators. The training focused on the following: research ethics, survey administration dos and don'ts, and familiarization hence understanding the meaning of each question in the 3 questionnaires. Three questionnaires on Forestry, Fisheries and Agriculture were trained on. Training also covered the use of a mobile-based data collection tool in data collection. Enumerators were provided with mobile smart phones for data collection. The training day also included planning on how the actual data collection would be undertaken.

FACE-FACE SURVEY

The household survey was done through face to face interviews with household heads selected from three categories: Forestry group, Fisheries and Agriculture. The survey was accomplished through data collection software uploaded on SMART phones. The data collection started in Luli village, then on to Dei village and ended in Hoima village. Data collected was synchronized with the data server on a daily basis by the survey field supervisor.
100 households were targeted. 93 households were surveyed. This is a response rate of 93% which is good.

FOCUS GROUP DISCUSSIONS

Focus group discussions were held separately for women and for men. 3 men groups and 3 women groups were engaged. The group member selection was managed by the ED staff. Initially, non-group members of the current beneficiaries of ED programs were targeted. However, after the men group at Luli raised the issue of 'facilitation' it was agreed that as much as possible the men group participants of FGD be drawn from the groups that ED works with. Focus group meetings were held in Luli, Dei and Hoima as parallel activities to the household survey that was being conducted there too.

KEY INFORMANT INTERVIEWS

A limited number of KIIs were conducted with the following: Ajamugisa Gerald, Michael Dolo Osisi, Richard Aramazan, and Mohammed Ocakacon Hamza. The rest were either engaged with other commitments or had a language barrier (could not speak English). However, efforts to reach out to every contact are still ongoing.

GROUP INTERVIEW

A group interview was held with the sub county leaders at Dei. Initially, they were targeted for Key Informant Interviews. However, since they happened to be at the sub county at the same time it was prudent to engage them together to avoid the loss of any of them. The participants included the following: Muswa Maurice, the Sub county Chief; Baguma Jamal, the CDO; Odaga Daniel, the Parish Chief of Oguta Parish; and, Ozinda Sam Babylon, Deputy Speaker.

Figure 2. FGD held with men in Dei village, Dei Landing site

VILLAGE RESOURCES MAPPING AND TRANSECT

The men were engaged in drawing of the village maps and transects. This activity helped to explore the communities understanding of: their community resources, the changes in their community; and, the relationships between the environmental changes and human practices. The intention was to have women and men draw these maps from their perspectives. However, due to limitations in women's literacy levels and time the exercise was only accomplished with the men of the community. Village maps were drawn for Luli and Hoima. Dei men were slow in responding to the invitation to participate in the FGD meeting. Therefore it was not possible to do the exercise with them.

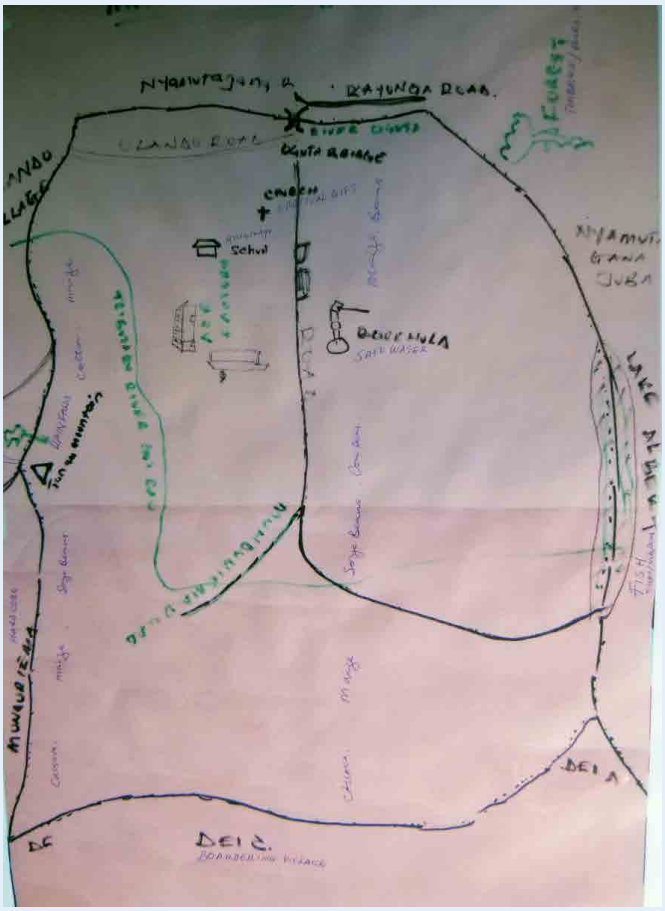

Figure 3. Luli village map drawn by Luli Village FGD Men

DEBRIEF

The de-brief was planned as an early morning activity on the day after the household level data collection was completed. However, this did not materialize due to two problems: the consultant team's vehicle broke down on that morning. Also, by the time the consultant team arrived in the sub county, the Sub county leaders at Dei were waiting to be engaged. Priority was given to meeting the leaders while the ED team engaged the Enumerators to get the feedback from the household exercise from the Enumerators. Details of this interaction were recorded and are available for any future reference at the ED offices.

After the data collection from the Dei sub county authorities the Lead consultant debriefed the ED representative, Program Officer, Joshua Oyergiu. The debrief covered a general overview of the exercise and preliminary outcomes of the study. This report is an expanded version of this debrief, and in a formal / written format.

FINDINGS OF THE BASELINE STUDY

DEMOGRAPHICS OF THE RESPONDENTS

Forestry Respondents: Targeted and available respondents (these being the beneficiaries of ED's interventions) were 30; actual respondents were 27. This is a response rate of 90%.

- 63% (17) were male and 37% (10) were female: more males than females.
- 22.2% (6) were aged 30-40; 7.4% (2) aged 41-50 years; 18.5(5) aged 51-60 years; 18.5% (5) aged 61-70 years and 33.3 % (9) aged 71-80 years: majority are in the two age brackets of 51-60 and 61-70 years old.
- 81.5% (22) households were male headed while 18.5 % were female headed: four fifths of the households are male headed.
- 11.1% (3) households had a size of 1-5 members; 48.1% (13) of households had a size of 6-10 members; 25.9% (7) households had a size of 11-15 members and only 14.8 (4) households had over 16 members in their household. The most prevalent household sizes are in the two categories of 6-10 members (most common) followed by 11-15 members.

Fisheries Respondents: Targeted and available respondents (these being the beneficiaries of ED's interventions) were 30; actual respondents were 30. This is a response rate of 100.

- 50% (15) of the fisheries respondents were female and 50% (15) were males: balanced males and females
- 83.3% (25) households of the fisheries respondents were male headed against 16.7% (5) households which were female headed: majority of the fisheries respondents' households are male headed.

Agriculture Respondents: Targeted agriculture respondents were 40; actual respondents were 39. This is a response rate of 97.5%

- 84.6 % (33) of the agriculture respondents were female against 15.4 % that were male (6): more females than males.
- 7.7% (3) of the agriculture respondents were aged 18-25; 35.9% (14) aged 26-35 years; 35.9% aged 36-45 years; 12.8% (5) aged 46-55 years and only 7.7% (3) aged 56-65 years old: majority are in the two age groups of 26-35 and 36-45 years old.
- 12.8% (5) households had a size of 1-5 members; 53.8% (21) of households had a size of 6-10 members; 20.5% (8) households had a size of 11-15 members and only 12.8 (5) households had over 16 members in their household: The most prevalent household sizes are in the two categories of 6-10 members (most common) followed by 11-15 members.

FINDINGS OF THE THREE (3) STUDY OBJECTIVES

KNOWLEDGE AND PRACTICES OF CCA AND SUSTAINABLE LAND MANAGEMENT

Knowledge of practices that degrade Forestry resources: Amongst the forestry respondents, almost three quarters (74%) know that the cutting of trees degrades the environment; 15% think that it is bush burning ; 7% attribute it to charcoal burning and 4% to overgrazing.

> *"Yes, the 74% have said the right thing because tree cutting is bad. According to proper rules when you cut a tree plant 10 others in the stead of the one cut"*
>
> Male Participant, Validation Meeting,
> July 18, 2022, Dei Centre

Amongst the agriculture respondents, almost half (46%) point at tree cutting for use in smoking of fish as the most damaging to the environment followed by one fifths (20%) that think it is overgrazing the grasslands; and then 19% that think it is burning of bushes that are the problem. Less than one tenth (5%) think that clearing forested areas for crop production; (5%) think it is oil or mineral extraction; and 3% think it is growing large areas of tree plantations and growing large areas of monocrops for agribusiness that damages the environment.

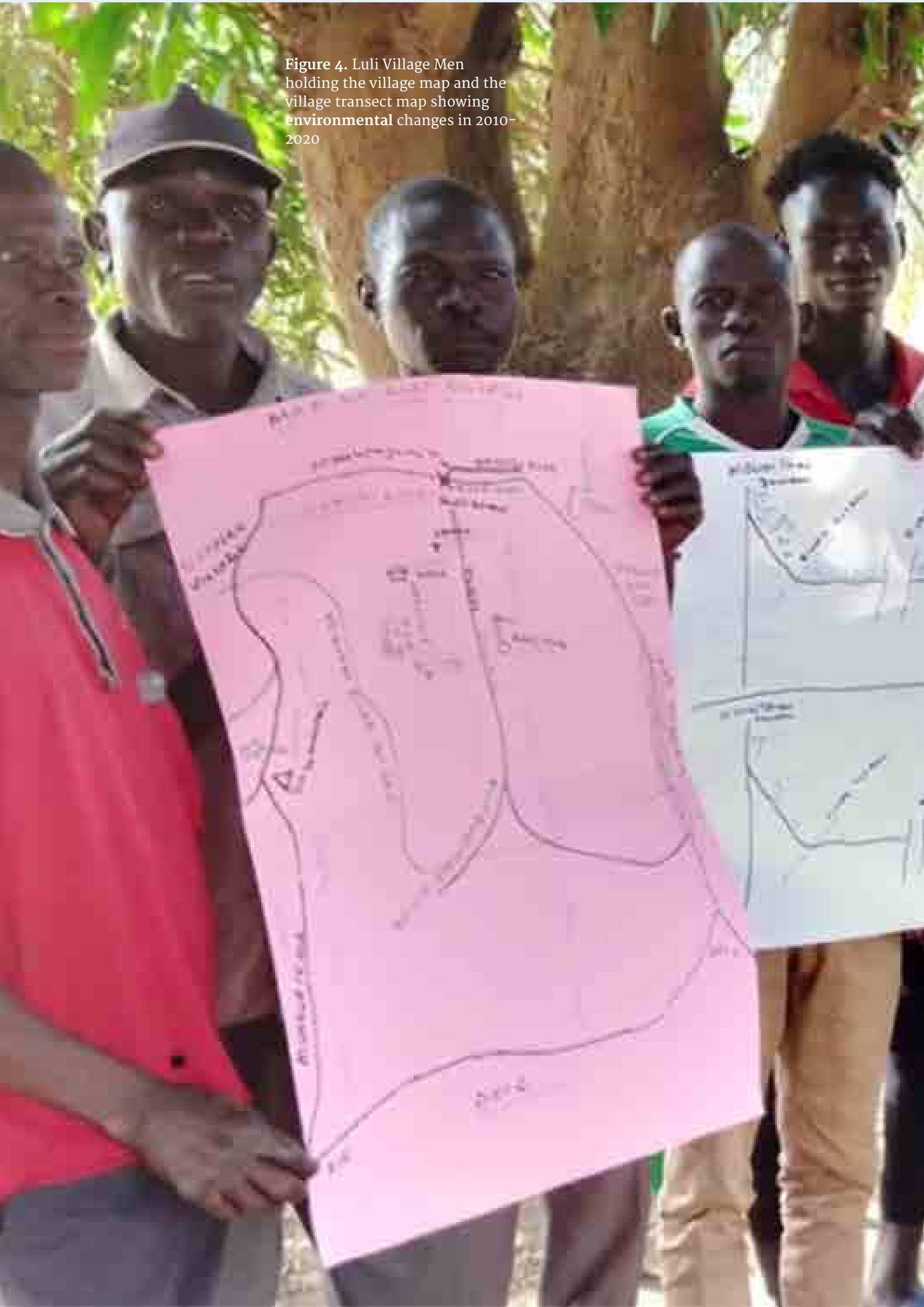

Figure 4. Luli Village Men holding the village map and the village transect map showing **environmental** changes in 2010-2020

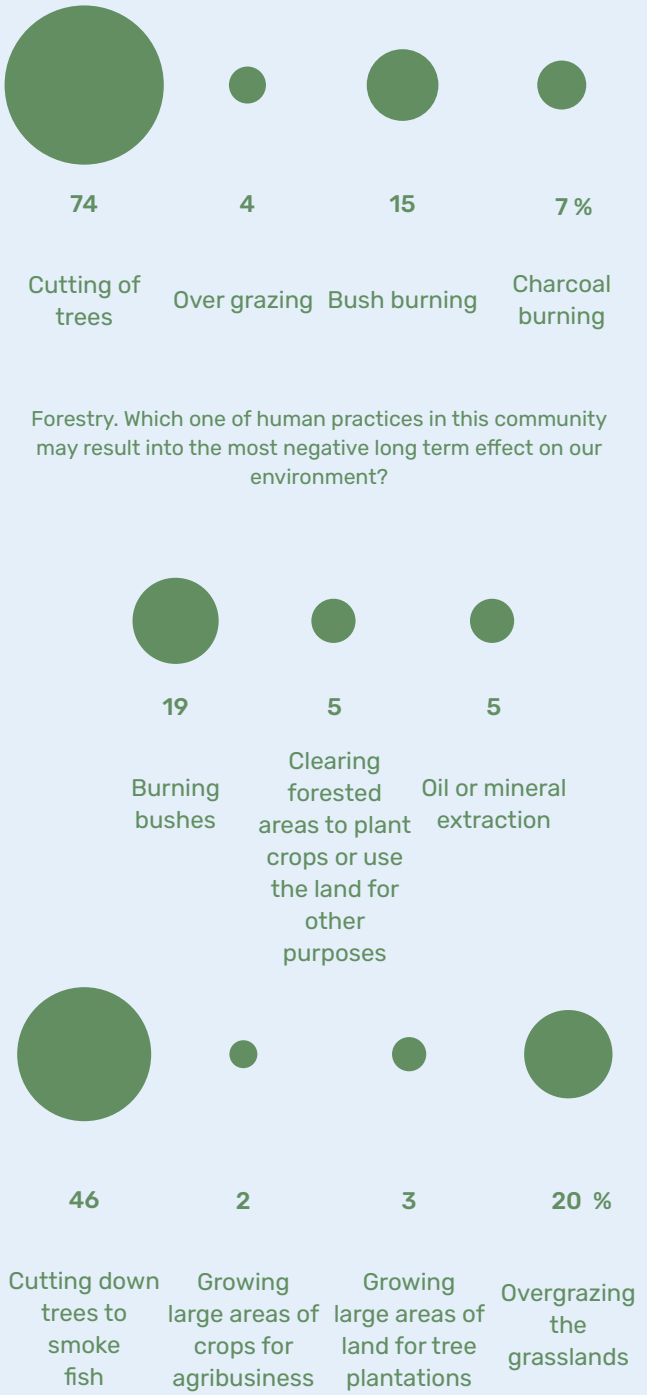

Figure 5. Human practices with the most negative effect on the environment

Therefore the top three practices causing environmental degradation in this community are in order of most negative: tree cutting followed by burning of bushes and thirdly by overgrazing the land.

The FGD male participants of Luli village were asked to map their village and then identify the environmental changes they have observed between 2010 and 2020. In their feedback, they highlighted factors that hurt the Landscape since 2010 to include the following:

- "*Lack of knowledge*"; Male FGD participant 1, Luli village, Feb 26, 2022;
- "*Financial problem: leads to cutting trees for burning charcoal and firewood*", Male FGD participant 1, Luli village, Feb 26, 2022;
- "*Over population: By then (that is 2010) people were few. Now (2022) Congolese influx into this place. Congo is just 4km from here*". Male FGD participant 1, Luli village, Feb 26, 2022;
- "*Overgrazing*". Male FGD participant 1, Luli village, Feb 26, 2022.

From the FGD and the survey, it appears that the reasons tree cutting is the main culprit for environmental degradation includes: i) Trees are being cut for fuel wood in smoking of fish and domestic cooking; ii) Trees are being used for burning charcoal which is sold for earning of income; and iii) by stating that "*financial problem leads to cutting trees for burning charcoal and firewood*", they are also referring to cutting trees for sale as firewood-therefore as a direct income source. Furthermore, the reference to over population as a result of influx of Congolese implies that there is increased pressure for fuel wood at household level as well as tree products for other uses including building poles. The survey results confirms that majority (66.7%) of households are using forest based products for earning income (see ***Table 18***).

In view of the foregoing, any interventions aimed at eliminating or reducing tree cutting must put high priority on adequately availing an alternative income source for households and alternative energy source for fish processing and domestic cooking.

KNOWLEDGE OF PRACTICES THAT HELP PROTECT FORESTRY RESOURCES

Over two thirds of the respondents (66.7%) **know** planting of trees as a practice that helps to protect the environment followed remotely by just over a tenth

USE	FREQ	%
For sale to earn income	18	66.7
For household use	9	33.3

Table 18. What is the main use of forest or forest products in your household?

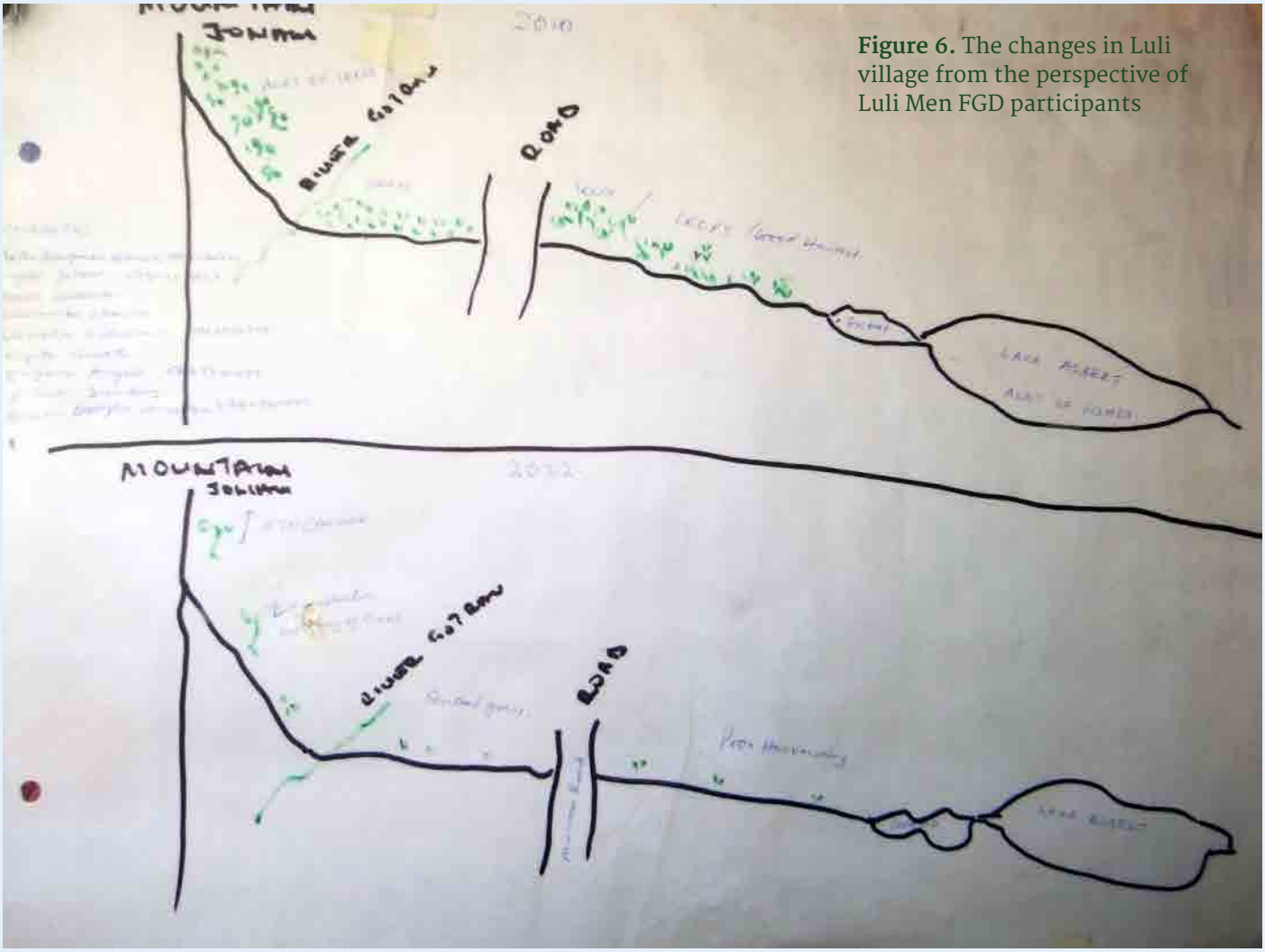

Figure 6. The changes in Luli village from the perspective of Luli Men FGD participants

(11.1%) who identifies guarding forests as a protection measure. Control of bush burning (7.4%) and practice of good farming methods (7.4%) were in third place while making strict laws (3.7%) and sensitizing the community about the benefits of tree growing (3.7%) were in fourth place. Additionally, the survey respondents in identifying **practices that should be adopted** towards environmental conservation were spread as follows: those that considered planting of trees (40.7%) as a remedy to environmental degradation were the majority followed by 11.1% who said it was the control of bush burning. Noteworthy is that those who considered *Arresting the culprits*, *Employing some people to do the monitoring*, and *Stop cutting trees*, and *Strict laws should be introduced* each had equal proportion of respondents (7.4%). Those that said *Should stop people from over grazing*, *Use strong people like forest guard to protect the forest*, *We need support from ED*, *We report to the government* and *We join hands with NGOs* each also had the proportion 3.7%.

If *Arresting culprits*, *Stop cutting trees*, *Strict laws introduced*, *Stop over grazing* and *Report to government* are clustered under strengthening enforcement of environmental laws then these together have 29.6% respondents. *Monitoring* and *Use strong guides to protect the forest* are forest management practices and they together are 11.1% of respondents. *Support from ED* and *Work with NGOs* are thinking of environmental conservation programs by development partners, and together they are also 11.1%. The Men FGD participants also proposed the following remedies: i) "*Afforestation*"; ii) "*Cooperate: being in groups to be able to do something more*"; and, iii) "*Government support: we have land*".

This finding shows that tree planting is well known and established in the community as a positive practice for environmental conservation while the rest of the practices though known are either practiced on a low magnitude or community has not yet fully embraced them. Therefore the public awareness creation interventions should seek to close these knowledge gaps. Additionally, and most critical is to build on this varied knowledge of the available remedies to environmental conservation to introduce and establish the concept and practice of Forest landscape restoration (FLR).

This baseline also investigated sites that the community considered the most degraded in the Dei sub county but did not go as far as determining their size and most socio-ecologically and economically optimal restoration options or interventions. For the latter parameters the IUCN study will be the reference adjusted where possible to update to the current status of things in the sub county.

Twenty four (24%) of respondents identified Hoima Parish as degraded followed by 14% who named Got Rau Parish, 9% who said it was Dei Parish and lastly 4% that felt it was Oguta. At the village level, Dei B/Border led with 15% saying it is degraded followed by Olando (6%), Dei Forest (5%), by Dei Central tied with Luli (4%) and Dei C (3%). The rest of the villages including: Amani, Dei, Got Cwiriba, Got Olando, Murubi Upper, Dei Juba and Dei Nyamutagana all got equal and low frequency in mentions (2%). It is noteworthy that Pambagu which is most mentioned by respondents (28%) as degraded is not identified to be located within the official administrative units of Dei sub county hence the label 'unknown'. Therefore, in terms of priority for conservation interventions, the Parishes of Hoima and Got Rau should be the point of initial focus. At the village level DeiB/Border, Dei Forest, Luli and Dei Central should be the initial areas of work.

◇ KNOWLEDGE OF PRACTICES THAT DEGRADE THE WATER RESOURCES

Amongst the fisheries respondents, two thirds (60%) of blame the fishing using gears (nets) which are prohibited as causing the most negative impact on the Lake Albert; followed by illegal fishing methods (30%).

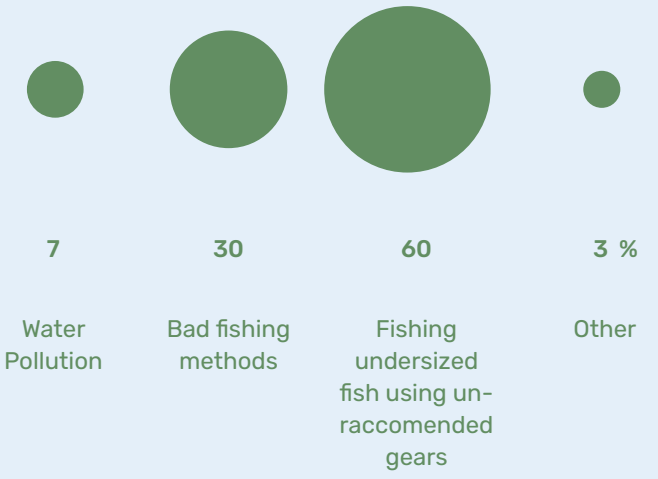

Figure 7. Human practices with the most negative impact on environment- water resource

Less than 10% think that water pollution (7%) and other factors are responsible for degrading the water resources.

◇ CURRENT GOVERNMENT RESPONSE TO THE HUMAN PRACTICES ON LAKE ALBERT

The Fisheries and Aquaculture bill, 2020 in section 108 (1) identifies the use of 'other noxious substance for catching fish as an offence: "*A person commits an offence who-(a) uses any explosive, fire-arm, any device capable of producing an electric current, poison; including poison made from a natural substance or other noxious substance for killing, stunning, disabling or catching fish*". With regard to fishing undersized fish the law provides in section 109 that "*Any person who-in fishing waters, captures, kills or injures any fish which is undersize; or buys, sells, exposes for sale, or is in possession of any fish or part of a fish. which is undersize and was taken from any fishing waters, commits an offence …*". Since these two account for the two practices causing the most negative impacts on the Lake Water resources, the law is also most relevant.

◇ HUMAN RIGHTS VIOLATIONS IN IMPLEMENTING ENFORCEMENT

Although GOU has heightened enforcement of law to curb the human practices that are causing negative impacts to the Lake Albert water resources; there are also incidences of human rights violations. Community members report that GOU is currently enforcing compliance through seizure of boats and/or nets and that the seized items are routinely burnt by the law enforcement personnel. However, a review of the provisions of the law, sections 101 and 102 shows no provision in the Bill that gives the enforcement officers power to destroy and/or burn boats and nets once a suspect is arrested. Instead, clear procedures have been laid down on what should happen to seized items. Therefore, the burning of boats or nets, without the backup of the law may be considered as a human rights abuse since the same law allows suspects to apply for the recovery of seized items even as they are being presented to court.

Geheb's finding also pointed out that: "*Further questioning on why illegal gear use was so widespread revealed that … small mesh-sized nets cost less than larger ones (82%).*' (Geheb, 2000). A key informant of this baseline made the following comment: "*I work with Mukene (silver fish) and Ragogi. The GOU requirement is that for Onangnang and Ragogi, one should use Nylon fish nets. But then each piece of Nylon net is 28-30,000UGX (USD8.0-8.6). You need 25 pieces. That is a lot of money. So, people have resorted to using acid to capture fish. And yet the acid kills the fish and makes it to rot*". KII, Dei Landing Site, Feb 26, 2022.

SECTION 101: DEALINGS IN MOTOR VEHICLES, FISH AND VESSELS

(1) Where a vehicle, vessel or fishing gear is seized, impounded or confiscated, the owner, operator or hirer of ... may apply to the court to release the vehicle, vessel or gear.
(2)The court may, ... release upon the furnishing of reasonable security or the execution of a reasonable bond by the owner, operator or hirer.
(3). Where ..... the owner, operator or hirer of ... does not apply ..... the Chief Fisheries Officer shall cause a notice of the intention to sell ..... by auction to be published in the Gazette and in at least two newspapers of national circulation.
(4)The vehicle, vessel or fishing gear shall be sold by auction thirty days after the notice in subsection (3)
(5)The proceeds of any sale under subsection (4) shall be applied to-(a) payment of costs and charges relating to the sale, including advertisement; and (b) payment of expenses of the removal and storage of the motor vehicle, trailer or engineering plant.

SECTION 102: DISPOSAL OF SEIZED FISH AND OTHER PERISHABLES

(I) The Chief Fisheries Officer may, where fish or other perishable fisheries products are seized under this Act-
(a) release the fish or perishable fisheries products on obtaining adequate security from the person from whom they were seized, upon payment of the administrative penalty under section 128;
(b) where court proceedings have been instituted, sell the fish or perishable products and pay the proceeds into court;
(c) in case of under size fish, destroy the fish or fisheries products.
(2) Where live fish is seized, the seizing officer shall destroy or otherwise dispose of the fish in accordance with subsection (1), but where the fish is of a species listed in Appendix 1 to the Convention of Trade in Endangered Species, the fish shall not be disposed of by way of sale.

These two accounts indicate that the cost of the appropriate sized nets has been a prohibitive to adoption of the right sized nets for over twenty years now. It is unacceptable that a government Bill is drafted in 2022 without due consideration of such a constraint. Government agencies like NEMA are mandated to ensure that Environmental and Social Impact Assessments are done for industry, project, policy and activity which has any relation with the environment. Why have they not weighed in on such error in government policy?

NEMA ROLE IN ESIA

NEMA plays a critical part in the ESIA process, amongst others, by: monitoring the operation of any industry, project, policy or activity with a view to determining its immediate and long-term effects on the environment; and, making recommendations regarding the approval or mitigating factors relating to environmental assessments; and do follow up inspections to ensure that mitigation measures are implemented.

This action of GOU contravenes Article 19 of the United Nations Declaration on the Rights of Indigenous Peoples which requires that *States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them.*

It also is in conflict with Article 5 of the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas. Subsections 1 and 2 are hereby presented:

1. Peasants and other people working in rural areas have the right to have access to and to use in a sustainable manner the natural resources present in their communities that are required to enjoy adequate living conditions, in accordance with article 28 of the present Declaration. They also have the right to participate in the management of these resources.
2. States shall take measures to ensure that any exploitation affecting the natural resources that peasants and other people working in rural areas traditionally hold or use is permitted based on, but not limited to:
(a) A duly conducted social and environmental impact assessment;
(b) Consultations in good faith, in accordance with article 2 (3) of the present Declaration;
(c) Modalities for the fair and equitable sharing of the benefits of such exploitation that have been established on mutually agreed terms between those exploiting the natural resources and the peasants and other people working in rural areas.

KNOWLEDGE OF HUMAN PRACTICES THAT CAN HELP PROTECT LAKE ALBERT WATER RESOURCES

Forty percent (40%) of the respondents proposed that *Sensitize the community to stop illegal methods of fishing* thirty percent (30%) said, *Provide quality fishing gears*another thirty percent (30%) recommended, *Enforce the laws on fishing practices*.
A review of the Fisheries and Aquaculture Bill, 2020 which is currently being enforced in ensuring the protection of the Lake Albert water resources identifies two sections that are relate to the communities recommendations:

Section 26 (1) h provides for the functions of the DFO, amongst others, to *ensure, in collaboration with lake management organisations and landing site fisheries management committees, that this Act and the regulations made under it are enforced.*
Section 108 (6) provides that *any person who-(a) manufactures, stocks or sells prohibited fishing gear, including nets with prohibited mesh sizes; or, (b) sells explosives or substances knowing or having good cause to know that they are likely to be used for illegal fishing, commits an offence.*

The Pakwach District and Dei sub county performance report for the period 2017-2020 lack record on enforcement efforts under Fisheries sector. If this provision of the current law is implemented illegal fishing would also be curbed. A key informant pointed out that GOU was not playing it's role in controlling the trade in the illegal gears.

"Government also has a role to play. Because if you think about it, from where are the (poor quality) nets coming from? Most of them come from China! So why do they let these to be imported into the country ?"

KII, Dei, Feb 27, 2022

This selective implementation of the law in addition to a narrow and excessive focus on enforcement implies that as much as the objective of regulation may be achieved in the short term, in the long term there may still be no sustainable use of the Lake Albert resources. For it takes community participation and/or ownership of the sustainable use of their natural resources for such resources not to be degraded or destroyed.

POSITIVE HUMAN PRACTICES THAT CAN HELP PROTECT LAND/AGRICULTURE RESOURCES

Seventy percent (70%) of the agriculture respondents mentioned tree planting eleven percent (11%) said it was the rearing of animals according to the capacity of the land, another 11% said it is the growing of more diverse crop and tree species and only 4% identified the raising seeds for tree planting. These four practices are what the community is undertaking currently to help their environment. Dei sub county and Pakwach efforts around tree planting are obviously not in vain since the concept of tree planting now seems to be taking root in the community. It can be expected that with similar or greater support and community sensitizations the other three practices as well as other relevant land, water and air conservation practices will be taken up by the community.

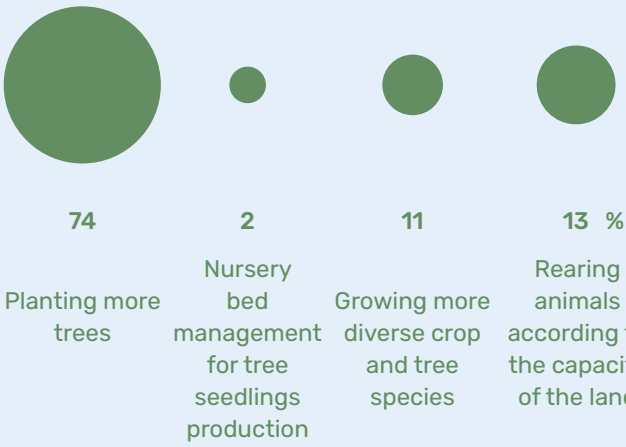

Figure 8. Positive practices that help to protect the environment

COMMUNITY LIVELIHOOD OPTIONS AND ANNUAL INCOMES

WHAT ARE THE LIVELIHOOD OPTIONS?

The study established that just over half (51.9%) of the respondents under the Forestry category have crop farming for subsistence as their main livelihood source followed by eleven percent (11.1%) that depend on livestock farming for commercial purpose; then 11.1% who do livestock farming for subsistence purpose.

Figure 9. Livelihood sources amongst forestry category respondents

Commercial crop farming and tree production, each were at 3.7% of the respondents. This means that technically, these respondents are crop and animal farmers that are undertaking forestry as an additional livelihood source.

Amongst the fisheries respondents, over two thirds (66.7%) indicated crop farming for subsistence was their main livelihood source; followed by almost one third (26.7%) having fishing or fish trading as their main livelihood source. Only six percent (6 %) of fisheries respondents had livestock farming as their main livelihood source. This implies that the majority are crop farmers that are engaging in fishing as a livelihood diversification strategy.

Figure 10. Livelihood sources amongst fisheries category respondents

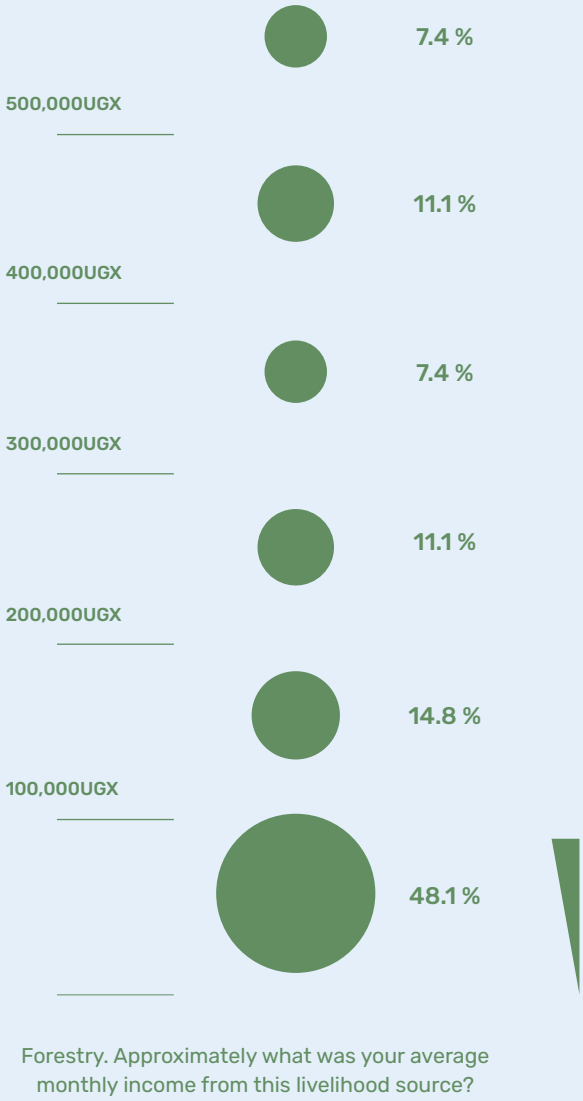

Figure 11. Average monthly incomes of forestry respondents

◇ WHAT ARE THE ANNUAL INCOMES?

Since most people have trouble recalling figures over a long duration, respondents were asked about their monthly incomes instead of their annual incomes. It is expected that with some adjustments for other contextual factors estimates of the annual incomes can be made from these monthly averages.

Amongst forestry respondents just under half (48.1%) of the respondents earned less than average 100,000UGX (USD28.6) per month from their main livelihood source while less than one tenth (7%) were earning an average of 500,000UGX (USD 142.6) per month. See ***Figure 11*** for the distribution in average monthly incomes.

Amongst the Fisheries category respondents, over a third (36.7%) earned between 101,000 to 200,000UGX (USD 28.6-USD 57.1) per month; while almost one fifth (16.7%) earned 500,000UGX (USD142.9) per month. The distribution of respondents' incomes is shown in ***Figure 12***.

There were more poorer people in the forestry category compared to those in the fisheries category as evidenced by a higher number of community members (48.1%) of the forestry category that earned less than 100,000UGX (28.6USD) per month. Considering that the forestry category's main livelihood source was crop production, not tree production, this is evidence that their current crop farming is unable to provide reasonable livelihood support to rural households.

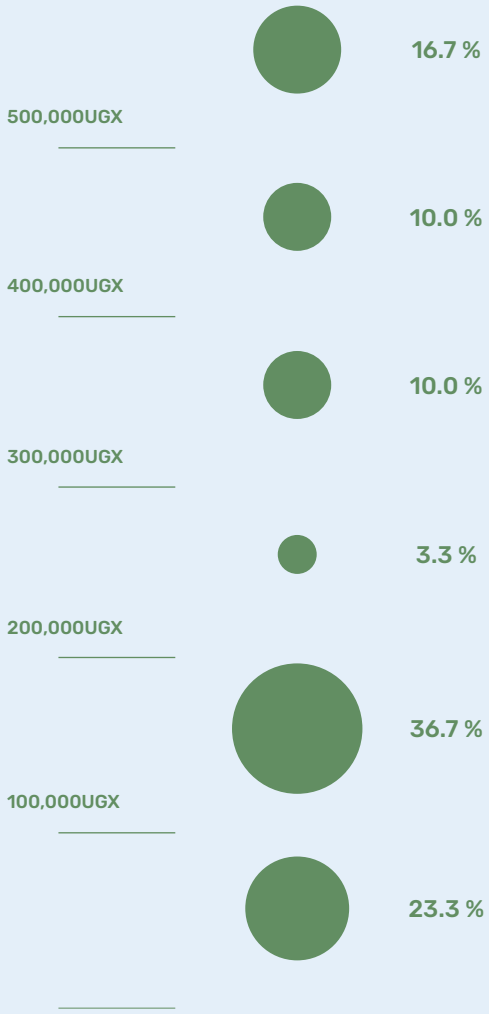

Figure 12. Average monthly incomes of forestry respondents

However, by July 2022, the above scenario had quickly changed. Due to the global crisis from fuel shortages that has seen a doubling of the prices of fuel, validation stakeholders reported that the picture for fisher folk was very different.

> *"Today, as we speak that graph does not represent the fisher folk. Instead the farmers may be better than fisher folk because these days income of fisher folk is zero; and people are sleeping on empty stomachs. The evidence of this bad situation is this: last week we leaders of the sub county conducted a visit to Kayonga Primary School. We found that from a pupil population of 1022 pupils at the beginning of this year, today we only have 106 pupils for the class range of P1-P7. This means that 921 pupils cannot go to school because they have failed to eat. There is no single boat left in Kayonga."*
>
> Dei Sub county Leader,
> Validation workshop Dei, July 18, 2022

A CLOSE UP LOOK INTO DIFFERENT FOREST BASED RESOURCES

The main forest based products used by the forestry category respondents include: timber/building poles, food items collected from the forest, medicinal plants from the forest and fuel wood. In terms of use of these products at household level, over two thirds (66.7%) sell these products while just over one third (33.3%) use them within the household.
In the last year, timber or building poles were the most collected forest product followed by forest based food products, then forest based fuel wood; and ;last but not least medicinal products. However, the quantities are generally small (See ***Table 19***).

An analysis of the value, in terms of income earned from forest products sale shows that, forest foods, timber and fuel wood are the top three products that support households to earn between 100,000UGX to 500,000UGX. Timber is the only product with respondents who earned over 1,000,000UGX. Within the two income ranges of 100-500,000UGX and 501-900,000UGX, Timber is the top followed by forest foods and then fuel wood with 77.8 %, 74.1% and 63% of the respondents, respectively (See ***Figure 13***). This means that these three are the most important products income earners while forest medicines are important for home-based health maintenance.

FOREST PRODUCT	QUANTITY (AVERAGE)	UNITS
Timber or building poles	146	Poles
Forest based food products	37	Bags
Forest based medicinal products	13	Bundles
Forest based fuel wood	25	Bundles

Table 19. In the last year, what volume of the following forest products did you get?

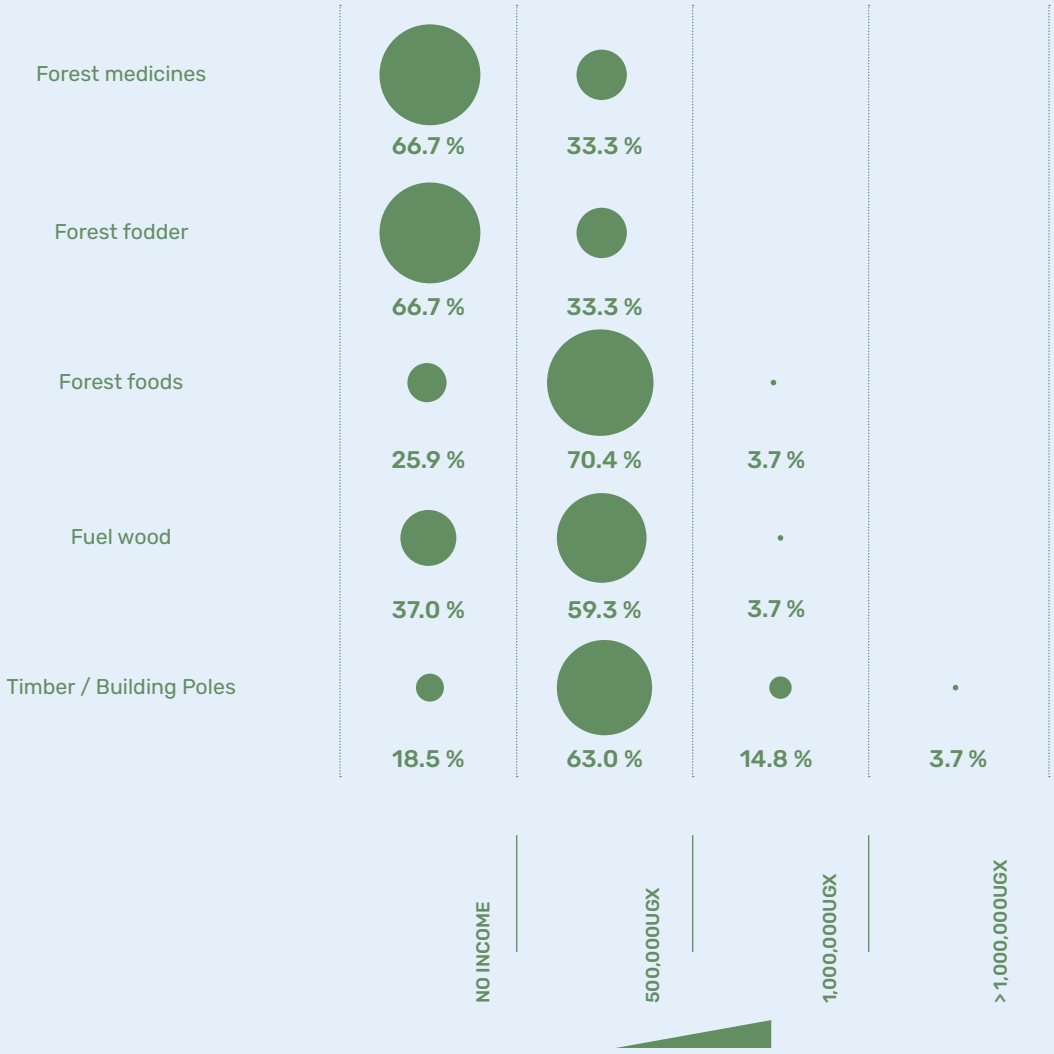

Figure 13. How respondents earned from different forest and forest based products

IUCN conducted a forest landscape restoration assessment in which it also examined the benefits related to the selected FLR options, that is, agroforestry, afforestation, and natural regeneration. An analysis of the costs and income from these FLR options revealed that agroforestry is the most profitable FLR option offering net revenue of 35,586,000. Woodlots and natural regeneration would bring in 17,728,300UGX and 3,516,000UGX in net revenue, respectively. (See ***Table 20***).

◇ CONCLUSION

The Baseline study tried to inquire whether respondents owned forests. None identified themselves as forest owners. And the feedback of the forestry category and the agriculture category suggest that both are majorly crop farmers. This suggests then that when talking about trees with these respondents they are referring to the trees in communal land areas such as may be found in what they called *Dei Forest* and also on *Got Olando*. Luli Kayonga Forest seemed to be a bit of distance from hence of little access to most of the respondents of the study. The IUCN study is not clear whether these costs and benefits apply to say a communal agroforestry or woodlot project, if undertaken. But it presents a scenario that should trigger dialogue between community and any organization seeking to apply the FLR options above. During such engagement the critical function of trees as fuel wood source – for a growing population – and direct income source must be given high priority in interventions design and implementation.

FOREST PRODUCT	AGROFORESTRY VALUE (UGX/HA)	WOODLOTS VALUE (UGX/HA)	NATURAL REGENERATION VALUE (UGX/HA)
Variable costs (Pruning, Seedlings , Planting, Thinning, Timber harvest)	3,080,000	7,127,000	
Fixed costs (Site preparation, Weeding, Protection/ Patrolling)	370,000	670,000	10,000
TOTAL COSTS	3,450,000	7,797,700	10,000
Revenue (crop yields, timber, firewood, biomass and watershed protection)	39,036,000	25,526,000	3,526,000
NET REVENUE	**35,586,000**	**17,728,300**	**3,516,000**

Table 20. Enterprise budgets for Agroforestry, woodlots and natural regeneration FLR options

◇ A CLOSE UP LOOK INTO DIFFERENT WATER BASED RESOURCES

In the study area, the main water based resource being harvested from the Lake Albert is fish. Asked about the benefits of the Lake Albert, 43 % were selling the fish, 30% were using it as their food; and 27% were earning income from making equipment that is used in the fishing activity (see ***Figure 14***). That is how the community is benefiting from the lake.

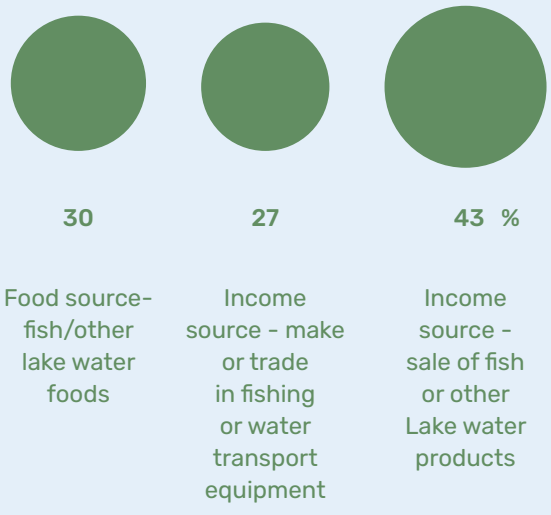

Figure 14. What is the main use of Lake Albert waters and its related products in your household?

When it came to incomes, it turned out that even the fish that is used for food is being sold to earn income. And that this practice accounted for a higher fish sale. Thus, almost two thirds (56.7%) of the respondents' sold their 'food' fish for an income between 100,000 to 500,000UGX as compared to a third (33.3%) that earned the same range in income from direct harvest and sale of fish.

Fish by it's nature is a high income earner. However, the data shows low incomes from fish sales. An investigation into the factors affecting fishing in general highlighted how 'the capture and sale of young fish' contributes to the above low earnings. A key informant puts this into context:

> "*For instance, a 1kg fish goes for 10,000UGX; a 2kg fish is 20,000UGX while people are capturing fish of less than 1 kg and selling it at 5,000-6,000UGX*"
>
> KII, Dei Landing site, Feb 27, 2022

Thirteen percent (13.3%) of respondents that directly deal in fish for income earned between 501,000 to 1,000,000UGX, followed by 6.7% who earned a similar range in income from the sale of equipment. A very small percent (3.3%) earned a similar amount in income from the sale of fish for home consumption. For incomes of over a million, the sell of fish for income led with 20% respondent followed by sale of equipment at 16.7% and last was the sale of fish for home consumption at 10%. (See ***Figure 15***).

On the Lake Albert, the most important livelihood source is the direct sale of fish followed by dealing in equipment used in the fishing process. Sale of fish that is harvested for home consumption brings in a little income just like the way subsistence crop farming performs against commercial crop production.

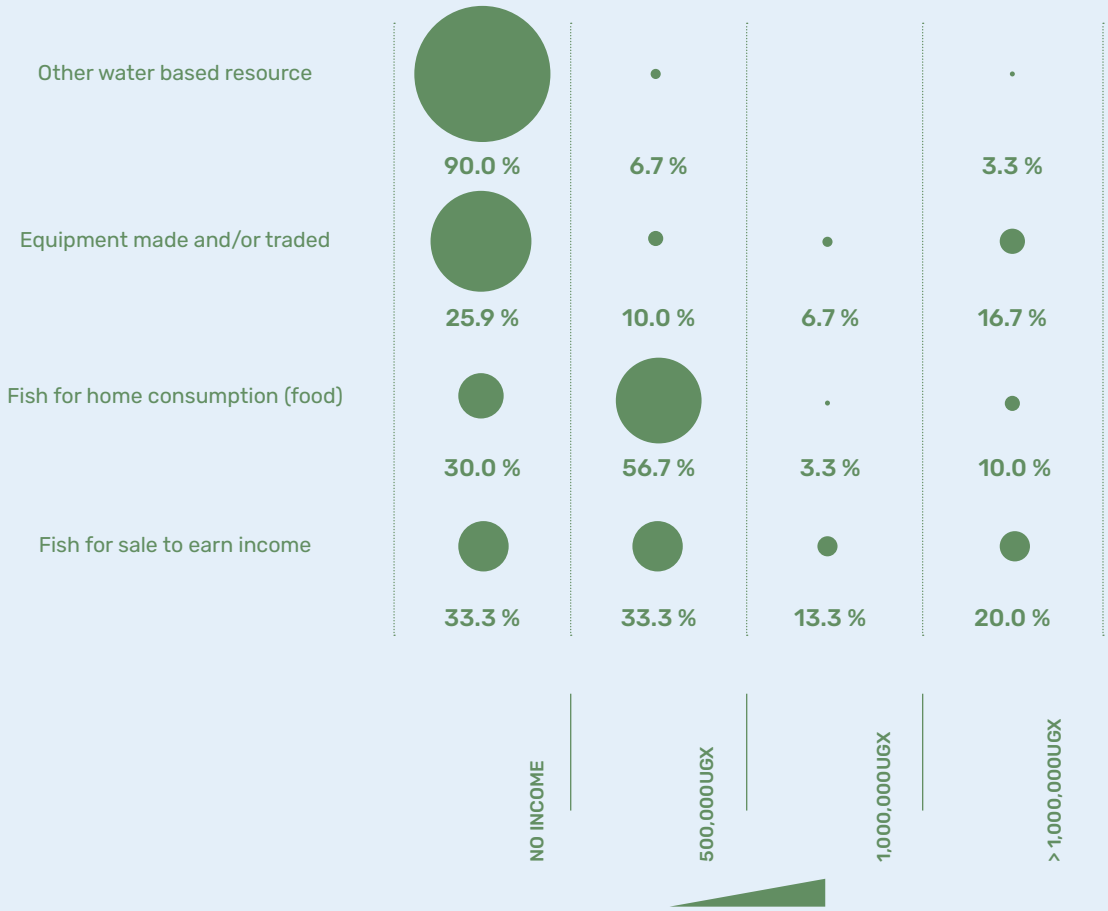

Figure 15. Income earned from the main lake based resource/livelihood source

Therefore, in considering interventions in livelihood that are best for the landing site community, place highest priority on how to enhance commercial fish dealing and dealing in fishing equipment. Then, since the subsistence based fishing may be practiced by women, youth and other vulnerable groups, interventions to enhance their livelihood musts include, inter alia, a mind - set change and/or capacity building on how to transition from subsistence to commerce based fish dealing - more like from subsistence farming to farming as a business.

Note: It must be borne in mind that when it comes to investigating incomes, most people will under-report their incomes as a way of avoiding of payment of high taxes. Therefore the numbers on incomes should not be taken as exact or the truest representation of the actual incomes individuals earn.

CONFLICT OVER FISHERIES AND FORESTS RESOURCE USE

In the past three years four fifths of respondents (82%) have not experienced any forest based conflicts in contrast to a similar proportion (80%) of respondents that have experienced conflict based on water based resources.

BACKGROUND OF THE CONFLICT ON LAKE ALBERT

In about June 2021, GOU passed a ban on fishing activity in the Lake Albert citing malpractice in fishing that was causing harm to the Lake Albert fisheries.

A media report captured it as per the excerpt *The government has set tough rules for fishermen operating on Lake Albert as a means of streamlining activities at the lake and cracking down on illegal fishing. The commander for Fisheries Protection Unit (FPU), Lt Col Dick Kirya Kaija, said*

in an interview at the weekend that over the years, Lake Albert has been open to all fishermen but strictly licensed fishermen will now be allowed access to the lake. Some of the new rules include applying for a fishing licence, revoking it (licence) if abused, and having a boat number, among others. Tuesday, June 08, 2021, Alex Asaba (Journalist).

This report also noted that the *fishermen were given one month to return the substandard fishing gears to the FPU.* It also adds that *in May 2019, the government slapped a ban on commercial fishing at the lake over illegal fishing methods. These include using less than five-inch fishing nets for tilapia and less than seven-inch fishing nets for Nile Perch. They also entail fishing boats less than 20 feet, especially canoes. The government lifted the ban on July 27, 2020.*

A community key informant confirms the GOU action in 2021 thus:

> *"The GOU slapped on us strict regulation since 2021... there was no community outreach to prepare us about the regulations. Instead we were given one (1) week to change the net size and change from using canoes to boats..."*
>
> KII, Dei Landing site, Feb 27, 2022

However, this action came on the back ground of other previous communications or engagements of GOU with the fishing community. It is reported that:

> *"In 2016 the DFO, based in Nebbi, at the time wrote a letter to the Dei Landing Site Chairperson of fishermen instructing that fishermen use the recommended inches. By then it was 4 inches. Forms were signed by each fisherman committing to keep this regulation. And the chairman also endeavored to implement this GOU instruction. However, this very effort resulted into the group members removing the Chairperson from office."*
>
> KII, Dei Landing site, Feb 27, 2022

The action of the DFO must have been based on earlier efforts to control illegal fishing on the Lake Albert, ad this too being informed by research results by NaFIRRI. For instance *at least 60% of the gears used on the lake (Albert) are long lines and multi-mesh gillnets that target Nile perch. Usually, the hooks are of small sizes (no. 12 to 14) instead of the large hooks size no. 9 and below. Gill nets of mesh size 3" to 4" are also used to capture small Nile perch and tilapia. However, there are also large proportions of other small mesh sized nets particularly 1.5 - 2.5" nets that also target Brycinus nurse (ragoge) Alestes baremose (angara) and Hydrocinus forskali (ngassa)* (NaFIRRI, 2012).

Before the Fisheries and Aquaculture Bill, 2020, there was the Fisheries and Crocodile Act, 1964. Geheb (2000) notes that the main tenets of the 1964 Fish and Crocodile Act (later renamed the 1964 Fish Act) include the following (Uganda Government, 1964):

- Any person must have a valid license to fish, to accompany a person who is fishing or who is in a boat used for fishing. The Chief Fisheries Officer (CFO) may, ..., limit the number of fishing licenses issued, ... to certain waters.
- Vessels must be licensed if gill-netting or long-lining is to occur from them; the CFO, ... may, ..., limit the number of gill-nets or long-lines to be carried in a boat, generally or with regard to specific areas.
- Without written permission of the CFO, no poisoning, explosives nor electric fishing may occur.
- The Minister may, by statutory order, ban a gear generally or with reference to specific waters; .. may declare closed seasons generally or specifically to certain waters and either generally or specifically to certain fish species.
- It is illegal to transfer fish or eggs from one water body to another.
- The government, 'Federal State' or district administration may issue fishing licenses, provided that they think it is in the public interest to do so. A District Commissioner (DC) can annul a license issued by a Federal state or the government if s/he feels that it is in the public interest to do so. The Minister may remove the rights of Federal states and DCs in this respect as s/he sees fit.
- It is illegal to take immature fish, to use under-size mesh-sizes.

On Provision (d), a community member shares on the actual practice as follows:

"The Crocodile and Fisheries Act 1964 established the minimum size of nets for fishing on, especially Lake Albert. The minimum inch size was 2.5 inches because Aletes (locally known as Angara) is unique to Lake Albert and Albert Nile. This regulation was in place from Obote I till Idi Amin regime". "In Obote II the two and a half (2.5) inches was too short for the depth, this being equivalent to 3 Long-lines. They started to capture immature Nile Perch. They started to get 2.5inches from China for fishing Mukene (silver fish). Note: the right Long-lines should be 2 because Angara is fish that feeds and lives in the upper areas of the Lake waters."

HOW POLICY AND PRACTICE BY GOU SUSTAINS THE CONFLICT

The Fish and Crocodile Act, 1964 promoted the *command-and-control* approach to fisheries management. A comparison of the 1964 law and the proposed Fisheries and Aquaculture Bill, 2020 indicates that these key tenets of the 1964 law were largely retained.

Geheb notes GOU failed to issue the necessary Statutory Orders specifying what an 'immature fish' is, or what an under-sized mesh-size is, ...(Kyangwa M. and Geheb K, 2000). Noteworthy is that the current

Fisheries and Aquaculture Bill, 2020 does not specify what undersize fish or fishing gear is.
It is also noted that the current law provides that: *The Fisheries Monitoring, Control and Surveillance Unit shall comprise of persons appointed by the Public Service Commission and trained by the Uganda Peoples Defence Forces in Para-military skills*. Indeed, according to the accounts of the community members that have been victims of the law enforcement, there is heavy reliance on use of military tactics to ensure compliance with GOU regulations on the Lake. This approach is no departure from the *very stringent enforcement system consisting of motorised patrol boats and spotter aircraft which was employed in 1907-08 (Uganda Protectorate, 1939)* by the colonial masters in efforts to curb illegal fishing in Lake Victoria.

◇ EFFECTIVENESS OF GOU RESTRICTIONS ON FISHERIES RESOURCE USE

In the colonial era, the fishers took to smoking their catch, accumulating it and then smuggling it to laud. Thereafter, it was smuggled through to officially sanctioned markets and distributed amongst fish arriving from other lakes still open to fishing (Hoppe, 1997). In the end, the average weight of Ngege (Tilapia) landed declined 50 grams between 1938 and 1948, from 726 grains to 676 grams (Uganda Protectorate, 1938, 1949) as well as fish catches declining too as a result of over fishing (Geheb, 2000).

Geheb's research established that *over three quarters of respondents also agreed that there had been declines in fish species diversity, that their fishing trips were longer in 1999 than they had been in 1995, that the use of illegal fishing techniques had increased, that the number of boats had increased, that the average size of fish landed had declined (90%) and, finally, that fishing paid less in 1999 than it had done in 1995*. He also established that the largest proportion of respondents believed *that the reasons for these declines were because of regulatory disobedience (43%), followed by there being too many boats, fishers and/or nets (33%)*.

It is clear that the restrictions were not effective in controlling over fishing; and, caused *declines to the fishery and that these can be directly related to regulatory disobedience and excessive effort*. (Geheb, 2000)

◇ THE FINANCIAL INVESTMENT NEEDED TO COMPLY WITH GOU RESTRICTIONS

During the men's FGD held in Dei village, one of the participants made the following comment:

"*Government takes us as rebels...we are not. This is because they accuse us of using boat size that is not allowed and use of net size which is not allowed. But we lack the resources to purchase the nets and boats that they require. So let them provide us with the nets and boats in form of loans...and form groups to work with...*"

Part of the discussion that followed this comment was what amount of loan can help these community men to restore their fishing livelihood source. The men shared estimates of costs of the major items needed to be able to comply with the current GOU regulations. The table below presents the budget outlook, as contributed by the Men FGD participants and later adjusted according to the feedback from the Validation workshop.

ITEMS DESCRIPTION	AMOUNT (UGX)
Boats 8 meters, GOU size for a group: 4 @ 2,500,000 UGX (building the boat).	4* 2,500,000 = 10,000,000
Nets ** Size -4 inches @ 23,000UGX • 1 fleet requires 6 pieces of nets: @ net is 4,000,000UGX • 1 boat requires 20 fleet	4*20*6=480 (nets of 4 inches) 480*23,000 = 11,040,000
Engine: each requires mounting spool @6,000UGX	4*6000=24,000UGX
Engine purchase: @9,000,000UGX	4*9,000,000 = 36,000,000UGX
TOTAL	**57,064,000**

** One Validation stakeholder mentioned that nets cost 4 million. But we have stuck with the original figures given by the men because we do not know what net size costs 4 million, when, according to the fishermen there is a net that costs 23,000UGX

Table 21. Estimated loan amount required for a group of men to comply to GOU regulations

"The group that gave you that information on what amount they need are not fishermen but have the intention of fishing. To be a fisherman, let us see...you need an engine which now costs 9,000,000UGX, then the nets are 4million, then building the boat which must be 8 meters long you need 2,500,000UGX. Now they need 4 boats.... Which means they need 50 to 60 millions"

Dei subcounty leader, Validation workshop, July 18, 2022

The leader was spot on as can be seen from the revised figures in table 21. Hence the estimated loan amount required from any lending institution is at minimum, 50,000,000UGX as of July 2022. The FGD men had indicated that a loan duration of 2 years would enable them pay back easily, but that was with a figure of 33,000,000UGX. With this new and larger amount perhaps 3 years is more feasible.

◇ THE COSTS TO EQUIPMENT MAKERS IN COMPLYING WITH GOU RESTRICTIONS

Previously, fisher folk used canoes to fish. The canoes cost between 300,000 UGX (USD85.7) to 400,000UGX (USD114.3). A key informant put the cost of the required GOU boat size at 3,500,000UGX (USD1000). However, during the validation workshop stakeholders clarified that the required GOU boat size is 8 meters and that it currently costs 2,500,000UGX.

The latter puts it at 6 times the former cost of fishing boat (that is 400,000UGX). Most fisher folk cannot afford this. The alternative then is to have the required GOU boat locally made. According to a Key informant consulted in February 2022, the cost entailed 1,290,000UGX and consisted of the items listed in ***Table 22***. However, the validation workshop stakeholders refuted the 1,290,000UGX saying it was too low and mentioned 2,500,000UGX.

"At Dei landing site, there used to be 2 canoes makers-selling them at 300,000UGX to 400,000UGX. But with the GOU regulations the canoe makers ran out of business as they could not make profit"

KII, Dei Landing site, Feb 27, 2022

Either way, the impact of this excessive rise in boat cost is that 'most people' have left fishing. Dei sub county leader confirmed that indeed most of the fisher folk have left fishing:

"If for a group you need 50-60 million, which means an individual needs at least 18,000,000UGX. This is the reason why most people will not go back to the fishing industry because they cannot be part of the fishing activity". He added: "There used to be 690 boats (before GOU regulations) but as of July 2022, there are left only 80 boats. There is no single boat left in Kayonga. Instead you find 2-3 people hooping Tilapia with nets."

◇ THE INDIVIDUAL FISHER'S CURRENT COSTS FOR FISHING IN COMPLIANCE WITH GOU RESTRICTIONS

The cost of fishing in one night while complying with GOU regulations was discussed and is the estimates are presented in ***Table 23***. If an individual fished while complying to other GOU requirements but without the required boat size he would need only 2,925,000UGX to go out and fish for one night. If he complied and purchased engine to run the recommended boat size he would need at least 12,425,000UGX to start fishing on the first night; and at least 7,725,000UGX to do so through renting the engine for the boat. It is clear that it takes a very high financial investment to comply with GOU regulations. This is likely to disproportionately affect women and youth who are interested in or are dependent on fishing for a livelihood.

ITEMS	QUANTITY	UNIT COST (UGX)	AMOUNT (UGX)
Timber	30 pieces	70,000	210,000
Frames	25 pieces	12,000	300,000
Colors for painting the boat	4 tins	55,000	220,000
Blankets to close gaps between timbers	6 pieces	10,000	60,000
Labor of the carpenter	1 person	500,000	500,000
			TOTAL COST 1,290,000

Source: KII, Dei Landing site, Feb 27, 2022

Table 22. Cost of making a boat that meets GOU standards

ACTIVITY/ITEM DESCRIPTION AS PER GOU REGULATIONS	QUANTITY REQUIRED BY GOU	UNIT COST (UGX)	AMOUNT (UGX)
Fishing net for Mukene/Onangnang	7 Long-lines	185,000	1,295,000
Corks for the Long-lines	600 corks	1,000	600,000
Ropes (White)	8 pieces	12,000	216,000
Stones	16 pieces	1,000	16,000
Sewing rope (Nylon)	4 pieces	7,000	28,000
Pay Labour for sewing: 80,000UGX	1 person	80,000	80,000
Pressure Lamps: need 4 pieces, @130,000	4 pieces	130,000	520,000
Paraffin for the lamps	4 lamps	10,500	42,000
Kitambi-used each trip of fishing	4*2 lamps	1,000	8,000
Fuel for the engine (uses Petrol)	20 litres per boat	6,000	120,000
			SUB TOTAL cost of fishing in one trip 2,925,000
Engine (to move the boat)	1 piece	@ 9,500,000UGX if you buy; @ 400,000UGX per month, if you rent it	9,500,000 400,000
			TOTAL cost of fishing on the first night with a purchased engine 12,425,000
			TOTAL cost of cost of fishing on the first night while renting the engine 7,725,000

Table 23. Individual fisher's cost of complying with all GOU requirements for fishing on one trip (a night)

According to the validation feedback, an individual requires at least 18,000,000UGX to be able to comply with GOU restrictions for fishing on the Lake Albert. However, the above table is maintained here for purposes of capturing the details of what it takes for fishing to happen. Hopefully this, with adjustment through further consultation with fisher folk, will assist ED to plan and budget for projects supporting the fisher folk to resume fishing hence restoration of livelihoods.

◇ THE INDIVIDUAL FISHER'S CURRENT REVENUE WHEN HE/SHE COMPLIES WITH GOU REGULATIONS

At Dei Landing site, fishermen sell fish either directly to the consumers which include bot local consumers and factory buyers or through retailers to consumers (DFID, 2004). [15] The typical fisher dealers at Dei are those man and women who hires a boat from a 'Boss' and then hires a fisherman to go out and harvest fish for him/her in the Lake Albert. He/she receives the fish and then sells it to others. The 'others' includes those that buy wholesale fresh fish and transport it to destinations outside Dei; those who buy fresh fish and sell it to consumers at Dei landing site; Those that buy fish, smoke it and then go and sell it to other markets outside of Dei Landing site.

The individual fisherman being considered here is the one that hires a boat and a laborer to do the fish harvesting from the Lake waters. The estimated monthly income of such a fish dealer is calculated based on a key informant's values for different cost and income items. ***Table 24*** presents the estimated monthly income of such a fish dealer. It shows that a fish dealer that sells Mukene fish fresh makes more monthly income (2,240,000UGX) than the one who sells dried Mukene (700,000UGX).

[15] Uganda: Selected Fish Landing sites and fishing communities. Survey undertaken by Fisheries Training Institute for the DFID project 'Impacts of globalization on fish utilisation and marketing systems in Uganda. Accessed at: https://assets.publishing.service.gov.uk/media/57a08cd8e5274a31e00014b2/R8112k.pdf. On June 14, 2022.

INCOME FROM FISH PRODUCTION	UNIT	AMOUNT
Fish harvested in one night trip to the Lake	Basins of fresh Mukene OR Basins of dry Mukene	Dry Mukene: 4 OR Fresh Mukene: 6
Fish harvested in one month **	Basins of fresh Mukene OR Basins of dry Mukene	Dry Mukene :14*4=56 OR Fresh Mukene :14*6 =84
Gross Revenue from fish in one month Min.50,000UGX @ basin Max. 60,000UGX @ basin		Dry Mukene: 56*55,000=3,080,000UGX OR Fresh Mukene: 84*55,000=4,620,000UGX
Items used in one night: Paraffin, Petrol, kitambi-occasionally on replacement of the following-jet, mulingiti, needle and lamp replacement.	Various prices	Min. 150,000UGX
SUBTOTAL ITEMS USED IN ONE MONTH		**MIN: 150,000*14 = 2,100,000UGX**
Cost of boat hire per night	Standard amount	10,000UGX
Cost of laborer (that harvests the fish) hire per night	Standard amount	10,000UGX
SUBTOTAL COSTS OF HIRING PER MONTH		**20,000UGX*14 = 280,000UGX**
TOTAL COSTS OF PRODUCTION PER MONTH		**280,000+2,100,000 = 2,380,000UGX**
NET INCOME		**MIN: 3,080,000-2,380,000 = 700,000UGX (DRY MUKENE) MAX: 4,620,000-2,380,000 = 2,240,000UGX (FRESH MUKENE**

Source: KII, Dei Landing site, Feb 27, 2022

** You operate for 14 nights at most

Table 24. Net monthly income from fishing at Dei landing site on Lake Albert, Pakwach

◇ AVAILABLE FINANCIAL SUPPORT

The District production grant, DDEG and NUSAF-3 has supported community with fish cages; NAADS/ OWC distributed Tilapia fingerlings; LEAF II project of MAAIF constructed a modern market and access road at Dei Landing site while the Embassy of Iceland expanded the fish market in Panyimur.

The fish cages and Tilapia fingerlings may result in increased fish production and the market infrastructure established will provide improved access to marketing facility. However, there is reduced trade in the fish due to the GOU restrictions. A community member puts it like this:

"A certain company was supporting us (our group) with Solar technology (for fish drying), however there are no more fish markets (since the GOU restrictions started). And you know, most profit is at the market"

KII, Dei Landing Site, Feb 26, 2022

Therefore, one of the consequences of the GOU restrictions is that all efforts being made in the fisheries development will become counterproductive if the social aspects continue to be ignored. However, it is these men and women who have ceased to trade in fish that were using the fish market in Panyimur; and would use the modern market constructed by MAAIF. For as long as there is no ready market for fish,

it implies that, for instance, all Mukene fish harvested can only be sold in form of dry fish as there is none to buy it fresh. But the income from dry fish selling is very little compared to fresh fish selling (See ***Table 24***).

GOU has the Youth Livelihood program and the Uganda Women Empowerment Program that targets supporting youth and women through availing direct financial support. However, current data showed that only one youth group in Nyamutagana was supported with 12,200,000 for a motor boat engine project and no women's group was supported. The one women group known as *Merber Kuyello Fish Mongering Group* supported by UWEP which received UGX 7,100,000 is located in Singla A' village of Nyakagei Ward of Panyimur Town Council.

While the GOU restrictions are well intentioned- to ensure sustainable Lake Albert fisheries resource exploitation- GOU's failure to put in place safety nets for the fishing communities that depend on this lake for their livelihood. Currently there is no focused and well-coordinated financial mechanism to support these communities in complying with the GOU restrictions. It is not focused because the issue of fishing community incapability to afford the cost of compliance is not being addressed although there are interventions towards development of the fisheries subsector. The fact that these interventions are scattered amongst various institutions which are not even coordinating with each other implies that the finances may be invested in locations and/or population segments other than those that need it the most.

It is no wonder then the fishing community are complaining of loss of livelihood:

> "*Fishing supports households to pay school fees; it helps orphans of 12-15 years old to be employed on mending the Mukene (silver fish) net; even the youth either fish or sell fish and earn income that helps them met their needs. However, from October 2021 up to now GOU has put in place very strict rules being enforced by UPDF. The latter burn boats and nets; we no longer have a source of living.*"
>
> KII, Dei landing site, Feb 27, 2022.

Ensuring that these small scale fishers and fish traders continue to fish and have a livelihood from the Lake Albert is important and in line with the SDG goal of "leave no one behind".

IMPACT OF GOU ON GOVERNMENT

While we focused on the negative impact of the GOU regulations on the community's livelihoods, there is another dimension to this: the negative impact of the GOU regulations on government. The dei sub county's local revenue generation has been highly impacted.

According to figures from the sub county, the following is the status:

"*Dei landing facility charged 1,200,000UGX now it is charging 1,000,000UGX; Kayonga used to charge 30,000UGX now it is charging 0UGX, and Nyamutagana charged 35,000UGX now it is 0UGX. This has translated into a loss of 26,000,000UGX annually in revenue. And yet, last year we all got a budget cut of 40% and the situation is the same this year. Now, there is no fishing on the lake but simultaneously due to the drought all farmers' crops dried out.*"

With the above status of things, even the sub county that should have been the refuge of the fisher folk has been left totally incapable of supporting the community. And worst of all, agriculture which is and has always been a fall back for all Ugandan's is severely affected now by Climate change.

ACCESS TO, AND USE OF, LAKE AND FOREST RESOURCES

LEVEL OF ACCESS TO LAKE ALBERT AND FORESTRY RESOURCES

Less fisheries respondents compared to forestry respondents have access to the respective resource. 92% of the forestry respondents compared to 63.3% of the fisheries respondents answered in the affirmative to the question "Do you have access to the Forest/ Forest resources and Lake Albert water-based resource?" See ***Figure 20***. This is consistent with the previous finding that less than one fifth (18%) of the forestry respondents had experienced any forest based conflict in the last 3 years.

FACTORS OF LACK OF ACCESS TO LAKE ALBERT FISHERIES

The strict GOU regulation had the highest respondents

Figure 16. Brycinus nurse (Ragogi) dried on nets spread out at Dei Landing site

Figure 17. Mukene nets spread out on Dei Landing site

Figure 18. Recommended GOU net size (held by youth)

Figure 19. Lake Albert, Dei Landing site as seen from ED office in Luli village

Figure 20. Do you have access to the Forest/Forest resources and Lake Albert water-based resources?

(36.4%) followed by 18.2% who cite lack of funds to buy GOU recommended equipment; another 18.2% do not have the recommended equipment for fishing and another 18.2% say the cost of the available equipment is a prohibitive (See **Figure 21**). The last three reasons for lack of access to Lake Albert fisheries are interlinked because they all emanate from the requirements of the first reason, that is, strict GOU regulations slapped on the Lake Albert since October 2021. Considered together then, the GOU regulation and the effects of it have rendered 91% of the respondents to have no access to the Lake Albert fisheries resources.

◇ ADDITIONAL CHALLENGES BEING FACED BY THE FISHER FOLK

In addition to the prohibitive costs associated with purchasing a boat, or complying with GOU regulations in full or adopting the regulations at minimum, these challenges are being faced by the fishing community:

> *"Lamps get lost during a night of fishing;*
> *Strong winds tend to crack the boats;*
> *Nets need to be replaced every 3-4 months;*
> *During the days when the moon is out you cannot fish- a custom of the fishing community;*
> *Fishing license is 200,000UGX per annum;*
> *Workers also pay a license of 50,000UGX per year".*
>
> Source: KII, Dei landing site, Feb 27, 2022

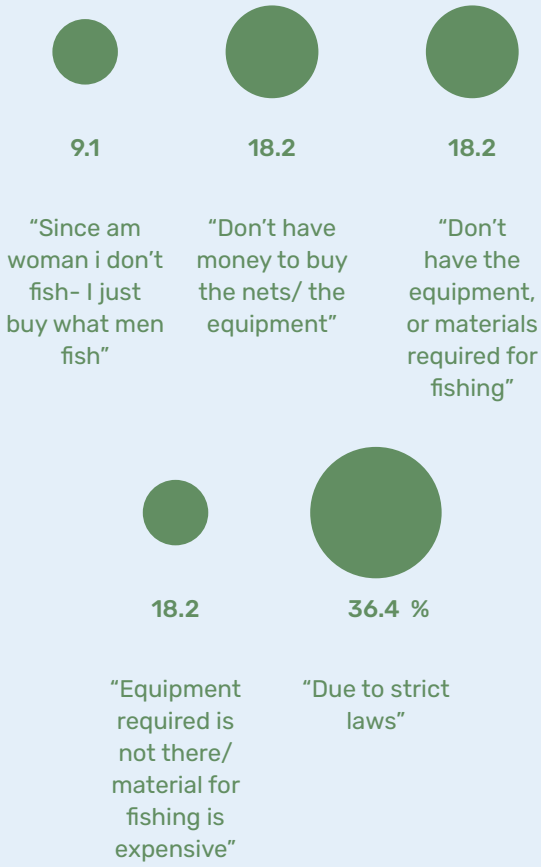

Figure 21. Factors of lack of access to Lake Albert fisheries resource

> *"Theft of nets by other fishermen*
> *Waterborne diseases e.g. Bilharzia and Amoeba*
> *Water hyacinth, in its season- this causes nets to get lost during fishing trips*
> *Lack of financial resources to enable the fish traders purchase the GOU recommended net sizes".*
>
> Source: Men FGD at Dei Village, Feb 27, 2022

◇ FACTORS OF LACK OF ACCESS TO FORESTRY RESOURCES

92.6% of the forestry respondents gave 'No response' to the issue of access to the forests. Only 4% of the respondents named National Forestry Association's protection of the forest as a factor hindering them from having access to the forest or it's resources.

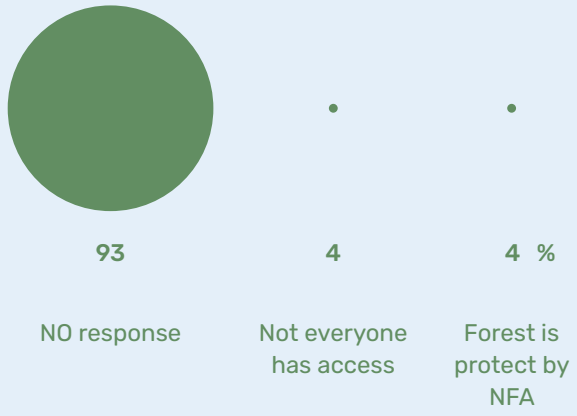

Figure 22. Factors of lack of access to (Luli Central) Forest resource

Uganda, through the NFA, has adopted Collaborative Forest Management (CFM) as a co-management model for Uganda's Forests. CFM aims to establish a mutually agreed upon and beneficial relationship between an eligible local community group and the governing authority of either a Central Forest Reserve (CFR) or a Local Forest Reserve (LFR) i.e., the "responsible body". The National Forestry Authority (NFA) is the "responsible body" for CFRs, and LFRs fall under the jurisdiction of district local governments. Under the terms of a CFM agreement, the CFM group takes on specific responsibilities, for example, forest patrolling and management, in exchange for specific benefits, for example, access to forest resources and forest land for tree growing. The responsible body, in turn, takes on the responsibly to support the CFM group and respect and deliver on agreed benefits. CFM is grounded in shared roles/responsibilities, rights, returns (benefits) and relationships – the '4R' framework. [16]

The validation exercise confirmed that Luli Kayonga Central Reserve Forest is under NFA. It further clarified that the community does have access to the forest. It is under an arrangement of NFA licensing community forest groups to use the forest. Thus, a member of Bidokomit Forestry group gave the following clarification:

> *"Luli Kayonga forest is under NFA. But you have to apply for use of the Forest and NFA gives you a license. You state, in your application, the number of acres you want to use. They give it to you. You plant the trees. Then when they reach the time of maturity and you are ready to sell, you have to inform the Executive of NFA that 'we are selling. They let you sell but 15% of the revenue goes to NFA."*
>
> Chairperson, Bidokomit Community group, Validation workshop, Dei, July 18, 2022

The Validation workshop also confirmed that there is no conflict with this government entity on the use of the forest resource. A member of one the benefiting groups did state the following:

> *"The Data on Forestry is correct. There is a good relationship we have with government/ NFA. The only problems we are facing is that of lack of seedlings; and government has only one Patrol Officer who is patrolling 4 forests. So the trees get stolen."*
>
> Bidokomit Group member, Validation workshop, Dei, July 18, 2022

ACCESS RIGHTS TO THE FOREST AND ITS RESOURCES ◇

It appears that the forest resources in Dei are largely under private ownership. Hence, over half of the respondents (52%) report that private owners; just under one fifth (19%) said Public Agency officials; 18% think it is the women and children of the community; and, just over one tenth (11%) of the respondents said it was the men in the community who have access rights to the forests and its resources.

In the perspective of the respondents, private forest owners have the highest control rights (48.1%) and ownership rights (44.4%), while men, women and children in the community have less least control over (7.4%) and ownership rights (7.4 %). This implies that most of the forests in Dei are under individual tenure. Since a private forest cannot be co-owned with others, then the rest of the forests that are not under public control and ownership and tenure are 'communal' forests i. And the very low percentages may point to the fact that such 'communal' forests are very few in the community. This has important implications that need to be considered in order to apply the appropriate interventions in a forest landscape restoration program.

[16] https://www.nfa.go.ug/images/A_REVIEW_OF_COLLABORATIVE_FOREST_MANAGEMENT_IN_UGANDA.pdf . Accessed July 21, 2022.

Figure 23. Different stakeholders access rights to forests in Dei

Figure 24. Distribution of different stakeholders' ownership and control rights to forests in Dei

GENDER EQUALITY

GENDER ROLES IN FORESTRY VALUE CHAIN [16]

Non community forests management.

Over half (55%) of the respondents say that women and youth are providing labour including digging, weeding, watering trees. Tree planting which is also a labour service is by 4% of the respondents. Considered together, almost two thirds of the respondents (59%) report women's and youth's roles in forest management as typically in the production segment of the forest value chain. Well under one tenth (4%) of respondents report of women *carrying timber*; a task in the harvesting segment of the value chain. These gender roles seem to apply to the privately owned forests who naturally will employ women and youth to provide them labour for the maintenance of their forests.

Luli Layonga CRF, Community groups' forestry value chain.

The validation workshop further availed information on the roles of women in the community forestry groups. One of the members of Bidokomit reported women's roles as follows:

> *"Women play an important role. For us in our group we are 31 members. So the women in our group perform the following roles: transplanting the seedlings from the nursery beds to the main garden; planting the seedlings in the main garden, watering the seedlings, and preparation of tea for all the workers in the tree garden."*
>
> Chairperson, Bidokomit Community group, Validation workshop, Dei, July 18,, 2022.

However, different from the women in the privately owned forests, under the forestry groups, women are also elected to sit on and therefore make decisions in the Market Committee. Asked on the issue of financial management, after the sale of the forest products, the group Chairperson submitted as follows:

> *"We have a budget and that will consist of the activities we want to undertake hence allocate money to. So after the sale, we hold meetings to decide on the following (a) the*

[16] The value chain of a product simply "describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services, delivery to final consumers, and final disposal after use") (Kaplinsky and Morris 2001:4).

money we need for re-afforestation, (b) money to pay the annual ground rent of 15,000UGX per year; and then (c) what money remains to be divided amongst us members- and we ensure that we all get equally.."

Chairperson, Bidokomit Community group, Validation workshop, Dei, July 18, 2022.

By the above submission, it is appears that women in the community forest groups are not confined to just the production segment but the entire value chain of forestry and that they are also equal decision makers with men in the use of the revenues of the forestry value chain. This is a good model, it at all it is being implemented as reported by the Chairperson. [17]

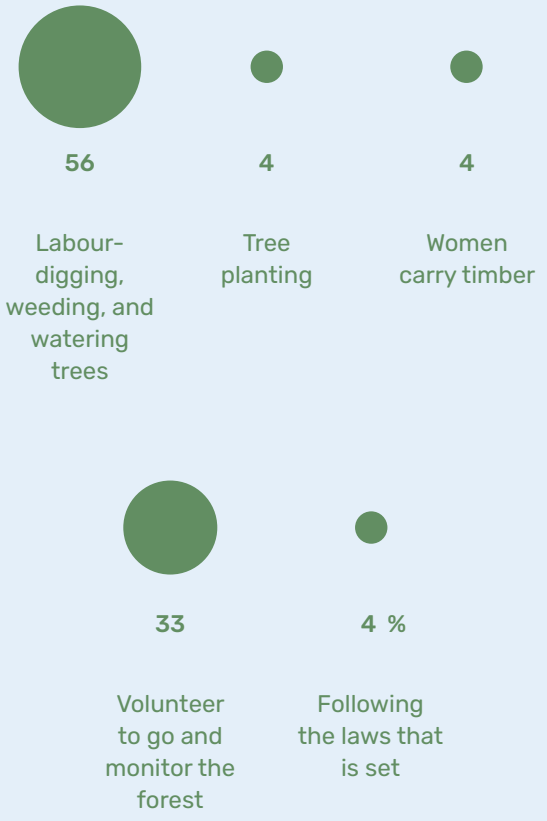

Figure 25. Gender roles in the forestry value chain

[17] The Evaluation was unable to independently verify this information as it had no access to the women members of Bidokomit group. ED may want to probe into this later.

GENDER ROLES IN TREE SEEDS COLLECTION, BANKING, STORAGE AND RELATED ACTIVITIES

Although tree seeds collection, banking, storage and related activities are still on small scale- having been introduced in the community by a project implemented by ED, in the households of respondents involved in these activities, well over two thirds (67%) report that either wife or husband while over one fifths (23%) answered 'none'. The 'none' category includes persons outside of the family that may be performing these tasks of seed variety protection (See ***Figure 22***). This means that the activities of tree seeds collection, banking, storage are mainly the responsibility of the women, in case the men have other obligations in or outside the home of greater priority to them. This may result into a greater burden of work on the women in these households.

GENDER ROLES IN MANAGEMENT OF LAKE ALBERT FISHERIES

n the management of the Lake Albert water and resources women and youth roles are reported in two areas: (a) legal compliance (See ***Figure 27***); and, (b) sanitation. Under legal compliance, 57% say they play a role in 'compliance to law' and the rest say they are in 'report bad fishing'.

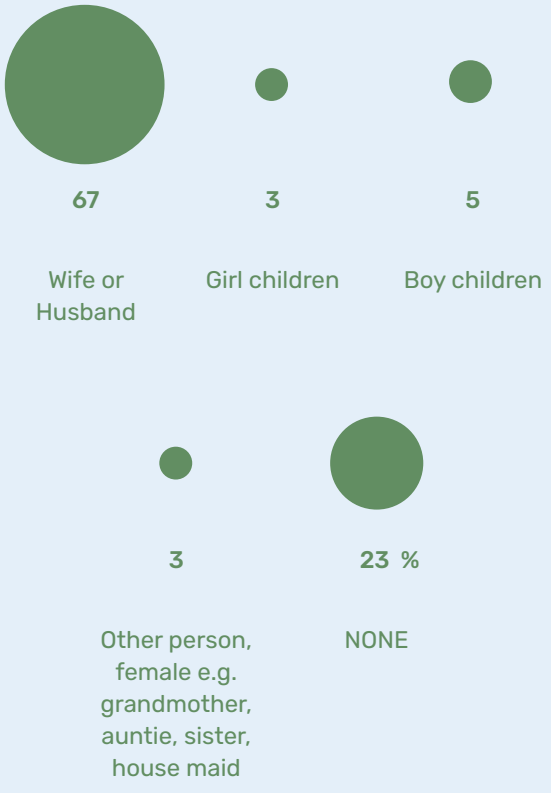

Figure 26. In your household, who primarily performs the tree variety protection activities(seed collection, banking, storage, other)?

With regard to their role in sanitation activities, almost half (47%) of the respondents report that they are involved in 'managing waste disposal'; 21 % said they are in 'promoting good hygiene'; 16% say they are in 'influence of the community in good sanitation'; and another 16% said they were 'monitors of sanitation activities'.

Figure 27. What role do women and youth play in the management of the Lake Albert water resources?

Fisheries play a significant and important part in the economy of the country contributing to foreign exchange, food security and employment creation (Ikwaput, 2003). [18] The purpose of fisheries management is to ensure conservation, protection, proper use, economic efficiency and equitable distribution of the fisheries resources both for the present and future generations through sustainable utilization.

Fisheries management involves a number of tasks, which include policy formulation, resource estimation, access rights, harvesting regulations, market regulations, monitoring, control and enforcement (Ikwaput, 2003). There are at-least six key tasks that can be shared between government and the resource users in the development and management of fishery. These include: (a) Assessment of the state of the fishery; (b) Setting management objectives; (c) Selecting management measures; (d) Allocation of fishing rights (licensing) (e) Monitoring and control; and, (f) Enforcing of regulations (Ibid). Under selecting management rights, Uganda has adopted the co-management approach having failed to achieve the objectives of sustainable water resource exploitation through a centralized approach to fisheries management. Through the co-management approach, GOU uses the Beach management Units (BMU) to manage the fisheries resources at each Landing site.

These BMUs are made up of the BMU Assembly and the BMU Committee that it elects. The BMU Committee is responsible for the day to day running of the BMU (EAC, 2005). [19] The BMU Assembly consists of: boat owners, crew members, managers/supervisors, chatterers, artisanal fish processors and traders, fishing gear and equipment dealers /repairs, boat makers, agents of industrial fish processors and other fisheries related institutions operating at the particular beach (ibid). The BMU Committee will have 9-15 members democratically elected by the BMU Assembly. The representation of the BMU committee should be as close as possible to the following distribution: (a) 30 % boat owners; (b) 30 % crew (fishing labourers/barias who do not own boats); (c) 30% other stakeholder groups (including fish processors, boat makers, local gear makers or repairers, fishing equipment dealers and managers); (d) 10% fish mongers/traders (ibid). Amongst the many roles of the BMU is to 'Undertake Monitoring, Control and Surveillance in collaboration with the relevant authorities'; and, 'Improve sanitation and hygiene at landing sites'.

According to the Fish Quality Assurance Guidelines, the roles of women and youth's as per the baseline data would suggest that this gender is contributing to the BMU fulfilling it's role in 'Improve sanitation and hygiene' at landing sites, as well as in monitoring, control and surveillance. How this is exactly is a matter for further research.

However, during the validation workshop, it was clarified that although the Beach Management Unit has ever been formed, after some time, it was changed to Landing site Committee. It is not clear, whether the former roles, responsibilities as well as other guidelines that BMUs operated on were maintained or revised. Initially, there was division on whether the BMU's performed their task. Although some stakeholders thought that BMUs did not achieve anything, one of them was able to provide insights into the issues around the BMUs as follows:

"BMU was formed to reduce the illegal fishing. This role has now been overtaken by the Fish Patrol Unit (FPU). BMU were not empowered to control illegal fishing. They were

[18] A paper presented at the International Workshop on Fisheries Co-Management on Lake Victoria. Kisumu -Kenya 7 -9 October 2003.

[19] EAC, 2005. Guidelines for Beach Management Units (BMUs) On Lake Victoria. Version Approved by Executive Committee and Policy Steering Committee.

ANNEX IV FISH QUALITY ASSURANCE AND SANITARY GUIDELINES FOR THE BEACH (EAC, 2005)

1. Requirements for Handling Fish : a) Fishing vessels and fish transport boats shall always be cleaned and well maintained; b) Fish transport boats shall not be used for transport of people and other cargo; c) Fish shall be handled properly to prevent contamination, spoilage and preserve wholesomeness; d) Fish shall not be placed on the bare ground/dragged along on the ground; e) Fresh fish shall be properly iced after catching, transshipment and during transportation in clean containers; f) Persons handling should not have open wounds or cuts in the hands and rest of body. g) Should have a health certificate.

2. Requirements for Fish Landing Sites: a) There shall be sufficient toilet facilities for operators at the fish landing site; b) There shall be portable water; c) There shall be suitable unloading, display, and landing facilities for fish which shall be kept clean; d) There shall be suitable and clearly marked areas for waste disposal.

3. All persons at the beach shall use toilets for human waste disposal.

4. BMU shall establish and maintain hygienic and sanitary conditions in the beach.

to preach the fishing policy to fishermen. This they did, thereby they fulfilled their role…"

A leader of the community, Validation workshop, Dei, July 18, 2022.

In conclusion then, with the termination of the BMU, and the replacement of the former with the Landing site Committee and overtake of some of the BMU roles by FPU, it may well be that women's and youth's role in the management of the Lake Albert resources is currently non-existent.

◇ GENDER ROLES IN THE FISHERIES VALUE CHAIN

The men FGD in Dei village were asked about the role of women in Fisheries. This is the feedback they gave:

"*When the boat return it is the women who process the fish: they smoke it, sun dry it, salt it and then take it to the market*"

Male FGD participant 1, Dei Village

"*Some women own boats*"

Male FGD participant 2, Dei Village

"*The money from the fishing, women use it for farming… get food for the family*"

Male FGD participant 3, Dei Village

"*Women advance money to fishermen due to the great competition for the fish catch. When the fishermen deliver the fish she sells it*"

Male FGD participant 3, Dei Village

"*Women work very hard. Women have brought a machine into this community- a solar drying machine. They have a kiln. They should be given additional funds to operate these machines. Two women groups are involved: Kwer Kabacayi Women Group and Cwara Nguta women Group*"

Former Landing site chairperson, Dei village.

According to the categorizations of the Beach Management above, it can be said that women are participating in the fisheries as: (a) boat owners; (b) fish processors; and, (c) fish mongers/ traders.
The implications of this are as follows:

(a). Women's *hard work* attracted Development partners to support the community by establishing fish processing facilities. NUTRIFISH supported a fish kiln in 2018; and MAAF through a NARO project supported another women's group with kiln in the same year.

However, the women also highlighted the challenges they are facing with full utilisation and benefit from these facilities:

"*These machines are useful only for big fish. However, we have no money for the big boats and the required net sizes. Therefore provide us with funds to buy the equipment*"

Women FGD participant 4, Dei Village, Feb 27, 2022.

They also said thus: "*The funds also enable us to hire workers that will process the fish as well as for buying fish from other fishermen*"

Women FGD participant 2, Dei Village, Feb 27, 2022.

Therefore, an attempt was made to make a budget for what their group may need in order to fish the big fish, hence be in position to utilize the machines they have acquired. ***Table 25*** presents the revised estimates, adjusted as per feedback from the Validation stakeholders. It shows that at least 46 million Uganda shillings would be needed for them to operate a fish production project that will feed into the fish processing facility given to them. This kind of money can only come from Financing institutions or, government/NGO projects specifically targeting women's empowerment.

Figure 28. The kiln of Kwer Kabacayi Women's Group – funded bu a NARO project

THE KWER KABACAYI' FISH DRYING MACHINE INCOMPLETE STRUCTURE

Kwer Kabacayi Women's Group: Consisted of 50 members but after the flooding of Lake Albert, members were scattered and also the impacts of COVID-19 made members to reduce on their saving. Currently are only 28 members. They still need to finish the structure. Requirements include: 5,000bricks, 27 bags of cement; 10 bars for Reinforcement; 8 Stirrups, 4 kg of binding wires; 48 pieces of Iron sheets; 65 pieces of Timber, 6 trips of sand and 2 doors. There is no money to complete because of the reduced number of members.

ITEMS DESCRIPTION	AMOUNT (UGX)
Purchase of Boats : need 2 boats- one for Muthiri and Ragogi; and one for bigger fish like Tilapia and Nile Perch	2* 2,500,000 = 5,000,000
Purchase Nets: need 7 Longers, @ piece of Longer is 180,000UGX @ boat needs 20 fleets	2*20*180,000 = 7,200,000
Purchase of Pressure Lamps: 4 pieces per boat	2*4*130,000 = 1,040,000
Purchase of Engines	2*9,000,000 = 18,000,000
TOTAL	**31,240,000**

Source: Calculations are based on Women FGD participants' information

Table 25. Estimates of funds required for the women group to produce enough fish for the fish processing plants they were supported with.

Figure 29. The fish drying machine for Mukene of 'Cwara Nguta' Women's Group funded by NUTRIFISH

Figure 30. The local fish drying kiln: Inset is the fish (Onangnang) drying from the smoke of the kiln

(b). The negative effects of the GOU regulations have hit women hard just as it has hit women. A woman from the Women FGD held in Dei narrates her experience of the impact of GOU regulations on her:

"*I used to buy and sell fish. I used to invest in boats. But now the boats are being burnt. You need to look into that... farming is not an alternative as there is no rain. The soil is dry*"

Woman FGD participant 1, Dei Village

Another woman confirms this by saying: "*I used to have a boat in the Lake. They burnt it. It has been very difficult to get school fees. I used to put my money into farming but due to no rain it is hard*"

Woman FGD participant 1, Dei Village

Women put forth certain proposals to stakeholders on how they prefer to be supported as women in Fisheries. These include the following:

"*Capacity building to the women groups on the following: steady production of the fish, marketing, savings; and financial management*"

Women FGD participants 1&5, Dei Village, Feb 27, 2022.

"*To be linked to market for the products. The products expected from operating the acquired machines are free of smoke that causes harm to human health; they are better quality Mukene and of higher shelf-life; and other products such as powdered Mukene will also be produced. There is need to find a market for these higher quality products...not to take them to the same market as the poor quality Mukene currently at the Landing site*"

Women FGD participants 1, Dei Village, Feb 27, 2022.

"*Farming should also be promoted so that we do not depend only on the fishing livelihood. The issue is to address the commodity prices: last year people abandoned cotton because when they harvested the price was so low ; similarly maize, gnuts had no market*"

Women FGD participants 6, Dei Village, Feb 27, 2022.

GENDER IN AGRICULTURAL PRODUCTION

In Luli Village, the men identified the key crops as including: cassava, maize, sweet potatoes, ground nuts, pumpkins, soybeans, rice, yams, *Lalang*, beans and simsim. Luli village is located in a part of Dei Sub County where the majority of the men are landowners.

FGD PARTICIPANT	MAIN OCCUPATION	ACREAGE OF LAND RENTED	CROPS PLANTED AND COST OF LAND RENTED
Matilda Tolit, 65 years old,	Farmer	0.5 acre	Maize and Groundnuts 60,000UGX
Kabot Annet, 40 years old	Hairdresser	1 *musiri*	Cassava and Groundnuts 40,000UGX
Ayiorwoth Joyce, 29 years old	Fish Monger (seller)	1 acre	Cassava and Groundnuts 40,000UGX
Christine Iracan, 32 years old	Farmer	1 acre	Cassava, Beans and Groundnuts 100,000UGX
Kawambe Scovia, 28 years old	Fish Monger (seller)	1 acre	Cassava, Groundnuts, and soya beans 120,000UGX
Kacwinyrwoth Mercy, 25 years old	Fish Monger (seller)	1 acre	Cassava and Maize 100,000UGX
Giramiya Nadia, 16, years old	Fish Monger (seller)	Has land (family land)	Groundnuts and maize
Mungucwiyo Francwazi, 37 years old	Farmer	0.5 acre	Ground nuts and Maize 40,000UGX

Table 26. Land rent rates in Hoima Parish as reported by women FGD participants

However, feedback from the Men FGD of Luli village said that cotton, tomatoes, maize and cassava were a problem in Dei:

> *"Some cotton cannot work here. For the last 3 years cannot grow cotton; also, tomatoes are a problem. We need good seed for cotton and tomatoes"*
>
> Male FGD participant 1, Luli Village, Feb 26, 2022.

> *"As for maize, the current type is vulnerable to pests-weevils"*
>
> Male FGD participant 5, Luli Village, Feb 26, 2022.

> *"Even Cassava does not yield well. The current variety which is of 6 months' maturity period is not good. We prefer the ones of year's maturity, that is, the local variety"*
>
> Male FGD participant 7, Luli Village, Feb 26, 2022.

Hoima Parish is the location of Dei Landing site. In this area, there is a mix of population: immigrants that moved into the area to participate in fishing activity and the indigenous people. The latter are the landowners while the former have to buy land to be able to own it. Even so, the women FGD participants of Hoima Parish, pointed out that due to scarcity of land they rent each season in order to grow food for their households. An inquiry into how they rented land last season yielded the ***Table 26***. In general an acre is rented for between 100,000UGX to 120,000UGX and half an acre goes for 40,000 to 60,000UGX per season. The important crops grown in Hoima parish are: cotton, cassava and groundnuts.

In Hoima Parish, the men tend to be in groups. For instance, there is this group which initially had 30 members. The association is composed of more middle aged men 73.7% (14) than Youth 26.3%(5).
Some of the members migrated into Dei Sub County from other parts of Uganda areas including Buliisa, Parombo, Erusi and others. See ***Table 27***.

These men, just like the women of Hoima are also faced with the problem of land scarcity. Those that hail from the area may have the advantage of also having access to land as opposed to those that have migrated into the area. Unless the latter have purchased such land out of the incomes earned from the fish business. For those that have not purchased, they may rent land for farming. Otherwise, they usually become nearly destitute in the absence of a booming fishing business under the current GOU regulations introduced since last October.

NAME OF THE GROUP MEMBER		REMARK
Ajamugisa Gerald	Youth	Came/ migrated to Dei
Okaba	Youth	Came/ migrated to Dei
Aruse	Youth	Came/ migrated to Dei
Ageno Charles	40+	Came/ migrated to Dei
Bidoko Patrick	Youth	Came/ migrated to Dei
Ageno Fred	Youth	Came/ migrated to Dei
Osaga Alfred	38+	Came/ migrated to Dei
Ofoyuru Solomon	40+	He hails from Dei sub county
Opar Fundi	40+	He hails from Dei sub county
Ojone Wafula	40+	Came/ migrated to Dei
Mukama Geoffrey	40+	He hails from Dei sub county
Mejose	36+	Came/ migrated to Dei
Olar	40+	Came/ migrated to Dei
Oceke M	40+	Came/ migrated to Dei

Table 27. Fishermen/fish monger association demographics

◇ CHALLENGES WOMEN AND MEN ARE FACING IN AGRICULTURAL PRODUCTION

During the FGDs held in Luli and Hoima villages, the men and women shared the following challenges in their agricultural production efforts. ***Table 28*** shows that Rainfall variability which is an effect of climate Change is a key constraint in agricultural production in both Got Rau Parish and Hoima Parish. This is followed by lack of land and inputs but this is based on location within the Sub county.

RAINFALL VARIABILITY/ CLIMATE CHANGE
"There is persistent lack of rain. This is how rainfall availability has changed. In 2010 Season would start from end of February until end of May; June would be harvesting. The second season would commence from July up to November then in Dec up to January people would be harvesting" Male FGD Participant 5, Luli Village, February 26, 2022. *"But now, for instance last year (2021) season one (1) started in April and lasted up to July; August was used for harvesting. Then season 2 started September ending in November. December was dry but there was very little harvesting in December. Now (this year), the rains have delayed...season 1 is expected from March may be up to May... We need irrigation"* Male FGD Participant 7, Luli Village, February 26, 2022.
DROUGHT/CLIMATE CHANGE
"We are also challenged with too much sunshine. Therefore, a project supporting Irrigation systems is relevant for us so that we can produce crops during the dry season too" Male FGD participant 1, Hoima Parish, Feb 28, 2022.
LACK OF INPUTS E.G. CERTAIN TREE SEEDS; AND SEEDS FOR SOME FOOD CROPS
"We require seedlings of the following: Kalafuru, Sufre, YaAu, Mangoes, Tooo and oranges; and seeds for cabbage, beans and groundnuts" Male FGD participant 1, Hoima Parish, Feb 28, 2022.
LAND SCARCITY IN HOIMA PARISH
"Our challenge here (Hoima Parish) is little land. On average people own 1 acre of land per household. So if you are to introduce a Seedlings project there will be need for land. The seeds for the project are available" Male FGD participant 2, Hoima Parish, Feb 28, 2022.

Table 28. Challenges in Agricultural production for both men and women in Oguta and Hoima

LAND USES AND THEIR CONTRIBUTION TO NATURAL ENVIRONMENTAL DEGRADATION

From the results of the study, half (50%) of the respondents are using land for production of Biennial crops followed by a fifth (20%) that use land for perennial crop production, and 16% using land for fruits and vegetables production. Land use for tree planting and wetlands conservation is minimal, each with only 3% of the respondents belonging to this category (See ***Figure 31***.

According to respondents the land uses that are mainly contributing to destruction of natural ecosystems, loss of biodiversity in the community are: grazing land use (34%), perennial crop production (21%), wetland conservation land use (19%) and infrastructure development land use (11%). Wildlife land use (2%), tree planting land use (4%) and biennial crop production are in the perspective of respondents contributing minimally to destruction of the natural ecosystems and loss of biodiversity (See ***Figure 32***).

EXISTING RESTORATION OPPORTUNITIES, STRATEGIES, AND THE POTENTIAL FOR FOREST LANDSCAPES AND FISHING VILLAGES

EXISTING EFFORTS IN FORESTRY MANAGEMENT TO BUILD ON

96.3% of the Forestry respondents said that there are community groups formed with the aim of improving the use and /or management of the forest and its resources. And that they were participating in the community groups. The following activities are being done in those groups: 26% do forest tree seeds collection, banking and storage, tree nursery beds, selling of seedlings; and, forest products collection and sale; 22% are in forests products collection and sale; and advocacy for forest conservation. 19% do seeds collection, banking and storage, nursery beds; and, selling of seedlings. There was low representation

Figure 31. What land uses are found in this community?

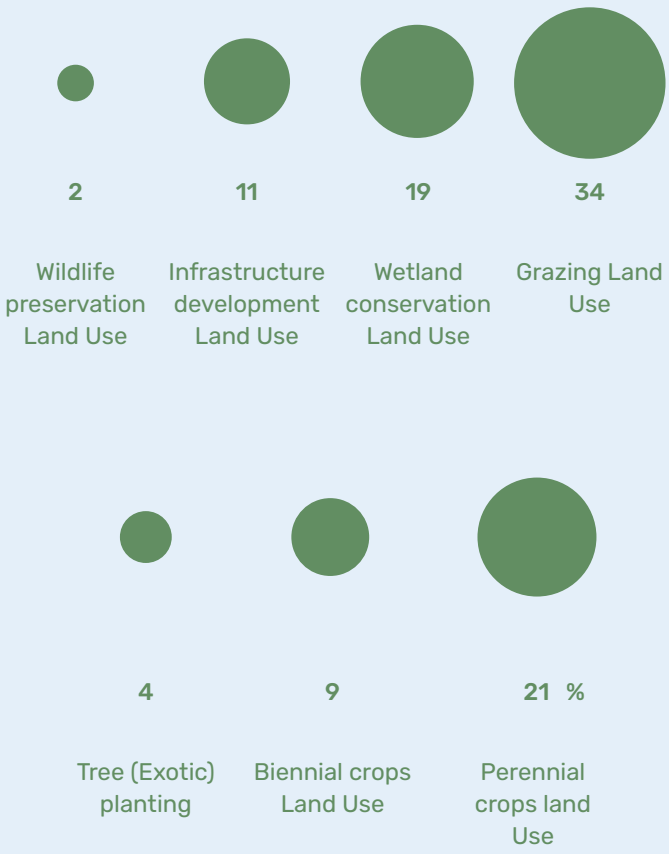

Figure 32. Which of these land uses contribute the most to destruction of natural ecosystems, and loss of biodiversity in this community?

of those in tree seeds collection, banking and storage only (4%); and seeds collection, banking and storage/ forest products collection and sale/advocacy for forests conservation (4%); as well those in nursery beds, sale of seedlings, collection of and sale of forest products, and advocacy (4%).

Seeds collection, banking and storage is an initiative of ED as part of their interventions towards environmental conservation. It is not being implemented by any other organization in the sub county. The related district and sub county efforts include: (a) 2 nursery operators trained on nursery operation; and (b) Farmers were mobilized for tree planting under the Oguta catchment tree planting project of 1500 teak trees. ED has an opportunity of utilizing the trained nursery operators to further their objectives under trees collection, banking and storage by coupling it with their acquired knowledge on nursery operation since the latter are skilled in it.

◇ APPROPRIATE STRATEGY FOR GENDER CONSIDERATIONS

On Tree planting, the Men of Luli Village made reference to a NUSAF-3 project implemented in their village in 2018. Under that project, they say, "each household was given about 5 seedlings to plant in their gardens". However, they rejected this approach to tree planting activity and instead proposed that tree planting should not be at household level. And they supported their proposal by highlighting that "we have land".

> *"But the tree planting should not be on individual basis. They used to give each household about five (5) seedlings. Do it at community level"*
>
> Male FGD participants 1, & 3, Luli Village, February 25, 2022.

By contrast, the women brought up the constraint of land for a community level activity on tree planting as the first obstacle that needs to be addressed:

> *"Tree planting is welcome but where land is an issue....we need a lot of land for tree planting"*
>
> Women FGD Participant 1, Luli FGD.

However, they converged with men on the approach of using a community or group approach to tree planting activity. Thus a woman noted: "*Yes, we know about tree planting but none of us has been involved at an individual level*". And another woman made the following proposal to the same effect: "*To get involved we can do so under our women's group on a seedlings project*". "*We would need a group land for tree planting*".

The findings on tree planting indicate that community as opposed to a household level tree planting program is relevant to this community. However, the gender dimensions are important to note: while the women raised the issue of land for the tree planting initiative, the men did not. This is related to the social norm in which men own land and control was it is used for, while women only use the land. Furthermore, in order to ensure equitable benefits sharing, it is important

Figure 29. Women participating in the Luli village FGD

"Under such a seedlings project, we would prefer to focus on timber trees and medicine trees. Examples of medicine trees are Cwaa, Otyep, Tooo, Ogal. Timber trees are Mbeni and Kalafuru"

Women FGD, Luli village.

for the tree planting project to target men and women separately. However, this would mean that land should be purchased and availed to the women while men, being landowners, may use the 'Kalulu' approach. In this approach, members of the labour group dig in each other's gardens in turns. Thus, all labour related tasks on raising seedlings, planting them, weeding, thinning etc, would be provided by the group members. However, the sale of the tree products hence revenue remains for the individual.

The IUCN study, amongst it's recommendations, makes emphasis that 'sites being proposed should have previously been under forest cover but had been degraded'. This recommendation implies that there should be a community mapping of the formerly forested areas that had become degraded and such parcels are prioritised for FLR activity. For men, those that own such parcels should be in one group but for women, it would entail purchasing such a parcel from a willing male seller and availing it to the women for the implementation of their group project on tree planting.

◇ EXISTING EFFORTS IN FISHERIES MANAGEMENT TO BUILD ON

In Fisheries, just under half (46.7%) reported that there were existing efforts towards improving the use and/or management of the Lake Albert water and it's resources. For those who reported presence of such efforts, over one third (36%) reported that the community groups were engaging in sanitation activities; almost one third (29%) said the groups are in sensitizing on hygiene and sanitation; while slightly over one fifth (21%) said that the groups are in saving and business. Only 14% said the groups are in enforcing rules and regulations around the Lake Albert (See ***Figure 30***).

However, these groups are facing challenges. According to Fishermen's Association Chairperson, who belongs to a group that commenced in 2020 the following challenges have been a barrier to progress:

> *"We started out in 2020. But the Lake Albert waters flooded the area. This brought a lot of confusion in the fishing community. Then, after the water, CORONA came...there was lockdown. After the lockdown, the UPDF marine came... burning boats and nets...So that is how the association and it's activities died out. But, it should be revived"*
>
> KII, Dei Landing Site, Feb 27, 2022.

◇ APPROPRIATE STRATEGIES FOR LAKE ALBERT FISHERIES MANAGEMENT

Since the Beach Management is the established mechanism for Lake water resources management, and the activities above (See ***Figure 34***) are part and parcel of it's activities. Therefore, strengthening the BMUs through capacity building and other relevant financial or in-kind support is the way to go.

◇ EXISTING EFFORTS IN AGRICULTURAL PRODUCTION TO BUILD ON

Amongst agriculture respondents, 70% are participating in tree planting at an individual level while 30% say they are doing so in a group context. Just over two thirds (62%) are planting trees on their own land; 15% planted trees as hired laborers on public land; and 10% planted trees as hired laborers on a private land (that is land owned by someone else in their community.
This indicates that there is ongoing agroforestry efforts within the community on which future interventions of Forest Landscape Restoration can build on.

Figure 33. What kinds of activities are being done in such (community) groups?

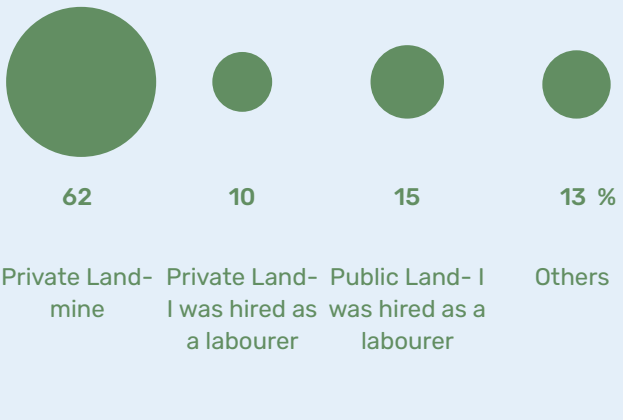

Figure 34. On which type of land did you do the tree planting activity?

◇ APPROPRIATE STRATEGIES FOR FOREST LANDSCAPE RESTORATION INTERVENTIONS

Timber and fruit trees should be prioritised in agroforestry interventions.
The evidence shows that almost half of the agriculture respondents (46%) planted timber trees; almost one third (28%) planted native tree species followed closely by 26% that were planting fruit trees.

Seeds should be made readily available.
Almost two fifths (36%) of the agriculture respondents used their own seed from their own nurseries or other seed source to plant trees; followed by almost one third (28%) that sourced seed from a Public Agency promoting tree planting; then by 21% that sourced seed from various places in different ways (See ***Figure 35***). The lowest sources of seed for respondents were NGO/CBO/FBO (8%) and private nurseries located within the community (8%). The low level of seeds being sourced from NGO/BO/FBO is an opportunity for the formation of local community groups that are dealing in seeds production and making these available to the rest of the community.

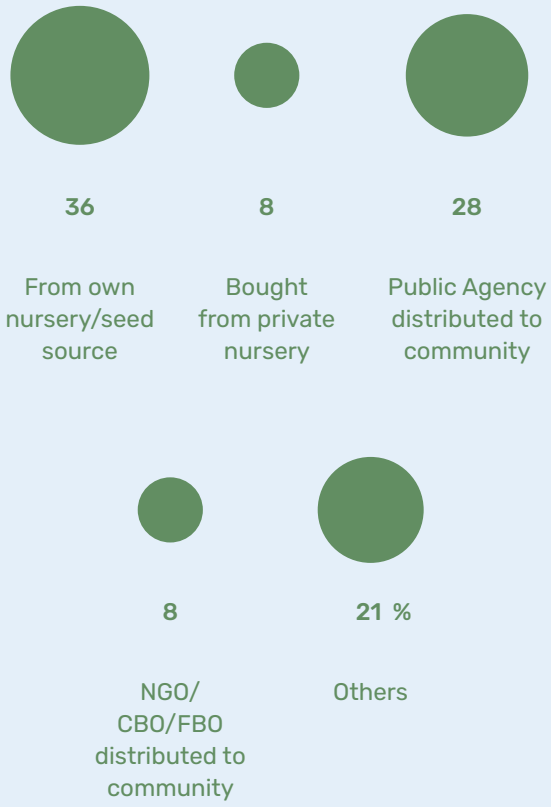

Figure 35. From where did you get the seedlings for the tree planting?

There is some existent capacity in tree management activities which can be built on and/or scaled up.
Just over one third (33%) said that an NGO in the last one year has supported them in the establishment of groups in seed collection and management. This NGO is Environmental Defenders. The NGO has passed skills in tree management activities including: two thirds (62%) that believe they have skills in tree planting, one fifth (20%) in native seed collection, banking and storage, 13% in nursery bed management and only 5% in maintaining and protecting regeneration tree plantations (see ***Figure 36***).

Other NGOs and build on this existent capacity, or learn from it and apply to their own interventions in similar projects. Environmental Defenders will have to scale up it's achievements in this so that more community members acquire these important skills in tree management.

Native seed species.
On knowledge of native tree species seeds, just over one fifths (23%) mentioned Neem; 19% mentioned Tamarind seeds; 15% mushroom seed and 10% mango seeds. The rest of the tree species, including Muthambi, Acoga, Cassia, Eucalyptus, Guava, Acoga, Osiga, Pumpkin, Otigo, orange, ovacado, Olemo and Yao had very low representation at 2% for each seed. Although most people know Neem tree seeds, it is not an indigenous tree species-it was introduced in Uganda from Uganda during the era of trying out approaches to control of Malaria in the last decade.
The generally low knowledge of native trees species seeds means that ED has to intensify it's seed collection, banking and storage intervention and ensure that includes these tree species seeds as well.

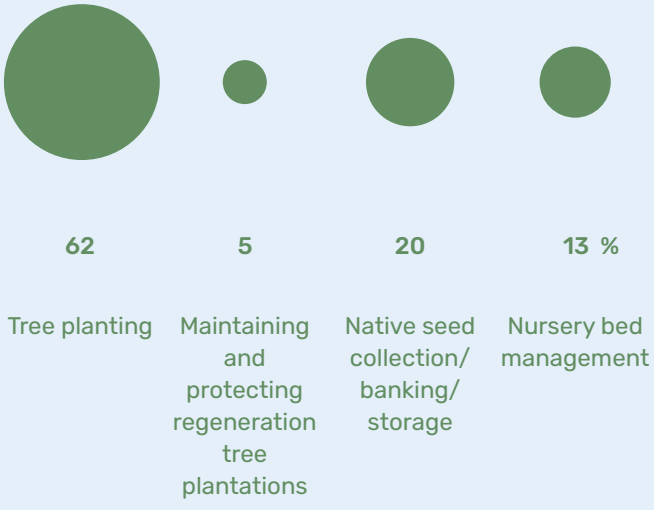

Figure 36. What kinds of activities are being done in such (community) groups?

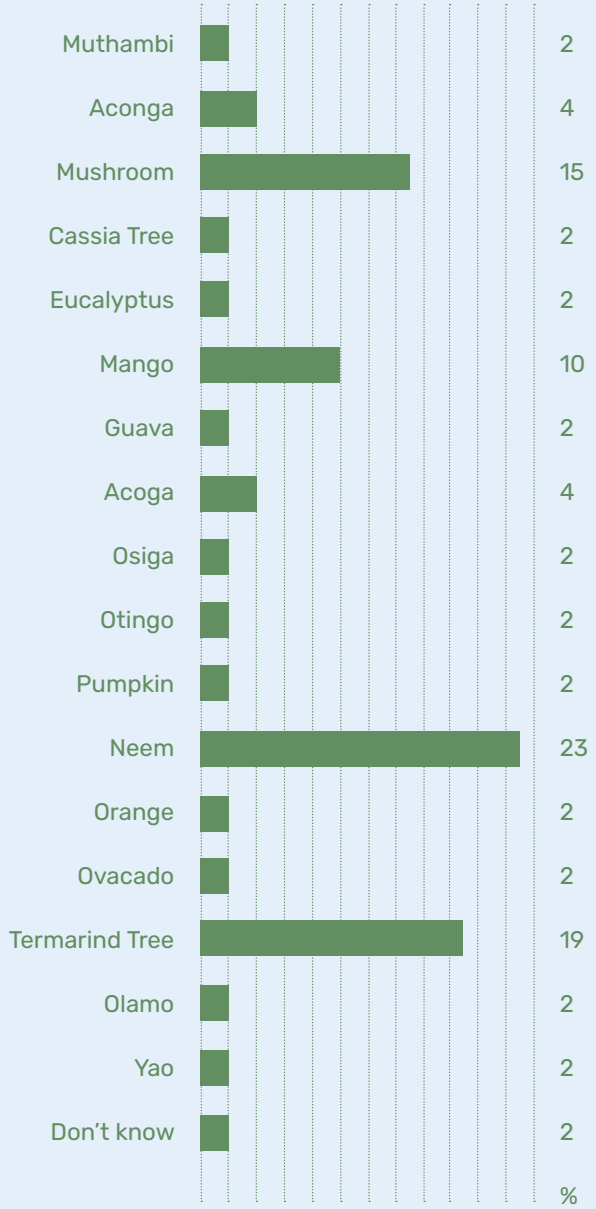

Figure 37. What native seed species are you aware of?

In Luli Kayonga Central Reserve Forests which is under NFA, there a farmers groups that are undertaking forestry activities. These groups are a great opportunity for establishing and popularizing forestry in Dei sub county. The information below consists of the feedback from the Validation workshop as regards Kayonga CRF and forestry in practice:

- There are 3 groups in Kayonga CRF: Bidokomit has 31 members; Peri Kony has 75 members; Nyakagei Parish Farmers Association has 40 members;
- There are two individuals: One Chris and Renaldo Ogwetta in Kayonga CRF;
- Due to the problem of little rain, most of the seedlings that were distributed dried out;
- Bidokomit group would like to get support to access 10 acres to plant trees;
- The practice of NAADS/OWC whereby seedlings were transported over long distances was rejected. Farmers said that the seedlings arrive with no soil on their roots hence end up drying up no matter how much they are watered;
- Land is scarce e.g. in Dei Forest, need land for planting of trees;
- "*We are a group with land of 2-3 acres: can we get support to plant trees*" Avugu Lower village;
- Odaga Alfred: "*I am an individual landowner. I am willing to sell land to a group that is doing tree planting*";
- Isingoma: "*I have land. I do not want to sell it. Instead, I would like to plant trees on it: can I get support?*"
- The district should not only focus on timber. Trees are being cut for charcoal burning. So encourage fruit trees because in 15 years we shall be able to earn from the trees even before we benefit from the timber.

From the above stakeholder feedback, 4 key issues were picked up:

- ED has a project of land purchase for land restoration. ED should begin to collect data on where land is available, and the owners are willing to sell. To this end, it was agreed that the ED team avails their contact with the Local Chairperson I leaders that attended the validation workshop so that members of the community with land could register with them;
- ED has opportunity to work with the existent community groups of farmers that have already accessed land from NFA and are doing certain forestry activities. There was a request that "*GOU should provide advisory services*". While this request was directed at GOU, ED can also provide advisory services to the above 3 groups;
- Agroforestry -the issue raised on not just focusing on timber only- is a very good entry point for establishing forestry into the community;
- Climate change, manifested in excessive dry spells, must be addressed.

BASELINE VALUES FOR OUTPUTS UNDER PROJECT COMPONENT

COMMUNITY LIVELIHOOD SUPPORT

What farmers have been trained on so far.
Just over four fifths (82%) of the respondents are participating in farmer groups in their community. Within these groups, just over four fifths (82%) were trained on 'how to make a business plan' followed by 78% trained on GAPs or CSAs; then by 69% trained on 'how to get and use marketing information'. Almost two thirds (59%) were trained on value addition; while just over a half (53%) trained on livestock production practices. Only 41% had benefited from training on required marketing standards.

Figure 38. Which training have you got as a group ?

Stakeholders offering farmer trainings in the community.
Two thirds (60%) of the respondents report that Environmental Defenders Initiative was the source of their training on the various topics noted in the preceding section. 16% were trained by the sub county Extension workers; 8% trained by another NGO; and a very small percent (4%) that got the training from their group's own initiative (see ***Figure 39***). Since the bulk of the farmers have been trained by ED, these values show the need for greater mobilizations within the group so that more farmers attend trainings on the various topics. Or, there could be a mechanism established through which the trained farmers train those who are absent and ED follows this up to ensure

Figure 39. Who give you the training?

that it has happened. Some NGOs have this approach in their community/farmer capacity building programs, and ED can learn from them.

Existence of Para-veterinary services in the community.
Well over three quarters (79%) said there is a person that offers veterinary services for small animals; 13% were not aware of such a service provider; and 13% denied the existence of this service (See **Figure 40**).

Qualifications of the said Para-vet.
Over half of those who said there is a Paravet also said the person is fully trained; 21% did not know if he is trained; the rest of the respondents 21% did not give a response to the question. Three percent (3%) said he was trained by an NGO (See **Figure 41**).
The four fifths that affirmed the presence of veterinary service provision may be those that the Vet has offered service to, or who witnessed him deliver the service to their neighbor. Since the said person was not directly engaged on his training background, there would be need to further investigate who this person is, and get the information directly from him. However, since some sections say that the said Vet was trained by an NGO, it may be that he qualifies to be called a "Paravet". What this study has established is that veterinary service is known to exist in the community

Source of agricultural production information for farmers.
37% get crop/animal production information from NGOs implementing projects in the community; 23% got it from a Lead farmer in the community. Information from formal education (i.e. primary or secondary schooling) was at (7%) of the respondents; information from sub county Extension workers; and a demonstration plot set up for farmer training both were at 5% (See **Figure 42**).

Use of improved vs. indigenous seeds for crop production
Majority (77%) use of locally saved seed for 18% use improved varieties and only 5 % use both local and improved seed.

Source of improved seeds in this community
55% source improved seed from the village agro input shop; 21% from the village COOP agro-input shop; 18%

Figure 40. In this community, is there any person that offers small animals veterinary services?

Figure 41. Is this person fully trained as a veterinary, or they were trained by an NGO/GO as a Paravet?

source it from Pakwach (over …miles away) District Town and only 5% got it from Kampala Capital city. For the local seed, half of the respondents (50%) use own saved seed followed by one third (30%) getting seed from a farmer group that is seed banking; and lastly 20% sourcing seed from fellow women who save seed.

Current methods of local seeds preservation

Men FGD participants of Luli village shared the following local methods of seed preservation:

"For the local cassava, you leave it in the garden: harvest when it is rainy, and plant it immediately"
"For Sorghum and Maize: we store heads of Sorghum and cobs of maize over the fire/cooking place in the kitchen. The smoke from cooking preserves the seeds for planting in the next season"
"With Soybean we simply pack it nicely in polythene bag- ensuring it is airtight. And it will keep fine till the next planting season"

The Women FGD participants of Hoima Parish had this feedback to share on local seeds preservation:

"The cassava variety we have right now is impossible to preserve"
"We buy simsim from the market"
"With millet, we do not have money. So what we planted we have also consumed it all so we also buy that from the market"
"For maize, we just hang it to the ceiling of the huts"
"Pumpkins- that one we get a stick and fix the seeds onto it and then hang it up, or we use a net that allows for free air circulation to the seeds"
"Soybeans – we keep it in sacks"
"Groundnuts - we store it in polythene"
"The seeds we are currently preserving are: cassava, beans, groundnuts and soybeans"

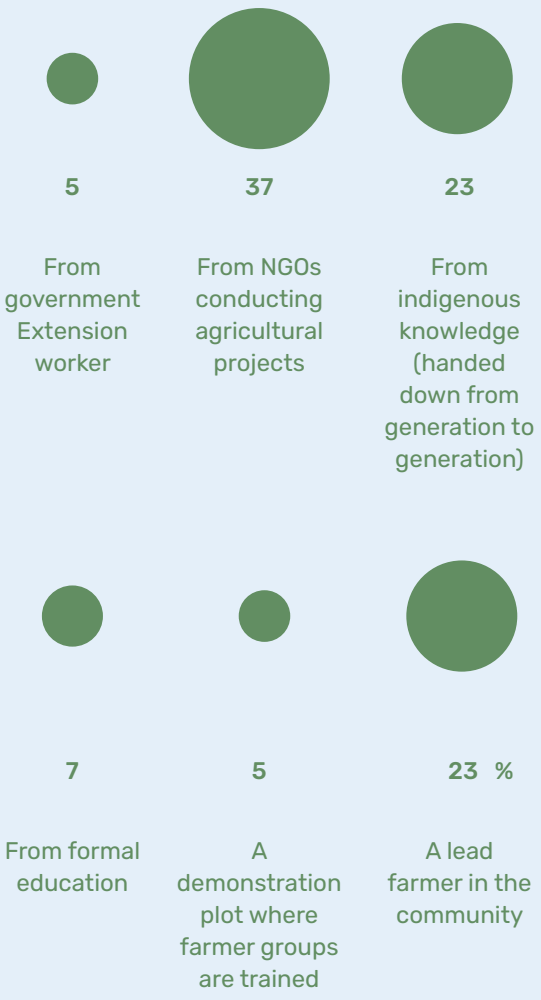

Figure 42. Where do you usually get information for crop production and/or animal production activities?

MARKETING SUPPORT COMPONENT

Almost two thirds (59%) of the respondents have participated in a market fair followed by a half (50%) that have received business coaching and then 41% that participated in an exchange learning visit. Only a quarter (25%) had participated in a farmers' clinic.

Figure 43. For the farmer group you belong to, have you ever benefited from the following?

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS ON THE ED BASELINE STUDY OBJECTIVES

KNOWLEDGE AND PRACTICES THAT DEGRADE THE ENVIRONMENT

ED's work with the respondents has resulted in the impartation of knowledge of the practices that degrade the environment with the highest level knowledge being found amongst the Forestry respondents followed by those in Agriculture and then least is in fisheries. More work is needed in fisheries and agriculture.

COMMUNITY LIVELIHOODS OPTIONS AND ANNUAL INCOMES

◇ LIVELIHOOD OPTIONS

Although respondents were engaged as forestry, fisheries and agriculture, based on the main source of their livelihoods, the bulk of forestry and fisheries respondents are agriculturalists. The difference may just be that these two have diversified their livelihood source into either forestry or fisheries. Therefore, the typical forest farmer or fisher folk is still low in number of those that ED is working with currently.
Respondents that diversified into fisheries were earning more than those that diversified into forestry implying that fishing is a more profitable enterprise. Indeed, during the validation exercise, the forestry stakeholders confirmed that forestry does not earn them as much income as compared to their fisher folk counterparts.

> *"Yes, that data (graph of forestry livelihood incomes) is correct. Someone here asked you about the evidence that the information on incomes truly represents the respondents. For me I would say that the evidence is this: just inspect the houses that we, forestry farmers live in; you will find that none of them is a permanent structure as compared to our colleagues in fisheries"*
>
> Bidokomit group member, Validation workshop, July 18, Dei.

However, with the economic crisis that has hit the country since April 2022, the fisheries stakeholders are now much worse off than the forestry counterparts. And they need urgent assistance, as of July 2022.

CONFLICT OVER FISHERIES AND FORESTS RESOURCE USE

The NFA is managing Luli Central Reserve Forest. Data showed that in the last 3 years, the community there has been no conflict based on this resource. The forestry representative at the Validation meeting confirmed that they have a good relationship with NFA. And do have access to Luli Kayonga CFR.

> *"There is a good relationship with GOU on the use of NFA because whoever wants land in the forest you simply make an application to NFA indicating how many acres you need for planting trees and they will give you a license"*
>
> Bidokomit group member, Validation workshop, July 18, Dei

With Lake Albert there is an ongoing conflict between community and GOU. GOU's action to enforce laws against illegal fishing practices on the Lake, with the aim of ensuring it's sustainable exploitation has instead bred increased costs of fishing/fish trade for the local community. Men, women and Youth whose livelihood has been and is the Lake fisheries are left without an income. GOU's action, since it's contravenes international commitments on ***Article 19*** of the United Nations Declaration on the Rights of Indigenous Peoples. Hence, it has become a violation of human rights.

ACCESS TO, AND USE OF, LAKE AND FOREST RESOURCES

The prohibitive financial implications of complying with GOU regulations have resulted in reduced access to, and use of, the Lake Albert resource. Moreover, since this constraint is in addition to other existing challenges on the Lake, the fishing community has become completely helpless. This too, contravenes the provisions of ***Article 5*** of the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas.

GENDER EQUALITY

◇ GENDER IN THE FORESTRY VALUE CHAIN

The forests in Dei are mostly privately owned. Thus women's participation the timber value chain becomes relegated to labour service provision in the production segment of the value chain. Noteworthy is that under the community forestry groups, women's participation in the Forestry Value chain is more equitable. The latter model should be carried forward.

◇ GENDER IN TREE SEEDS COLLECTION, BANKING, STORING AND RELATED ACTIVITIES

ED is commended for taking the household approach to implementing this activity. Usually, this approach ensures equitable benefit sharing between men and women at the household level. The only issue to look out for is that the woman does not become overburdened as a result of her spouse engaging in other household activities.

◇ GENDER IN THE LAKE ALBERT FISHERIES MANAGEMENT

Women and youth's activities are important in the achievement of legal compliance; and sanitation and hygiene objectives. However, the challenges plaguing landing site committees need attention; as well intentional gender mainstreaming into the functionality of these lake management structures is necessary.

◇ GENDER IN THE FISHING/FISH TRADE VALUE CHAIN

Women participate in the fisheries value chain as: (a) boat owners; (b) fish processors; and, (c) fish traders/ mongers. Any GOU action for or against any of the above segments has important positive or negative effects on women. For instance the current GOU enforcement that involves boat and nets confiscation and burning has left the women boat owners without their capital. Moreover, women need capital- and a lot of it- to be able to continue participating in the fishing industry of Dei.

◇ GENDER IN AGRICULTURAL PRODUCTION

On one hand, women in Luli who are under the customary land tenure system only access land through their husbands, brothers and fathers. However, this access is generally throughout the year. On the other hand women in Hoima Parish access land through renting. Most of these use their earnings from the fish business they are involved in to fund the land rental. Hence, with the current GOU restrictions that has left majority of fisher folk without money, these women's access to land has also been severely curtailed.

LAND USES AND THEIR CONTRIBUTION TO ENVIRONMENTAL DEGRADATION

According to the respondents the land uses causing environmental degradation include, in order of importance: grazing the land above it's holding capacity, perennial crop production, wetland conservation; and, use of land for infrastructure development activities.

EXISTING OPPORTUNITIES, STRATEGIES AND POTENTIAL FOR FOREST LANDSCAPES AND FISHING VILLAGES

◇ EXISTING OPPORTUNITIES IN FORESTRY

The groups ED has formed in the community with the aim of improving/management of forests and its resource; and has given capacity in tree seeds collection, banking and storage; tree nursery beds establishment; selling of seedlings; collection and sale of forest products; as well as some advocacy for forests conservation are an existent resource in this community. This, together with two (2) trained nursery operators; two (2) trained Lorena stoves and briquettes makers; and are resources that can be accessed and used in promoting forest landscape restoration activities in Dei.

◇ EXISTING OPPORTUNITIES IN FISHERIES MANAGEMENT

Some groups of fisher folk which were engaging in: sanitation activities; sensitizing communities of hygiene and sanitation; and enforcing rules and regulations had been formed before the COVID pandemic. These community groups' activities being aligned with the mandate of the Landing Site Committee (formerly BMU) in the areas of monitoring, control and surveillance as well as sanitation and hygiene means they are a structure that can be leveraged for effective landing site management.

◇ APPROPRIATE STRATEGIES IN FISHERIES MANAGEMENT

Consists of: (a) the revival of the fishing groups/ associations; (b) the strengthening of the capacity of the fisher groups; (c) working with them on fish management activities within their mandate; and, coordinating with the Landing Site Committee (formerly BMU) and Dei sub county local government.

◇ APPROPRIATE STRATEGIES IN AGRICULTURE AND FORESTRY

Agroforestry is already a well-established practice in the community. The FLR assessment of Uganda in 2016 identified agroforestry as the most profitable FLR enterprise.

However, in promoting agroforestry it must be tailored to Dei's context through addressing, amongst others, the following issues: increased access to tree seeds; community capacity on tree management must be enhanced; community knowledge of native tree species must be widened; and water for production must be addressed given the high rainfall variability resulting from climate change. Additionally, there should be equal promotion of fruit trees with timber trees as the former serves a dual purpose of providing food for the households.

> *"The district should not emphasize only timber trees but also fruit trees. Because if each household planted a fruit tree, in a few years we shall have a lot of fruit trees such that even during times of drought people can at least eat from the fruit trees"*
>
> Validation workshop stakeholder, July 18, Dei.

The trees of preference were mentioned as follows: mangoes, oranges and jackfruit for fruit trees; and teak, Mbeni, Kalafuru as the other trees.

BASELINE VALUES FOR SOME OUTPUTS OF TWO PROJECT COMPONENTS

COMMUNITY LIVELIHOOD SUPPORT COMPONENT ◇

- On **trainings**, ED has had a high coverage on training it's beneficiaries on business plan, GAPs/ CSA and Market information; it needs to improve on it's coverage in training on value addition, livestock husbandry and required marketing standards.
- With regard to **existence of veterinary services**, the community has access to veterinary service. The adequacy of this service is unknown but could be enhanced through ED's proposed establishment of Para-vets in the community using the available

GOU trained Vet to train the Para-vets.

- On **source of information for crop production**, NGOs (NUSAF, NURI, WENDI, ED etc.) and Lead farmers are the main information providers; only a very small number of community members are served by Extension workers as an information source.
- In terms of **seed sources**, three quarter of the respondents still save seed use locally saved seeds; and the main sources of this seed were 'own saved seed' and farmer groups that are seed collecting and banking. This is an opportunity for creation of seed saving groups to harness indigenous knowledge in the conservation of local varieties hence enhancing preservation of biodiversity.
- The **main source of improved seeds** over half of the respondents source improved seeds from the village agro input shop. This means that the demand and adoption of improved seeds may increases with increased access through brining the services closer to community.
- **Indigenous knowledge in seeds preservation**: there is a wealth of knowledge amongst men and women on how to preserve indigenous crop variety seeds. This can be harnessed in a seed collection, banking, and storage group. And this group can turn this into an income generation activity.

◇ AGRICULTURAL MARKETING SUPPORT COMPONENT

There was moderate coverage of respondents in participating in a market fair; and business coaching; there was low coverage in attendance of exchange learning visit; and very poor overage in attendance of a farmer's clinic. If ED, is the one that implemented these interventions, there is need to review the activity reports to identify the obstacles to respondent's attendance of these activities.

OTHER CONCLUSIONS ON ED'S POSITIONING

◇ NATIONAL PLANS AND STRATEGIES

ED's strategic Plan 2021-2025 is fairly well aligned with NRM program of NDPIII. The gaps can be integrated into the Strategic Plan at Mid-term review; and the opportunities can also be used to expand ED's strategic direction at the mid-term. Alternatively, projects under the strategic objectives can be designed to integrate opportunities identified at the national level.

The same applies to Ed's alignment with the Agro-industrialization program under NDP III. However, in addition, ED needs to keep updated with GOU commitments as they provide opportunities for advocacy engagement with GOU, even at the local level. So far, ED's current strategy feeds into the national level development objectives; but there are also gaps as well as opportunities. Therefore, ED can choose to refine it's alignment; as well as consider inclusion of other actions that ED may not have foreseen, specifically actions relating to advocacy.

The analysis on ED's alignment with the current INDC, shows that there is still a lot of opportunity for ED to strengthen its programming under Climate resilience through undertaking more interventions in both CCA and CCM. Otherwise, as it stands right now ED is strong on forest landscape restoration interventions but not climate change adaptation and climate change mitigation as a whole. ED should keep updated of developments in the INDC review (that is ongoing) to be able to re-align as necessary.

The IUCN assessment of Uganda's FLR in 2016 made important findings that are highly relevant to the adoption/implementation of this approach. ED can make use of these findings, one of which is that agroforestry is the most profitable FLR option. However, the approach to implementing agroforestry must be context specific and this study has findings which provide the initial hints on what strategies are relevant.

DISTRICT INTERVENTIONS ◇

- The District NRM department established trained persons in the sub county which ED can most affordably hire to train their beneficiaries on the skills these already acquired and/or they can train these very resource persons to become their facilitators in the community under all their Climate resilience community outreach/training interventions.
- The NRM Department's achievements in other sub counties provide for cases of learning visit destinations right within the district which ED can most affordably undertake instead of travelling to other districts and incurring high costs on transport.
- The district and other partners high concentration on Cassava distribution makes irrelevant to undertake cassava projects, ED may consider other neglected crops; similarly on tree planting, the district and other organizations focused a lot on fruit trees-mangoes, oranges- therefore, ED may

consider focusing on other neglected fruit trees when implementing it's agroforestry under an FLR program.

None of the activities under Fisheries are directly benefiting the Dei Landing site community whose livelihood has been severely affected by the government ban on fishing in Lake Albert.

◇ SUB COUNTY INTERVENTIONS

- At the sub county level, apart from the work of the District in the sub county, the sub county's NRM department is almost non-functional. Indeed, if these projects were not in the sub county, then the NRM department would have nothing to report on.
- On production management, just like at the district level, the focus in livestock is on cattle and improved goat breeds. These animals are not affordable for the poor; and even when they are given to the poor, there must be a high level of organization for the group to successfully manage such projects.
- Specifically, on fisheries development, the fish cage project was implemented in Got Rau and Oguta parishes while the men and women of Dei Landing site whose livelihood has been taken away are left without any safety net. The YLP grant supported a youth group in Oguta to purchase a boat engine while youth in Dei Landing site are struggling to purchase a boat after the GOU restrictions came into force. Similarly, there are women at Dei Landing site whose boats have been burned by the UPDF enforcing government law on the Lake but the UWEP grant was given to certain women's fish monger group far from Dei Landing site. In short, the people that are most vulnerable are not necessarily the ones being served or supported.
- Cassava distribution and demonstration kits are popular interventions by both GOU and NGOs.

A very important feedback from stakeholders of the validation workshop in relation to GOU's development directions is on the Parish Development Model. The stakeholders noted thus:

> *"PDM has 470millions allocated on it. The money is coming. But our people who were fisher folk are being forced to change from fishing to rearing animals. But if GOU would allow us to plan for that money, we would advise that it be used to provide loans to this fishing community that is in dire need of financial assistance"*
>
> Validation stakeholder, July 18, 2022.

This feedback confirms the observation that GOU's emphasis in livestock was on promotion of the rearing of cattle and goats which are not affordable for the common people; these being expensive ventures. The misalignment between GOU priorities and community needs and capabilities clearly indicates the continued use of a Top-Down approach to development in Uganda. There is need for advocacy towards the implementation of bottom-up approaches.

RECOMMENDATIONS

RECOMMENDATIONS BASED ON SYNTHESIS OF RESEARCH RESULTS

◇ LIVELIHOOD OPTIONS

In undertaking the interventions elaborated under 'community livelihood support' of ED's Strategic Plan 2021-2025, ED should take note of the following:

- Got Rau was recommended by the sub county leadership as 'best for animal projects including sheep, goats and cattle'. Since poultry is not mentioned, ED should consult with the sub county production Department on this intended intervention. They also recommended that Cassava, Groundnuts and Maize are best grown in Got Rau. Since ED is pursuing the establishment of farmer groups that are registered as COOPs, perhaps Cassava, groundnuts and Maize commodity COOPs should be the focus (ED, had not indicated what crops it would build it's COOPs on). The men and women in Got Rau highlighted unreliable rainfall and did request for irrigation support. In addition, amongst the key challenges in production was that of drought that cause seedlings of trees distributed in the area to have dried out. Therefore, irrigation projects should be considered too.
  On irrigation, the validation stakeholders agreed that it is necessary but that there are issues that should be considered: (a) large scale irrigation projects are impossible because drawing water from Lake Albert for such projects have legal implications since the Lake Albert is trans-boundary (shared with Congo). Therefore, smaller irrigation scheme models should be considered; (b) apparently, Oguta stream does not run out of water even during the drought times therefore, it could be used to support horticulture projects in the following five (5) villages in Oguta and Got Rau Parish: Nyamutagana, Nyamutagana A, Nyamutagana B, Oguta, and, Luli, respectively.

- Oguta Parish has some land. The sub county leaders estimated each household hold 3-4 acres and they said the land is fertile. This area should also be targeted for the COOPs dealing in specific commodities, although these will have to be established with the community during the inception of the agriculture project. In addition, this is the Parish best for individual forests/ woodlots projects. The IUCN assessment of 2016 recommended Agroforestry, woodlots and natural regenerations as the appropriate FLR options for the North Moist farmlands, in which Dei Sub County is located. Due to land constraint in Hoima Parish, and the hilly Got Rau Parish, Oguta is the best for promoting woodlots. Moreover, they can also undertake agroforestry in addition to say, an acre of land, dedicated to a woodlot. The woodlot should be an enterprise, hence a livelihood source for the households. ED can then implement it's planned trainings for 'private forest owners' with these types of households, in addition to the exiting private forest owners in Dei currently.

- In Hoima parish, the mainstay of the community here is fishing/fish trade. On the side of GOU and other Development partners, the fish cages should be implemented in Hoima Parish as part of the financial support to the community through providing an alternative livelihood option. In relation to this, validation workshop stakeholders proposed that ED supports community to grow fish outside of the Lake Albert in ponds.

> "*People are already doing it in Pambagu. So as we seek for a long term solution to the current GOU restrictions on fishing, this option could be pursued in the following areas: Nyamutagana, Awulu, Kayonga, Nyamutagana Juba, Luli, Dei A and Dei C*"
>
> Validation stakeholder, July 18, 2022.

  Furthermore, grants under YLP and UWEP should also go to Hoima Parish to support as many youth and women groups to revive their fishing businesses through acquiring the required GOU boat, engines for the boats, and nets.

  On the other side, for ED as a human rights defender, they have to undertake advocacy at the District, the region and globally to amplify the human rights violations that GOU is meting out on it's own citizens so that help is found. In

addition, since the estimates in terms of costs related to GOU regulation compliance are now known, ED should:

- Develop project proposals for funding that will result in direct financial support to the men, women and youth in crisis at the landing site.
- The sub county's petition (See **Annex 1**) to GOU on the appropriate measures for implementing regulation must be addressed by the District and Central government. This petition should be re-drafted with the help of a season Activist lawyer and it must capture the Statistics which are evidence of the negative impacts of GOU's actions on it's own citizens as well as on itself. This is ED's most pressing human rights defense challenge right now.

In Hoima Parish, on the aspect of production, the kitchen gardening intervention would be most appropriate here. This is based on the scarcity of land in this area that has seen many women resort to renting small areas of land for crop production to sustain their households. This was agreed on during the validation workshop.

◇ VALUE CHAIN

In Hoima Parish, focus on the fisheries value chain. And for gender equality, given the negative impacts women boat owners are suffering, the challenges facing the women groups that have fish processing machines which they cannot fully benefit from; and the reduced fish quantities which definitely affects the women fish mongers, ED would do well to develop project proposals in each of these three segments. These proposals should focus on availing women the financial support they currently need to be able to revive their businesses in the fisheries value chain.

In Got Rau and Possibly Oguta parish, since ED is planning on availing inputs to farmers, then it should address the need for millet seed, simsim seed and the local cassava variety. Farmers are having a challenge in locally saving these crop's seeds. In terms of specific commodities to promote, the sub county counsel of Cassava, groundnuts and maize should be considered for Got Rau; while in Oguta, there should be further consultations on what is appropriate.

ED has a great foundation on which to build on the forest landscape restoration programs it is envisaging for Dei Sub County. It work with the 3 groups and 2 individuals in Luli Kayonga CFR to develop the timber value chain; as well as establish individual forest/ woodlots owners in Oguta Parish through promotion of woodlots.

On the conservation side however, the high population in Dei Sub County puts high pressure on forests for firewood. For this issue, the sub county proposal that groups of community members be trained in Lorena stoves and charcoal briquettes making becomes very relevant. ED can utilize the resources trained by the Pakwach District NRM department to train it's community groups in all the three subsectors. The validation stakeholders did request that ED undertake sensitizations on the same:

> "*On stoves and briquettes; increase sensitizations on these technologies such that each person can do this at their home*"
>
> Validation stakeholder, July 18, 2022, Dei.

> "*These people that the District trained-they are those two here- need to be empowered. Because they are very few as compared to a population of 20,000 people plus. ED should empower them to go and influence others through sensitizations and mobilizing other community members, especially the owners of land that is located on these hills/ mountains*"
>
> Dei Subcounty leader, Validation workshop, July 18, 2022

◇ RESTORATION AREAS ED SHOULD FOCUS ON PER VILLAGES OR PARISHES/LANDING SITES

- Got Rau parish was identified to have 3 villages (Got Olando, Luli and Olando) that are considered degraded. This was confirmed by the sub county leadership that said that the unreliable rainfall in Got Rau is related to deforestation. Therefore, in Got Rau the crop production interventions above should be coupled up with the massive tree planting (reforestation) under the intended FLR programs of ED.

- Hoima Parish also had several villages (Amani, Dei, Dei forest, Dei B/Border) considered degraded. ED intends to purchase 3,000 hectares of degraded for land restoration. It is recommended that these hectares be spread between Got Rau and Hoima Parish. In purchasing these lands, ED will need to do a mapping of the authentic land owners of these

degraded lands, and 'engage them directly' as per the counsel of the sub county leadership. To this end, even during the validation workshop, it was suggested and agreed that landowners in the various villages inform their Local Council Chairperson of availability of land. This information will be picked up by ED to develop a database of available land and where it is located.

- ED under it's land restoration program intends to form local environmental conservation association and committees to develop and implement EPAs; and these will consist of youth, women, students and indigenous people. Before proceeding with the approach, ED may benefit from evaluating the approach used by NUSAF-3. The sub county leadership reported that in the Tree planting project, a community member would offer land; then the group would plant trees on it but also each individual would receive 5 seedlings for planting in their own lands. When the trees reached a certain level of maturity, then the owner would take over the trees.

The Validation workshop offered opportunity for the assessment of the NUSAF-3. Knowledgeable people stood up and gave account of how the NUSAF-3 project was implemented. The following account captures important details:

> "*NUSAF-3 worked with the District. The District came to the community. They got land in Luli CFR. They trained the group on how to manage the trees until they grew well. However, the district hired 150 labourers who came to the ground with all the equipment-that is, watering cans, tuki, wheelbarrows etc.,who came and planted the trees. These laborers were paid a monthly salary. For us our part was to supervise the work. The management was very bad*"
>
> Validation workshop stakeholder, July 18, 2022, Dei.

> "*The trees cannot reach even 100 because of that bad management*"
>
> Validation workshop stakeholder, July 18, 2022, Dei.

Relatedly, and in response to the report of the district that 1500 teak trees had been planted in Oguta catchment area the following feedback was given:

> "*If you owned land along the catchment, they would come and plant for you. When the trees grow it becomes yours. In other cases they took the trees to any plan which was free without consulting about the owner. In such cases nobody was there to water the trees. Therefore, these teak trees are not growing well because management was very poor.*"
>
> Validation workshop stakeholder, July 18, 2022, Dei.

With this new feedback from the Validation stakeholders two key takeaways are important to note as ED undertakes forestry related interventions in Dei:

- The community prefers that they are empowered to do the forest production activities as opposed to making them supervisors as was the case with the district approach.

> "*Give the money to the groups. We can manage and will manage it because it is our own. When we are involved we do it as our own and we also know how to do our work*"
>
> Bidokomit Group Chairperson, Validation workshop, July 18, 2022, Dei.

- For those that are individuals, e.g. landowners along a stream or river for which a catchment activity is being implemented involve them as opposed to considering the land 'free' and just planting in it trees. Nobody will take care of the trees.

ED should still take note of the sub county leadership's recommendation that, if there is enough land, consideration be made for the planting of pine trees; while schools and institutions get fruit trees.

COMMUNITY VOICES ◇

This captures the recommendations that community have made which stakeholders who work in their midst should consider, in addition to or to confirm the recommendations already made above.

- **Fishing subsector**

> "*GOU should support us to organize ourselves into groups*"
>
> FGD male, Dei village, Feb 27, 2022

> "*We hear of Emyooga ..we plan to join Emyooga but Dei sub county has a high population...and that*

money, you can't see it…but we would like to benefit from it"

KII male, Dei Landing site, Feb 27, 2022.

"*Provide trainings to fishermen associations/groups on financial management in order to be able to access loans*"

KII male, Dei Landing site, Feb 27, 2022.

"*Link the associations to institutions that can provide loans especially government programs of loans*"

KII male, Dei Landing site, Feb 27, 2022.

"*Have a center where inputs e.g. fishing gear is brought closer to the fishermen and the latter are not charged exorbitantly by local traders*"

Former Landing site chairperson, Dei Landing site, Feb 27, 2022.

"*Identify elders to run the landing sites, these being supported by the Police instead of use of the military*"

Former Landing site chairperson, Dei Landing site, Feb 27, 2022.

"*Fishermen should be required to belong to groups because this eases supervision of the groups in the use of illegal fishing gears*"

Former Landing site chairperson, Dei Landing site, Feb 27, 2022.

"*Government takes us as rebels…we are not. This is because they accuse us of using boat size that is not allowed and use of net size which is not allowed. But we lack the resources to purchase the nets and boats that they require. So let them provide us with the nets and boats in form of loans…and form groups to work with…*"

Dei FGD participants.

Women FGD participants in dei also made the following proposals that should be considered:

"*These machines are useful only for big fish. However, we have no money for the big boats and the required net sizes. Therefore provide us with funds to buy the equipment. The funds also enable us to hire workers that will process the fish as well as for buying fish from other fishermen*"

Women FGD participant 4 and 2, Dei Village, Feb 27, 2022.

"*Capacity building to the women groups on the following: steady production of the fish, marketing, savings; and financial management*"

Women FGD participants 1&5, Dei Village, Feb 27, 2022.

"*To be linked to market for the products. The products expected from operating the acquired machines are free of smoke that causes harm to human health; they are better quality Mukene and of higher shelf-life; and other products such as powdered Mukene will also be produced. There is need to find a market for these higher quality products…not to take them to the same market as the poor quality Mukene currently at the Landing site*"

Women FGD participants 1, Dei Village, Feb 27, 2022.

"*Farming should also be promoted so that we do not depend only on the fishing livelihood. The issue is to address the commodity prices: last year people abandoned cotton because when they harvested the price was so low; similarly maize, gnuts had no market*"

Women FGD participants 6, Dei Village, Feb 27, 2022.

The survey respondents also made some recommendations on how to protect the Lake Albert resources as follows: "sensitize the community to stop bad methods of fishing"; "provide quality fishing gears"; and, "enforce the laws on fishing practices".

During the Validation meeting, the issue of enforcing the laws was discussed at length. Important insights shared included the following:

"*Fisher folk should form associations then come up with bye-laws e.g. 'to be a fisherman in the sub county you must be a member of an association*"

"*The community be sensitized and all leaders must be brought on board: make it a social responsibility because leaders are responsible for implementing GOU policies and laws*"

"*Leaders be elected to manage the associations but these leaders also need to be overseen by another administrative level. So as to avoid some of the problems we have already experienced with past structures such as BMUs, where leaders lacked accountability. BMU's broke down and up to date*

investigations are still ongoing. BMUs were are a business"

"*The elected leaders of the associations must be empowered to arrest errant fishermen. The past leaders had no power to arrest. That is also part of the reason they failed. And that is why their role has now been taken over by FPU. There is an ongoing debate whether Landing Site Committee members should be appointed. But this emanates from the past problem of leaders that could not enforce the regulations- say because they lived in the same community as the offender*"

The above proposals were floated as an alternative to the current approach of use of the military or paramilitary to enforce government regulations. In short, the community would like to own the Lake Albert fisheries resources conservation. This is commendable, and it should be viewed as a great opportunity for introducing and alternative, win-win and more sustainable approach to the conservation of the Lake Albert fisheries resources.

Currently community has lost, a lot, in terms of lost livelihoods but GOU has also lost. If a sub county is losing annual revenue of 26,000,000UGX annually and yet GOU is cutting funding to the same sub county, what wisdom is this? Furthermore, if an honest analysis were undertaken of the cost of maintaining FPU in Lake Albert to enforce regulations, can't that money instead fund compliance to the required GOU regulations and with savings left?

Perhaps, in view of the above queries to the current conflict over the fisheries resources, a stakeholder did suggest thus:

"*ED should also research on the impact of GOU restrictions on Lakes, specifically the level of poverty that has resulted from the enforcement efforts. Because if parents are pulling children out of school at such a high rate then sincerely….*"

- **Forestry**

With regard to practices that help to protect forestry resources, the respondents gave the following recommendations:

"*Arresting the culprits*"

"*Employing some people to do the monitoring*"

"*Stop cutting trees*"

"*Strict laws should be introduced*"

"*Should stop people from over grazing*"

"*Overgrazing is not good. It is better to find a specific land to graze your goats or livestock for example apportion half or one acre to this. Divide the land so that you can rotate the grazing in that land*"

Male participant, Validation Meeting, Dei Center, July 18, 2022.

"*The NAADS/OWC seedlings were transported from far. After delivery, even if you watered diligently they still dried out and died out. It is better to have the nursery beds within the location of the tree planting project so that a seedling is transferred direct from the nursery bed to the garden*"

Forestry stakeholder, Validation Meeting, Dei Center, July 18, 2022.

"*Use strong people like forest guard to protect the forest*"

This point is very important. The validation workshop helped to clarify why this recommendation was given.
"*The government has only one Patrol officer, who unfortunately is responsible for patrolling 4 forests. So the trees get stolen*"

Bidokomit Group member, Validation workshop, July 18, 2022, Dei.

"*We need support from ED*"

According to the feedback during the Validation workshop, this support may consist of the following package of interventions: (a) the 3 groups and 2 individuals that NFA has licensed to plant trees in Luli Kayonga Forest can be an entry point for establishing community forestry management groups; (b) there was e request that government should give advisory services;

ED can also provide such advisory services on forest management to individuals who wish to undertake tree planting projects (Isingoma who said he has land and would like to plant trees); and, (c) there was a rejection of seedlings transfer from long distances and nursery beds of the trees be established in the community: ED already planned for interventions including nursery beds – this should be done with this recommendation in mind.

"*We report to the government*"

"*We join hands with NGOs*"

In addition to the above recommendations, stakeholders of the validation workshop also contributed the following recommendations:

"*ED should consider support of a campaign on how we spoil the environment. This should focus on the current undisciplined use of plastic bottles and Kaveera (polythene bags/materials)*"

"*With these trained people we already have local activism. So ED needs to empower them to outreach the community. For instance, support them to go on local Radio with local leaders. Then they can sensitize on tree planting for those who have land. They can also go to schools which have land and do demonstrations on tree planting*"

"*Ok. You were told that Cwiriba is not part of Dei. That is true because Cwiriba is in Nebbi District, Akworo Sub County. However, the women on the hilly side of this sub county cut trees indiscriminately. They need serious sensitization*"

The Men FGD participants of Luli village also proposed the following remedies: (a.) Afforestation; (b.) Cooperate: being in groups to be able to do something more; and, (c.) Government support: we have land.

Women FGD Participants of Luli village made the following proposals with regard to tree planting projects:

"*Tree planting is welcome but where land is an issue....we need a lot of land for tree planting*"

"*Yes, we know about tree planting but none of us has been involved at an individual level. "To get involved we can do so under our women's group on a seedlings project*"

"*Under such a seedlings project, we would prefer to focus on timber trees and medicine trees. Examples of medicine trees are Cwaa, Otyep, Tooo, Ogal. Timber trees are Mbeni and Kalafuru*"

"*We would need a group land for tree planting*"

- **Agriculture subsector**

The Men FGD of Luli village said that cotton, tomatoes, maize and cassava were a problem in Dei and made the following recommendations:

"*Some cotton cannot work here. For the last 3 years cannot grow cotton; also, tomatoes are a problem. We need good seed for cotton and tomatoes*"

Male FGD participant 1, Luli Village, Feb 26, 2022.

"*As for maize, the current type is vulnerable to pests-weevils*"

Male FGD participant 5, Luli Village, Feb 26, 2022.

"*Even Cassava does not yield well. The current variety which is of 6 months' maturity period is not good. We prefer the ones of year's maturity, that is, the local variety*"

Male FGD participant 7, Luli Village, Feb 26, 2022.

"*We are also challenged with too much sunshine. Therefore, a project supporting Irrigation systems is relevant for us so that we can produce crops during the dry season too*"

Male FGD participant 1, Hoima

"*Our challenge here (Hoima Parish) is little land. On average people own 1 acre of land per household. So if you are to introduce a Seedlings project there will be need for land. The seeds for the project are available*"

Male FGD participant 2, Hoima Parish, Feb 28, 2022.

"*We require seedlings of the following: Kalafuru, Sufre, Yaau, Mangoes, Tooo and oranges; and seeds for cabbage, beans and groundnuts*"

Male FGD participant 1, Hoima Parish, Feb 28, 2022.

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I would like to thank various stakeholders and individuals who contributed to the production of the Baseline study for the Environmental Defenders project on Conservation and Livelihoods. I am particularly grateful to the women and men engaged during the household survey and the focus group discussions who provided valuable input during consultative engagements with them. In a special way, I wish to thank representatives of the Dei Subcounty Local Government who gave me their time and honestly gave me feedback during the Validation workshop that assisted in making this study a true reflection of the baseline status in Dei Subcounty in relation to conservation of the environment and livelihoods. I am grateful to the staff of Environmental Defenders – Sarah and Adubango – for their overall coordination that ensured a smooth implementation of the data collection during the Field Mission.

Special thanks go to the Gloria who provided valuable feedback on the document drafts; Alithum Lawrence, the Local Council III Chairperson of Dei Subcounty who was very committed to the process and made very important input during the validation event at Dei Landing site; Dolo Osisi Michael, Chairperson Also Patron, Dei Women Kwer Kabu Acaye; Ronald Mpala Mukisa my colleague in data collection that conducted a great job in coordinating the household survey; Lawrence the Statistician that supported the analysis of the household survey; and last but not least, the hardworking enumerators: Joshua, Innocent, Priscilla, and Prisca that gathered the household data under the scorching heat of the dry season.

May God bless you all, and above all May God hear and answer the prayers of our precious men, women, youth and children in Dei subcounty.

For God and My country.

ANNEXES

ANNEX 1

FORESTRY SURVEY QUESTIONNAIRE	
SECTION 1: KNOWLEDGE/AWARENESS	
1. Which human practices in this community may result into the most negative long term effect on our Forestry resources?	
2. Which human practices that can help to protect our forest resources from degrading are being practiced in this community?	
SECTION 1: PRACTICE	
3. Have you been involved in forest resources restoration program or activity?	□ YES (Go to Q4) □ NO
* 4. If YES, who supported this activity?	
5. What, in your view should be done to reverse the negative impacts of human activity on the Luli Kayonga Forest resources?	
SECTION 2: ACCESS, CONTROL AND OWNERSHIP TO THE LULI KAYONGA FOREST RESOURCES	
6. Do you have access to the Forest/Forest resources in this community?	□ YES □ NO (Go to Q7)
* 7. Give one reason why you do not have access to forest or its resources?	

8. Which of the following have access rights only to the forest and its resources?					
□ 1. Women / children in the community	□ 2. Men in the community	□ 3. Private owners of the Forest	□ 4. Public agency officials and workers only	□ 5. Other (Please Specify) _____	□ 6. NONE

9. Which of the following have control rights only to the forest and its resources?					
□ 1. Women / children in the community	□ 2. Men in the community	□ 3. Private owners of the Forest	□ 4. Public agency officials and workers only	□ 5. Other (Please Specify) _____	□ 6. NONE

10. Which of the following have ownership rights to the forest and its resources?					
□ 1. Women / children in the community	□ 2. Men in the community	□ 3. Private owners of the Forest	□ 4. Public agency officials and workers only	□ 5. Other (Please Specify) _____	□ 6. NONE

11. For any stakeholder category who is marginalized on access, control or ownership rights, what is the main reason for this?	
12. In the past 3 years (2021, 2020 and 2019) have you experienced any forest based conflicts in this conflict?	□ YES □ NO
13. If yes, describe the nature of the conflict (who was conflicting with who, for what or why; was it resolved?)	
SECTION 2: FOREST PRODUCTIVITY AND IMPACT OF ENVIRONMENTAL CHANGES	
14. What is the main use of forest or forest products in your household?	□ For sale to earn in come □ For consumption as food □ Other specify: _____

15. In the last year, what volume of the following forest products did you get?		
FOREST PRODUCT	Quantity	Units
1. Timber or building poles		
2. Forest based food products		
3. Forest based medicinal products		
4. Forest based fuel wood		
5. Other products: specify _____		

16. In the last three years, what changes have you noticed in terms of availability of the following forest products?			
FOREST PRODUCT	2021 (increased/ decreased)	2020 (increased/ decreased)	2019 (increased/ decreased)
1. Timber or building poles			
2. Fuel wood			
3. Forest foods			
4. Forest Fodder			
5. Forest Medicines			
6. Other products: specify _____			

17. In your view, what is the main human practices/ actions that is causing increase in the availability of these forest products?	
18. In your view, what is the main human practices/ actions that is causing decrease in the availability of these forest products?	

19. In the last one year (2021), what income did you earn from your main forest based income source?				
FOREST PRODUCT	NO Income	100-500,000 UGX	501-1,000,000 UGX	Over 1,000,000 UGX
1. Timber or building poles				
2. Fuel wood				
3. Forest foods				
4. Forest Fodder				
5. Forest Medicines				
6. Other products: specify _____				

20. Apart from changing availability of products, what is the other main challenge in Forest based livelihood?					
□ 1. No market for the product	□ 2. Competition for the forest based product with outsiders	□ 3. Government laws, regulations or policies	□ 4. Climate change	□ 5. Indiscriminate harvesting of the forest based product	□ 6. Other (Please Specify) _____

SECTION 2: PARTICIPATION IN MANAGEMENT OF THE FOREST AND IT'S RESOURCES	
21. Do you own a forest?	□ YES □ NO

22. In which of the following ways are you involved in the use and management of the forest resources in your community?				
□ 1. As a collector of forest based products	□ 2. As a timber trader	□ 3. As a hired labourer in the forest maintenance activities	□ 4. As a manager of the Forest	□ 6. Other (Please Specify) _____

23. What role do women and children play in Forest Use and management?	
24. Are there any community groups formed on forest use and/or management in this village/parish/ sub county?	□ YES □ NO
25. Are you participating in such groups?	□ YES □ NO

26. Which of the following activities are such groups involved in?					
□ 1. Forest tree seeds collection, banking and storage	□ 2. Forest tree nursery beds and selling of seedlings	□ 3. Forest products collection and sale	□ 4. Advocacy for Forests conservation	□ 5. Other (Please Specify) _____	□ 6. NONE

SECTION 3: DEMOGRAPHICS Last are some demographic questions that will be used for classification purposes only	
27. What is your age?	
28. What is your gender?	□ FEMALE □ Non Binary □ MALE

29. Who is the head of this household?	□ Male head □ Female head
30. How many people are living in your household since last year?	
31. What was your three main livelihood sources last year (Tick only 3 that apply)?	□ Crop Farming- subsistence □ Crop Farming- commercial □ Livestock farming commercial □ Livestock Farming subsistence □ Fishing/Fish Trading □ Commercial Tree selling □ Handcraft making/selling □ Petty trading – groceries or vegetables sales □ Other (Please Specify): _____
32. Which of the three main livelihood sources last year earned you the most income (Tick only 1 that apply)?	□ Crop Farming- subsistence □ Crop Farming- commercial □ Livestock farming commercial □ Livestock Farming subsistence □ Fishing/Fish Trading □ Commercial Tree selling □ Handcraft making/selling □ Petty trading – groceries or vegetables sales □ Other (Please Specify): _____
33. Approximately what was your average monthly income from this livelihood source?	□ Below 100,000UGX □ 101,000-200,000UGX □ 201,000-300,000UGX □ 301,000-400,000UGX □ 401,000-500,000UGX □ Above 500,000UGX
34. Is there anything that you would like to add for us to think about?	

THANK YOU FOR COMPLETING OUR QUESTIONNAIRE!

ANNEX 2

FISHERIES SURVEY QUESTIONNAIRE	
SECTION 1: KNOWLEDGE/AWARENESS	
1. Which human practices in this community may result into the most negative long term effect on our water resources?	
2. Which human practices that can help to protect our water resources from degrading are being practiced in this community?	
SECTION 1: PRACTICE	
3. Have you been involved in water resources restoration program or activity?	□ YES (Go to Q4) □ NO
* 4. If YES, who supported this activity?	
5. What, in your view should be done to reverse the negative impacts of human activity on the Lake Albert resources?	
SECTION 2: ACCESS, CONTROL AND OWNERSHIP TO THE LAKE ALBERT FISHERIES RESOURCES	
6. Do you have access to the Lake Albert fisheries and other water-based resources?	□ YES □ NO (Go to Q7)
* 7. Give one reason why you do not have access to Lake Albert or its resources?	

8. Which of the following have access rights only to the Lake Albert and its resources?					
□ 1. Women / children in the community	□ 2. Men in the community	□ 3. Private owners of fishing vessels or lake transport vessels	□ 4. Public agency officials and workers only	□ 5. Other (Please Specify) _____	□ 6. NONE

9. Which of the following have control rights only to the Lake Albert waters and its resources?					
□ 1. Women / children in the community	□ 2. Men in the community	□ 3. Private owners of fishing vessels or lake transport vessels	□ 4. Public agency officials and workers only	□ 5. Other (Please Specify) _____	□ 6. NONE

10. Which of the following have ownership rights to the Lake Albert waters and its resources?					
□ 1. Women / children in the community	□ 2. Men in the community	□ 3. Private owners of fishing vessels or lake transport vessels	□ 4. Public agency officials and workers only	□ 5. Other (Please Specify) _____	□ 6. NONE

11. For any stakeholder category who is marginalized on access, control or ownership rights, what is the main reason for this?	
12. In the past 3 years (2021, 2020 and 2019) have you experienced any Lake water and it's resources-based conflicts?	□ YES □ NO
13. If yes, describe the nature of the conflict (who was conflicting with who, for what or why; was it resolved?)	
SECTION 2: LAKE ALBERT WATERS' PRODUCTIVITY AND IMPACT OF HUMAN ACTIVITIES ON IT	
14. What is the main use of Lake Albert waters and its related products in your household?	□ Sale of fish and/or other Lake water based resources to earn income □ Use of fish and/or other Lake water based resource for consumption (as food) □ It is an employment source for me (e.g. I make and sell fishing equipment, water transport gear, etc) □ Other specify: _____

15. In the last year, what volume of the following Lake Albert water based resources that you use (as per your answer to Q9 above) did you get?

LAKE ALBERT BASED RESOURCE	Quantity	Units
1. Fish for sale to earn income		
2. Fish for home consumption (food)		
3. Equipment made and/or traded		
4. Other water base resource		
5. None of the above		
6. Other products: specify _____		

16. In the last three years, what changes have you noticed in terms of availability of the any of the Lake Albert water based resources that you use (as per your answer in Q9 above)?

LAKE ALBERT WATER RESOURCE	2021 (increased/ decreased)	2020 (increased/ decreased)	2019 (increased/ decreased)
1. Fish for sale to earn income			
2. Fish for home consumption (food)			
3. Equipment made and/or traded			
4. Other water base resource			
5. None of the above			
6. Other products: specify _____			

17. In your view, what is the main human practices/ actions that is causing increase in the availability of these Lake Albert water resources?	
18. In your view, what is the main human practices/ actions that is causing decrease in the availability of these Lake Albert water resources?	

19. In the last one year (2021), what income did you earn from your main forest based income source?				
LAKE ALBERT WATER RESOURCE	NO Income	100-500,000 UGX	501-1,000,000 UGX	Over 1,000,000 UGX
1. Fish for sale to earn income				
2. Fish for home consumption (food)				
3. Equipment made and/or traded				
4. Other water base resource				
5. None of the above				
6. Other products: specify _____				

20. Apart from changing availability of Lake albert water based resources, what is the other main challenge in a water resource-based livelihood?					
□ 1. No market for the water based products	□ 2.Competition for the water based product with outsiders	□ 3. Government laws, regulations or policies relating to fishing and/ or other water based resources	□ 4. Climate change	□ 5. Indiscriminate harvesting of the water based products	□ 6. Other (Please Specify) _____

21. In which of the following ways are you involved in the management of the Lake Albert water resources?			
□ 1. I participate as member of the water management committee	□ 2. I am a member of a fish monger association	□ 3. I am a government officer that conducts activities for the protection of the Lake water and its resources conservation	□ 4. Other (Please Specify) _____

22. What role do women and youth play in the management of the lake Albert water resources?	
23. Are there any community groups formed with the aim of improving the use and /or management of the Lake Albert water and it's resources?	□ YES □ NO

24. Are you participating in such groups?	□ YES □ NO
25. What kinds of activities are being done in such groups?	

SECTION 3: DEMOGRAPHICS Last are some demographic questions that will be used for classification purposes only	
26. What is your age?	
27. What is your gender?	□ FEMALE □ Non Binary □ MALE
28. Who is the head of this household?	□ Male head □ Female head
29. How many people are living in your household since last year?	
30. What was your three main livelihood sources last year (Tick only 3 that apply)?	□ Crop Farming- subsistence □ Crop Farming- commercial □ Livestock farming commercial □ Livestock Farming subsistence □ Fishing/Fish Trading □ Commercial Tree selling □ Handcraft making/selling □ Petty trading – groceries or vegetables sales □ Other (Please Specify): _____
31. Which of the three main livelihood sources last year earned you the most income (Tick only 1 that apply)?	□ Crop Farming- subsistence □ Crop Farming- commercial □ Livestock farming commercial □ Livestock Farming subsistence □ Fishing/Fish Trading □ Commercial Tree selling □ Handcraft making/selling □ Petty trading – groceries or vegetables sales □ Other (Please Specify): _____

32. Approximately what was your average monthly income from this livelihood source?	□ Below 100,000UGX □ 101,000-200,000UGX □ 201,000-300,000UGX □ 301,000-400,000UGX □ 401,000-500,000UGX □ Above 500,000UGX
33. Is there anything that you would like to add for us to think about?	

THANK YOU FOR COMPLETING OUR QUESTIONNAIRE!

ANNEX 3

AGRICULTURE SURVEY QUESTIONNAIRE

SECTION 1: ENVIRONMENTAL/FOREST CONSERVATION KPS

In this section we would like to know about your knowledge, thoughts and practice in the area of conserving our natural resources/ the environment

KNOWLEDGE/AWARENESS

1. Which human practices in this community may result into the most negative long term effect on our environment?

☐ 1. Cutting down trees to smoke fish	☐ 2.Growing large areas of crops for agribusiness	☐ 3. Growing large areas of land for tree plantations	☐ 4. Overgrazing the grasslands	☐ 5. Burning bushes	☐ 6. Clearing forested areas to plant crops or use the land for other purposes	☐ 7. Oil or mineral extraction

2. Which human practices that help to protect our environment from degrading are being practiced in this community?

☐ 1. Planting more trees	☐ 2. Growing more diverse crop and tree species in farmland	☐ 3. Rearing animals according to the capacity of the land we have to hold them	☐ 4. Other (Please Specify) _____

3. Name one place you know in this community that you consider has degraded because of human activity?	
4. State which year this degradation started or could have started	
5. What native seed species are you aware of?	

SECTION 1: ENVIRONMENTAL/FOREST CONSERVATION KPS

PRACTICE

6. How much time do you use for collecting firewood or any other forest product that you need from the forest?

☐ 1. Less than 1 hour	☐ 2. One hour	☐ 3. More than 1 hour	☐ 4. I do not collect firewood or any product from the forest. (Go to Q7)

7. If you do not collect forest based products, who in your household collects them?				
□ 1. Wife	□ 2. Girl children	□ 3. Boy children	□ 4. Other person, female	□ 5. Other person, male

8. Which negative practices that damage the environment are mostly people involved in within your community?						
□ 1. Cutting down trees to smoke fish	□ 2. Growing large areas of crops for agribusiness	□ 3. Growing large areas of land for tree plantations	□ 4. Overgrazing the grasslands	□ 5. Burning bushes	□ 6. Clearing forested areas to plant crops or use the land for other purposes	□ 7. Other (Please Specify): _____ _____ _____ _____

9. Which positive practices that help to protect/conserve the environment are mostly people involved in within your community?					
□ 1. Planting more trees (go to Q10)	□ 2. Nursery bed management for tree seedlings production	□ 3. Growing more diverse crop and tree species	□ 4. Rearing animals according to the capacity of the land we have to hold them	□ 5. Other (Please Specify) _____	□ 6. None of the above

* 10. Have you been involved in tree planting?	□ YES □ NO (go to Q11)
* 11. If YES, was it in a group setting or as an individual?	□ I participated as part of a group □ I participated as an individual
12. Which type of trees were you mainly planting?	□ Exotic trees species (pine, eucalyptus) □ Native tree species □ Other trees: (specify) _____

13. On which type of land (e.g. private own or private individual in the community) did you do the tree planting activity?					
□ 1. My land	□ 2. Group land	□ 3. I was hired on private land	□ 4. I was hired on public land	□ 5. Other (Please Specify) _____	□ 6. NONE

14. From where did you get the seedlings for the tree planting?

□ 1. My tree nursery	□ 2. Group tree nursery	□ 3. Private tree nursery	□ 4. Public tree nursery	□ 5. Other (Please Specify) _____	□ 6. NONE

15. In the last one year, what activities have you carried out to protect the different tree varieties (biodiversity *)?

* Biodiversity is the biological variety and variability of life on earth. Variety at genetic, species, and ecosystem level. Ecosystem is a geographic area where plants, animals, weather and landscape work together to form a bubble of life.

□ 1. Native tree seed collection	□ 2. Native tree seed banking	□ 3. Private tree nursery	□ 4. Native tree seed storage	□ 5. Other (Please Specify) _____	□ 6. NONE

16. In your household, who primarily performs the tree variety protection activit(ies) above in Q14?

□ 1. Wife or Husband	□ 2. Girl children	□ 3. Boy children	□ 4. Other person, female e.g. grandmother, auntie, sister, house maid	□ 5. Other (male e.g. grandfather, uncle, brother, house boy) _____	□ 6. NONE

17. In the last year, has there been any organization that has set up /started up seed collection and management groups?	□ YES (go to Q18) □ NO
* 18. If YES, have you or any member of your household participated in these seed collection and management groups?	□ YES □ NO

SECTION 1: ENVIRONMENTAL/FOREST CONSERVATION KPS

SKILLS

19. In which way of environmental conservation do you consider yourself as skilled in?

□ 1. Nursery bed management	□ 2. Tree planting	□ 3. Maintaining and protecting regeneration tree plantations	□ 4. Native seed collection/ banking/storage	□ 5. Other (Please Specify) _____	□ 6. NONE

20. For the skills you identified above, from whom or where did you get your knowledge from?

□ 1. Traditional knowledge	□ 2. Schools/ formal education	□ 3. Sensitizations under NGO community projects/ programs	□ 4. Sensitizations under GO community projects / programs	□ 5. Other (Please Specify) _____	□ 6. NONE

21. What other skill relating to tree production and management and conservation do you consider as necessary for the community?	

SECTION 1: AGRICULTURAL PRODUCTION

LAND USES

22. What land uses are found in this community?

☐ 1. For production of Perennial crops (e.g. Cotton, Arabica coffee, sisal etc, sugar cane, etc)	☐ 2. For seasonal crops (e.g. simsim, millet, cassava, sweet potatoes, gnuts, beans, maize, peas, etc)	☐ 3. For Fruits/ vegetables (e.g. oranges and boo)	☐ 4. For timber or building poles production	☐ 5. For animal grazing	☐ 6. For a wetland conservation	☐ 7. For wild animal conservation

8. Other (Please Specify)

_____

23. Which of these land uses contribute the most to destruction of natural ecosystems, and loss of biodiversity in this community?

☐ 1. For production of Perennial crops (e.g. Cotton, Arabica coffee, sisal etc, sugar cane, etc)	☐ 2. For seasonal crops (e.g. simsim, millet, cassava, sweet potatoes, gnuts, beans, maize, peas, etc)	☐ 3. For Fruits/ vegetables (e.g. oranges and boo)	☐ 4. For timber or building poles production	☐ 5. For animal grazing	☐ 6. For a wetland conservation	☐ 7. For wild animal conservation

8. Other (Please Specify)

_____

24. In which locations within this community has land use created degraded land or water body?	
25. What action has the community collectively taken to stop or reverse land or water degradation (any change to the water or land that lowers its value)?	

SECTION 1: AGRICULTURAL PRODUCTION

CROP YIELDS AND CLIMATE CHANGE IMPACTS

26. In the last year, what was the yield (e.g. number of bags, basins, bunches per plot) for the crops you grew?

CROP CATEGORY	Number of bags, basins or bunches harvested
Crop 1	
Crop 2	
Crop 3	
Other: _____	

27. In the past 3 years which changes have you experienced in crop production?	□ Decreasing yield from the same piece of land □ Increasing yield from the same piece of land □ Increasing poor quality of the land on which you farm on □ Increasing longer drier spells □ Increasing too much rain □ Increasing receiving of rain or sunshine in the wrong time
28. In the past 3 years which changes have you experienced in soil or land quality?	□ Increasing loss of soil when it rains □ Increasing poor fertility □ Increasing poor soil form □ Increasing cracked soil □ Other forms of soil problems
29. What actions have you taken to reverse or stop the above soil problems?	

30. Where do you usually get information for crop production and/or animal production activities?

□ 1. A lead framer in the community	□ 2. A demonstration plot where farmer groups are trained	□ 3. From own education through formal channels	□ 4. From indigenous knowledge (handed down from generation to generation)	□ 5. From NGOs conducting agricultural projects	□ 6. From GO-e.g. Local Government Extension worker

SECTION 1: AGRICULTURAL PRODUCTION AGRICULTURAL INPUTS USE IN CROP PRODUCTION	
31. Do you use locally saved seed varieties or improved seed varieties?	□ Locally saved seed varieties □ Improved seed varieties □ Both of the above
32. Where do you get your local seed from?	□ Own saved seed □ Fellow women that save seed in the community □ A farmer group that collects, banks and stores seed using traditional knowledge

33. Where do you get your improved seed from?				
□ 1. A Lead farmer that runs a demonstration plot in this village/ community	□ 2. A village ag-input shop run by an individual	□ 3. A village ag-input shop run by a COOP	□ 4. An ag-input shop in the district headquarters	□ 5. Directly buy from Kampala city

34. Do you use drought tolerant varieties?	□ YES □ NO
35. In this community, is there any person that offers small animals veterinary services?	□ YES (go to Q36) □ NO □ I do not know
* 36. Is this person fully trained as a veterinary, or they were trained by an NGO /GO as a Paravet?	□ YES, he is fully trained □ No, was trained by a NGO/GO/other □ I do not know
SECTION 1: ENVIRONMENTAL/FOREST CONSERVATION KPS FARMER GROUPS AND MARKETING CAPACITY	
38. Are you participating in any farmer groups?	□ YES (go to Q39) □ NO (skip to Q46)

39. Which training have you got as a group? (Tick all that apply)	□ How to make a business plan □ Crop production practices like Good Agricultural Practices or CSA □ Livestock production practices □ How to get and use marketing information □ Value addition □ Required marketing standards for your crop commodity □ Other trainings (Please Specify): _____
40. Who gave you the training?	
41. For the farmer group you belong to, have ever benefited from the following?	**Category of support services** □ Participating in any market fair □ Participating in an exchange learning visit □ Receiving business coaching □ Participating in a Farmers' clinic
42. Who provided you with the above support services?	
43. Have you ever got a loan from your group to support your agricultural activity?	□ YES □ NO
44. Have you ever received training on any of the following?	**Skills training category** □ Gender □ Basic numeracy and literacy □ Financial literacy □ Life skills
45. Who gave you the training?	

SECTION 3: DEMOGRAPHICS Last are some demographic questions that will be used for classification purposes only	
46. What is your age?	
47. What is your gender?	□ FEMALE □ Non Binary □ MALE

48. Who is the head of this household?	□ Male head □ Female head
49. How many people are living in your household since last year?	
50. What was your three main livelihood sources last year (Tick only 3 that apply)?	□ Crop Farming- subsistence □ Crop Farming- commercial □ Livestock farming commercial □ Livestock Farming subsistence □ Fishing/Fish Trading □ Commercial Tree selling □ Handcraft making/selling □ Petty trading – groceries or vegetables sales □ Other (Please Specify): _____
51. Which of the three main livelihood sources last year earned you the most income (Tick only 1 that apply)?	□ Crop Farming- subsistence □ Crop Farming- commercial □ Livestock farming commercial □ Livestock Farming subsistence □ Fishing/Fish Trading □ Commercial Tree selling □ Handcraft making/selling □ Petty trading – groceries or vegetables sales □ Other (Please Specify): _____
52. Approximately what was your average monthly income from this livelihood source?	□ Below 100,000UGX □ 101,000-200,000UGX □ 201,000-300,000UGX □ 301,000-400,000UGX □ 401,000-500,000UGX □ Above 500,000UGX
53. Is there anything that you would like to add for us to think about?	

THANK YOU FOR COMPLETING OUR QUESTIONNAIRE!

ENVIRONMENTAL DEFENDERS

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JUNE 2022