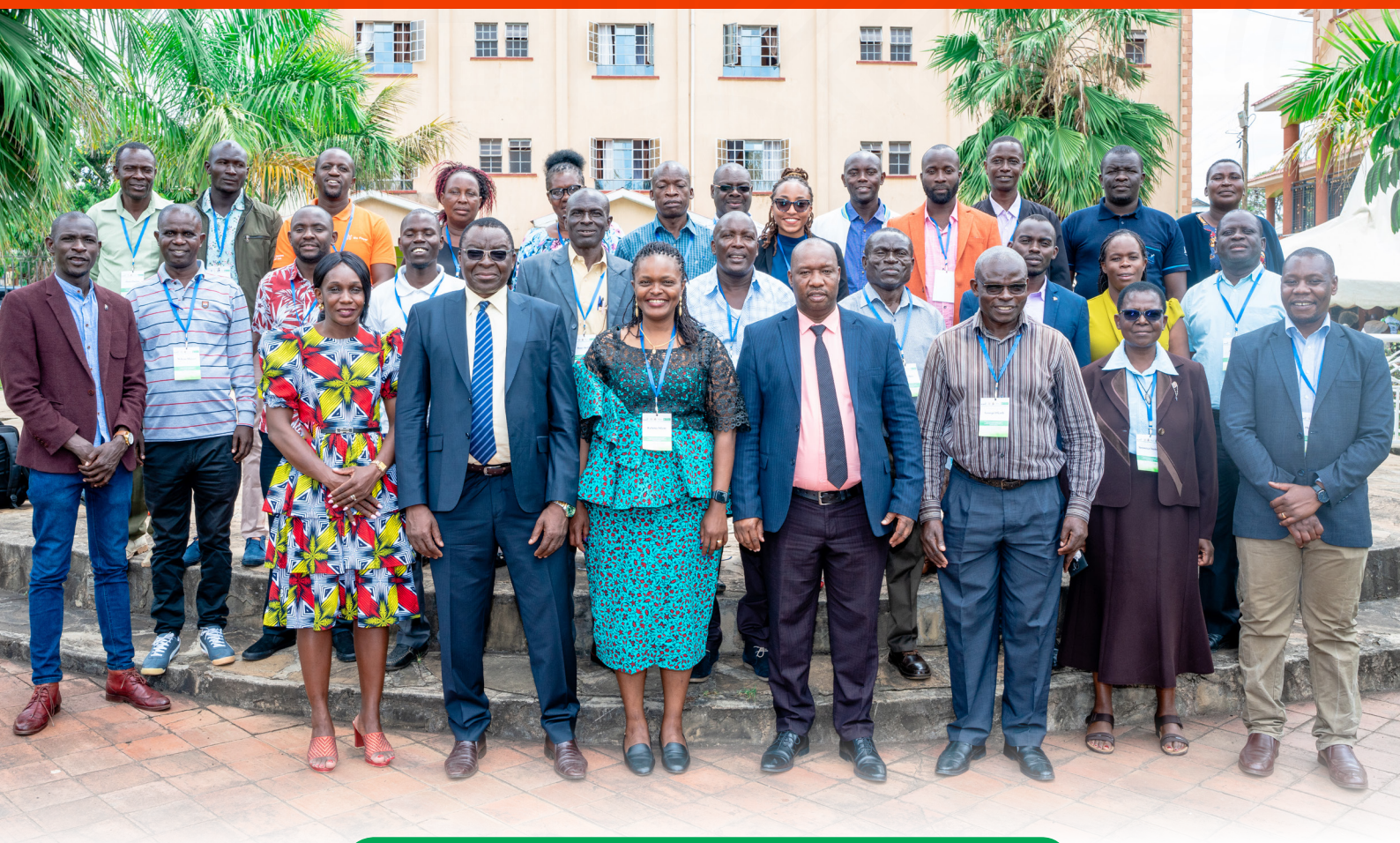


Climate change, Gender and Livelihoods Among Fisher communities in the Lake Victoria Zone Region in Kenya



Workshop held on: 25th-26th September, 2023 at Florence Hotel, Migori, Kenya.

Report by Rahma Adam, Philip Osano, Dorothy Amwata, Leon Lidigu, Kevin Ouko and Nicholas Ndiema

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List of abbreviations and acronyms

BMU	Beach Management Unit
CGIAR	Consortium of International Agricultural Research Centers
COP27	2022 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC (commonly referred to as COP 27)
EAC	East African Community
FGDs	focus group discussions
GDP	gross domestic product
GHG(s)	greenhouse gas(es)
ICIPE	International Centre of Insect Physiology and Ecology
ILRI	International Livestock Research Institute
IPCC	Intergovernmental Panel on Climate Change
KES	Kenyan shilling
KIIs	key informant interviews
KMFRI	Kenya Marine and Fisheries Research Institute
KNBS	Kenya National Bureau of Statistics
LVFO	Lake Victoria Fisheries Organization
MCA(s)	Member(s) of County Assembly(lies)
MP(s)	Member(s) of Parliament
MT	metric ton
NGO(s)	non-governmental organization(s)
PWDs	persons/people with disabilities
SACCO	Savings and Credit Cooperative Organization or Society
SEI	Stockholm Environment Institute
Sida	Swedish International Development Cooperation Agency
SMS	short message service
SSF(s)	small-scale fisher(s)

Executive summary

Aquatic foods are vital for the livelihoods, food and nutrition security of more than 800 million people in developing countries. They are especially important to countries and regions (such as islands) particularly vulnerable to climate change, poverty, conflict and humanitarian emergencies. Over and above that, aquatic foods harvested or grown in water are important for global food security, poverty alleviation and economic development. They are a rich source of vitamins, minerals and healthy fats, and therefore central for nutrition for children, pregnant women and people whose health is immunocompromised. More than three billion people obtain 20 percent of their animal protein from aquatic foods, and 60 million people are engaged in fisheries and aquaculture. Aquatic food systems are highly dynamic, comprising a complex web of all the elements and activities which relate to foods from water, along with sectors of the broader economic, social, political, geographical and natural environments in which they are embedded.

The Lake Victoria fishery currently supports more than 200,000 fishers (Lake Victoria Fisheries Organization [LVFO], 2014), with an estimated 35 million people dependent directly or indirectly on it for a living (Weston, 2015). The Lake Victoria fisheries contribution to the GDP in terms of food, income, employment, and foreign exchange earnings is 0.8% in Kenya (Kenya National Bureau of Statistics [KNBS], 2022). The fishery resources of Lake Victoria are contributing enormously to the livelihood of the communities and the riparian states in terms of food security, employment, wealth generation, foreign earnings, and other multiplier effects. The Kenyan side of the lake accounts for over 69% of the total national freshwater fish production (KNBS, 2022). The earnings from the lake fisheries are a major contributor to economic growth around the riparian counties.

The Lake Victoria fisheries has undergone some of the most intense ecological disturbances ever seen in a big freshwater ecosystem, attributed to both climatic and non-climatic pressures (Kolding et al., 2014; Njiru et al., 2018). The Lake Victoria region faces a very serious challenge because of climate change. It is anticipated that it will pose a threat to the Nile perch fishery, deteriorate the condition of the lake's environment, compromise food security, promote waterborne illnesses, and worsen eutrophication (Johnson, 2010). Climate change has had a negative impact on Lake Victoria fisheries and fishery-dependent livelihoods. As a result, communities who depend on fishing have limited access to necessities like food and money. The restricted options available to the communities make this problem worse by restricting their options for survival (Baki et al., 2015). The effects of climate change on fisheries at the local levels are still not widely studied. Investigating how climatic variability and change affect fishing communities and households may be helpful in identifying and describing counterproductive actions.

Thus, WorldFish carried out a scoping study from March to July, 2023 to assess through a gender lens how climate change affects the fishing communities in two riparian counties, specifically in Homa bay and Migori counties, which are located along Kenya's Lake Victoria Zone Region. Owing to high poverty, the two counties are hotspots of community vulnerability to climate change. The purpose of the *Climate change, Gender and Livelihoods Among Fisher communities in the Lake Victoria Zone Region in Kenya Multi-stakeholder Workshop* then was two folds: (i) to validate the findings of a scoping study; and (ii) recommending interventions and measures that can contribute to strengthening adaptation and resilience among women, youth, men and marginalized individuals among the fisher communities in the two counties.

Attending were 42 participants (31% women) comprising researchers (including Kenya Marine Fisheries Research Institute), representatives of the national and county governments (including the Kenyan Meteorological Services staff), local fishing communities, non-governmental organizations (NGOs) operating in the fisheries sector and a journalist (see Annex 1 for a full list of participants). Presenters shared ideas and experiences on the impacts of climate change on the fishers and other fish value chain actors, which generated discussion.

Discussions revealed that the fish value chain actors, suffer severe impact by climate change, as indicated by declining fish populations in the lake. This diminishing results in low and inconsistent fish catches, tremendous postharvest losses caused by rainfall and temperature variability, destruction of fish landing areas – including businesses and livelihoods along the shores of the lake – caused by floods or high tides that overrun the lake's high watermark, increased air pollution and waterborne diseases, and livelihood disruptions. This forces households that are engaged in the fish value chain to find alternative sources of income, some of which destroy the environment.

From the workshop deliberations, five major recommendations emerged. First, governance of fisheries resources requires: (i) the formulation and enforcement of appropriate policies with a gender focus, (ii) development of regulations, laws and policies to govern water bodies within Kenya and the neighbouring countries, as well as cage fish farming,

and (iii) empowering beach management units with financial and knowledge resources to aid them to promote adherence and enforcement of responsible use of fisheries resources. Second, addressing technology and fish value addition needs, through developing links with industry experts to help identify, test and implement affordable climate-smart technologies. Third, addressing financial bottlenecks, through linking key actors in the value chain with potential funding sources. Fourth, education and awareness, specifically through facilitating access to information and knowledge on climate change, markets, available technologies and financing options for actors in the fish value chains. Fifth is addressing health matters, through improving health and hygiene for safety and food handling, and adopting climate-smart drying technologies for omena and fulu for better hygiene and food safety).

The outcomes and outputs of the workshop were as follows: (i) site-specific awareness of gaps and planning of next-phase interventions; (ii) establishing commitments from the key government ministries, county departments and various organizations and fisheries value chain actors; and (iii) rallying the various stakeholders, fostering dialogue and networking, and enhancing partnerships and collaborations.

1.0 Introduction and background

Globally, fisheries are crucial for supplying food and nutrition security (Intergovernmental Panel on Climate Change [IPCC], 2018). The fishery resources of Lake Victoria enormously contribute to riparian livelihoods in terms of food security, employment, wealth generation, foreign exchange earnings and other multiplier effects. At the national level, Kenya's fisheries contribute 0.8% to the country's gross domestic product (GDP). This is significantly below its considerable potential which – if realized – would spur tremendous economic and social growth (Munguti et al. 2021; Kenya National Bureau of Statistics (KNBS) 2022). The primary contributor to the nation's fish production systems is capture fisheries. According to estimates, Kenya's inland waters have a fisheries potential of between 150,000 and 300,000 metric tons (MT), primarily from commercial fishing (Munguti et al. 2021). Total fish production grew to 163,600 tons in 2021, up from 151,300 tons in 2020. Freshwater fish landings increased by 8.5% to 136,300 tons in 2021. The production of marine fish also grew, reaching 27,300 tons in 2021 – an increase of 6.2% from the 2020 production levels. The increase was ascribed to the continuation of sustainable and optimal utilization of fishery resources through the imposition of stronger regulations on fishing practices during breeding seasons. Fish landings brought in a total of 30.4 billion Kenyan shillings (KES) in 2021, up from KES 26.2 billion in 2020. Rising from KES 20.6 billion in 2020 to KES 23.3 billion in 2021, earnings from freshwater fish landings increased, making up 76.8% of the total value of fish landed. With an output of 94,348 MT in 2021, Lake Victoria is the main producer of fish, accounting for 69% of the nation's total freshwater fish production, including aquaculture production (KNBS, 2022).

However, climate change has had a negative impact on Lake Victoria fisheries and fishery-dependent livelihoods. As a result, communities that depend on fishing have limited access to necessities like food and money, worsened by limited options for survival (Baki et al. 2015). The effects of climate change on fisheries at the local levels are still not widely studied. Investigating how climatic variability and change affect fishing communities and households would help identify, describe and understand counterproductive actions in mitigation. Despite the significance of fisheries, little is known on local-level climate-change driven vulnerability of fishery-dependent livelihoods. Most research has concentrated on the impact of climate change on fisheries at global, regional and country scales. Furthermore, there has been relatively limited in-depth analysis of the gender dimensions of climate change in Lake Victoria Region.

Kenya's fisheries contribute

0.8%

of GDP

Kenya's inland waters fisheries potential

150,000 - 300,000

metric tons (MT)

Growth in Total fish production



163,600 tons
(2021)

151,300 tons
(2020)

Climate change has had a negative impact on Lake Victoria fisheries and fishery-dependent livelihoods.

Consequently, WorldFish commissioned a scoping study to assess how climate change affects the fishing communities in two riparian counties along Kenya's Lake Victoria – Migori and Homa Bay counties. Owing to the high poverty rates, both counties are hotspots of climate-change driven community vulnerability. Thus, WorldFish together with the Stockholm Environment Institute (SEI) organized a two-day workshop (25th–26th September 2023) on *Climate change, gender and livelihoods in Migori and Homa Bay*. The workshop had three objectives, which are: (i) to disseminate the findings of the scoping study on determining the impacts of climate change on fishing communities in the two counties; (ii) identify choke-points in the fish value chains; and (iii) recommend interventions and measures that can contribute to strengthening adaptation and resilience to climate-change impacts in fisheries in the study area.

The workshop brought together 42 key stakeholders, including researchers, representatives from the national and county governments, local fishing communities, NGOs operating in fisheries and a journalist (see Annex 1 for the list of participants and Annex 2 for the workshop agenda).

To maximize input from all participants, sessions were a mix of plenary presentations, group breakout sessions and discussion panels. The workshop had five components, which were: (i) introduction and scene setting (welcome session, official opening); (ii) findings from scoping study on impacts of climate change on the livelihoods of the fishing communities in Migori and Homa Bay counties, and plenary discussions; (iii) Group breakout sessions on adaptation and resilience to the impacts of climate change in the fisheries sector in Migori and Homa Bay counties; (iv) Presentations on climate-smart technologies in the fisheries value chain; fish value addition and other fish value chain activities in East Africa; panel discussion on reflections and recommendations; and (v) Recommendations for actions and closing remarks.

Moreover, the workshop covered five thematic areas, which are: (i) governance of fisheries resources, (ii) technology and value addition, (iii) financing, (iv) education and awareness, and (v) health. This report then presents highlights, activities and insights from the workshop.



2.0 DAY ONE

2.1 Session 1: Opening remarks and scene-setting



2.1.1. Placing the workshop in context and WorldFish overview

*Dr. Rahma Adam,
Social and Economic
Inclusion Lead Scientist
at WorldFish.*

Before presenting workshop objectives, Dr. Rahma Adam first gave an extensive overview – backed by the latest data – of WorldFish. Specifically, she provided information on what the organization does, its contribution to the world over the years as well as successes. WorldFish is one of 13 institutions under One CGIAR – a global partnership that unites international organizations engaged in research on food systems. It works in the global south, specifically Africa, Asia and the Pacific.

While stating ‘big facts’ about aquatic food, she noted that globally, 3.3 billion people depend on aquatic foods, with genetically improved tilapia being introduced in the aquatic foods system. She highlighted the importance of leveraging on partnerships and noted that WorldFish’s mission is to end hunger, and to advance sustainable development by 2030 through science and innovation to transform food, land and water systems with aquatic foods for

a healthier planet and people. WorldFish’s vision is to realize an inclusive world of healthy, well-nourished people and a sustainable blue planet, now and in the future. She mentioned that this is why the workshop aims to review the impacts of climate change on livelihoods and identify priority actions for enhancing the resilience of the vulnerable fisher communities to climate change, including women and youth in Homa Bay and Migori. The workshop’s aim was to present findings from a scoping study on the impacts of climate change on fishery-dependent livelihoods in the two counties. It was also a validation workshop for the scoping study. Findings from the study sought answers to the following questions: (i) What are the choke-points in the fishing value chains in Homa Bay and Migori?; and (ii) What can be done to address the bottlenecks in the fisheries sector along Lake Victoria Zone Region in the midst of climate change?



The workshop aims to review the impacts of climate change on livelihoods and identify priority actions for enhancing the resilience of the vulnerable fisher communities to climate change, including women and youth in Homa Bay and Migori.

Dr. Rahma Adam, Lead Scientist, Social and Economic Inclusion, WorldFish.

2.1.2 Introduction of participants

This was led by Prof. Dorothy Amwata, the moderator of the opening session. She welcomed the participants to the workshop, recognizing all the partners and stakeholders present. Participant self-introduction helped in setting the stage and relaxing the atmosphere, readying participants for the day's activities.



2.1.3 Overview of Stockholm Environmental Institute (SEI)

*Dr. Philip Osano,
Director, Stockholm
Environment Institute,
Africa.*

Dr Philip Osano gave a background, overview and history of the Stockholm Environmental Institute (SEI) – an international non-profit research and policy organization that tackles environment and development challenges. SEI's strategic policy engagement prioritizes 2030 Agenda and SDGs, climate governance, financing for sustainable development, biodiversity, ecosystems and oceans. This means that SEI connects science and decision-making to formulate solutions for a sustainable future for all. The institute's work spans climate, water, air and land-use issues, governance, the economy, gender and health. Stakeholder involvement is at the heart of SEI's efforts to build capacity, strengthen institutions and equip partners for long-term change. SEI promotes debate and knowledge-sharing for and among decision-makers, academics and practitioners; and engagement with policy processes, development action and business practice worldwide.

SEI currently (2023) has ongoing work in Migori and Homa Bay counties on climate change and fisheries. They conducted a scoping study on Lake Victoria's rising water levels. Conclusions from this workshop will feed into the next SEI strategy. Of note, the blue economy is more than fisheries alone.

The 6th assessment report of IPCC focused on impacts, adaptation and vulnerability, noting that climate-change impacts and risks are becoming increasingly complex and more difficult to manage.

Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk, and in risks cascading across sectors and regions. And although different regions have different priorities, the workshop's deliberations are vital, and will have cascading impact on other countries and counties.



2.1.4 Impacts of climate change on the livelihoods of fisher communities in Homa Bay County

*Mr. George Okoth,
Chief Fisheries Officer,
Homa Bay County.*

Mr. George Okoth, the Chief Fisheries Officer of Homa Bay county, reported that Homa Bay County is currently living through a climate crisis, which he described as ‘turbulent times’ whose signs are very clear. Homa Bay has two main physical features – the lakeside lowlands and the upland plateau. The county has the largest share of the Kenyan waters of Lake Victoria, 16 islands with unique fauna and flora and an impressive array of highly aesthetic physiographic features. Several rivers drain into Lake Victoria, most of which originate from the surrounding highlands. They include Awach Kibuon, Awach Tende, Maugo, Kuja, Rangwe and Riana rivers. In the 2019 census, the Homabay county’s population was about 1,131,950 people of whom the majority were youth, with 40% below 15 years. The county’s population density is about 359.1 persons per square kilometer.

With detailed data, a picture was painted on how greatly the climate crisis has devastated the lives of the fisherfolks, to a point that they have now resorted to sand harvesting despite knowing how disastrous it is to biodiversity. Sand harvesting has spread to Rusinga and Mfangano Islands.

However, the Homa Bay county government is currently working on a policy to ‘mainstream’ sand

harvesting – currently an illegal activity – as part of wider mineral harvesting. Sand is core raw material in construction. Banning it will have ripple effects, as it is also a source of livelihood despite its negative environmental and economic impacts. Streamlining is a better approach and experts are working on the best way of harvesting without destroying the environment.

Homa Bay county recently launched a five-point El Niño preparedness plan. The five areas are as follows:

- i. Pre-identifying value chains likely to be affected by El Niño (sorghum, chicken and fish);
- ii. Improving weather advisory messages to help farmers, e.g. reinforcement of dikes, water monitoring, dissemination of information to fishermen, health department to be part of the team on climate change;
- iii. Public awareness that climate change is real;
- iv. Even if El Niño doesn’t come, the improvements made in preparedness are sound and of benefit; and
- v. Research and partnership are key: no interventions in isolation.



2.1.5 Impacts of climate change on the livelihoods of fisher communities in Migori County

Mr. George Ochola, Chief Officer, Fisheries and Blue Economy, Migori County.

Mr. George Ochola, Migori County Chief Officer for Fisheries and Blue Economy, welcomed participants to the county. Migori County takes climate change seriously, with a special committee on climate change issues. The impacts of the climate crisis, particularly in Nyatike sub-county, are dire. Water has destroyed all landing areas along territories run by beach management units (BMUs). Fish population is so depleted that fishermen often return empty handed. The workshop is very important and the study will help the country to find solutions for communities whose livelihoods depend on fisheries.

Lakeside aquaculture business is adversely affected when floods from the hinterland wash equipment and soil into the water. Therefore, hinterland residents must be sensitized to institute flooding measures. Farmers in the region acknowledge that cage fish farming is the solution. However, setting up cages is very expensive. The county government is fully cognizant of this and in fact provided cages to only seven of the county's 30 BMUs. They lack the resources to provide fingerlings and feed. Likewise, the county government has limited resources to help fisherfolk mitigate and adapt to the challenges of the climate crisis.

Migori County recently formed a committee in line with El Niño preparedness following Kenya's Meteorological Department predictions. Besides El Niño, above average rainfall is expected this year, also driven by the Indian Ocean Dipole – a natural climate cycle brought about by sustained changes in the difference between sea surface temperatures in the tropical western and eastern Indian Ocean, adjacent to the East African coast and south of Indonesia.

Enforcing fishing governance is challenging, but has been achieved in Tanzania. It requires close liaison between regional and national governments because the lake belongs to the national government while fishing falls under the county government. This split creates a gray area in implementing governance policies. The Lakefront Development Authority being formed will bring together all counties that touch Lake Victoria, including Busia, Siaya and Kisumu.

2.2 Keynote address by Western and Nyanza Regional Coordinator for Blue Economy and Fisheries



Mr. Samson Kidera, Western and Nyanza Regional Coordinator for Blue Economy and Fisheries.

Mr. Samson Kidera, the Western and Nyanza Regional Coordinator for Blue Economy and Fishers, represented the Chief Guest, Ms. Betsy Muthoni Njagi, the Permanent Secretary for Blue Economy. The State Department is sensitizing women to ensure good practices are achieved. He lauded continued efforts and initiatives by WorldFish in doing the same. Sensitization is important to ensure good practices are achieved. This workshop is important because: (i) policy documents provide conducive environment and are developed through such forums; and (ii) research and extension are critical in ensuring that answers to our challenges are found. Results of the scoping study will provide some of the solutions for resilience to climate change.

The national government through the State Department for Fisheries, Aquaculture and the Blue Economy has the mandate to facilitate sustainable development and management of aquatic resources. This is why the government hopes the scoping study will provide sound recommendation on investment

in Lake Victoria that will help achieve Kenya's mission and vision.

Aquaculture is a part of the blue economy and supports 1.2 million people. The sector can deliver more, which is why the government is developing new methods to achieve the true reality/expected GDP contribution. Lake Victoria accounts for 98% of the fishing industry. With 44% of all landing sites according to a study done in 2020, Homa Bay has the highest contribution, but has less developed landing sites. During last year's largest global climate conference (COP-27), emissions from fisheries were recognized as contributors to greenhouse gas (GHG) emissions and therefore contributing to climate change. This is why the government is supporting appropriate technologies including solar driers, and believes that there are windows for funding adaptation. Workshop recommendations will therefore be vital in helping shape policy development.

The Constitution of Kenya recognizes the role of community through establishment of the BMUs to ensure best services. Women play major roles in fisheries – both negative and positive. Postharvest processing contributes to GDP. But buying and selling immature fish caught using illegal methods and gear has negative impacts. Sensitization by WorldFish and others is important to ensure good practice.

Some of the impacts of climate change are: (i) displacement of fisherfolks from their landing sites; (ii) October 2022 to March 2023 –Climate change resulted in temperature rise. Lake Victoria temperature went as high as 29°C, which destabilized the water habitat; and (iii) cage farming as one of the blue economy initiatives suffered a loss of approximately KES 1 billion.

These could be addressed by initiatives carried out by the CGIAR research systems, and therefore the forum is fundamental to the government. In February 2023, a fisheries policy was adopted and presented to parliament after cabinet discussions. The policy will support growth and inclusivity (gender equality, social inclusion and youth). Youth have energy and mental capacity to drive the blue economy.

The government also recognizes the participation of women in fisheries. Recommendations should have inclusivity at all levels, from reporting and implementation to development of adaptive strategies. *Omena*, Nile perch and tilapia are the main species within the lake region. Postharvest losses are highest for *omena* which involves women, and therefore women should be supported.



Lake Victoria
accounts for
98% of the
fishing industry

2.3 Session 2: Scoping study on the impacts of climate change among fisher communities in Migori and Homa Bay counties

2.3.1 Presentation of the study findings

The findings of the scoping study on the *Impacts of climate change and variability on livelihoods of fishing populations in the Lake Victoria Zone Region, Kenya* by Prof. Dorothy Amwata, Dr. Rahma Adam, Mr. Nicholas Ndiema, Dr. Philip Osano and Mr. Kevin Ouko were presented by Prof. Amwata.



Prof. Dorothy Amwata, Murang'a University of Technology.

The general objective of the study was to assess the impacts of climate change and variability on fishery-dependent livelihoods in Kenya's Lake Victoria Zone region, Kenya.

Specific objectives, focusing on fishery-dependent women, youth and other vulnerable populations:

- i. Assess knowledge and perception of climate change and variability;
- ii. Identify effects of changes in rainfall and temperature on livelihoods;
- iii. Assess coping and adaptation strategies to climate change; and
- iv. Assess climate change adaptation constraints and opportunities.

Small-scale fishers (SSFs) are more susceptible to the effects of the climate crisis since they already face numerous problems, e.g. extreme poverty and high reliance on fishing and subsistence farming.

The researchers opted for a cross-sectional study design incorporating mixed-methods approach, specifically qualitative and quantitative methods.

In terms of sampling and sample size the following was followed: (i) Qualitative study participants (through key informants and focus group discussion) were purposively selected based on their knowledge of the fishing sector, climate change adaptation and community socioeconomic practices; (ii) Quantitative study participants were randomly selected from a list of households in the selected villages compiled with the help of the local leadership and existing household data from the county government; and (iii) Study villages and wards were purposively selected to represent fishery-dependent populations.

A total of 477 respondents participated in the quantitative study, of whom 41.9% (n=200) were from Homa Bay and 58.1% (n=277) from Migori. There were 42 key informant interviews (KII) and 6 focus group discussions (FGD). KIIs were coded with QRS NVivo version 14 Pro software for analysis.

The effects of climate change are not gender-neutral. Options for adapting to climate change closely interact with men's and women's roles and responsibilities, social norms, risk perceptions and access to resources. Thus, the study undertook a more nuanced gender analysis while embracing individual- and intrahousehold-level data and gender-differentiated FGD and KIIs. Regarding

knowledge/perception on flooding and impacts, the local communities reported that they greatly fear the devastating impacts of floods as they destroy equipments and assets they hold. Other challenges of the climate change crisis that have negative effects on fishing include submergence of *bandas* (informal and semi-permanent structures for commerce), greening of waters due to pollution, destruction of property (especially homes) and disease outbreaks, particularly waterborne diseases such as malaria, cholera and bilharzia. Majority of the consequences of climate change are substantially negative (IPCC, 2007).

Changes in weather (rising temperatures), invasive weeds (water hyacinth) and waste dumping are some of the other negative effects of climate change in the region. These have led to decreased oxygen levels in the water and increased acidity creating unfavourable conditions for fish growth. Homa Bay and Migori fisherfolks reported that mobile phones (through SMS [short message service] alerts), radio, television, newspapers and public *barazas* (community meetings) are their main sources of weather and climate information. The researchers concluded that members of the fishing communities in the two counties have a good understanding of climate change and its effects on their livelihoods.

Findings revealed that there were gender differences and similarities in activities undertaken within the value chain. Specifically, few women were boat managers and boat owners, but majority were fish traders; participated in BMUs; were custodians of the proceeds from fishing activities; were source of financing for the male fishers; as well as drying *omena*, fish vendors, frying, salting and sun-drying of fish. Men undertook roles such as boat managers, boat owners, BMU management, making and repairing of boats and fishing. In a similar vein, while men governed fish production, women dominated its marketing – wholesale and retail. They buy fish in bulk from fishermen or cooperative societies and resell it to retailers as wholesalers. Women also buy fish from wholesalers and transport it to their selling points as retailers. Women are clearly actively involved in the Lake Victoria fishing industry, particularly in the postharvest activities.

Findings also revealed gender differences in the impacts of climate change on income and livelihoods for different fisheries-related activities. The respondents in the study perceived major fishing seasons as 'good season' when catches are

big and incomes are high and 'bad season' when catches are meagre, and incomes are low attributed to climate change and variability, among other factors. Women had less control over fishery activities, mainly engaging in less profitable fishing activities and had more access to fish of poor quality. The data on income from fish value chains showed that on average in Homa Bay, men earned KES 40,000 weekly and women KES 20,000. In Migori in contrast, men earned KES 15,000 and women KES 80,000 weekly. One of the factors that might lead to the gender difference in average weekly income in the two countries can be attributed to membership to social groups and cooperative societies. In Migori, more women belonged to social groups and cooperative societies compared to women in Homa Bay. By the fact that the women belong to social groups and/or cooperatives in Homa Bay, it provides the women an opportune to get loans (financial capital), which they can use to purchase high volumes of fish from the fishers, compared to their counterparts, which they can use to sell to the market, and consequently earn more revenues than those who do not have the financial muscles on a weekly basis.

Another finding was that while BMU laws take into consideration the one-third gender rule where women are at least one-third in BMU leadership, the reality was that more than 90% of the BMU top leaders are male. And while people with disabilities (PWDs) are considered members of the group, they are not in leadership positions. Nevertheless, government policies provide a sound basis on which to form social groups and cooperatives which are helpful to women and PWDs in getting financial support and lobbying for improved fisheries management.

Women, youth and PWDs were the most vulnerable to the impacts of climate change. Women tend to have fewer resources to cope and are more reliant on climate-sensitive resources because of gender division of labour (Abedin et al., 2013). Women are often considered as 'timid' hence as vulnerable to the impacts of climate change as their endowments, agency and opportunities are not equal to those of men. Findings indicated that the youth are the largest population in the communities living around Lake Victoria within the two counties. Due to climate-change induced lack of jobs, majority of them resort to drug and substance abuse, leading to a reduction in productive labor. Our findings indicate PWDs are also greatly affected, especially those with impaired or no legs or hands. They cannot go fishing in the wake of climate change and quite often they cannot

participate in the leadership of BMU due to the high risks involved. Generally, PWDs are disproportionately impacted by climate change at three distinct stages: (i) prior to the disaster e.g., access to urgent information and early warning systems; (ii) during the disaster e.g., evacuation, transportation, and shelters; and (iii) after the disaster (such as housing, food, water, medical care, and education) (Kosanic et al., 2022; Jodoin et al., 2020). Closing the gender gap in adaptation can be improved by carefully designing the implementation of the adaptation interventions. Efforts must therefore be stepped up to formulate gender-blind policies and law that promote and reinforce an egalitarian structure for men and women. Changing gender relations is a crucial step toward a gender equal community that acknowledges women, youth and PWD's need, roles and contributions in the era of climate change.

Overall, climate change has led to the problems among fisher communities in the two counties:

- i. increased health problems, destruction and loss of property, particularly fishing-related assets, and heightened competition in the sector as more people go into fishing;
- ii. decrease in fish caught, fish species, fish sizes and consequently decreased revenue and reduced access to food; and
- iii. increased vulnerability of women, youth and PWDs to impacts of climate change.

Current climate change coping strategies used by the fisher communities in the two counties include:

- i. use of personal savings when business goes down, and borrowing from chamas (micro-savings groups);
- ii. spending more time in fishing (extending from six to 48 hours) or going deeper in the lake looking for fish;
- iii. being less selective on the fish type and size to buy/sell because stocks have reduced;
- iv. alternative livelihoods, however limited the options, such as running motorbike 'taxis' (men) and shops, and charcoal selling (women); and
- v. using own judgment on current and future climatic conditions and deciding whether or not to go fishing.

Major constraints faced by both women, youth and men in the two fishing communities include: (i) lack

of cold-storage facilities; (ii) limited finance; (iii) lack of access to timely knowledge, extension services and appropriate technology; (iv) weak BMU governance: BMUs should be empowered beyond rescue and registration to also oversee lake operations; and (iv) lack of organized groups and associations to support training and access to credit facilities.

Potential opportunities for interventions to address climate change problems include: (i) knowledge-sharing platforms; (ii) sound governance to ensure fishing is a source of sustainable livelihoods; (iii) formation and/or strengthening of social groups, networks or cooperatives to support fishers (in nascent stages); and (iv) construction of weather stations on the beaches to provide real-time weather information.

Some of the recommendations by the researchers include:

- The need to address health and hygiene matters. There is a need to improve hygiene, safety and food handling through drying racks for *omena* and *fulu* and water cleaning and purification facilities, and keeping the environment clean (installation and use of dustbins).
- Strengthening and/or constructing weather stations on the beaches to bridge gaps in weather and climatic data.
- Installation of cold-storage facilities, specifically ice plants, solar refrigerators, etc.
- Sensitization and awareness creation to the public, focusing on the impact of climate

change, value addition on fish and related products.

- Fish solar dryers and improved smoking kilns for longer shelf-life of fish and related products, thus reducing postharvest losses.
- Cages to enhance all-season fish availability.
- Promote cottage industry in feed manufacturing and value addition.
- Enhanced climate information sharing among stakeholders.
- Integration of indigenous knowledge.
- Knowledge integration and sharing between stakeholders to enhance fishery sustainability.
- Revitalization of fishery networks, associations and cooperatives to improve access to credit and capacity building.
- Reinforcement of regulations on fishing gear and fish poisoning.
- Proper marketing systems and networks, specifically contractual fish farming to improve market access.

2.3.2 Question & Answer session

Question (Q)1: Were people aware of climate change? Are they involved in activities that would increase the negative effect of climate change?

Answer by Prof. Amwata: “Climate change” itself is technical jargon, so we use proxies. Communities do not necessarily know nor use the term “climate change”. For clarity, accuracy and assuring common understanding we used proxies such as rainfall to assess effect of climate change. The fishermen we interviewed related well with changes in temperature over time, as well as rainfall changes.

People were not aware of the causes of climate change. Most of them related it to God (act of God), and most pray about it. Local communities can help reduce emissions if they are well-informed, e.g. using alternative technologies, planting certain type of trees, etc. to contribute to reducing GHG emissions.

Q2: KES 168 million was not accounted for in the name of farmer training. What are you doing to manage corruption?

Answer by Mr. Kidera: The Auditor General could not ascertain how the money was used. The questions were raised because accounting documents were not made available in good time. The State Department has since been acquitted.

Q3: What are you doing about sand harvesting which is an important issue?

Answer by Mr. Kidera: Sand harvesting is illegal. According to the Climate Change Act, Kenya is establishing a coordination team to enforce the necessary sand-harvesting laws through the Department of Mining. Departmental weaknesses in enforcement could be contributing to the apparent failure, although enforcement of mining laws is a multi-agency effort.

Q4: On exploitation in fisheries especially regarding women, what types of exploitation were you referring to?

Answer by Prof. Amwata: In terms of cultural norms and gender decisions such as being allocated a husband when a woman moves to a new area, and sexual harassment where women have to give in sexually to benefit from the fishing sector. More so because they cannot themselves go fishing.

Q5: What is the level of engagement you have with the Meteorological Department, including setting up of weather stations?

Answer by Prof. Amwata: There are meteorological advisory services from the Meteorological Department. There is also World Bank funding at county level to help in establishing weather stations as early warning systems. Africa has the lowest density of weather stations, which was raised at COP27 in Egypt in 2022. County teams and stakeholders are encouraged to take up the initiative to prioritize weather stations.

Q6: How is BMU empowerment a constraint? A study in Mbita was generalized to Homa Bay. Other areas were not included in the study. How was Suba selected? The alternative livelihoods proposed are related to fish. Were non-fish related livelihoods investigated? Is cage fishing a sound alternative given that fish catch is declining?

Answer by Prof. Amwata: Constraints faced by BMU is lack of financial resources, so their role is limited to rescuing fishermen. They cannot run big programs or project. BMUs need to be empowered to be pro-active. The study area would not have covered the entire region because of resources. Area selection was informed by science and by engaging local communities to identify major impact areas. Sand harvesting is bringing in a new perspective for future considerations. Cage fish farming is an alternative because of the

variation in fishing. Others are charcoal burning cottage industries and feed manufacturing using *ochong'a* by empowering local fishers. Our study focus was fish-dependent livelihoods.

Q7: Typically, research findings take more than five years to be implemented. What is the immediate support to farmers as WorldFish research on affordable feed continues?

Answer by Dr. Adam: The initiative Ukama Ustawi Initiative: Diversification for resilient agribusiness ecosystems in East and Southern Africa has two specific work packages (WPs), which people from the two counties can benefit from. Specifically, WP3, will help in providing small- and medium-sized enterprises with the needed technical assistance to accelerate in their aqua-business and WP5, will help in providing the needed support to the fisher communities in terms of addressing gender equality and social inclusion matters. In addition, WorldFish will use the grant from the CGIAR Gender Impact Platform grant to implement a suite of trial interventions to reduce fish post-harvest losses attributed to climate change. We are working with the women involved in cooperative societies within the fishing communities who process and sell fish at local markets. Interventions include providing women with solar freezers, solar driers, improved smoking kiln processes and providing glass display boxes to improve the shelf life of the fish and related products.

Q8: The figures on how El Niño will affect cage farmers were high. What will Homa Bay County do for those affected by El Niño?

Answer by Mr. Okoth: The El Niño preparedness plan has a budget for each of the actions. It will be a multi-agency approach and most entities are on high alert. The support is at both county and national government levels. It also recommends that farmers undertake preventive measures such as construction of dikes.

Q9: There is much work being done in the Blue Economy sector. How do you cascade this information to the community to help them make decisions?

Answer by Mr. Kidera: Mostly through mobile-phone and digital channels with needs-relevant information.

Q10: The construction of affordable houses is starting, can the government adopt alternative to sand usage of construction?

Answer by Mr. Kidera: Harvesting is a livelihood. The best way to create alternative livelihoods could be the use of cross-laminated timber instead of bricks and there is a proposal for adoption. Zanzibar is piloting such a study. We need policy changes alternative technologies and investment in public education for mitigations and to ensure solutions are implemented.

2.4 Session 3: Adaptation and resilience to the impacts of climate change in the fisheries sector in Migori and Homa Bay counties

Breakout sessions were on the following sub-themes:

- **Group 1:** Governance of fisheries resources
- **Group 2:** Technology and value addition
- **Group 3:** Financing
- **Group 4:** Education and awareness

The groups discussed the following questions:

1. What are you currently doing to address the impact of the climate crisis? As an individual or organization?
2. What challenges are you facing and what opportunities exist to solve these challenges?
3. Which institutions/organizations should act?

Group 1 breakout



Group 2 breakout



Group 3 breakout



3.0 DAY TWO



3.1 Review of day one outputs and emerging issues for action

Mr. Nicholas Ndiema gave a recap of day one activities and outputs, noting that the scoping study is one of the projects under the *Ukama Ustawi Initiative: Diversification for resilient agribusiness ecosystems in East and Southern Africa*.



Nicholas Ndiema giving a recap of day one of the workshop outputs.

3.2. Session 4: Bridging the science–policy–practice gap in climate change and fisheries in the Lake Victoria Zone Region.

WeTu: Climate-smart technologies in the fisheries value chain

WeTu is a social enterprise that provides mobility, power and water solutions to improve living standards in rural Kenya.



Charles Ogola from WeTu.

WeTu approach

- Environmental protection of Lake Victoria ecosystem
- Productive use of solar energy
- Innovative business model combining We Water, We Power and We Mobility
- Sharing economy approach
- Circular economy approach

Current projects

Project and the problem	Solution
<ul style="list-style-type: none"> • Solar-powered lanterns for <i>omena</i> night fishing • Dependence on lead acid batteries and kerosene pollutes Lake Victoria and relies on fossil fuels 	<ul style="list-style-type: none"> • Replace lead acid batteries and kerosene • Reduce pollution in Lake Victoria • Shift from fossil fuels to clean solar energy
<ul style="list-style-type: none"> • Pilot solar-drying technology for <i>omena</i> fish drying • Inefficient <i>omena</i> drying methods and postharvest losses 	<ul style="list-style-type: none"> • Innovative approach to <i>omena</i> drying • Reduce postharvest losses • Enhance incomes and improve food processing
<ul style="list-style-type: none"> • Ice flakes for fish preservation • Postharvest fish losses and limited shelf-life. 	<ul style="list-style-type: none"> • Extend fish shelf-life • Strengthen the fish value chain • Reduce food waste
<ul style="list-style-type: none"> • 'Improved <i>Kengre</i>' • Ambatch trees, breeding ground for tilapia, are being depleted for fishing floats. 	<ul style="list-style-type: none"> • Replace Ambatch tree <i>Kengre</i> (breeding ground for tilapia and other fish species) • Protect local fish populations • Sustainable fishing practices

BiInnovate Africa



Margaret Kanyua, BiInnovate Africa, ICIPE.

The second presentation was by BiInnovate Africa on fish value addition and other fish value chain activities in East Africa by BiInnovate Africa (International Centre for Insect Physiology and Ecology [ICIPE]). Fish-processing industries around Lake Victoria generate about 150,000 tons of waste, 80% of which is dumped, creating a waste management menace. BiInnovate Africa is a regional science- and innovation-driven initiative stimulating a sustainable bioeconomy in eastern Africa. It is supported by Sida (Swedish International Development Cooperation Agency), implemented by ICIPE (cooperation partners) and is present in Burundi, DR Congo, Ethiopia, Kenya, Rwanda, South Sudan, Tanzania and Uganda.

The project promotes use of scientific knowledge and talent in universities and research institutes to add social and economic value to biological resources, and convert biowaste into useful substances to diversify the economy, create jobs, and alleviate poverty, while conserving biodiversity and reducing carbon emissions.

The benefits of improving value addition to fish in a bioeconomy include:

- Fish-filleting waste processed into cost-friendly products with high-nutrient concentrations.
- Nile perch fat pads (oil-rich in polyunsaturated fatty acids) to omega-3 rich fish oils.
- Fish skin into leather and leather products.
- Collagen from scales and bones into cosmetic and pharmaceutical industries.
- In Uganda, by-products from Nile perch are used to develop micro-nutrient rich powders that enrich animal feed..

Conclusions:

- Aquaculture is a vital part of the East Africa bioeconomy and as such, focus needs to shift to improving access to high-quality feed, to make fish farming more sustainable.
- There is need for education of farmer communities on newer innovations in highly productive fish farming systems.
- A coordinated approach involving different actors is necessary within the East African Community (EAC) to realize maximum aquaculture potential.

3.3 Panel discussion

The panel comprised the Chief Officer, Environment and Climate Change, Migori County; representatives from Kenya Marine Fisheries Research Institute; BMUs; NGOs and the private sector, which included savings and credit cooperative organizations or societies (SACCOS) and banks.

Some of the gaps identified included:

- Legislation: Members of County Assemblies and Members of Parliament (MCAs and MPs, respectively) should have been invited to the forum: they are a powerful voice in legislating climate change.

- Address accountability to seal graft loopholes to safeguard climate change becoming the new cash cow.
- Engaging with the media: the journalists they reach out, need to understand the subject matter to better communicate about climate change.



Left-to-right: Philip Osano (Director, SEI, Africa), Margaret Kanyua (BioInnovate Africa), George Okoth (Chief Fisheries Officer, Homa Bay County), Samson Kidera (Western and Nyanza Regional Fisheries Coordinator, State Department for Fisheries, Aquaculture and the Blue Economy), George Ochola (Chief Officer, Fisheries and Blue Economy), Judith Okinda (Migori County Fisheries Department) and Rahma Adam (Lead Scientist, Social and Economic Inclusion, WorldFish).

4.0

Session 5: Key recommendations for action

Recommendations for action were wide-ranging, traversing policy and action, and mapping existing and potential partners. They included::



1. Finance: To recognize the substantial role of women in fisheries, microfinance approaches which provides loans, saving and insurance should be pursued. For example, counties should seek funds for community support, e.g. cooling systems run by women groups.



2. Improved security: The border patrol unit responsible for security around the lake is poorly equipped and therefore cannot carry out their mandate effectively. Maritime security is working on setting up a rescue center along the beaches. Further to this there is need for a trans-boundary resource policy that harmonizes policies, legislative acts, management and development of Lake Victoria water resource regarding transboundary disputes..



3. Market access: The fisherfolks should be directly connected to regional and external markets to gain higher returns. For example, the locals sell fish to middlemen in Nakuru who then export it.



4. Legal and policy arena: Establishing a robust legal framework and urgently formulating harmonized policy for the five countries that depend on Lake Victoria. In the absence of legal systems and harmonized policy, guidelines have been adapted to serve as legal instruments. For this reason, the existing East Africa Guidelines (Lake Victoria Fisheries Management Plan III (FMP III)) should therefore be more effectively used in cage fish farming. However, while guidelines can be used to organize operations (as is the case for Kenya which uses the East Africa Guidelines on cage fish farming), the guidelines are not legally binding. With proper regulation, Lake Victoria's fisheries stand a good chance of increased production without damaging wild stocks or the environment.



5. Sustained community-level communication: Drawing on creative arts to dramatize simplify messages for broad and effective reach. There is also the need for a collaborative governance with multiple stakeholders, shared narratives, continuous scientific monitoring programs, and the local perception of change to foster adaptive and transformational pathways to climate change and variability.

In summarizing and clustering the key recommendations from the workshop, Dr. Philip Osano identified five interconnected key thematic areas. The classification of recommendations into thematic areas is for ease of presentation and reference based on the thematic area that the recommendation will have the highest impact on. The five thematic areas were:



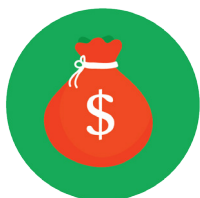
1. Governance of fisheries resources

- Formulate and enforce appropriate policies with a gender perspective
- Empower BMUs with the appropriate resources to help them promote adherence and enforcement of responsible use of fisheries resources.
- Develop regulations and laws on cage fish farming.
- Speed up the formation of the Lakefront Development Authority as a convening body to bring together all counties sharing Lake Victoria's resources.
- Develop mechanisms and strategies for the county and national governments to work closely together in the development and management of fisheries resources, including drafting regulations on harvesting and marketing of the Nile perch swim-bladder.



2. Technology and value addition

- Forge links with industry experts to help identify, test and implement affordable climate-smart technologies.
- Promote cage farming as a mitigation against declining fish population in the lake.
- Introduce and/or promote renewable energy (solar) driven postharvest processing technologies including drying of omena.
- Digitization to promote quick access to fishing data and information.



3. Financing

- Link key actors in the value chain with potential funding sources.
- Support the formation and growth of cooperative societies for actors in the fish value chains, including BMUs.



4. Education and awareness

- Facilitate access to information and knowledge on climate change, markets, available technologies and financing options for actors in the fish value chains.
- Empower BMU leaders with knowledge on leadership, regulations and guidelines on proper utilization of fishery resources.



5. Health

- Improve hygiene for safety in food handling.
- Climate-smart drying technologies for omena and fulu for hygiene and food safety.
- Technology-driven water cleaning and purification facilities.
- Equip fishermen with lifesaving gear

4.1 Closing session and next steps

Dr. Rahma Adam gave the final remarks and next steps. From this validation workshop, the researchers have three take-aways:

- 1. Redrafting the report to consider feedback from the validation workshop.**
- 2. Designing two-phase intervention programs to address the challenges: short-term interventions for immediate action, and a more robust intervention program in 2024.**
- 3. Some interventions will require cross-sectoral and cross-stakeholder action in the spirit of collaboration.**

The researchers concluded by asking all stakeholders to translate the research findings into action and embrace partnerships. Mr. George Ochola, the Chief Officer, Fisheries and Blue Economy, Ministry of Agriculture formally closed the workshop and thanked all the participants and presenters for their attendance.

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ANNEX 1: Workshop participants

Name	Organization	Gender	Value chain/ Designation	County	
1.	George Okoth	County Director Fisheries, County Government of Homa Bay	M	County Fisheries Expert	Homa Bay
2.	Zachary Oreko Winam	Fisheries Officer, Homa Bay County	M	County Fisheries Expert	Homa Bay
3.	Beatrice Atieno	Chairperson, Mbita Beaches	F	Chairperson, BMU	Homa Bay
4.	Wilson Juma Makori	Chief Mbita and Opinion Leader	M	Chief and Opinion Leader	Homa Bay
5.	Nathan Onyango	Coordinator, Coxswain	M	Coxswain	Homa Bay
6.	Mr. Paul Ng'ala Oloo	County Director, Meteorological Services	M	Meteorological Services	Homa Bay
7.	Margret Atieno Oswago	Trader, Nyachebe, Mbita	F	Trader	Homa Bay
8.	Jackline Akoth	Large-scale trader, Sindo/ Ice Plant	F	Large-scale trader	Homa Bay
9.	Philip Osindi	Fisherman	M	Fisherman/crew	Homa Bay
10.	Bryon Peter Ogola	Cage fish farmer, Kaugege	M	Cage farming	Homa Bay
11.	Rachel Awuor	Boat Manager/ Owner BMU	F	Boat Manager/ Owner	Homa Bay
12.	Eddah Pendo	County Government of Homa Bay	F	Gender Officer	Homa Bay
13.	Tarwish Lemech	WeTu	M	Technical Manager	Homa Bay
14.	George Ochieng Ochola	County Government of Migori	M	County Fisheries Expert	Migori
15.	Naphtali A. Odhoch	County Director, Meteorological Services	M	Meteorological Department	Migori
16.	Stephen Ologi	Matoso Beach, Got Kachola/ Cage farmer	M	Cage farmer	Migori

17.	Ruth Muhonja	Director Fisheries, Migori County	F	County Fisheries Expert	Migori
18.	Simon Karoki	Director, Fisheries	M	County Fisheries Expert	Migori
19.	6.Rispa Omua	Fisheries Officer, Karungu	F	Sub-county Fisheries Expert	Migori
20.	Dorothy Awuor Makongo	Trader	F	Small-scale trader	Migori
21.	Ochieng Peter Owino	Boat-maker/-repairer, Muhuru	M	Boat-maker/repairer	Migori
22.	Barnabas Majiwa	Chief, Sori, Karungu	M	Chief and Opinion Leader	Migori
23.	10.Peter Okoth Awiti	Chief, Karungu	M	Chief and Opinion Leader	Migori
24.	Fred Onyango	Fisherman, Got Kachola	M	Fisherman	Migori
25.	Okinda Fred Omondi	Cage fish farmer, Got Kachola	M	Cage farming	Migori
26.	Judith Okinda	County Government of Migori	F	County Fisheries Expert	Migori
27.	Caleb Ayub Ogwai	Fisheries Officer	M	KMFRI	Kisumu
28.	Veronica Obiero Ombwa	Gender and Fisheries	F	KMFRI	Kisumu
29.	Charles Ogalo	WeTu	M	Project Coordinator	Kisumu
30.	Kidera Samson	State Department of Blue Economy	M	Regional Coordinator for Blue Economy and Fisheries	Kisumu
31.	Dorothy Amwata	Murang'a University of Technology	F	Professor and consultant	Murang'a
32.	Rahma Adam	WorldFish	F	Lead Scientist, Social and Economic Inclusion	Nairobi
33.	Philip Osano	Stockholm Environment Institute	M	Director, SEI, Africa	Nairobi
34.	Nicholas Ndiema	International Livestock Research Institute (ILRI)	M	Data Analyst Consultant	Nairobi
35.	Kevin Ouko	WorldFish	M	Research Associate	Nairobi

36.	Margaret Kanyua	ICIPE	F	Bioeconomy group	Nairobi
37.	Leon Lidigu	Freelance	M	Reporter	Nairobi
38.	Kenneth Guchu	Lightbulb Studios Africa	M	Creative Director, TV and film producer	Nairobi
39.	Alfred Ngachi	Lightbulb Studios Africa	M	Creative Director, TV and film Producer	Nairobi
40.	James Gakunyi	Lightbulb Studios Africa	M	Photographer	Nairobi
41.	Lawrence Nzuve	SEI	M	Communications Coordinator	Nairobi
42.	Ngongang Danube	SEI	M	Research Fellow, SEI	Nairobi

Annex 2: Workshop agenda



Ukama Ustawi:
Diversification for Resilient
Agrifood Systems in East
and Southern Africa

PROGRAM FOR THE WORKSHOP ON CLIMATE CHANGE, GENDER, AND LIVELIHOODS AMONG FISHER COMMUNITIES IN THE LAKE VICTORIA ZONE REGION IN KENYA



DATE: 25TH-26TH SEPTEMBER 2023

VENUE: FLORENCE HOTEL, MIGORI

DAY 1 (MONDAY 25TH SEPTEMBER 2023)

Time	Activity
08:00-09:00	Arrival and registration (ALL) Person in charge: Kevin Ouko (Research Associate, WorldFish)
09:00-09:30	<p>WELCOME SESSION:</p> <p>Moderator: Dorothy Amwata, Murang'a University of Technology</p> <ul style="list-style-type: none"> Rahma Adam – Lead Scientist, Social and Economic Inclusion, WorldFish Philip Osano – Africa Director, Stockholm Environment Institute (SEI) George Okoth – Chief Fisheries Officer, Homa Bay County <p>Official Opening</p> <ul style="list-style-type: none"> Lukas Musenda – County Executive Committee Member for Agriculture, Livestock, Veterinary services, Fisheries & Blue Economy
09:30-10:30	<p>SESSION 1: INTRODUCTION AND SCENE SETTING</p> <p>Moderator: Paul Oloo, Director Meteorological Services, Nyanza Region</p> <ul style="list-style-type: none"> Introduction of participants (All) Workshop objectives and expected outcomes (Rahma Adam, WorldFish)
10:30-11:00	TEA/COFFEE BREAK
11:00-12:45	<p>SESSION 2: SCOPING STUDY ON CLIMATE CHANGE AND FISHERIES IN MIGORI AND HOMA BAY COUNTIES</p> <p>Moderator: Rahma Adam – WorldFish</p> <ul style="list-style-type: none"> Preliminary findings from scoping study on adaptation to impacts of climate change on fishing communities in Migori and Homa Bay Counties (Dorothy Amwata, Murang'a University of Technology) Plenary Discussions
12:45-14:00	LUNCH BREAK
14:00-15:30	<p>SESSION 3: ADAPTATION AND RESILIENCE TO THE IMPACTS OF CLIMATE CHANGE IN THE FISHERIES SECTOR IN MIGORI AND HOMA BAY COUNTIES</p> <p>Moderator: Dorothy Amwata, Murang'a University of Technology</p> <p>Group Breakout Sessions</p> <ul style="list-style-type: none"> Group 1: Governance of fisheries resources Group 2: Technology and Value Addition Group 3: Financing Group 4: Education and Awareness
15:30-16:30	<p>SESSION 3 (continued)</p> <p>Group Report back (Plenary)</p> <ul style="list-style-type: none"> Group 1: Governance of fisheries resources Group 2: Technology and Value Addition Group 3: Financing Group 4: Education and Awareness
16:30-17:00	BREAK (END OF DAY ONE)

DAY 2 (TUESDAY 26TH SEPTEMBER 2023)

Time	Activity
09:00-09:30	<p>RECAP OF DAY 1</p> <p>Review of day one outputs and emerging issues for action. (Nicholas Ndiema, Project Consultant)</p>
09:30-10:00	<p>SESSION 4: BRIDGING THE SCIENCE-POLICY-PRACTICE GAP IN CLIMATE CHANGE AND FISHERIES</p> <p>Moderator: Philip Osano - Stockholm Environment Institute</p> <ul style="list-style-type: none"> • Presentation on Climate Smart technologies in the fisheries value chain (Charles Ogallo – WETU) • Presentation on fish value additions and other fish value chain activities in East Africa (Margaret Kanyua–ICRPE)
10:00- 11:15	<p>SESSION 4 (CONTINUED)</p> <ul style="list-style-type: none"> • Panel Discussion on Reflections and Recommendations <p>Panelists</p> <ol style="list-style-type: none"> 1. Chief Officer, Environment and Climate Change (Migori County) 2. Representative, Kenya Marine Fisheries Research Institute (KEMFRI) 3. Representative, Fishing Community (BMU) 4. Representative form the NGO sector 5. Representative of Private sector (SACCO/Bank)
11:15-11:45	TEA/COFFEE BREAK
11:45– 12:45	<p>SESSION 5: RECOMMENDATIONS FOR ACTION (TABLE GROUPS)</p> <p>Moderator: Rahma Adam – WorldFish</p> <ul style="list-style-type: none"> • Opportunities for policy and project actions (pilot) • Mapping of existing and potential partners
12:45-13:15	<p>CLOSING SESSION</p> <ul style="list-style-type: none"> • George Ochola – Chief Fisheries Officer, Migori County • Rahma Adam– Lead Scientist, Social and Economic Inclusion, WorldFish • Workshop evaluation • Closing Remarks
13:15	LUNCH BREAK AND DEPARTURE



For further information, contact:

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