EU-EAC TrueFish Farming Story in the Lake Victoria Basin

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TrueFish: ONE YEAR OF IMPLEMENTATION
Advancing Aquaculture in East Africa

Welcome by Dr. Shigalla Mahongo
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In our region the fishery employs ~ 200 000 fishers and 3-4 million along the entire fisheries value chain. Fish generates >840 million US$ at landing and >300 million US$ in export revenue. The EAC needs about 3 million tons of fish annually to meet the average global per capita fish consumption of about 20 kg per annum. This can be achieved through the development of capture fisheries and aquaculture.

Regional aquaculture is challenged by a relatively high cost for inputs and production inefficiencies, which result in a price point that encounters strong competition from wild capture fish and imports from East Asia, particularly China.

The main constraint preventing growth of aquaculture is production inefficiency, which challenges its competitiveness compared to other sources of fish. This is largely caused by a combination of the higher than international average costs for quality imported inputs (or use of lower
quality local inputs), particularly feed, and suboptimal feeding and farm management practices which result in lower than benchmark feed conversion ratios.

It is estimated that with the current cost of inputs and market prices, tilapia farming offers modest returns. There are also constraints with access to technology and technical expertise, skilled labor, high quality fingerlings, finance, and generally an enabling environment which could be improved.

The Lake Victoria Fisheries Organization (LVFO) is an institution under the East African Community, with the aim to harmonize, develop and adopt conservation and management measures for the sustainable utilization of the living resources of Lake Victoria, and to optimize the socio-economic benefits from the basin for the three partner states; Kenya, Tanzania and Uganda. The LVFO headquarters are in Jinja, Uganda, from where it collaborates closely with the national fisheries research institutes in the three partner states.

The LVFO was established in June 1994, as informed by the FAO’s Committee for Inland Fisheries of Africa (CIFA) Sub-Committee for the Development and Management of the Fisheries of Lake Victoria.

The goals of TrueFish are to contribute to the development of competitive, gender equitable and sustainable commercial aquaculture to support economic development and sustainable management of natural resources in the Lake Victoria Basin. Funded by the European Union with an overall budget is EUR10.15 million, its specific objectives are to improve access to commercial networks for aquaculture-related businesses, increase the availability of skilled workers, thereby addressing two of the most important limiting factors for the development of aquaculture, as well as to improve sustainability by mitigating risks related to aquatic animal health conditions and biodiversity.

The TrueFish project covers the following three components:

- Component 1. BUSINESS: Facilitating access to commercial networks.
- Component 2. SKILLS: Making available local skilled workers in aquaculture-related businesses.
- Component 3. SUSTAINABILITY: Ensuring sustainable and bio-secure regional aquaculture production systems.

Let’s see what TrueFish has been working on during the first quarter of this challenging 2022.
COMPONENT 1. BUSINESS

The business component is being implemented by Landell Mills and has three major focal areas, which include:

- The establishment of an East African Aquaculture Exhibition and Conference.
- Facilitating an increased flow of investment into the sector.
- Supporting regional aquaculture associations through effective B2B linkage and study tour programmes.

Following support to the first regional conference of the East African division of the African Chapter of the World Aquaculture Society (ACWAS) in 2021, the business component has been working in collaboration with this African Chapter towards the hosting of a hybrid conference in Kenya in September 2022. This will be followed by a regional conference in Tanzania in 2023 and Uganda in 2024. A great milestone has been achieved by the business component in securing the World Aquaculture Conference for Uganda in June 2025. This event will see the entire aquaculture world descend on Entebbe to deliberate, present, and set the tone for global aquaculture.

To assist the flow of investment into the sector, this component is currently working on the development of a generic business case or model for fish farming that can be used to showcase the sector to financial institutions, investors, entrepreneurs, and donors. This will be supported by an East African Aquaculture Business Directory.

In supporting regional aquaculture associations, Landell Mills facilitated a study tour to Egypt in March 2022 for representatives of the aquaculture associations and societies of Kenya, Tanzania, and...
Uganda. Equal numbers of men and women participated in the study tour, which coincided with the African Conference of ACWAS in Alexandria and saw participants visit the Central Laboratory for Aquaculture Research (CLAR) and the WorldFish Centre in Egypt. This study tour provided wide-ranging opportunities to link with equipment and service providers to the aquaculture sector, while it enhanced collaboration with Egyptian aquaculture researchers and associated organizations. A B2B training session is being planned for each of the beneficiary countries later in 2022/3.

COMPONENT 2. SKILLS

Institutional Training Needs Assessments

After a slow start, impacted by COVID, the FAO team in TrueFish progressed in its work with the three national collaborating Technical and Vocational Education and Training (TVET) Institutions. These institutions deliver aquaculture training in the region and include the Ramogi Institute of Advanced Technology (RIAT) in Kisumu, Kenya; the Fisheries Training Institute (FTI) in Entebbe, Uganda and the Fisheries Education Training Agency (FETA) of Tanzania, at its Nyegezi Campus.

This subcomponent’s activities aim at updating and reinforcing the training contents currently delivered by the three TVETs, enhancing the technical capacity in some specific areas, and upgrading the exiting equipment, with the overall goal of supporting these TVETs to deliver skilled workers that can cope with the needs of the aquaculture operators in the Lake Victoria Basin.

In 2021, the training needs of the three TVETs was assessed, and a corresponding report produced, which has subsequently been reviewed and validated by the institutions concerned.

During the first quarter of 2022, FAO in collaboration with Lattice Aquaculture Trust², conducted a SWOT analysis of each of the participating TVETs and concluded their respective business plans.

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¹ The Food and Agriculture Organization of the United Nations (FAO) has deployed a team composed of a fisheries and aquaculture specialist and an operations officer that will collaborate permanently with the LVFO in implementing specific work-packages of the components 2 and 3 of TrueFish. The team is located at the LVFO premises, in Jinja, Uganda.

² https://lattice-aqua.com/
These business plans are informed by the results of the TNAs and SWOT analysis and are intended to serve as guidelines for the implementation of the required improvements. Additionally, the project is exploring ways of enhanced regional collaboration among the three institutions, which will reinforce the entire technical capacity of the Lake Victoria region. The work is ongoing and being done in close collaboration with RIAT, FTI and FETA. Preliminary results are expected soon and will lead to the next immediate objective related to the delivery of upgraded training content in 2023.

**Aquaculture Operators Training Needs Assessment and Census**

In 2021/2 the sector-based Training Needs Assessment (TNA) and census was also undertaken by FAO in collaboration with the Lattice Aquaculture Trust to produce interesting results. The main aim was the identification and mapping of the current aquaculture operators working in the Lake Victoria Basin and to assess their specific training needs. TrueFish intends to provide skilled workers to the aquaculture sector to assure and support their sustainable aquaculture activities. Therefore, it is imperative to collect firsthand information from the sector as this relates to their needs and expectations.

Consequently, and with the view to not leaving anyone behind, TrueFish used GIS technologies to conduct a preliminary census of aquaculture operators, which totaled 571 operators in Lake Victoria working at “commercial business level”.

In addition to the 571 commercial business operators, 21 non-farmer stakeholders were interviewed for additional insight. The spatial scope of the census was 1km offshore and 5km inland. The commercial business operators were mainly cage farmers on the lake and pond/hatchery farmers close to the lake. In total, the responding farmers operate a total of 5 656 cages.
COMPONENT 3. SUSTAINABILITY

Aquatic Animal Health (AHH) and Sustainability.
National AAH Self Assessments

The TrueFish FAO component is working on the enhancement of aquaculture biosecurity conditions in the Lake Victoria Basin to reduce the risk that the spread of aquatic diseases poses to the regional aquaculture industry.

Through 2021, TrueFish worked with the Aquatic Animal Health (AAH) National Focal Points specifically designated by Kenya, Uganda, Tanzania, Burundi, and Rwanda, to conduct their national AAH self-assessments.

In the context of this work, the term biosecurity is used to specifically describe the measures used to prevent the introduction of unwanted biological agents, particularly pathogens, and to manage adverse effects associated therewith. It encompasses both farmed and wild aquatic animals; exotic, enzootic, and emerging diseases; and is applied from the farm to the ecosystem, and at national and international level.

Considering the above definition, the focus of this activity is on conducting a gap analysis by using a FAO standardized self-assessment survey questionnaire that covers national performance and capacity around biosecurity. This includes a SWOT (strengths, weaknesses, opportunities, and threats) analysis and consultation with relevant stakeholders.

The 5 national self-assessments conducted during 2021 and the first quarter of 2022 are currently under FAO specialist review. These national assessments will be validated during the upcoming first meeting of the LVFO’s Aquatic Animal Health Technical Working Group.
In the first quarter of 2022, TrueFish has produced the Terms of Reference (ToR) for the LVFO’s Aquatic Animal Health Technical Working Group (AAHTGW). The ToR has been distributed among participating countries (Kenya, Uganda, Tanzania, Burundi, and Rwanda), and the LVFO Secretariat has requested national authorities to nominate delegates that will become the technical representatives of the AAHTGW. Some delegates have already been nominated and names submitted to the LVFO.

A constituent meeting of the AAHTGW is planned for early June 2022. Among other items, delegates will discuss and adopt the Aquatic Animal Heath, Aquaculture Biosecurity, and overall approach of the TrueFish/FAO AAH project. The meeting will review and approve the AAHTWG Terms of Reference, analyze the national AAH institutional framework and aquaculture biosecurity status as well as adopt the first steps towards a Regional Strategy based on their National Strategies and AAH status.

The remaining months in 2022 will see activities around reinforcing the national AAH strategies as well as building a regional strategy. This will include, among others, the following key steps:

- Identification of the nationals and regional pathogens lists.
- Development of a risks analysis.
- Enhancing technical capacity at national level for diagnosis.
- Development of monitoring and control systems.

Aquaculture Spatial Planning and Zoning
Legal and Institutional Review of the National Priorities for Aquaculture.

Aquaculture Spatial Planning (Zoning) is basically a process towards the establishment of a sustainable management system for aquaculture production. Different steps of this process are linked to the gathering of information that can be plotted (mapped) in different layers. By overlapping these layers, the most suitable areas for the development of aquaculture are revealed. This information is based on research, providing decision makers with informed tools to better draft and adopt management plans.

This process is guided by the Ecosystem Approach to Aquaculture (EAA) and requires extensive and intensive consultation with stakeholders. In addition, the project aims to reinforce national and regional technical capacities and provide legal and normative guidance to the LVFO and its member states.

During 2021, TrueFish conducted an institutional and legal frameworks review for Kenya, Uganda, and Tanzania. The main purpose was to identify who is who when it comes to selecting what areas will be allocated to aquaculture development in areas of Lake Victoria under their jurisdiction. Additionally,
TrueFish gathered information on aquaculture related strategies and plans, as well as the current approach to cage culture and zone-based management.

The main findings of this analysis showed that, although aquaculture related zoning is not well developed, countries are working on reinforcing this area, including the development of national strategies. Little has been achieved around spatial planning, but countries are looking forward with increased interest to the project results.

The report on this work is in the process of being validated by the respective countries.

**Lake Victoria Social and Economic Analysis for the Development of Aquaculture**

A core layer of information in the spatial planning related to the evaluation of social and economic impacts that the development of the aquaculture will bring to the lake basin users and surrounding communities. Other aspects such as cooperative use of resources with other sectors is equally important and could result in both positive or negative impacts.

During the first quarter of 2022, TrueFish launched a situation analysis in the three riparian countries to evaluate these aspects, which is known in spatial planning as the determination of Social Carrying Capacity. Once concluded, the lake basin map will be plotted with a traffic color system, showing in green the areas where development of aquaculture is recommended from a social point of view. Red will show areas where aquaculture is not feasible, while yellow will indicate areas where development is possible with specific limitations. The analysis will be concluded and ready for public consumption during the second quarter of 2022.

**Prepare a survey and report on spatial analysis of data on Lake Victoria**

The next layer of information that TrueFish has been working on relates to the identification of all spatial related resources in the region. This analysis includes existing capacities (experts, institutions, academia, research centers, government departments, etc.), which have experience and skills in spatial planning as well as existing institutional capacities and existing relevant infrastructure to be considered during the aquaculture spatial planning. The relevance of selected infrastructure is justified according to its pertinence to aquaculture development. Examples include roads and transport lines, energy and power supply, urban and rural nuclei, processing plants, ice, markets, cage builders, shipyards, etc. Finally, this exercise is also looking at existing Lake Victoria basin biological, physical, and environmental data relevant to the production of tilapia and catfish in cages and ponds, including information on lake hydrology, bathymetry, environmental information, etc.

This assessment is being developed in collaboration with the University of Stirling (UK) and results are expected towards the end of 2022. These results will fine-tune the selection of that area feasible for the development of the aquaculture in the lake basin.
Obtain remote sensing and other pertinent geospatial data. LVFO Spatial Information Inventory.

In addition to the collaboration with the University of Stirling, and in a coordinated manner, TrueFish launched a valuable collaboration with The Nature Conservancy (USA) to identify and obtain pertinent geospatial data.

Among other relevant data, the following sources will be considered and incorporated into the TrueFish analysis:

- The Centre for Satellite Applications and Research of the US NOAA.
- U.S. National Science Foundation.
- The Lake Basin Action Network of Harvard University.
- Remote sensing data, and existing spatial data held by the East African national fisheries research institutes (coordinated with the University of Stirling).
- Remote sensing data, and existing spatial data held by East African national research institutes “other than fisheries” (coordinated with University of Stirling).

These activities will integrate the collected datasets into a newly created LVFO Spatial Data inventory, that will be utilized/considered for further definition and development of spatial models.

“Modelling” under TrueFish will focus on the identification of optimal areas for cage and pond aquaculture operations, which will minimize impacts, the likelihood of disease, and user conflicts, while maximizing benefits and long-term viability.

LVFO’s Zoning Working Group (ZWG)

In the first quarter of 2022, the FAO team, together with the LVFO, defined the Terms of Reference (ToR) for the Zoning Working Group (ZWG).

The LVFO Secretariat distributed the TOR among its member states and has requested nominations of members who will participate in the working group on zoning. During the constituent workshop and subsequent meetings of this ZWG, delegates will discuss, among other issues:

- Social and Economic Lake Status review (Social Carrying Capacity Determination).
- Identification of suitability variables and a multi-layer database compilation (bathymetry data, water quality, etc.).
WorldFish

Under the TrueFish project, WorldFish (WF) implements the result area 3.3 that relates to improved protection of biodiversity. The key aim of this subcomponent is to address key perils to the long-term development and sustainability of the aquaculture sector, by minimizing the risk of accidental or intentional introduction of genetic material which can threaten native species.

WF will generate four outputs, including:
- The establishment of a LVFO Regional Working Group to deliver advice on genetics and biodiversity in aquaculture.
- The mapping of aquaculture and wild locations to show the distribution of native and exotic genotypes
- Science-based policy recommendations and model national policies, regulations, and guidelines for biodiversity presented for adoption at the regional level.
- Awareness training for fisheries, aquaculture, and environmental officers, as well as private hatchery owners (capacity building) on methods and technologies for hatchery and biodiversity management.

During the last six months, WF is delighted to report on several achievements. This includes the establishment of and support to an LVFO partner state working group. This working group meeting was held in Entebbe, Uganda in November 2021. The group comprised 12 participants (4 each from Uganda, Kenya, and Tanzania). In addition to the regional balance, the group strictly adhered to principals of gender equity. Many activities took place in the workshop including the review and harmonization of the terms of reference. Since this was the first meeting, a regionally representative committee was established, consisting of a chairperson from Kenya (Dr Dorcas Luswet), a vice-chairperson from Tanzania (Mr Masondole Kusekwa Tabu), as well as a secretary-general from Uganda (Mr. Sam Orukan).

A focal area of the WorldFish work revolves around genetic screening research in the Lake Victoria Basin. WorldFish has established a research partnership with the EAC institutes of NaFIRRI, KMFRI, and TAFIRI. Additionally, a detailed research plan has already been developed which includes the standard operating procedures (SOPs) for genetic sampling and analysis. The EAC research institutes continue to collect the genetic materials so that these can be transferred to the UK for genotyping in mid-2022.

WorldFish has achieved some outputs around capacity building in aquatic genetic resources,
management, and conservation. For instance, a short introduction course was conducted on aquatic genetics and biodiversity, which was attended by the LVFO Regional Working Group members in Entebbe in November 2021. Several topics focusing mainly on the management of aquatic resources and biodiversity were covered during the training session that was presented by the WorldFish Biodiversity Advisor (Dr Papius Dias Tibihika) and the WorldFish Component Director (Prof. John Benzie).

Late in 2021 WorldFish facilitated the training of 13 junior scientists from Kenya, Tanzania, Uganda and Burundi at the Biosciences East and Central Africa-International Livestock Research Institute (BecA-ILRI), Nairobi, Kenya. Several pragmatic and cutting-edge sciences in molecular genetics and bioinformatics were presented and equipped the EAC scientists with high-level skills for aquatic resource biodiversity management and conservation.

Project Coordination

The Lake Victoria Fisheries Organization’s TrueFish Project, in collaboration with the implementing partners (FAO, Landell Mills and WorldFish) organized a Monitoring and Evaluation (M&E) workshop in Kampala, which was held from 12 to 13 May 2022. The workshop was also attended by the management of LVFO and Focal Point Persons from Burundi, Kenya, Tanzania, and Uganda. The workshop was opened by the Executive Secretary, Dr. Shigalla Mahongo who gave the opening remark. The aim of the workshop was to review the available data, harmonize the M&E reporting format and analyze available data on project progress for preparation of the first M&E report.

The following presentations were made during the first day of the workshop:

- Introduction and overall objectives by the Regional Project Coordinator.
- Overview of the TrueFish Project by the Deputy Executive Secretary, Dr. Anthony Taabu-Munyaho.
- Review and update of the M&E Plan for the project and harmonizing of the M&E reporting format by the Regional Project Coordinator.

After the presentations the meeting divided itself into three groups to review the data for the respective TrueFish components. On the second day members shared their draft reports for consolidation, so that the M&E report can be presented to the Project Steering Committee members prior to the meeting set for June 2022.

Looking ahead

The Project Steering Committee whose membership is drawn from representatives of the EAC Secretariat (i.e. Agriculture and Food Security Department), representatives of LVFO (i.e. Executive Secretary), representatives of the EU Delegation in Tanzania; representatives of the EAC Partner States (i.e. from fisheries and veterinary control authorities and fisheries research institutions); representatives of the private sector/Non-State Actors (such as aquaculture associations etc.) and Project Coordination Unit officers acting as rapporteurs, is planned to take place in Kampala in June 2022.
The Steering Committee was formed essentially to review the overall policy and strategic direction of the project, monitor the overall performance and coherence between the different components, provide guidance as appropriate, review the work plan, budget, project implementation modalities and the work carried out under the project.

The Steering Committee meets at least bi-annually with the first meeting held on 1 June 2021 at the EAC Secretariat, Arusha, Tanzania. The second Project Steering Committee meeting was scheduled to take place on 9 December 2021 in Kampala, Uganda, but was postponed. It is in this regards that the Project Coordination Unit is organizing the second Project Steering Committee meeting that will take place in Kampala in the month of June 2022. The agenda of the second Project Steering Committee meeting will include reviewing of the overall policy and strategic direction, monitoring of the overall performance of implementation, coherence between the different components, and guidance to the project as appropriate. The meeting will also review the work plan, budget, project implementation modalities and the work carried out thus far.

The Project Coordination Unit welcomes the Project Steering Committee members to the second Project Steering committee meeting and looks forward to a fruitful deliberation and guidance in driving the project objectives to fruition.

Links of interest
https://lvfo.org/content/eu-eac-true-fish-farming-story-lake-victoria-basin-truefish

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