



**BUILDING ADAPTIVE FISHERIES GOVERNANCE CAPACITY
REPORT OF THE FIRST NATIONAL STAKEHOLDER ENGAGEMENT
WORKSHOP**

**Ridar Hotel, Mukono, Uganda
3 – 5 September 2024**



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Summary

From 3-5 September, an interactive multi-stakeholder workshop was conducted to co-develop a framework for assessing capacity for adaptive fisheries governance. The workshop was part of a project, *Building Adaptive Fisheries Governance Capacity*, that is being implemented in Uganda and Malawi with support from the United Kingdom's Global Centre on Biodiversity for Climate (GCBC). The aim of the project is to strengthen the adaptive governance capacity of fisheries in Uganda to deliver positive impacts on biodiversity, poverty alleviation and improved ecosystem resilience.

Over the three days, stakeholders present at the workshop were from the Directorate of Fisheries Resources (DiFR), National Fisheries Resources Research Institute (NaFIRRI), Fish Protection Unit (FPU), fisheries staff from selected local governments, representatives of selected fishing communities, and several relevant Non-Governmental organisations (NGOs) engaged in fisheries governance. The NGOs included Association of Fishers and Lake Users of Uganda (AFALU) and Uganda National Women's Fish Organization (UNWFO).

The workshop was an opportunity to introduce the project to the stakeholders, overview of the fisheries sector in relation to fisheries governance, biodiversity and climate change. On each of the days of the workshop, the stakeholders convened in two or three small discussion groups for in-depth discussions on the following topics from a pre-defined framework for assessing capacity for adaptive fisheries governance.

1. Why move towards adaptive fisheries governance
2. Issues that should be investigated to improve governance
3. Mapping of stakeholders involved in fisheries governance and factors that affect the performance of fisheries governance
4. How fisheries affect habitats and ecosystems and should anything be done to address negative
5. How fisheries are responding to change in fisheries, including climate change
6. Knowledge, data collection, and use in fisheries
7. How fisheries governance could be improved while protecting ecosystems and building climate resilience

This report presents the proceedings of the workshop and a synthesis of the discussions made by the stakeholders on the topics relevant for planning and developing capacity of Adaptive Fisheries Governance (AFG) in Uganda. The participants of the workshop support adaptive fisheries governance as a better approach to address the challenges that the fisheries sector is facing. Through the discussions, the participants identified different aspects or issues that should be considered in plans to promote the implementation of AFG. The discussions on these aspects or issues are extensively covered in sections 4 to 9 of this report. The participants of the workshop can be taken as a community of practice composed of a diverse group of stakeholders with a common need of improving fisheries governance in Uganda. This group will be expanded and engaged regularly during the implementation of this project to advance the conversation on AFG and ultimately, facilitate its practical implementation.

1.0 Introduction

Inland fisheries in Africa face multiple challenges that undermine their capacity to maintain their contribution to livelihoods of fishing communities and biodiversity (Hecky et al. 2010). The impacts of climate change will worsen this situation if the fisheries are not managed adequately for resilience (Harrod et al., 2018). It is essential that objectives for developing resilience to climate change be incorporated in fisheries management through for example Ecosystem-based Fisheries Management (EBFM) (Bryndum-Buchholz et al., 2021). However, poor governance capacity and lack of adaptive governance in most low-income countries limit the implementation of EBFM, consequently weakening the resilience of inland fisheries to climate change (Bahri et al., 2021).

The need to encourage EBFM and promote the incorporation of adaptation to climate change in fisheries management objectives and tools, a project was developed with an aim of strengthening the adaptive governance capacity of inland fisheries to deliver positive impacts on biodiversity, poverty alleviation and improved ecosystem resilience. Implemented in Malawi and Uganda, the project will explore how capacity for adaptive fisheries governance for improved biodiversity conservation, poverty alleviation and climate resilience can be strengthened within inland fisheries. The project has three main objectives as follows:

1. Assess adaptive fisheries governance capacity for biodiversity protection, climate resilience and poverty alleviation from community to national government level.
2. Address key challenges to developing adaptive capacity for climate resilience in fisheries governance and how those challenges could be overcome.
3. Develop communities of learning for inclusive and sustainable adaptive fisheries governance.

The research project will assist the fisheries sectors in the two countries in forming plans for progressing towards adaptive fisheries governance; having systems and structures in place for inclusive adaptive fisheries governance; delivering on reduced drivers of biodiversity loss and strengthened protection of biodiversity; and supporting greater integration of biodiversity protection, climate resilience measures and poverty alleviation in fisheries governance.

The objectives of the project will be addressed by a transdisciplinary co-production approach with the research team working collaboratively with partners, namely, the Department of Fisheries in Malawi, Directorate of Fisheries Resources (DiFR) in Uganda, fishing communities, and all relevant Non-Governmental Organisations (NGOs).

In line with this co-production approach, we planned and conducted an interactive multi-stakeholder to co-develop a framework for assessing capacity for adaptive fisheries governance. In addition, the workshop was an opportunity to introduce the project to the stakeholders who included staff from the DiFR, fishing community members, local governments, and several relevant NGOs. During the workshop, small group activity worked through sections of an adaptive governance assessment framework, identifying among others what matters for adaptive governance in Uganda, what capacity is needed, and how existing capacity can be assessed. This report is an account of the proceedings of the workshop and the synthesis of stakeholders' considerations on the different aspects or issues relevant to adaptive fisheries governance in Uganda.



Dr. Winie N. Nkalubo, Director of Research, NaFIRRI, giving official opening remarks at the workshop

2 Workshop proceedings

2.1 Opening and official remarks

The workshop was moderated by Bwambale Mbilingi, a Research Officer at the National Fisheries Resources Research Institute (NaFIRRI). A full list of participants is given in Appendix 2.

Opening remarks were given by Mr. Geoffrey Dheyongera, Principal Fisheries Officer, Directorate of Fisheries Resources (DiFR), Professor Fiona Nunan, University of Birmingham, and Dr. Nalukenge Winnie Nkalubo, Director of Research, National Fisheries Resources Research Institute (NaFIRRI).

Geoffrey Dheyongera welcomed everyone to the workshop on behalf of the Directorate of Fisheries Resources. He noted that we are all aware of what is happening in the fisheries sector that requires adaptive governance as soon as possible. Adaptive governance is not a new concept but needs more resources and serious consideration. Building capacity of resource users should be taken as an urgent activity. He also advised that including resource users must be deliberate, not by chance, and building their capacity to participate effectively is important. He observed that the workshop has a good mix of government representatives, community representatives and non-government organisations (NGOs). By building consensus and confidence, we will be able to adapt as a sector for better management. He thanked the funders of the project and noted that the relevance of the project should not just remain in papers but should demonstrate physical implementation on the ground.

Professor Fiona Nunan reflected on her experience of about 20 years in Uganda supporting the implementation of fisheries co-management. This experience was through projects such as the Integrated Lake Management (ILM) project on lakes George and Kyoga and the Implementation of a Fisheries Management Plan (IFMP) project on Lake Victoria. She observed that maintaining co-management has not been easy in Uganda but believes there is much to build on and urged participants to feel free to share experiences and views during the workshop.

Dr Nkalubo acknowledged everyone present on behalf of the National Agricultural Organization (NARO) and NaFIRRI, observing that the project resonates with the vision of

NARO (NARO, 2018), and the National Development Plan 4 that is under development by the National Planning Authority (NPA). She noted that NaFIRRI has been designated by the African Union as an African Centre of Excellence for Research and Training in Aquaculture, Inland Capture Fisheries, and Climate Change. This project fits well with this designation because it is active in Malawi in addition to Uganda. She observed that the workshop brings stakeholders together to be able to develop a framework for assessing adaptive governance capacity.



Dr. Fiona Nunan, Professor & Project Lead, University of Birmingham, introducing the workshop to participants.

2.2 Introduction to the project and the workshop

Professor Fiona Nunan, University of Birmingham

The research project is taking place in Malawi as well as Uganda. Like Uganda, Malawi also has implemented co-management since the 1990s, with different approaches taken between lakes, though consistently involving the formation of Beach Village Committees (BVCs).

The project is funded through a programme called the Global Centre on Biodiversity for Climate (GCBC), with funds coming from the International Climate Finance of the UK Government through the Department of Environment, Food and Rural Affairs (DEFRA). The project was awarded under the theme of ‘Natural resource management approaches resilient to climate change’. The project aims to strengthen adaptive governance capacity of inland fisheries in Malawi and Uganda to deliver positive impacts on biodiversity, poverty alleviation and improved ecosystem resilience. To do this, the project will assess adaptive fisheries governance capacity, address key challenges to developing adaptive capacity for climate resilience in fisheries governance and how those challenges could be overcome, and develop communities of learning for inclusive and sustainable adaptive fisheries governance in the two countries.

A definition of governance was given. It was also explained how governance is different from management. She explained that the research is interested in the whole of the governance system, which can be fragmented, uncoordinated and not that effective, including between different parts and levels of government. Professor Nunan then introduced the idea of adaptive governance, which implies that governance needs to respond in a timely and effective way to new information and change and needs to be flexible and able to cope with uncertainty. Information use is critical for adaptive governance.

The project intends to develop plans for progressing towards adaptive fisheries governance, inform systems and structures for inclusive adaptive fisheries governance and deliver on reduced drivers of biodiversity loss and strengthened protection of biodiversity. Greater integration of biodiversity protection, climate resilience measures and poverty alleviation in fisheries governance, supporting departments of fisheries and other organisations in securing government funding and applying for donor funding are key aspects that should be considered.

The project has three work packages: assessment of adaptive governance capacity at national, district and community levels; addressing challenges to inclusive adaptive governance capacity through studies on information generation, flows, use and gaps; and changing fishing practices and pilot interventions. Assessing adaptive governance capacity is an opportunity to assess governance capacity more generally and inform efforts to strengthen governance.



Mr. Geoffrey Dheyongera, Principal Fisheries Officer, DiFR, presenting an overview to the fisheries sector

2.3 Overview of the fisheries sector

Geoffrey Dheyongera, Principal Fisheries Officer, DiFR

A rich overview of the fisheries sector was presented, beginning with a reminder of the major sources of fish in Uganda: lakes Victoria, Kyoga, Albert, George and Edward. There are over 160 minor lakes, as well as rivers, swamps/dams with water bodies covering about 20% of Uganda. There are over 250 fish species including farmable ones. In terms of employment and nutrition, over 1.2m people are directly involved and 3 million livelihoods supported. The fisheries are mainly artisanal, providing 50% of animal protein food at 1 kg as per capita consumption compared with the world standard of 17kg per year. The fisheries sector is the second foreign income earner and contributes 3% to national GDP and 12% to GDP from agriculture. Mr Dheyongera gave data on the fishing fleet and referred to a report published in 2023 by the FAO on 'Importance of small-scale fisheries to healthy food systems and sustainable livelihoods in Uganda'. He noted that fish is the leading source of animal protein, but also noted that consumption is low even within the fishing community. Demand for fish remains high and increased production is required. In terms of the management regime, Mr Dheyongera explained that historically, fisheries management was based on central command and control. Fisheries co-management was introduced under the National Fisheries Policy of 2004. Over 700 Beach Management Units (BMUs) were established on all water bodies in Uganda. The DiFR was transformed into a fully-fledged directorate, with over 60 technical staff backed by over 300 Local Government technical fisheries staff. The non-state actors under the co-management arrangement include the Uganda Fish Processors and Exporters Association (UFPEA) involved in self-policing, BMUs (formerly) and other NGOs. In November 2015, the operations of the BMU and fisheries staff were suspended in law enforcement. The need for co-management remained and involved the establishment of interim Fish Landing Site Committees (FLSCs) to handle fish traceability issues.

Mr Dheyongera went on to set out the major issues of the sector, including the collapsing fisheries industry, changed fishery dominated by small fish species and resource utilisation conflicts, accelerated by the entry of non-citizens. He noted core drivers of the declining fisheries being an increasing population dependent on the fisheries sector leading to increased

fishing pressure, inadequate capacity and participation of stakeholders in management arrangements, high market demand for fish at international, regional and national levels, inadequate investment in the fisheries sector, and the open access approach.

The resulting impacts were noted to be environmental and habitat degradation, overfishing, illegal fishing and trade in immature fish, poor post-harvest facilities and practices, reduced catches, reduced income of fishers and poor adaptive capacity and resilience. However, opportunities were also noted, including the resource base being wide (lakes, rivers, dams, ponds etc.), Nile perch being highly fecund and capable of recovering if properly managed, high potential for aquaculture development, good political will, readily available fish markets, research technologies available for increased fish production and enabling policy environment.

The DiFR has the following targets for the sector:

- Increasing fish production from capture and aquaculture fisheries to 1.7 million MT to enable increased operational capacity of processing plants.
- Reduce illegalities by 80%.
- Promote community-based fish conservation through building capacity for self-policing.

The proposed reforms to achieve the set targets include the recent Fisheries and Aquaculture Act of 2023, which includes provision for a Monitoring Control and Surveillance (MCS) unit with a collaborative and inclusive fisheries enforcement approach, the existing fisheries enforcement approach, and the Standard Operating Procedures for Enforcement that are under review. Input controls were listed and management measures to help achieve the targets explained, including the re-establishment of co-management structures at grassroots, sub-county, district and regional levels.



Dr. Laban Musinguzi, Senior Research Officer, NaFIRRI, presenting on: Fisheries and biodiversity in Uganda: The need for adaptive fisheries management and governance

2.4 Fisheries and biodiversity in Uganda: The need for adaptive fisheries management and governance

Dr. Laban Musinguzi; NaFIRRI

Dr Laban Musinguzi took participants through a presentation on fisheries and biodiversity. He began by asking whether the current fisheries management regime or approach in Uganda is satisfactory. The predominant response from the participants was no. The focus of the presentation was to justify the need of adaptive fisheries management or governance using practical existing knowledge on fisheries and biodiversity and clarify why biodiversity conservation should be fully integrated in fisheries management and governance.

The presentation set out data to demonstrate that adaptive fisheries governance or management is required because:

1. The status of fish stocks in most of the major lakes in Uganda is poor (Figure 1), requiring adaptive fisheries governance or management that is more robust and therefore more effective than the conventional approaches.
2. Fisheries are complex, dynamic, and unpredictable and therefore the best approach should be flexible and dynamic.
3. Fisheries are prone to risks and uncertainties. The recent invasion of lakes Edward and George by water hyacinth is a good example of how fisheries are prone to risks.
4. It emphasises data acquisition and monitoring which are vital for proper management.

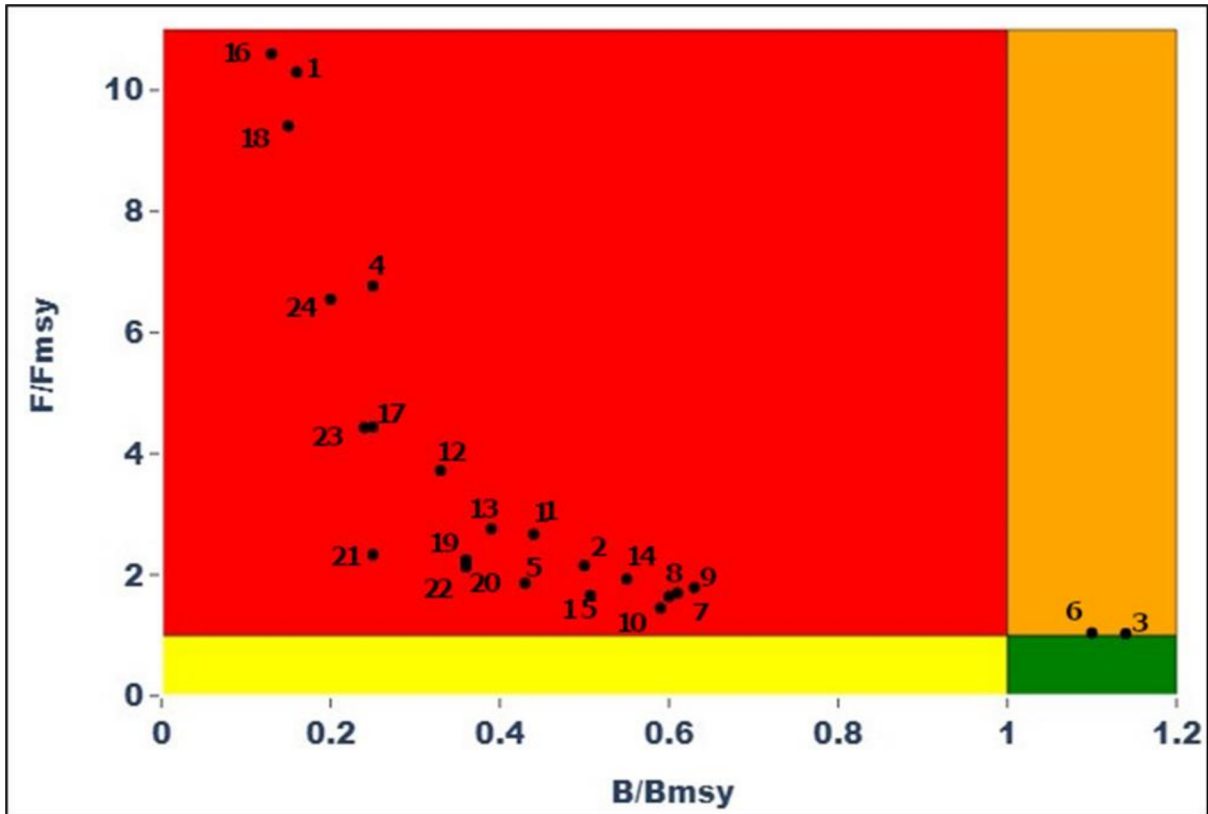


Figure 1: The position of fish stocks (numbers) in major water bodies of Uganda, except Lake Albert, on a kobe plot. This plot shows that apart from two stocks of Mukene in Lake Victoria, all the other assessed stocks are in the red region of high fishing pressure and low stock size (biomass). F/F_{msy} is an indicator of fishing pressure while B/B_{msy} is an indicator of stock size (see Musinguzi et al. 2021 and Musinguzi, 2024 for details). The poor status of the stocks is one of the reasons to move towards adaptive fisheries governance or management as the best approach to rebuild the fish stocks.



Ritah Amolo Kintu, General Secretary, UNWFO, synthesising content from one of the small discussion groups at the workshop

3.0 Discussion session 1: Why move towards adaptive fisheries governance? Identify issues that should be considered to improve governance.

3.1 Why move towards adaptive fisheries governance?

The stakeholders understand Adaptive Fisheries Governance (AFG) as responsiveness or flexibility to dynamic fisheries systems, situations, risks and uncertainties. This includes emerging needs occasioned by improved access to information in this age. The AFG was also referred to as a change in strategy to cope with changes in environment and/or emerging situations in fisheries. Fisheries being a natural resource, it is dynamic with various eco-system and socio-economic interactions that require the need of being adaptive. There was a general dissatisfaction of members with the current fisheries governance system in the country which is largely a top-down management approach.

Participants listed the following as some of the reasons for moving towards AFG. The list is an aggregation of suggestions from three groups.

- AFG facilitates efficient data collection and information flow and utilisation up and down the governance hierarchy. It allows for feedback. Currently, decision making is top-bottom which compromises accountability and responsibility thus AFG enables a bottom-up strategy. The emphasis of AFG on effective collection and utilisation of information allows proper compliance and decision making. For example, a fishing net approved for catching mature fish on Lake Victoria may not catch any fish on lakes Albert and Edward due to differences in ecological characteristics.
- Currently, the fisheries subsector is faced with increasing challenges which need to be addressed by embracing Adaptive Fisheries Governance. The fisheries subsector is associated with uncertainties, challenges and emerging issues that require planning and proper alternative strategies before they happen or become worse. AFG enhances capacity to foresee, model and manage the challenges and external factors such as climate change, habitat degradation, dwindling fish stocks and poverty. In addition, AFG addresses

emerging challenges on the market regarding demand and supply. More so, it addresses climate change and embraces adoption of new technologies in fishing.

- AFG calls for a multisectoral approach that requires commitment and engagement of several stakeholders such as National Environmental Management Authority (NEMA), Ministry Trade, Industries and Cooperatives (MTIC), politicians at all levels, and those in the fisheries sector including those in research, management, enforcement, NGOs, and fishing communities, to guide on best policies and practices, advocacy, availing necessary information, educating and training, enforcement among others for sustainable management of the resource.
- The AFG promotes faster and flexible decision and policy making by reducing the long bureaucratic process. It enables stakeholders to meet various needs and brings together knowledge from many disciplines and stakeholders. This builds trust and commitment to collective actions amongst stakeholders.
- Encourage alternative livelihoods through diversification in other sectors such as green trading, and agriculture among others to reduce fishing pressure and conserve biodiversity.
- The AFG instils a sense of ownership (responsibility and authority) of the resource among fishing communities and other stakeholders that allows for better protection of the resource.
- Address gender and equity concerns.
- Control overfishing and better manage fish stocks.
- Enable building structures, increase stakeholders' participation, funding and research.

3.2 Issues that should be considered to improve governance

The following were listed as issues to be considered to improve governance.

- Build capacity for sustainable collection, sharing and utilisation of fisheries data and information. There is a need to align the information sharing and publicity systems that enlighten the public, especially the industry players on the status of fisheries, regulations, laws and opportunities. This also includes developing a communication strategy to popularise common fish species to increase their market demand and reduce pressure on the endangered species.
- Operationalise the Fish and Aquaculture Act, 2023. This can be done by bringing up, enabling and implementing regulations, guidelines and frameworks in fishing and fish handling activities. In addition, some regulations are inadequate and need revision since they were formulated a long time ago, yet a lot of changes have occurred within the fisheries sub sector.
- Continuous sensitisation and awareness creation among the fishing community and other stakeholders on governance structure to be followed, especially on issues of where and who reports to where and who is responsible for what.
- Formation of well aligned management structures with clear roles and responsibilities. Ensure all players in the industry understand their role in the service delivery process, towards achieving the expected outputs from each of them. Stakeholders noted that the fish protection unit (FPU) crosses from enforcement to management. In addition, FPU sector commanders have their own committees on top of FLSC for example on Butiaba landing site. These are governance issues that call for governance structures to be clarified and streamlined.
- Strengthen linkages for coordination and collaboration among stakeholders to reduce the disconnection between the various fisheries organisations and departments, in as far as policy implementation is concerned. This can be facilitated through promotion of inclusive dialogue and conflict resolution among the key players such as enforcers, managers and the fishing community. This is a call to reinstate co-management fully and improve governance.

- Multi-sectoral approach to management that involves collaborative implementation, monitoring and financing with transparency and accountability. More agencies should be involved in fisheries management. For example, NEMA, National Forestry Authority (NFA), MTIC, NGOs and development partners.
- Integrating population dynamics and ecosystem approach in fisheries management.
- Decentralise some activities from the DiFR to community or water body levels. This enables the ideal bottom-top approach in management.
- Increase funding for the management of the entire fisheries subsector. Manage funding resources for fisheries research and management more sustainably to increase the intended impact. For instance, mobilise resources from within the industry actors as much as from outside, to foster a sense of ownership and responsibility over the funding.
- Establish a monitoring, evaluation and learning structure for rolled out policies, by which to carry out interim performance appraisals.
- Address the issue of buffer zones or recommended distances from both lakes and rivers with dynamism to better deal with climatic changes and settlement conflicts.



Mr. Ashraf Kamyra, Research Assistant, NaFIRRI, synthesising content from one of the small discussion groups at the workshop

4.0 Discussion session 2: Mapping of stakeholders involved in fisheries governance

4.1 Organisations and individuals involved in different spaces and at different levels – how important are they and why?

The participants identified many stakeholders involved in governance of fisheries in Uganda. These, their level of governance and importance are given in Table 1.

Table 1 Stakeholders at different levels and their importance

Level of involvement	Stakeholder (organisation/individuals)	Importance and why
Community	Fishing communities comprised of fishermen (boat owners & boat operators), processors (small scale), traders, transporters, input suppliers among others.	<p>Generally, they are at the grass roots, they bring fishers together, facilitate enforcement and the understanding regulations. They implement decisions of the members and those of the state for proper management of the resource.</p> <p>Boat owners</p> <ul style="list-style-type: none"> ● Decision makers on what to catch, type and size of gears to use or allowed in their boats. ● Employ the casual workers. ● Influence fishing pressure on water bodies by determining the number of fishing boats. <p>Casual workers/Boat operators</p> <ul style="list-style-type: none"> ● Implement the decisions by their bosses and ● Advise boat owners on fishing grounds, gear types and sizes used. <p>Processors</p> <ul style="list-style-type: none"> ● Add value to fish and products ● Influence the size of fish caught ● Preserve fish and products ● Influence quality of fish and products ● Distribute fish and fish products to consumers. <p>Transporters and traders</p> <ul style="list-style-type: none"> ● Influence the size of fish caught ● Influence quality of fish ● Influence price of fish <p>Input suppliers (boat builders, netmakers)</p> <ul style="list-style-type: none"> ● Influence size of gears and boats made. ● Supply materials to different members of the fishing community.
Community	Cultural and religious leaders	<ul style="list-style-type: none"> ● Shape Public attitudes towards governance processes and behaviours. However, this group is not active currently in some areas.
Community	Fisher groups or associations (Fish traders, processors, Saving & Credit Cooperatives (SACCOs) Boat owners, Repairers, etc).	<ul style="list-style-type: none"> ● Mobilisation of fishers and funds through savings schemes ● Lobby for government services and partnerships ● Producing products for income generation ● Source of information

Community	Civil Society Organizations (CSOs) Such as LAKIMO, AFALU, UNWFO, UFFCA etc.	<ul style="list-style-type: none"> ● Policy formulation, analysis, implementation, monitoring and evaluation. ● Advocacy and sensitization roles including inclusivity (where there are gaps i.e., in policy and practice) ● Lobby decision makers e.g., Local Government and the executive ● Build capacity: train fisher groups on how to sustainability use the fisheries resource. ● Mobilise and organise fishing communities into groups during different interventions e.g. during licensing. ● Mobilise resources to co-pilot co-management projects. ● Data collection and management: Collect views and volunteer information for research. ● Funding and resource mobilisation ● Identify market opportunities. ● Translating industry standards into actions that strengthen governance processes e.g., self-policing, certification and quality assurance.
Community	Fish landing Site Management Committees (FLMC) comprised of representatives from fishing communities i.e., processors, boat owners, boat operators, landowners and others	<ul style="list-style-type: none"> ● Implement practices and regulations on management. ● Supervise the fishing community (Co-management). ● Involved in the making of by-laws (make plans) ● They link government, CSOs and other stakeholders (collaborations and coordination of sector players). ● Data collection and management. ● Conflict resolutions in the fishing community. ● Sensitise the fishing community and provide feedback on policies.
District, sub-Counties, Town Councils, Municipalities, Parish and Local Councils I and II.	Local Governments; Include leaders and technical staff at all levels	<ul style="list-style-type: none"> ● They implement government decisions and plans. ● They disseminate information to the industry players at all levels ● Enact or make by-laws and ordinances for better implementation of the law ● Technical guidance (action planning) ● Submit reports to central government for implementation ● Coordination. ● Sensitization roles. ● Data collection ● Conflict resolution ● Feedback on what works and impact.

National/ government	Central	Ministry of Agriculture Animal Industry and Fisheries (MAAIF)/ Directorate of Fisheries Resources (DiFR)	<ul style="list-style-type: none"> ● Regulatory and management mandate i.e., developing policies and plans for implementation, enforcement, supervision, national accountability, guidance and coordination. ● Offer support to fisheries development and business performance.
National		National Fisheries Resources Research Institute (NaFIRRI)	<ul style="list-style-type: none"> ● Mandated for research and information generation to guide governance and sustainable resources management.
National		Academia – Universities and training institutions	<ul style="list-style-type: none"> ● Mandated for research, capacity building, and community engagement
National		Fisheries Protection Unit (FPU) and marine Police.	<ul style="list-style-type: none"> ● Enforce the implementation of regulations ● Provide management advice to the ministry ● Surveillance, control and monitoring. ● Mobilisation of players and shaping public attitudes ● Resolving conflicts ● Decision making and guidance to public
Regional		Fisheries organisations Such as Lake Victoria Fisheries Organisation (LVFO) and Lakes Edward and Albert Fisheries Organisation (LEAFO)	<ul style="list-style-type: none"> ● Regional coordination and harmonisation of governance processes and actions ● Make directives affecting governance processes
International		Development partners such as European Union (EU), The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), The Food and Agriculture Organization of the United Nations (FAO), World Bank (WB)	<ul style="list-style-type: none"> ● Supporting governance processes financially & technically ● Support to domestication of global guidelines and learning ● Supporting fisheries research

4.2 Who makes what decisions and why?

Stakeholders identified the Minister of State for Fisheries as the decision maker empowered by the law. The minister issues regulations or ordinances, and directives guided by monitoring plans, budgets and policies. Additionally, decisions are made depending on the level of management by both state and non-state actors through participatory decision making, decentralisation management and delegated responsibilities.

4.3 Do any local rules affect how the fisheries are managed at the beach level? What are they and where do they come from?

Local rules include the many regulations or by-laws on registration, permission of visiting boats, landing of boats, time for fishing, hygiene, regulations on number of fishers and traders in a landing site among others. These rules were approved by the local governments and are being implemented at the community level. On the other hand, cultural rules vary from one community to another and they are neither written nor used in management. The cultural rules are mostly in the form of beliefs and not standard throughout fishing communities.

4.4 Connections between stakeholders, do they work together – how? If not, why not?

All stakeholders in the fisheries sector including the government departments are not effectively coordinated and are coordinated to a lesser extent. Stakeholders are connected as follows.

- Landing site management committees work closely with the local government. The two groups are strongly coordinated, and the former comprises District Fisheries Officers (DFOs) who, among others train, guide and supervise members and activities within the fishing community.
- The FPU and DiFR work closely together especially on implementation of management plans and enforcement.
- The FPU is not well coordinated with the local government officials and the fishing community.

The weak links among stakeholders is attributed to poor communication flow, policy being limited, lack of functional structure for coordination, and differences in interests, lack of resources to enable the achievement of implementation requirements, and usurpation of roles and responsibilities among some stakeholders. The latter is exemplified by the FPU crossing from enforcement to management.

4.5 How inclusive is fisheries governance? How well are women involved and why? How well are all stakeholder groups (e.g. boat owners, boat crew, elders/leaders, fish traders, processors, other occupational group) involved – why is this?

Women are included in governance, but their proportion varies across all levels in the governance system. Details on the inclusivity and involvement of women in decision making in fisheries are listed below.

- At the level of central and local governments, research, academia and CSOs, women are well involved, and they highly influence decisions.
- At the community level, a slot of 30% is allocated to women on FLSC, whereas 60%, 30% and 5% women are estimated to be processors, boat owners and boat operators respectively. The proportion of women doing casual work or operating boats is low (5%) because the nature of work requires energy and flexibility which is not common among women. Women are also insecure on the lakes and are mindful of how they relate to others. The

slightly low percentage of women owning boats (30%) is due to fear of the risks involving loss of property on water since most women are not involved in manning the boats while on the waters. Usually, boat owners double as casual workers for their boats. In FLSC, few women get involved due to high levels of illiteracy among women and cultural related inferiority complex (stigma).

- There are social programs built around women's empowerment e.g., Uganda Women Entrepreneurship Programme (UWEP).
- There are women groups involved in savings at different landing sites and thus participate in governance.

4.6 How do politicians and government at national and sub-national levels affect fisheries governance?

Below is a list of ways through which politicians at all levels affect fisheries governance.

- Policy making, creating enabling laws and regulations that shape fisheries management
- Funding allocations for research, enforcement and management.
- Capacity building for fisheries management
- Implementing national policies.
- Influencing locals' decisions.
- Coordination and collaborations at local and national levels.
- Mobilise political support locally and nationally.
- Some politicians influence the development of illegalities like creation of illegal landing sites, illegal fishing methods and gears by facilitating selfish interests such as the need for political positions.

4.7 How much trust is there in the different organisations/individuals/stakeholder and why?

Stakeholders suggested different levels of trust among various stakeholders in fisheries governance.

- Fishers and researchers: Fishers are losing trust in research as the researchers tend to disregard the traditional or local knowledge. An example is in the light fishing technology of Mukene.
- Technical teams and enforcers of regulations: The DFOs think that there is no coordination between the two. However, the FPU believes that they work well with the technical people especially on fish measurements and advisory in management.
- The FPU and civil courts of fisheries: There is miss trust between the two. The FPU enforces and conducts arrests, but culprits go unpunished due to civil compromises.
- Managers and enforcers Vs politicians: Some politicians have selfish interests that interfere with effective governance.
- Resource users don't trust the government much because of taxation.
- Fisher groups do not trust themselves e.g., Nile Perch fishers don't trust Mukene fishers. They accuse each other of using poor fishing methods that are responsible for the decline of fish stocks.
- Fisher groups e.g., Nile Perch fishers don't trust research because of delays in information and failure to consider local knowledge.
- Fishers trust landing site committees more than local and central government officials.

5.0 What factors affect the capacity for fisheries governance? What factors affect the performance of the stakeholders?

5.1 How well resourced is the fisheries governance system in terms of people, funding and assets, at national, district and sub-district and community levels? What explains this?

The different levels in fisheries governance are resourced as follows in terms of people, funding and assets.

- People (human capital): there is understaffing across all levels e.g., national, district and sub-districts and community levels. For example, one fisheries officer manages four sub counties. Personnel at the community level lack capacity for example to disseminate the relevant information. For example, personnel at community level are not aware of what needs to be done due to low levels of education. This issue is because of underfunding as detailed below.
- Funding: There is inadequate funding at all levels characterised by for example poorly facilitated staff (in terms of transport, fuel, servicing, data collection and information dissemination). At the community, funds are generated through charges on fish movement permits (25%), landing site fees, packing fees, user fees, levy on fish maw and fish per boat levy but all may not be re-invested in fisheries governance. Poor funding is due to limited allocation of funding to the sector by the government.

5.2 What has been done to try to improve capacity?

The following have been done to improve the capacity of fisheries governance.

- Deployment of army (FPU) to boost the enforcement capacity.
- Training and demonstrations of new technologies e.g., solar dryers and smoking kilns.
- Creating awareness by carrying out exhibitions and experience sharing.
- Institutional framework development and establishment of more effective laws and policies.
- Strengthening management of institutions.
- Stakeholder engagement including lower-level participation and representation
- Inclusivity and diversity of stakeholders
- Knowledge and information sharing.
- Access to accurate and timely data.
- Improving quality of research.
- Effectiveness of monitoring and enforcement.
- Strengthening co-management.

5.3 What challenges have been experienced?

Challenges experienced include the following.

- The abolition of BMUs from enforcement of rules and regulations and deployment of FPU has resulted into challenges such as lack of technical capacity, corruption, and non-coordinated operations. The system through which funds are generated at community level has challenges that include the following.
- The funds' generation system at community level is according to the BMU statute that was repealed, and the regulation is yet to be made legally to support committees in fee collection.
- Misappropriation of funds generated at the community level due to lack of supervision by the local government.
- Lack of the ploughing back of resources for governance e.g., fish levy imposed on fish maw, collected but not being ploughed back.
- Inadequate budget allocations and poor mobilisation of resources.

- Non-adoption of technologies introduced by the stakeholder's (end of a given project means end of everything).
- Lack of clarity of roles and responsibilities of the different stakeholders involved in governance.
- Selfish interests coupled with political interference as a result of conflict of interest.



Participants in one of the small discussion groups at the workshop

6.0 Discussion session 3: How does Fisheries affect habitats and Ecosystems?

6.1 How do you think fisheries activities affect habitats and ecosystems? Why is this?

According to the stakeholders, fisheries activities affect habitats and ecosystems in the following ways.

- The use of destructive fishing gears and methods such as unrecommended hooks and nets leads to overfishing and capture of immature fish, destroys the flora and fauna, fish habitats, and disrupts occasional fish movements. For some methods, the nets that are laid to block the path of the migrating fish while the monofilaments do ghost fishing which is disastrous. These gears also lead to increased capture of by-catch of species which may be breeding or immature. More illegal fishing techniques are hazardous to the environment for instance the use of dead rotten materials (e.g. dogs, birds and people) also affects water quality, the use of paraffin and disposal of torch batteries also leads to water pollution.
- The increased capture of immature fish for bait especially *Mormyrus kannume*, *Clarias gariepinus* and haplochromines may lead to depletion of their stocks.
- Targeting of one species like Nile perch, Dagaa or Nile tilapia leads to disruption of predator-prey relationships in the ecosystem.
- Pollution from agricultural practices and human settlements associated with plastics and chemicals that have detrimental effects on ecosystems. Plastic packaging for fish products and water bottles also leads to water pollution. The use of plastics as floaters and sinkers and use of monofilament nets that are eventually disposed off carelessly along the shoreline end up in the lake leading to poor water quality. The use of plastics can be attributed to the poor sensitization on disposal of plastics waste and failure of the fishers to afford the recommended floaters that are expensive, so the fishers end up utilising the available and free plastics.

- Anchoring suds using sand and tree branches affects water quality in the decomposition process. The decomposing matter serves as a fish aggregation ground which makes catching the fish easier.
- Tree cutting for fish preservation, making fishing gears and boats, and for use as fuel leads to environmental degradation, accelerates soil erosion that in turn leads to siltation of water bodies and hence, poor water quality.
- Fishing along the shoreline destroys critical habitats such as breeding, feeding and nursery grounds of fishes such as tilapines. It physically impacts the sediment, flora and fauna (biodiversity loss).
- Open access to fisheries resources leads to high fishing capacity and undue pressure on the resource, hence overfishing. Overfishing depletes fish stocks.
- Poor fish handling infrastructure leads to waste overload on the water bodies due to improper disposal.
- Waste disposal at landing sites in the lake, brine from salted fish, and faecal matter among others contaminates fish habitats.
- Fuel leakages from boat engines affect water quality when fuels such as diesel, gasoline or oil spill into the lake. This is harmful to both aquatic organisms and human life.
- Cage fish farming may increase pollution. Excreta, unconsumed feeds, and use of antibiotics and hormones cause detrimental effects. These include eutrophication, drug resistance, and genetic challenges.
- Habitat degradation through vegetation clearance to give way for landing sites, infrastructure and provide materials for making gears and boats.
- Fish farming is usually associated with fish escapes. These usually sex reversed super males end up in water bodies causing changes in the ecosystem.

6.2 Has anything been done to reduce negative impacts or help to restore habitats and ecosystems?

Stakeholders reported that several efforts have been made to reduce negative impacts and help to restore habitats and ecosystems. These include initiatives from the government, NGOs and fishing communities. These efforts mainly target issues such as pollution, habitat destruction and overfishing. Listed below are some of the initiatives that have been done to reduce negative impacts or help restore habitats and ecosystems.

1. There are regulations in place on gear type and size and a buffer zone of 200 metres from the shoreline to promote sustainable fishing and protect fish breeding areas.
2. Enforcement is being carried out e.g., the suspension of light fishing of mukene to promote sustainable fishing.
3. Creation of awareness and sensitization on conservation e.g., in some places, NEMA has sensitised communities on effective utilisation of buffer zones and the importance of conservation of lakes. This has encouraged communities to adopt sustainable fishing practices that are not destructive to the environment.
4. Identification, mapping and demarcation of fish breeding areas has been done to reduce human activities that may destroy fish habitats.
5. Encouragement of alternative livelihoods such as increased aquaculture and green farming to reduce pressure on capture fisheries.
6. Formation and training of fishers' groups to benefit from funding programs, to add value to fish and fish products, and ecosystem protection.

7. Research in fisheries and aquaculture e.g., stock assessments to provide stock status in different water bodies as a basis for planning, carrying out research on alternative energy sources for fishing (solar lights) and processing (solar dryers, briquettes, etc.) as climate smart developments.
8. Training in post-harvest handling to reduce post-harvest losses.
9. Reforestation and use of energy efficient cooking and fish smoking kilns in fisheries.
10. Gazetting landing sites to reduce illegalities like use of illegal gears in fisheries.
11. There has been involvement of a wide range of stakeholders for instance local communities, local governments, NGOs like LAKIMO, AFALU, and UFFCA in promotion of sustainable fishing practices to reduce effects of overfishing.

6.3 What challenges, if any, have been experienced and why?

Listed below are the challenges that have been experienced while trying to reduce the negative impacts and restore habitats and ecosystems as mentioned by the stakeholders

- Limited implementation and compliance of the regulations on gear size and methods. This is attributed to low funding and lack of coordination among stakeholders.
- Enforcement challenges that include high cost of enforcement, conflict of interest, limited coordination (improper governance structure) among stakeholders and limited funds.
- There is also political interference in favour of illegalities, and this makes compliance to the existing regulations low.
- Inadequate resources to implement fisheries research and management programs due to limited funding to the fisheries sector by the government to facilitate implementation of these programs.
- Limited community willingness to change their poor attitudes or mindset towards good practices. Some people in the fishing community are conservative and not willing to change to sustainable fishing methods that are good for conservation of the environment. This, coupled with high levels of ignorance hinders efforts to restore habitats and ecosystems.
- Limited uptake of alternative livelihoods due to poverty. Most activities suggested as alternatives do not economically compete with fishing where a fisherman expects to earn daily compared to agriculture for example, where they have to wait for two to three months to earn.
- High costs of inputs such as fishing gears, fish processing tools (smoking kilns), mukene drying racks, solar units, and ice. The recommended gears are expensive compared to the destructive ones. This hinders efforts of fishers to shift to the use of the recommended gears and promotes use of destructive ones.
- Ungazetted border points that facilitate the entry of illegal fishing gears.
- Risky nature of work involved in fisheries makes credit institutions such as banks fear to invest and offer loans to fishers.
- Non-prioritization of the fisheries sector by the government means lack of investment into the sector resulting into several challenges such as poor infrastructure, inadequate research on sustainable fishing methods, and limited funds for enforcement.

6.4 Lessons learnt to reduce negative impacts or help to restore habitats and ecosystems

- Revenue collected should be reinvested back to the sector to enable effective management of fisheries.

- Investments to trigger the replenishment of the fish stocks can have a big impact on the sustainability of fisheries.
- Group licensing to enable self-regulation and self-policing. Offering boat licences to groups instead of individuals helps ease enforcement of regulations and enhances compliance of fishing communities.
- Co-management structures are very crucial for creating awareness on conservation measures that can be employed to ensure sustainable utilisation of resources.
- Sensitization of communities on the importance of conservation is very key for changing people's mindset.
- Public-private partnerships are good for attracting financing for technological change. New technologies like smoking kilns and solar lights have been introduced to fishing communities through collaborations with other organisations.
- More monitoring and evaluation are needed to ensure effective management of the resource.



Participants in one of the small discussion groups at the workshop

7.0 Adapting to change: How are fisheries being affected by climate change?

7.1 What kinds of changes have been experienced in fisheries in recent years? What do you believe has caused these changes and how have different stakeholder groups responded? Why did they respond in that way?

The changes that have been experienced in fisheries in recent years, causes of the changes, how different stakeholder groups have responded and why they have responded in that way are discussed in Table 2.

Table 2 Changes that have occurred in the fisheries sector, their causes and responses by different stakeholders.

Changes & effects	Causes	Stakeholders' response and why
<p>Flooding (rising water levels) - (2020-2021)</p> <ul style="list-style-type: none"> ● Submerging and destruction of landing sites. ● Disruption of fish breeding areas. ● Floating vegetation 	<ul style="list-style-type: none"> ● Heavy rains due to climate change 	<ul style="list-style-type: none"> ● Migrating to new areas ● Established new infrastructure at some landing sites ● Disaster response by local governments and Office of the Prime Minister (OPM) ● Emergency responses for energy assets.
<ul style="list-style-type: none"> ● Fish kills that occurred on Lake Victoria in the year 2021 	<ul style="list-style-type: none"> ● Stratification of the lake (Kaliro) ● Water pollution and turbidity. 	<ul style="list-style-type: none"> ● Carried out sensitization restraining people from selling or eating fish found dead on the water bodies.
<ul style="list-style-type: none"> ● Wetland modification/ destruction 	<ul style="list-style-type: none"> ● Population pressure ● Economic developments such as farming, tourism, sand mining, and tree/vegetation cutting. ● Lack of livelihoods alternatives ● Limited awareness amongst the population on aquatic ecosystem protection and benefits. 	<ul style="list-style-type: none"> ● Wetland standards enforcement done by National Environment Management Authority (NEMA). ● Alternative livelihoods support – CSOs ● Sensitization on conservation done by local governments.

<ul style="list-style-type: none"> • Changes in fish stocks (dwindling stocks) 	<ul style="list-style-type: none"> • Climate change: Increasing water levels disrupt fishing activities, drought leads to reduced water levels and reduces the size of fish habitats; Winds at different times of the year have good or bad winds (associated with high or low catches); and Strong winds cause moving sudds that block off landing sites thus disrupting fishing activities. • Water pollution from plastic and solid waste, industrial waste released into the lake, faecal waste from humans, etc. • Human activities like deforestation for agriculture • Overfishing • Fishing using destructive gears and methods. • Destruction of fish habitats. • Selective fishing that targets one species hence its depletion. 	<ul style="list-style-type: none"> • Fishing during different times of the day to avoid the strong and bad winds. • Migratory fishing practices depending on movement of wind. • Use of rafts to reach all places, especially those covered by floating vegetation and those that are difficult to operate in using the recommended boat places. • Regulations enforced to keep away from breeding grounds • Sensitization on the importance of the breeding grounds of fish, use of non-destructive fishing gears and methods, and importance of wetland protection. • Involvement of non-state actors in management decisions. • Enhanced enforcement by establishment of the Fisheries Protection Unit (FPU). • Increased exploitation of the small pelagic species like mukene. • Licensing to reduce fishing pressure. • Enforcement and ban on mukene fishing.
<ul style="list-style-type: none"> • Increased use of plastics as floaters, packaging materials resulting in pollution of water. 	<ul style="list-style-type: none"> • Plastics are cheap, readily available yet the recommended floaters are expensive for the fishing community to afford. • Lack of alternatives 	<ul style="list-style-type: none"> • Beach cleaning campaigns, • Plastics collection for recycling • Calls for spatial planning and improved regulation

7.2 Do you believe that fisheries are affected by climate change? If yes, how? What have been the implications of these changes and how have different stakeholder groups responded? Why did they respond in that way?

Stakeholders unanimously agreed that fisheries are affected by climate change and listed the following as the effects and implications of climate change on fisheries.

- Flooding (increasing water levels) leads to silting of the lake shores that act as fish breeding areas, destruction of fisheries and associated infrastructure (like roads, schools, hospitals), destruction of people's property and displacement of fishers. It also causes pollution of water resulting in health and sanitation issues at landing sites and fish mortalities. Flooding in addition leads to a disruption of all fishing activities e.g., when drying grounds for mukene are flooded, this stops mukene fishers from working.
- Strong winds and waves on the waters cause accidents on the waters which sometimes lead to loss of lives and property including fishing equipment. Strong winds also sometimes hinder fishers from accessing the waters.
- Drought reduces water levels thereby reducing the size of fish breeding areas.

Stakeholders' selected responses to the effects of climate change on fisheries are as listed below.

- Flooding: people whose houses were destroyed by flooding had to relocate to other areas, damaged property that was submerged by flooding was replaced. There was provision of relief items in terms of food, clothes, and medication to affected persons.
- Strong winds and waves on the waters: Safety measures like swimming lessons were taught to fishermen. Uganda National Meteorological Authority (UNMA) created awareness on the importance of weather forecasts and created a mobile application (BAVUBI app) that gives information about weather for fishers to use to forecast. There was also increased use of indigenous knowledge on weather, especially on the movement of wind.

7.3 What more, if anything, could stakeholder groups do to better respond to change, and in particular, climate change?

- There is a need to enhance collaborative arrangements of fishing communities with relevant authorities and agencies such as ministries. These collaborations play a crucial role in improving responses to climate change in fisheries by building local capacity in sustainable fishing methods and making resource mobilisation easy.
- A need for enforcement to stop people from constructing in buffer zones to help in restoration of these buffer zones.
- More research should be conducted to inform on the changes on climate especially on winds, water levels, drought and emerging issues in fisheries.
- Contributions by fishermen to social security funds to enable support themselves during times when they are out of business due to climate change.



Participants in two of the small discussion groups at the workshop

8.0 Discussion session 4: Data collection and use; how could fisheries governance be improved?

8.1 What sources of knowledge are available and how are they used? E.g. Within communities, information generated by the government. What local knowledge do communities have? E.g. How do they observe changes?

The variety of knowledge, its sources and what it is used for are given in Table 3. It is evident that the knowledge is mainly from local knowledge and research.

8.2 Limitations of the knowledge sources

Below (Table 4) are limitations in available knowledge as defined by participants in the workshop.

Table 3 Sources of knowledge available and how they are used

Type of knowledge	Source/description/examples	How is it used and for what?
<ul style="list-style-type: none"> Indigenous/local knowledge 	<ul style="list-style-type: none"> Weather conditions e.g. wind movements, seasons and moon phases. 	<ul style="list-style-type: none"> It is used to predict weather conditions for safe fishing, predict fishing periods and timing of high fish catches. There are different types of winds that move across the water bodies and they are named depending on the quantity of fish catches they attract (i.e. bad or good winds for low or high catches respectively). Fishing activities are stopped to rest the lake during bad winds and resumed during good winds in some places. For example, September is associated with bad winds known as Kisaawa on Lake Kyoga. Used in guiding fisheries development on landing sites
<ul style="list-style-type: none"> Indigenous/local knowledge 	<ul style="list-style-type: none"> Fishing technology or fish harvesting gear 	<ul style="list-style-type: none"> To make fishing gears and boats from locally available materials like stones, wood and plastic bottles for fishing activities. It is used to effectively operate fishing activities on water bodies. Used to aid in research. Development of fishing gears and boats For developing research projects
<ul style="list-style-type: none"> Indigenous/local knowledge 	<ul style="list-style-type: none"> Fish species, migration cycles and seasonality of fish catches, and Fish breeding and nursery grounds. 	<ul style="list-style-type: none"> Used to predict where certain fishes are found within the water body at particular times of the year. Used to predict decline in fish catches when they encounter certain fishes that are not expected in particular places within a particular time. Used to determine where fish complete their life cycles. Used to aid research. Used in designating and protecting fish breeding areas. For guiding on fish trade.

<ul style="list-style-type: none"> ● Indigenous/local knowledge 	<ul style="list-style-type: none"> ● Behaviour of fishers. 	<ul style="list-style-type: none"> ● Sourcing the best fishers: In certain communities, fishermen are sourced based on tribe e.g., Busoga are considered good fishers around Lake Kyoga.
<ul style="list-style-type: none"> ● Indigenous/local knowledge 	<ul style="list-style-type: none"> ● Navigation 	<ul style="list-style-type: none"> ● Fishermen and local communities can easily find direction and features while on water.
<ul style="list-style-type: none"> ● Scientific knowledge 	<ul style="list-style-type: none"> ● Research knowledge generated by NaFIRRI, Academia, LVFO and NGOs. They update information in the fisheries subsectors. The knowledge is in the form of reports, publications, fact sheets, policy briefs, and newsletters. 	<ul style="list-style-type: none"> ● It is used to guide policy formulation. ● New innovations in management of fisheries. ● It is used for resource mobilisation. ● It is used for training and advocacy.
<ul style="list-style-type: none"> ● Scientific knowledge 	<ul style="list-style-type: none"> ● Information generated by central and local governments. It is in the form of by-laws, guidelines, research findings. 	<ul style="list-style-type: none"> ● Planning and management

Table 4 Limitations in the knowledge used in fisheries

Type of knowledge	Limitations/challenges	General solutions to the challenges
<ul style="list-style-type: none"> ● Traditional Knowledge 	<ul style="list-style-type: none"> ● It is not usually used in governance. This is attributed to mis-trust between scientists/technical and the fishing community. 	<ul style="list-style-type: none"> ● Need to use CSOs for information dissemination. ● Information needs to be put in simple forms for easy interpretation ● Management structures to be put across from the directorate to the landing site level, however, this is not streamlined.
<ul style="list-style-type: none"> ● Scientific knowledge 	<ul style="list-style-type: none"> ● Lack of funds to conduct regular research and for information dissemination. ● Information is not interpreted in simple terms for use by the local fishing community. 	
<ul style="list-style-type: none"> ● Information generated by government 	<ul style="list-style-type: none"> ● No clear flow of information and training on guidelines and structures by the fisheries officers and information does not reach the intended people. ● Information delivered by different authorities is sometimes contradictory. ● Information is delivered in the form of instructions; fishing communities are not fully involved in decision making e.g., in the current crisis of Mukene fishing. ● Selective enforcement like in the Mukene fishery ● Delays in the issuance of the guidelines by MAAIF 	

8.3 What is data collected on and why? What led to this data collection and is it being sustained? Who collects the data? Why is the data collected/Who uses the data and for what? How is the data passed on or shared?

Table 5 Institutional participation in the collection of specific data and its use and sharing

Organisation	Data type	What the data is used for/why is it collected	How is the data passed on or shared?
<ul style="list-style-type: none"> MAAIF, Central government 	<ul style="list-style-type: none"> Quantity of exports Data on quality Aquaculture production Number of fishers, landing sites and traders 	<ul style="list-style-type: none"> To inform management decisions Policy formulation Trade Quality assessment 	<ul style="list-style-type: none"> District statistical reports Usually guidelines and by-laws that come via DFOs and the enforcement arm. Quality reports
<ul style="list-style-type: none"> Local fisheries office or Government officials (technical people) 	<ul style="list-style-type: none"> Catches (fish catch data) Aquaculture production Water quality Number of fishers, landing sites and traders Social economics including post harvest and gender (% of women and men), Fish quality and quantity for major markets Quantity of exports 	<ul style="list-style-type: none"> To guide on planning and management To determine trends on stocks and value overtime Determine fishing effort. Detect pollution levels Trade Revenue collection To know the rate of spoilage Understand gender aspects in relation to value chain Determine the method used to add value to the fish. 	<ul style="list-style-type: none"> DFOs have quarterly meetings and fish landing site committees usually have weekly meetings where information is shared and passed on. At certain landing sites, there are fisheries officers and FPU staff stationed there and often have meetings. Official reports Conferences and workshops Education such as institutions
<ul style="list-style-type: none"> Fish landing site management committees 	<ul style="list-style-type: none"> Catches (Fish catch data) Number of fishers, landing sites and traders 	<ul style="list-style-type: none"> For revenue collection at the landing site (data is used to determine revenue). To follow trends on stocks and value overtime 	<ul style="list-style-type: none"> Every landing site has a committee responsible for collecting data on total weight, size and quantity of fish such as Nile perch, Mukene and Nile tilapia. At certain landing sites,

			<p>there is always one collection centre to enable data collection according to the law.</p> <ul style="list-style-type: none"> • Daily data on fish catches is submitted to DFOs. • Workshops
<ul style="list-style-type: none"> • FPU 	<ul style="list-style-type: none"> • Catches (fish catch data) • Fishing vessels and gears • Number of fishers, landing sites and traders 	<ul style="list-style-type: none"> • To inform whether the operation is working or not • For reporting on illegalities • For monitoring and evaluation • To improve on enforcement. 	<ul style="list-style-type: none"> • Official reports • Resource centres.
<ul style="list-style-type: none"> • Traders and business people 	<ul style="list-style-type: none"> • Quantity of exports 	<ul style="list-style-type: none"> • Trade • For business planning 	<ul style="list-style-type: none"> • shared with scientists • Community barazas
<ul style="list-style-type: none"> • Researchers (NaFIRRI, Academia, Development Partners, LVFO and NGOs) 	<ul style="list-style-type: none"> • Catches (fish catch data) • Fish Biodiversity • Fishing vessels and gears • Water quality • Number of fishers, landing sites and traders • Social economics including postharvest and gender (% of women and men), fish quality and quantity for major markets 	<ul style="list-style-type: none"> • To guide policy formation regarding sustainable utilisation management and conservation of aquatic resources. • To follow trends on stocks and value overtime • Determine fishing effort. • Detect pollution levels • Understand gender aspects in relation to value chain 	<ul style="list-style-type: none"> • Policy briefs • Researchers usually involve local communities during their data collection on different research interventions. The locals have enough knowledge such as the location of breeding areas, nursery grounds, post-harvest and fisheries related. • During the write up of reports, the different sources of knowledge and contributions of locals are usually acknowledged. • Publications • Electronic e.g., webinars. • Workshops

8.5 Challenges/gaps with data collection and sharing.

- Understanding local governments. For instance, in some districts, one fisheries officer is responsible for 4 sub counties
- Data is lost through the very many illegalities such as the existence of many illegal or ungazetted landing sites and fish gutting points, sale of fish on water where fish and fish maw are unreported, lack of enforcement on certain water bodies, and under declaration of data (quantities) by factories.
- Project mode management
- No funds and poor resource mobilisation for data collection and sharing
- No data dissemination
- No feedback mechanism
- Poor management due to lack of equipment.

9.0 How could fisheries governance be improved, whilst better protecting ecosystems and building climate resilience?

9.1 Given the discussions at the workshop, in what ways could governance be improved?

From the discussions at the workshop stakeholders think that fisheries governance can be improved in the following ways:

- Enhancing collaboration: networking and coordination among all stakeholders from landing sites to the directorate e.g., by involving all stakeholders i.e. fishing communities, NGOs, government and researchers in decision making to address uncertainties such as climate change, moving suds and others.
- There is a need for proper dissemination of information to the stakeholders. Streamlining communication especially on uncertainties in the sector will make management of the resources easy. For example, if the lake is to be closed for a given fishery, prior communication should be made to all stakeholders with no contradicting information.
- There is a need for continuous data collection to enable evidence-based decision making. Continuous data collection and use will enable better decision making by the different stakeholders involved in fisheries management as it ensures that all decisions are based on the current conditions and are evidence based.
- A deliberate effort to fund the fisheries sector and mobilisation of funds to operationalize the Fisheries and Aquaculture Act.
- Review of existing rules and regulations to define gaps and develop new ones that provide for the changes.
- There is a need for gender inclusiveness in the governance of the sector. Management positions should be balanced based on gender i.e., equal opportunities for managerial positions for both genders.
- Aggregating the fishing community into productive groups/associations to facilitate benchmarking from good lessons like group licensing and recognition of best performing groups.
- Improving performance and service delivery of different institutions in the fisheries subsector.
- Streamlining resource user rights (national and community based) and involving the fishing community in decision making to help curb illegalities. It is believed that most of the illegalities originate from the fishing community.
- Increasing sensitization efforts and continuous education of fishermen e.g., on declining fish stocks. This will enhance efforts for sustainability of the fisheries sub sector.
- A deliberate effort to address issues of affordability of recommended gears and inputs e.g., through empowering fishers' SACCOs with funds to enable fishers afford to buy the recommended and non-destructive gears.
- Addressing the issue of ungazetted landing sites/illegal landing sites and porous borders to reduce illegalities and promote sustainability of the sector.
- More funding: there is a need to increase funding to the fisheries subsector to facilitate monitoring, evaluation and enforcement activities, fisheries infrastructure development, research and data collection on fish stocks, critical habitats, fishing methods and technologies for effective and sustainable management.
- Fighting corruption especially in enforcement and political stakeholders. This will improve compliance with fishing regulations and lead to more sustainable management of the subsector.

- Creating an enabling policy environment that encourages involvement of various stakeholders in decision making and clearly stipulates the roles and responsibilities of each stakeholder for sustainable management of the resource.

9.2 How could governance arrangements/structures better support biodiversity protection and coping with/adapting to climate change?

Governance arrangements can better support biodiversity protection and adapting to climate change by:

- Increase coordination and networking among different agencies and sectors to sustainably manage the resource, for instance the DiFR collaborating with NEMA and the Ministry of Water and Environment (MWE). This will create an environment for a multisectoral enforcement mechanism to enable biodiversity protection.
- Strengthen co-management by involving the fishing community in the management of the lake creates a sense of ownership and responsibility hence better sustainable practices.
- Incorporate issues of climate change and biodiversity protection in government programmes so that they are included in the management plans at community, district and national levels. This way, funding can be allocated to these issues.
- Carry out more research on climate change and biodiversity conservation and follow up on the impacts created by development projects and their interventions.
- Enhance advocacy for alternative livelihoods (like farming black soldier fly for feed formulation rather than mukene), generating and disseminating guidelines on use of forests, and reducing tree and vegetation clearing. There is urgency for local and national leaders and management to continuously educate and sensitise fishing communities on protection of critical habitats.

10 Closing remarks

Professor Fiona Nunan thanked everyone for their participation in, and contributions to the workshop discussions. Professor Nunan thanked everyone for being forthcoming and contributing so well to the discussions. She confirmed that she looks forward to working with everyone over the coming months and years on how adaptive fisheries governance capacity can be developed for improved livelihoods and sustainability of the fisheries. She wished everyone a safe journey back to their homes.

11 Major workshop outcomes

The workshop initiated a conversation on AFG among key stakeholders involved in the governance of fisheries resources in Uganda. This approach was introduced to the stakeholders as the best approach for ensuring positive outcomes for the reliance of fishery-based livelihoods and biodiversity. The approach received clear, and unanimous endorsement from all the participants as a way to address the challenges that the fisheries sector is facing (section 3).

The workshop was also an opportunity to learn about different aspects or issues that should be considered in plans to promote the implementation of AFG. These aspects or issues which were discussed extensively by the participants of the workshop are covered in sections 4 to 9 of this report.

The participants of the workshop can be taken as a community of practice composed of a diverse group of stakeholders with a common need of improving fisheries governance in Uganda. This group will be expanded and engaged regularly during the implementation of this project to advance the conversation on AFG and ultimately, facilitate its practical implementation.

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Appendices

Appendix 1 Workshop Programme

Day One: 3rd September 2024

Time(hours)	Activity	Responsible/Lead person(s)
09:00-09:30	Arrival & Registration of Participants	Ashiraf Kanya & Johnson Baluku; Research assistants, NaFIRRI
09:30 – 09:45	Self-introductions	All
09:45 – 10:00	Welcome Remarks	<ul style="list-style-type: none"> Mr. Geoffrey Dheyongera; Directorate of Fisheries Resources (DiFR) Prof. Fiona Nunan, University of Birmingham Dr. Nalukenge Winnie Nkalubo; Director of Research, NaFIRRI (Remarks & official opening)
10:00 – 10:30	Introduction to the project (Building Adaptive Fisheries Governance Capacity) and the workshop	Prof. Fiona Nunan; University of Birmingham
10:30 – 11:00	Overview of the management and governance of the fisheries	Mr. Geoffrey Dheyongera; Principal Fisheries Officer, DiFR
	GROUP PHOTO	
11:00 – 11:30	BREAK TEA	All
11:30 – 12:00	Overview of Fisheries, Biodiversity and Climate change	Dr. Laban Musinguzi; Senior Research Officer, NaFIRRI
12:00 – 13:00	Why move towards adaptive fisheries governance?	Group discussion
13:00 – 14:00	LUNCH	All
14:00 – 15:30	Identify issues that should be considered to improve governance	Group discussion
15:30 – 16:00	BREAK TEA	All
16:00 – 17:00	Plenary – group feedback and reflections for assessing adaptive fisheries governance capacity	
17:30	END OF DAY 1	All

Day Two: 4th September, 2024

Time (hours)	Activity	Responsible/Lead person(s)
09:00 – 09:30	Introduction to Day 2 and assessing governance capacity	Prof. Mafaniso Hara
09:30 – 10:30	Mapping stakeholders involved in fisheries governance <ul style="list-style-type: none"> Who are the key stakeholders involved in Fisheries Governance? What factors affect the performance of the stakeholders? 	Group discussions

10:30 – 11:00	BREAK TEA	All
11:00 – 12:00	Plenary – group feedback	All
12:00 – 13:00	How does Fisheries affect habitats and ecosystems and should anything be done to address negative impacts?	Group discussion
13:00 – 14:00	LUNCH	All
14:00 – 14:30	Plenary – group feedback	
14:30 – 15:30	Responding to change in Fisheries, including climate change	Group discussion
15:30 – 16:00	BREAK TEA	All
16:00 – 17:00	Plenary	
17:30	END OF DAY 2	All

Day Three: 5th September 2024

Time (Hours)	Activity	Responsible/Lead person(s)
09:00 – 10:00	Data collection and use in Fisheries	Group discussion
10:00 – 10:30	Plenary – group feedback	
10:30 – 11:00	BREAK TEA	All
11:00 – 13:00	How could Fisheries Governance be improved, whilst better protecting ecosystems and building climate resilience?	Group discussion
13:00 – 14:00	LUNCH	All
14:00 – 15:00	Plenary – group feedback	
15:00 – 15:30	Closing remarks (Dr. Nalukenge Winnie Nkalubo; Director of Research, NaFIRRI)	

Appendix 2 List of key stakeholders

SN	NAME	Designation/Title	Organisation
1	Catherine Akello	Representative of fishing community, Amolatar District (Lake Kyoga)	-
2	Yoki James Akol	Chairperson Bwonda landing site/ Representative of fishing community, Mayuge district (Lake Victoria)	-
3	Byamukama Patrick	Senior Fisheries Officer	Directorate of Fisheries Resources (DiFR)
4	Namusisi Jennifer	Representative of fishing community, Buyende district (Lake Kyoga)	-
5	Ssenyonga Godfrey kambugu	Chairperson	Association of Fishers and Lake Users of Uganda (AFALU)
6	Geoffrey Dheyongera	Principal Fisheries Officer	DiFR
7	Sarah Nakaziba	District Fisheries Officer	Mayuge District Local Government
8	Sarah Ahmed Nalukwago	District Fisheries Officer	Buyende District Local Government
9	Maj. Joseph Cherop	Head of Research	Fish Protection Unit (FPU)
13	Nalukenge Winnie Nkalubo	Director of Research	National Fisheries Resources Research Institute (NaFIRRI)
14	Fiona Nunan	Professor & project lead	University of Birmingham
15	Molly Atkins	Post-doctoral researcher	Uganda National Women's Fish Organization (UNWFO)
16	Hara Mafaniso	Project deputy lead	Institute for Poverty, Land and Agrarian Studies: PLAAS, University of the Western Cape, South Africa
17	Laban Musinguz	Senior Research Officer & county (Uganda) lead	NaFIRRI
18	Mr. Mbilingi Bwambale	Research Officer	NaFIRRI
19	Omoding Samuel	Representative of fishing community, Mayuge district, Buyende district (Lake Kyoga)	-
20	Ogwang Tommy	Fishing community representative, Amolatar district (Lake Kyoga)	-
21	Nakintu Carolorine	Fishing community representative, Buikwe district (Lake Victoria)	Buikwe
22	Otunga Anthony	District Fisheries Officer	Amolatar District Local Government
23	Edward Rukunya	Director, fisheries management	Lake Victoria Fisheries Organization (LVFO)
24	Ritah Amolo Kintu	General Secretary	UNWFO
25	Bassa Samuel	Senior Research Officer	NaFIRRI
26	Baluku Johnson	Research Assistant	NaFIRRI
27	Kamya Ashiraf	Research Assistant	NaFIRRI
31	Lutale Asad	Fisherman & Fishing community representative, Ssenyi landing site, Buikwe district (Lake Victoria)	-
32	James Katali	District Fisheries Officer	Buikwe District Local Government
33	Gonzaga Felix Maginot	Executive Secretary	Lake Kyoga Integrated Management Organization (LAKIMO)
34	Erumbi Gloria Ouma	Fisherwoman & Fishing community representative, Kabaganja landing site, Mayuge district (Lake Victoria)	-
35	Kamaturaki Seremos	Executive Director	Uganda Fisheries and fish Conservation Association (UFFCA)