LAKE TANGANYIKA AUTHORITY

REPORT ON THE REGIONAL FRAME SURVEY OF LAKE TANGANYIKA FISHERIES

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GLOSSARY OF TERMS AND DEFINITIONS

APPOLO

Two boats joined together, larger than a catamaran, using a boat equipped with an outboard motor of more than 25 HP.

Database

A logically structured and coherent set of data that can be used for analysis purposes.

Catamaran

Two plank boats fastened together and used to operate a net.

Data

Facts resulting from measurements or observations.

Fishing effort

Quantity of fishing gear of a given type used at fishing sites during a given unit of time, for example, number of hooks set per day, or number of sets made per day with a beach seine.

Overall volume of fishing (usually per unit time) expressed in units such as: length of gillnets × soaking time, etc. Effort can be nominal, meaning the simple total of effort units applied to a stock over a given period. It can also be standardized or effective, i.e., adjusted to account for differences in fishing power and catch efficiency, making it directly proportional to fishing mortality. Usually refers to a specific fishery and gear type.

Fishing vessels

Any ship or other vessel used for exploiting fishery resources.

Encircling gears

Fishing techniques generally involving the use of nets or similar gear to surround and capture fish or other aquatic organisms within a confined area.

Fisheries frame survey

A comprehensive description of the primary fishery sector structure, including an inventory of ports, landing sites, number and types of fishing units (boats and gear), a description of fishing and landing activities, distribution circuits, processing and marketing of fish, methods, supply centers for goods and services, etc.

FAIMS

Fisheries and aquaculture information management system.

Dip net

A type of fishing gear consisting of a shallow net attached to a handle, used to catch fish or other aquatic organisms by scooping them out of the water.

Lift net

Lift nets are horizontal and vertical net panels shaped like a cone with the opening facing upwards, submerged at a certain depth, left for a while to allow light to attract fish above the opening, then lifted out of the water.

Gillnet

A type of fishing net used to catch fish by entangling or trapping them in the mesh. Usually a rectangular net panel with a specific mesh size, suspended vertically in the water column.

Fishing intensity

Effective fishing effort per unit area. It is proportional to fishing mortality.

Jetty

A fixed structure projecting into the lake to facilitate landing and mooring of boats.

Handline

A type of fishing gear consisting of a single fishing line operated by hand, usually without a rod or reel, often used for jigging, generally without bait.

Longline

A long rope with an assortment of hooks carrying different numbers.

Fishing gear

All tools used to catch fish, such as longlines and lines, gillnets, traps, harpoons, etc.

Monofilament

A type of synthetic fishing line made of a single continuous filament, typically made from materials such as nylon or polyethylene. Widely used due to its strength, flexibility, and ability to be produced in various diameters for different fishing needs.

Fishing

Any activity involving the capture, taking, or harvesting of fish, mollusks, crustaceans, etc., or any attempt to do so; or any activity reasonably expected to result in such capture or harvest, including any operations on waters supporting this activity.

Fisheries

The sum (or set) of all fishing activities carried out on a given resource (e.g., sardine fishery). Can also apply to activities of the same type or fishing style (e.g., beach seine fishing or trawl fishing). Fisheries may be artisanal and/or industrial, commercial, subsistence, recreational, annual or seasonal.

Activities involving the capture of fishery resources from one or more stocks, which can be treated as a unit for conservation and management purposes, identified based on geographic, scientific, technical, recreational, social, economic, and/or catch characteristics.

Fisher

A person (man or woman) participating in a fishery. A person involved in fishing operations from a fishing boat, a platform (fixed or floating), or the shore.

Shore fisher

Fishers operating from the shore or wading in shallow waters to catch fish, often using simple or traditional fishing methods and frequently using their feet during fishing.

Pontoon

A floating structure projecting into the lake to facilitate boat landing and mooring.

Surrounding net

A ring net used to encircle a school of fish. Its design is similar to a purse seine but generally smaller and equipped with a drawstring.

Fishery resources

Any stock of living aquatic animals (except those specifically prohibited by law) that can be captured by fishing, as well as their habitat.

Beach seine

A large fishing net designed to encircle fish and draw them towards the shore.

Landing site

A place where boats unload their catch. A landing site may be the same as the home port or base port but may also differ.

Data/report validation

Confirmation of the reliability of data or reports by cross-checking, generally using information from other sources such as references or country participants.

Variable

Anything that can change. A quantity that varies or can vary. An element of a mathematical formula that can take any value.

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Acronyms and abbreviations

LTA: Lake Tanganyika Authority/LTA

CBO: Community-Based Organisations

ECOFISH: Contribution of Sustainable Fisheries to the Eastern Blue Economy

FAIMS: Fisheries and Aquaculture Information Management System

FAO: Food and Agriculture Organisation of the United Nations

NWG: National Working Group

RWG: Regional Working Group

IUU: Illegal Unregulated Undeclared

LATAFIMA: Lake Tanganyika Fisheries Management Project

LTAS: Lake Tanganyika Authority/LTA Secretariat

MCS: Monitoring, Control and Surveillance

TNC: The Nature Conservancy

EU: European Union

BMU: Beach Management Units

EXECUTIVE SUMMARY

Lake Tanganyika is of inestimable value for social and economic development, particularly for the communities living along its shores and the nations dependent on the provision of its ecosystem services and resources. More than 13 million people live in the Lake Tanganyika basin and depend directly or indirectly on the lake's resources. The fisheries sector directly employs over 150,000 people as direct fishermen on Lake Tanganyika. Consequently, assessing the state of the fisheries sector and fishing effort on a sustainable basis to guide fisheries management is of paramount importance.

The first framework survey of Lake Tanganyika fisheries was carried out in 1995 and the second in 2011. Both framework surveys received technical assistance from FAO. From May to June 2024, the four countries bordering Lake Tanganyika, namely the Republic of Burundi, Democratic Republic of Congo, United Republic of Tanzania and Republic of Zambia, under the coordination and supervision of the LTA Secretariat, conducted a Lake Tanganyika-wide framework survey using experts from their respective countries.

The 2024 fisheries framework survey covered 470 landing sites around Lake Tanganyika in the four riparian countries, broken down as follows: 25 sites in Burundi, 250 in the DRC, 104 in Tanzania and 91 in Zambia.

 In terms of post-harvest infrastructure, Burundi reported 6 traditional fish drying kilns, while 15 and 18 were recorded in the DRC and Tanzania respectively. The DRC had the highest number of smoking ovens with 106, followed by Tanzania with 78 and Zambia with 43, while Burundi reported the fewest with 7. Tanzania led in the number of cold store rooms with 18, followed by Zambia with 6, the DRC with 3 and Burundi with 2. Tanzania also recorded the highest number of fish stores, totalling 19, followed by the DRC with 9, Zambia with 6 and Burundi with 3.

The survey documented a total of 85,923 fishermen on Lake Tanganyika, of whom women accounted for a small proportion of 598, or 0.7% of the fishing population.The fishing population was highest in Tanzania with 32,757 (38.10%), closely followed by the DRC with 31,320 (36.45%), Burundi with 12,784 (15%) and Zambia with 9,062 (10.45%).

Participation by young people aged between 18 and 35 was particularly high, making up 71% of the fishing crew. DRC reported the highest number of weather-related deaths during fishing activities, with 431 deaths, while Zambia reported the fewest with 118 deaths over the last two years.

The number of fishing boats rose to 36,647 in 2024, an increase of 3.3% on the 35,468 in 2011. Of these, 4,649 were registered boats. The survey noted a significant increase in the number of outboard motors, totalling 5,442 compared with 1,353 in 2011.

Paddles were used by 3,508 boats in the DRC (39.47%), 2,939 in Tanzania (33.07%), 1,419 in Burundi (15.97%), and 1,021 in Zambia (11.49%). In addition, 3,470 boats used sails as their main means of propulsion. The types of craft recorded included 3,398 catamarans, 8,999 plank canoes, 2,698 pirogues and 4,134 boats.

The most common mesh size for gillnets was 3.0 inches (76 mm), followed by 1.5 inches (38 mm) and 3.5 inches (89 mm), respectively. The distribution of these gillnets between countries was as follows: Burundi had 7,349, the DRC 12,146, Tanzania 6,402 and Zambia 9,476. Compared with 2011, the total number of gillnets in the entire lake was 31,806, reflecting an increase of around 11.2% in the number of gillnets in Lake Tanganyika as a whole. On the other hand, the use of fishing hooks was dominated by 'Kachinga' handlines, with 1,218,531 hooks reported, followed by longlines with 461,182 hooks and gillnets with 35,373 in all riparian countries.

In terms of lift nets, a total of 3,312 lift nets were recorded in 2024, with a breakdown of 1,316, 1,167 and 338 respectively for Tanzania, the DRC and Burundi. This gear was not found in Zambia during this survey. The results of the surveys conducted in 1995 and 2011 revealed that the total number of nets to be lifted had increased from 2,973 to 2,309; however, in 2024 the trend was reversed with an increase from 1,003 (43.44%) to 3,312. The downward trend between 1995 and 2011 was caused by the switch by some tile fishermen to ring nets, which were introduced in the mid-2000s.

Access to social amenities varies from country to country. Burundi has seen an increase in access to most amenities, with the exception of ARV services, schools and health facilities. Conversely, the DRC reported a decline in most amenities, with access to drinking water being the exception, increasing from 15% to 19%. In Lake Tanganyika, landing sites with access to electricity increased from 4 in 2011 to 88 in 2024, resulting in 18% of landing sites in the region having access to electricity.

HIV/AIDS services have shown significant improvements over the survey period from 1995 to 2024. HIV/AIDS awareness services increased by 34%, voluntary HIV counselling and testing (VCT) services by 38% and ARV services by 27%, indicating a substantial increase. progress in the provision of HIV-related health care. The number of landing sites equipped with electricity rose from 4 to 88. Similarly, the number of landing sites with public toilets rose from 20 to 68, and those with drinking water from 38 to 139. Accessibility of all-weather roads for landing sites also improved, from 32 to 139.

Finally, the 2024 survey recorded significant involvement of women and young people in post-harvest activities, with 51,822 women and 32,308 young people agreeing to these roles. This underlines the vital contribution of various demographics to the fisheries sector around Lake Tanganyika

PREAMBLE

Fishery framework data is one of the principal means of measuring the social, economic, biological and environmental performance of a fishery and is fundamentally used to make informed conservation and sustainable development decisions.

Carrying out the framework survey of fisheries on Lake Tanganyika in June 2024 as part of the implementation of the LATAFIMA project is in line with the aim of strengthening the collection of fisheries data on Lake Tanganyika by LTA Member States and creating a harmonised regional database as provided for in the Convention on the Sustainable Management of Lake Tanganyika, the Strategic Action Programme (SAP) and the Framework Fisheries Management Plan (FFMP) for Lake Tanganyika.

The data from the framework survey will be used as a sampling base for other types of survey, such as catch assessment and socio-economic studies.

The completion of this activity reinforces the LTA's ambition to have a regional database fed by national data and to support the Member States (MS) in their efforts to improve the quality and availability of fisheries data and to facilitate their sharing with the various stakeholders at local, national, regional and international level.

The special feature of this fisheries framework survey was its alignment with FAIMS (Fisheries and Aquaculture Information Management System). This system has been developed to collect, manage and analyse data relating to fisheries and aquaculture, thereby contributing to the sustainable and efficient management of these resources. It had already been implemented on Lake Victoria and in Tanzania by a group of TAFIRI researchers and other experts from the region before being used on Lake Tanganyika in 2024. Its use was of great importance and contributed to the astounding performance of this framework survey.

Ultimately, LTA resolutely agrees to make data on fishing effort, production and fish stocks available on a regular basis in order to effectively manage fisheries on Lake Tanganyika.

Carrying out this framework survey will pave the way for setting up a permanent system for collecting, analysing, sharing and managing fishing data for Lake Tanganyika.

1.   INTRODUCTION

1.1 Background

The 2024 framework survey on Lake Tanganyika is part of the implementation of the Lake Tanganyika Fisheries Management Project (LATAFIMA).

This project is funded by the European Union as part of the ECOFISH programme and is being implemented jointly by FAO and Lake Tanganyika Authority/LTA. It aims to improve the management of Lake Tanganyika's fisheries at regional, national and local levels by resolving the major problems associated with the current over-exploitation of its fisheries resources.

The overall objective of the project is to improve equitable economic growth by promoting sustainable fishing through mechanisms based on the fight against illegal, unreported and unregulated (IUU) fishing, in order to stem the decline in the lake's fish production, mainly due to the use of illegal fishing gear that catches very young fish (juveniles), sometimes even larvae.

The project was scheduled to run for three years (2020 to 2023), but due to delays in its implementation, a one-year extension at no additional cost (twice for six months) was granted to allow certain ongoing activities to be completed by 30 June 2024 at the latest. The overall budget for the project was two million euros.

1.2 DESCRIPTION OF LAKE TANGANYIKA AND PRESENTATION OF THE LAKE TANGANYIKA AUTHORITY

1.2.1 DESCRIPTION OF LAKE TANGANYIKA

Lake Tanganyika is the second largest lake in Africa with an area of 32,900 square kilometres, the third largest in the world after the Caspian Sea and Lake Baikal, the second deepest in the world after Lake Baikal, and the longest freshwater lake in the world (677 km).

It contains 18% of the world's open freshwater surface area. The lake is fed mainly by the Malagarasi, Rusizi, Ifume, Lufubu and Lunangwa rivers, and its only outlet is the Lukuga River. It is located at an altitude of 775 m above sea level and stretches from north to south over a length of 677 kilometres, with a maximum width of 72 kilometres and a maximum depth of 1,471 m, with an average depth of 574 m. Lake Tanganyika is shared by four countries: Burundi (with an area of 8%), Democratic Republic of Congo (45%), Tanzania (41%) and Zambia (6%).

The lake is known for its diverse flora and fauna, home to more than 2,000 species of plants and animals, of which about 600 are endemic. The lake contains at least 250 species of cichlid fish and 150 species of non-cichlid fish, most of which live along the coast at a depth of about 180 metres. However, the largest fish biomass is found in the pelagic zone (open water) and is

dominated by six species: two species of clupeids (Stolothrissa tanganicae and Limnothrissa miodon) and four species of the Lates type (Lates stappersii, L. angustifrons, L. mariae and L. microlepis) (FAO 1992).

1.2.2 PRESENTATION OF THE LAKE TANGANYIKA AUTHORITY

The four countries bordering Lake Tanganyika, namely Republic of Burundi, Democratic Republic of Congo, United Republic of Tanzania and Republic of Zambia, signed the Convention on the Sustainable Management of Lake Tanganyika on 12 June 2023 in Dar Es Salaam.

Article 23 of this Convention establishes the Lake Tanganyika Authority (LTA), which provides a legal framework for regional cooperation on the conservation of biological diversity, sustainable management and the implementation of harmonised laws and standards for the sustainable use of the natural resources of Lake Tanganyika and its basin. The role of LTA is to coordinate the implementation of the Convention by the Contracting States.

The mission of LTA is to promote and represent the common interests of the Contracting States in the management of Lake Tanganyika and its basin.

LTA has three bodies, namely: the Conference of Ministers (CoM), the Management Committee (CoM) and the Secretariat. The CoM, which comprises one Minister from each Contracting State representing their respective Governments, is the LTA supreme body. The main role of the CoM is to regularly assess the implementation of the Convention and approve programmes and various reports. The CoM is the LTA second body. It comprises four members representing each of the Contracting States, drawn from the environment, fisheries, water and finance sectors, with the LTA Executive Director acting as Secretary. The MC provides advice and oversight. Its main roles are to coordinate and monitor the implementation of the Convention. LTA Secretariat (LTAS) is the LTA executive body and is based in Bujumbura, Republic of Burundi. The Secretariat is headed by the Executive Director and comprises the following four directorates: 1) Environment, 2) Fisheries and Aquaculture, 3) Monitoring and Evaluation, and 4) Administration and Finance.

LTAS is responsible for coordinating actions aimed at implementing the Convention and the LTA Strategic Action Programme (SAP). The Secretariat develops the Authority's Annual Work Plans and Budgets (AWPB), prepares projects, evaluations and reports, obtains and updates data on the implementation of the Convention and disseminates it to the Contracting States.

The completion of this fisheries framework survey is fully in line with LTA's vision as set out in the Strategic Action Programme (SAP), which reads as follows: 'That the people of the region prosper thanks to a healthy environment in the Lake Tanganyika basin and that it continues to shelter high levels of biodiversity and provide sufficient natural resources to meet the needs of future generations'.

Considering the necessity of this activity, LTA agrees to schedule the conduct of the fisheries framework survey every five years in its annual budgets or with the support of its partners.

Figure 1: Map of Lake Tanganyika

1.3 OBJECTIVE OF THE FRAME SURVEY.

The overall aim of the fisheries frame survey is to provide information on the composition, scale and distribution of the fishing effort: number of people in the fleet, size of boats, time spent on the lake, distances travelled, etc.), the facilities and services available at fish landing sites, in order to guide the planning, management and development of the fisheries sectors. It also assesses the quality of the facilities and services available at fish landing sites, in order to guide the planning, management and development of fishing infrastructures.

It provides data and information for the development and management of the fisheries sector and serves as a reference base for all other monitoring studies of the sector in general.
In Lake Tanganyika, two frame surveys covering the entire lake were carried out in 1995 and 2011 respectively.

However, due to the lack of up-to-date data and information, a fisheries frame survey was planned as part of the implementation of the LATAFIMA project. This project is financed by the

European Union through the Ecofish Programme and implemented by FAO in collaboration with LTA. The specific objectives of the 2024 Fisheries frame Survey are to provide reliable information on the following:

a) Number, location and distribution of fish landing sites;
b) Facilities available at landing sites to support fishing;
c) Number and distribution of fishers;
d) Number and types of fishing vessels and their mode of propulsion;
e) Number, types and sizes of fishing gears used on the lake and their method of operation;
f) Craft/gear combinations by target species;
g) Other support services, e.g. fisheries staff, sellers/ traders of fisheries inputs, fish markets, landing site management committees, etc.

1.4 EXPECTED OUTCOMES.

Carrying out this survey regularly, ideally every two to five years, is vitally important for understanding the dynamics of Lake Tanganyika's fisheries. It provides essential data on the number of fishermen, the capacity of fishing gear, the state of fishing infrastructure and overall fishing capacity. These data provide an informed basis for decision-making by policy-makers, enabling the implementation of effective management measures that are crucial to the sustainable use of fisheries resources.

In recognition of the critical role played by the fisheries frame survey, the member states of the Lake Tanganyika Authority (LTA), with the support of the European Union through the LATAFIMA project, have joined together in a collaborative effort to undertake this fisheries frame survey.

2. METHODOLOGY

2.1 Preparation for the Frame Survey

A Regional Working Group (RWG) planning meeting was held online on 22nd February 2024, during which the following regional plan of action was agreed upon (Table 1):

Table 1: Timetable of Activity conducted

S/N	ACTIVITY	DATES
1	Orientation meeting	22nd February 2024
2	RWG harmonization Planning meeting	22nd – 23rd March 2024
3	Training of trainers for the regional working group	08th -12th April 2024
4	NWG review/planning/Training of Trainers for supervision	24th April – 2nd May 2024
5	Procurement of inputs, publicity, and printing of materials	10th - 13th May 2024
6	Training of Enumerators	19th – 22th May 2024

S/N	ACTIVITY	DATES
7	Conducting the Frame Survey	22nd May to 20th June, 2024
8	Training data entry personnel/Electronic data entry/Ground truthing/Cleaning/Data analysis/National Draft Report Preparation	26th May – 20th June 2024
9	National Stakeholders/NWG workshop for final report preparation	10th -15th June, 2024
10	Submission of National reports to LTA Secretariat and Draft Regional Report	21st June 2024
11	Regional technical meeting to analyze and consolidate the fisheries frame survey data in the four riparian countries of Lake Tanganyika	22nd – 23rd June 2024
12	RWG meeting for Final Report	25th June 2924
13	Submission of the Final Report to LTA	29th June 2024

The Frame Survey was conducted concurrently in the four Contracting States from May 22th to June 20th, 2024. Both the RWG and National Working Groups (NWG) members were actively involved in the planning and execution of the survey. Each Partner State coordinated and implemented the survey through its respective NWG.

The implementation procedure for the Frame Survey included the following steps:
  i. **Online RWG Planning Meeting:** This meeting reviewed previous surveys, updated methods and inputs, prepared work plans, and set survey dates.
  ii. **NWG Planning Meeting:** This meeting reviewed survey plans, budget, and trained supervisors and enumerators in alignment with the revised 2011 frame survey.
  iii. **Stakeholder Awareness:** Planning and distribution of publicity materials, such as posters, to create awareness among stakeholders before the surveys began.
  iv. **Selection and Training of Supervisors and Enumerators:** Supervisors and enumerators, primarily from fishing communities, were identified and trained the week before the survey, including field pre-testing of the questionnaire.

2.2 Conducting the Frame Survey
The Frame Survey involved a comprehensive enumeration of all landing sites, facilities, infrastructure, and services available, as well as fishers, fishing crafts by type and mode of propulsion, and fishing gears by type and size.
Supervisors managed the survey logistics and coordination at various administrative levels, including regional/province/district/commune levels. Others were stationed at lower administrative units such as *colline* (in DRC/Burundi) or division (in Tanzania and Zambia). Each

supervisor oversaw a team of enumerators, with the number of enumerators proportional to the number of fishing crafts/landing sites within the administrative unit, based on the 2011 Frame Survey.

2.3 Data Collection

Enumerators collected frame survey data using mobile phones equipped with the Fisheries and Aquaculture Information Management System (FAIMS). They used electronic Frame Survey questionnaires (Annex 1) integrated within a dedicated module. These filled forms were submitted either online or offline to a centralized cloud server hosted by the Lake Tanganyika Authority (LTA). Managers monitored data entry in real-time for verification and validation. Supervisors were deployed for quality assurance to oversee enumerators, address any arising issues, and conduct field visits to the landing sites.

2.4 Storage and Analysis

Data was initially stored in a temporary database on the mobile phones and later synchronized with the regional FAIMS database for permanent storage. The FAIMS application automatically recorded the date, time, and GPS location of data entries. Data was stored in a MySQL database. Queries were conducted to aggregate data and generate summaries, identify trends over time, and make comparisons across administrative regions and years. Data and results were exported from FAIMS in CSV format for further analysis and visualization. Google Maps integration allowed for detailed visualization of landing sites. Additional annex results included data on the most targeted species by crafts, gears, and fishers, the most used bait by gear type and size, and various issues and projections. Identified gaps and challenges encountered during the survey were addressed, and recommendations were made.

2.5 Report Preparation

The RWG convened in Kigoma, Tanzania, from June 21st to June 23rd. 2024, to prepare a regional synthesis report. National Working Groups (NWGs) compiled National reports, which were presented at respective national stakeholders' workshops for inputs and validation. These reports were finalized and submitted to the LTA Secretariat in Bujumbura, Burundi.

3. RESULTS AND DISCUSSION

3.1 Landing sites

The results of the 2024 fisheries frame surveys revealed that 470 landing sites recorded across Lake Tanganyika, distributed as follows: 25 sites (5%) in Burundi, 250 sites (53%) in the DRC, 104 sites (22%) in Tanzania, and 91 sites (20%) in Zambia. In 2011, a total of 672 landing sites were observed. Compared to 2024, there has been a decrease of over 30%, primarily due to the rising of water levels in Lake Tanganyika, which have led to the loss of landing site infrastructures.
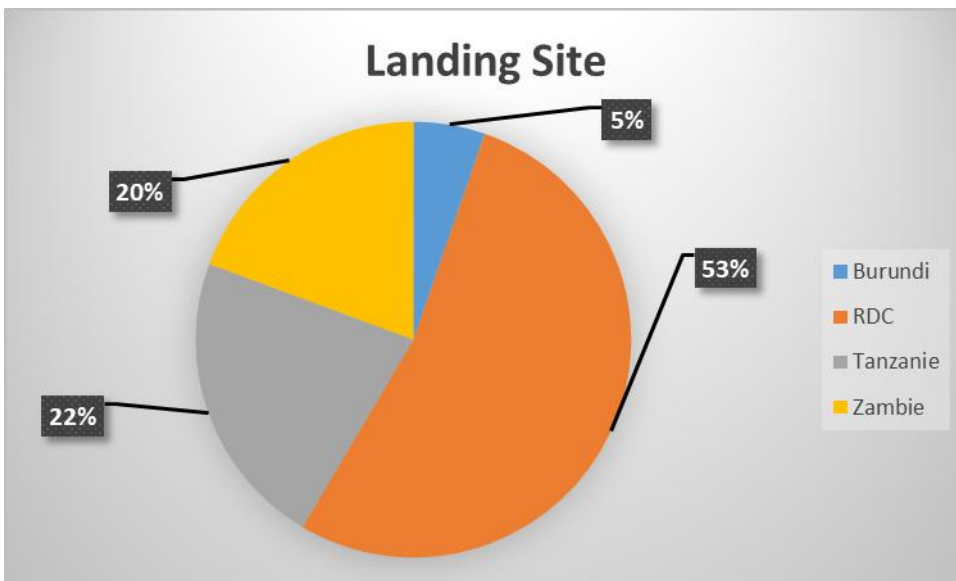
Figure 2: Landing site distribution

3.2 Number of Beach Management Units/ Beach Fishing Committee/ Beach Management Committee

The 2024 fisheries frame surveys identified a total of 76 BMUs with 6,734 active members, distributed as follows: 24% in Burundi, 3% in the DRC, 67% in Tanzania, and 6% in Zambia. In 2024, the number of BMUs remained the same in Tanzania while in other countries there was improvement in terms of establishment of those institutions. Emphasis should be placed on establishing these committees in each village to strengthen fisheries management and conserve fisheries resources. Nevertheless, in DR Congo there are institutions that have not developed like in Tanzania.
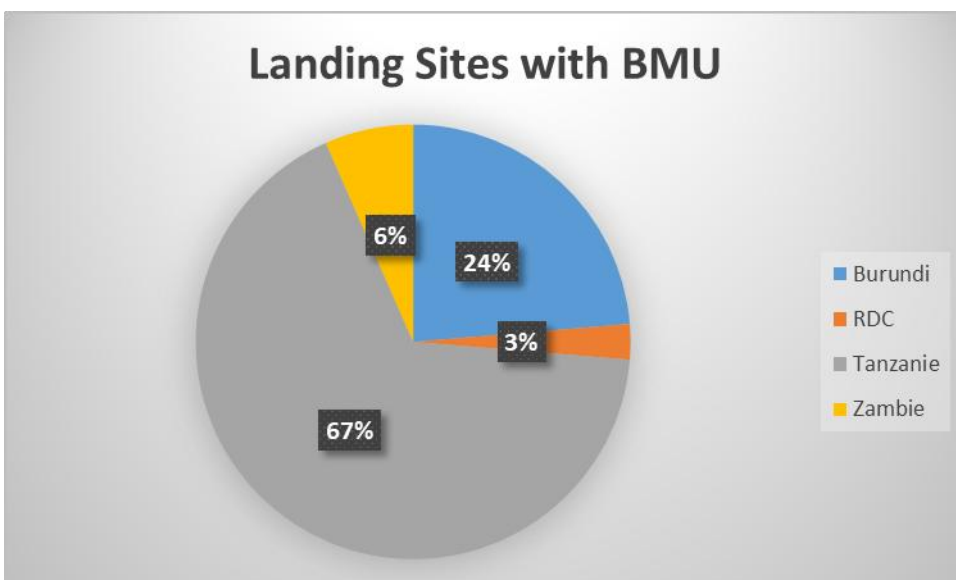
Figure 3: Landing site with BMU

3.3 Infrastructure for post-harvest

Post-harvest handling facilities are integral to the effective fisheries management of Lake Tanganyika, as highlighted by recent surveys. Out of 470 surveyed landing sites, the distribution of key facilities is as follows: 32 sites have cold rooms, with 29 of these being operational; 37 sites have fish stores; 176 sites are equipped with fish drying racks; and 234 sites utilize smoking kilns. This infrastructure is vital for preserving fish quality and extending shelf life, thereby supporting the livelihoods of fishing communities around the lake.

The distribution of these facilities across countries is as follows: Burundi has 6 fish drying racks and 7 smoking kilns; the DRC has 18 fish drying racks and 106 smoking kilns; Tanzania leads with 15 fish drying racks and 78 smoking kilns; while Zambia has 6 fish drying racks and 43 smoking kilns. Additionally, operational cold rooms are reported at 2 sites in Burundi, 3 in the DRC, 18 in Tanzania, and 6 in Zambia. Fish stores are present at 3 sites in Burundi, 9 in the DRC, 19 in Tanzania, and 6 in Zambia.

These findings underscore the varying levels of infrastructure development and utilization across Lake Tanganyika's shoreline. While Tanzania shows robust infrastructure with significant numbers of fish drying racks, smoking kilns, and operational cold rooms, other countries like Burundi and Zambia exhibit more modest numbers. Strengthening and expanding these facilities, especially in underserved areas, is crucial for enhancing fish preservation capabilities, supporting sustainable fisheries management practices, and fostering economic resilience in the region.

3.4 Number of fishers

During the 2024 frame survey, a total of 85,923 fishers were recorded across Lake Tanganyika, without categorizing their gender or specific fishing gear used. Out of the total, 598 were female fishers, making up approximately 0.7% of the fishing population, with most of them operating along the shores of the lake. Reasons limiting participation of women in fishing activity around Lake Tanganyika are related to traditional gender roles that discourage women from participating in fishing, which is often considered a male-dominated activity.

When the fishers were broken down by age, the youth, aged between 18 and 35 years, comprised the largest group, accounting for 71% of the fishing crews (see Figure 5). The next largest group consisted of individuals aged between 36 and 45 years, representing approximately 23% of all fishers. Older individuals, aged over 60 years, constituted a small fraction of less than 1% of the total fishers, while those under 18 years made up 2%.

Fishing is a labor-intensive activity that demands significant physical energy for hauling nets, operating boats, and enduring long hours on the water. Probably this explains the predominance of the 18-35 age group, followed by the 36-45 age group. Another reason, there

might be limited job opportunities in all countries around Lake Tanganyika, fishing provides a viable means of income for young people. The relatively low entry barriers and immediate returns make fishing an attractive occupation for the youth.
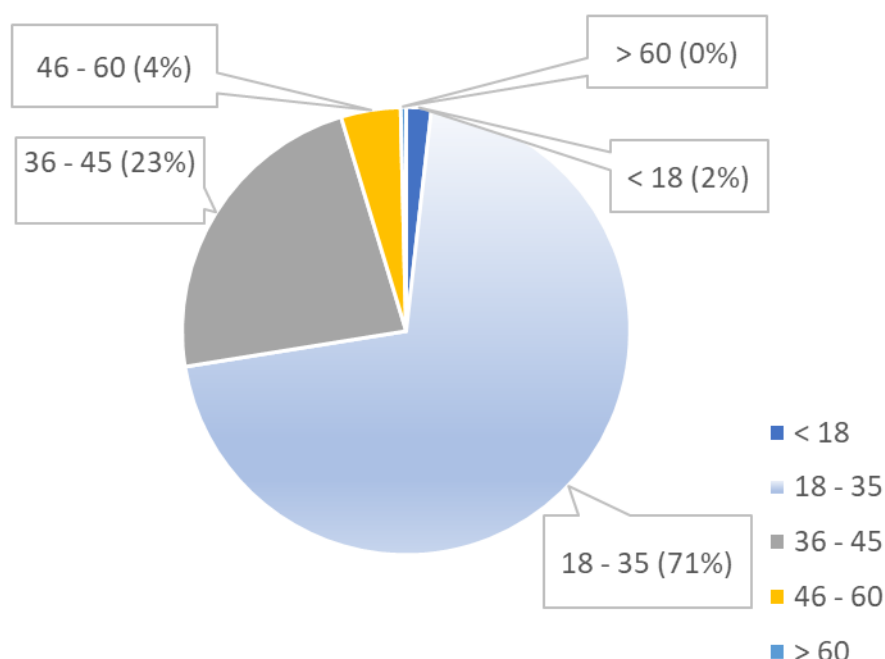
Figure 4: Age distribution of fishers in the whole lake

In 2024, the number of fishers in Burundi, DR Congo, Tanzania, and Zambia was 12,784, 31,320, 32,757, and 9,062 respectively. These numbers are slightly higher than in previous years as in Burundi, Tanzania and Zambia fishers increased by 4.83%, 6.48% and 0.68% respectively.

Exception was observed in DR Congo, where the number of fishers decreased from 51,625 in 2011 to 31,320 in 2024 resulting into (-21.41% decrease. This suggests that some fishers in DR Congo have left the industry, whereas in the other three countries, there have been new entrants, as illustrated in Figure 6 below. Increasing local and regional demand for fish could be driving more people to enter the fishing industry as a viable source of income in the three countries. Enhanced infrastructure and better access to markets might encourage more individuals to take up fishing too. Not only that but population growth in these countries can naturally lead to more people entering the fishing industry as they seek employment opportunities.

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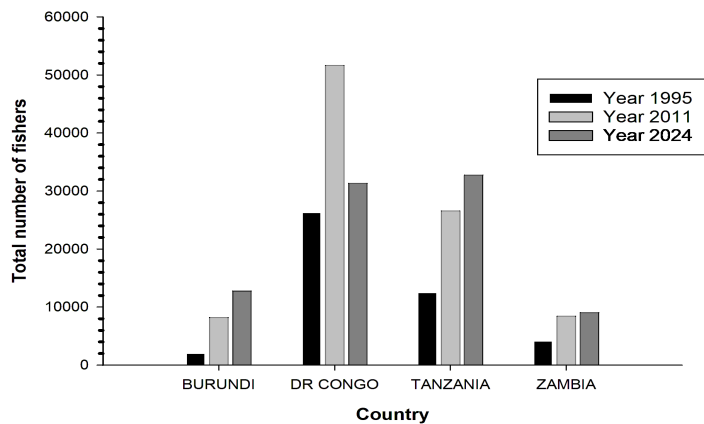
Figure 5: Trend of fishers in the past three decades

Fishing activity carries inherent risks, and fishers' lives are at risk whenever they go out fishing on Lake Tanganyika. In 2024, there were 903 reported deaths of fishers across the entire lake, accounting for 1.05% of all fishers counted that year. These fatalities were primarily due to boat capsizing and bad weather conditions. Figure 7 below shows the total number of fatalities recorded at landing sites in each country. DR Congo had the highest number of deaths, with 431 fatalities, representing 47.73% of all deaths.

Tanzania followed with 228 deaths, equivalent to 25.25% of the total. Burundi and Zambia had similar numbers of fatalities, with 118 (13.07%) and 126 (13.95%) deaths respectively. Insufficient safety equipment and training for fishers can lead to higher accident rates. Many fishers may not have access to life vests, proper communication devices, or training in emergency procedures. Another reason could be sudden and severe weather changes that can pose significant risks to fishers, especially those in small and less durable boats.

Despite the inherent risks associated with fishing, there has been a consistent increase in the number of fishers over the past two decades, indicating a growing interest in the fishing industry. However, a notable exception to this trend has been observed in DR Congo, where there has been a decrease in the total number of fishers.
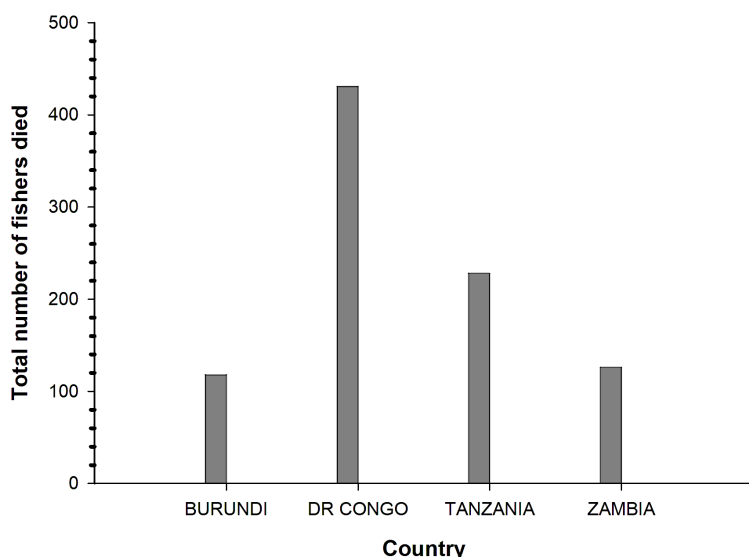
Figure 6: Fishers died by boat capsizing due to bad weather in the past one year at the landing sites

3.5 Fishing Crafts

During the 2024 survey there were 36,647 craft in the entire lake compared to 35,468 crafts in 2011 survey equivalent to an increase of 1,179 (3.3%). Of these crafts, the number of fishing crafts including foot fishers in each country were 14,115 (38.52%) for DRC, 12,409 (33.86%) in Tanzania, Burundi 6,788 (18%) and Zambia was 3335 (9.10%). The total number of axially boats around the lake was 13731, out of these Burundi, DRC, URT and Zambia had 42.41, 34.29, 18.47 and 9.10% respectively.
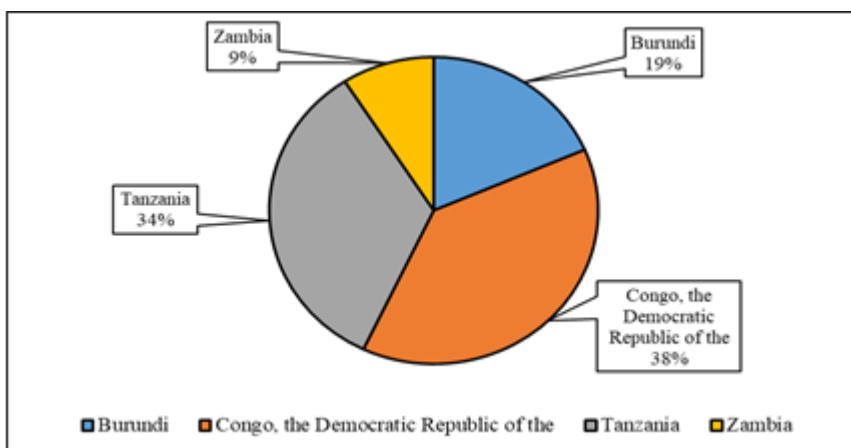
Figure 7: Distribution of fishing crafts in Lake Tanganyika in 2024

Planked canoe recorded lake-wide in year 2024 were 33,391 compared to 14,304 Planked canoes in 2011, indicating a significant increase of 133.43%. Overall, Planked canoe contributed 78.89% of the total number of fishing crafts on the Lake wide, Boats 9.77%, Dugout canoe 3.32% and Catamaran 8.03% in 2024.

3.6 Status of crafts registration

Status of crafts registration is one of the important indications of compliance in fishery management, in the entire lake the total registered crafts were 4,649 (12.69%). In terms of country distribution Tanzania had 4,552 (36.68) registered crafts, Congo DRC 80 (0.57%) and Zambia 15(0.45%). The survey didn't find any registered vessels in Burundi because there is no regulatory national framework. In DRC most of the registered vessels were from the southern part (south Kivu) of the lake while the northern part of the lake had no registered craft. Generally, it is still mandatory in DRC, though the compliance is lacking. Only, Tanzania implements vessels registration as a way of controlling and manage fishing activities.

3.7 Mode of Propulsion of Fishing Crafts

Mode of propulsion in fishing determines the speed and distance covered during fishing. Generally, in all the Contracting States, the number of outboard engines has been increasing over time since 1995.

In 2024, the total number of outboard engines lake-wide was 5,442, representing an increase of 4089 (302%) from the 1,353 outboard engines recorded in 2011. Historically, the number increased by 7% from 1,264 in 1995 to 1,353 in 2011. The frame survey results in 2024 indicated that the number of fishing crafts fitted with outboard engines in Tanzania is 2,159, followed by DRC Congo, Burundi, and Zambia, with 2,008, 713, and 562 respectively. A comparison with the 2011 results shows an increase in the number of fishing crafts using outboard engines as a mode of propulsion in each country.
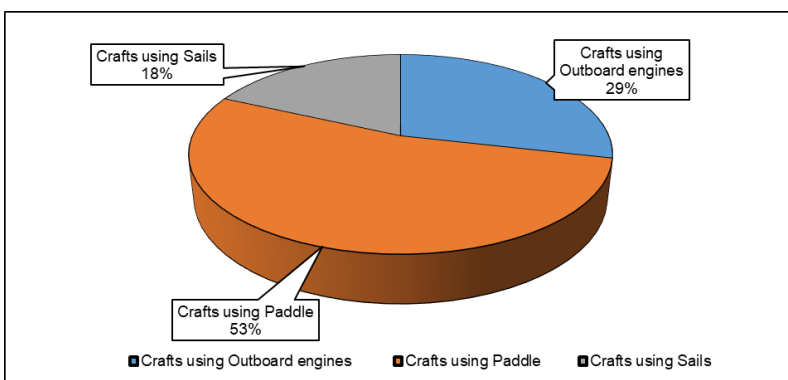
Figure 8 : Percentage Distribution of fishing crafts by means of propulsion

Lake wide in Tanzania, the number of outboard engines increased from 493 in 1995 to 991 in 2011, and then jumped to 2,159 in 2024. In DRC Congo, the number of outboard engines recorded rose from 417 in 1995 to 840 in 2011, and then surged to 2,008 in 2024.

A similar trend was observed in Zambia, where the number of outboard engines increased from 114 in 1995 to 259 in 2011, and finally to 562 in 2024. In Burundi, the number of outboard engines rose from 240 in 1995 to 561 in 2011, and then increased to 713 in 2024.

Overall, the increase in the number of vessels using engines as the primary means is due to various factors, including the growth in the use of technology, fishermen devising methods to help them catch fish due to the scarcity of fish, and the relationship between the fishing equipment and the type of fishing employed.

The present survey, recorded 3508 (39.47%) crafts using paddles in DRC, Tanzania 2939 (33.07%), Burundi 1419 (15.97%) and Zambia 1021 (11.49%).

A total of 3470 vessels were recorded as using sails as their primary means of propulsion during the census. These vessels originated from Tanzania 2057 (59.27%), Congo DRC 1293 (37.26%), Burundi 106 (3.05%), and Zambia 14 (0.40%).

3.8 Fuel consumption

Fuel consumption by different capacities of engines varied widely across the lake. Engines with capacity between 0-25HP recorded the least mean quantity of fuel consumption and those with horse power above 65 recorded the highest mean of fuel Quantity. Likewise, throughout the countries, the fuel consumption in Burundi was slightly higher than other countries where by for engines with 0-25HP, 26-40HP, 41-65HP and >65HP mean fuel Consumption was 35, 56, 80 and 80 respectively. In DRC mean fuel consumption was higher for vessels with more than 65 horse power. For Crafts with 0-25HP mean fuel consumption was almost similar in DRC, Tanzania and Zambia.

The high fuel consumption in Burundi might have been contributed by the fact that most fishermen use vessels that require large engines, such as the Apollo.
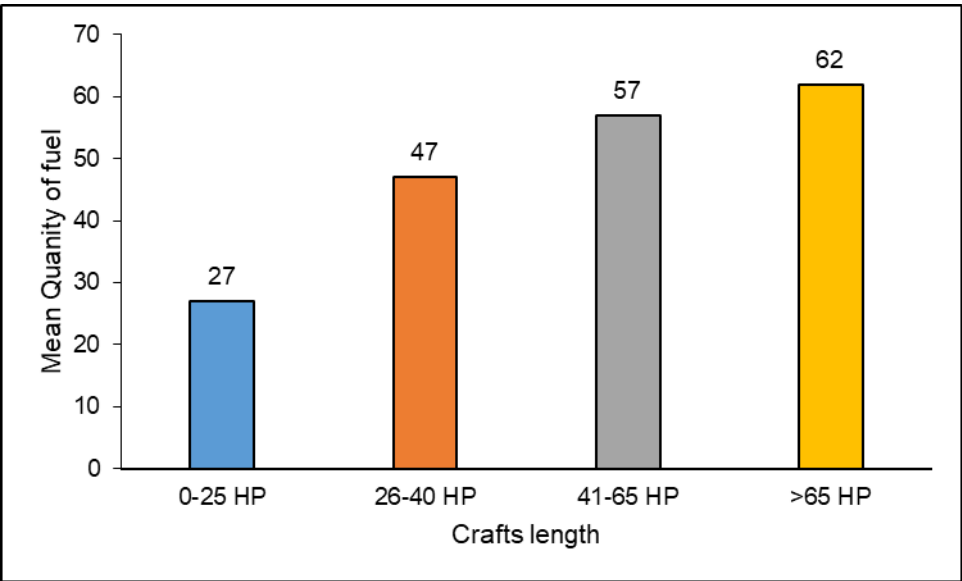
Figure 9: Mean fuel consumption

3.9 Crafts Type Targeting Different Species

Results indicates the number of fishing crafts by type targeting different types of species by country, whereas 5 types of crafts were recorded including the foot fishers namely catamaran (3398), planked canoe (8999), dugout canoe (2698) and boats (4134). Cataraman targeted mostly *Stolothrissa tanganicae* by (72.70%), followed by *Lates stappersii* (27.14%) and other species such as *Boulengerochromis microlepis, Lates microlepis, limnothrisa miodon* had 0.16%. Boats targeted mainly *Lates stappersii* (54.94%), *Stolothrissa tanganicae* 38.34% and other species had 6.71%. Moreover, Dugout canoe which were targeting *Lates stappersii* had 72.17%, those targeting *Lates microlepis* had 24.49% and other species such as *Oreochromis tanganicae (serotheron),limnotilapia dardenni* and *Hemibates stenosoma)* had only 3.34%. Results for the survey indicated that, Planked Canoes targeted mainly *Lates stappersii* (77.76%) where as 22.23% of all planked canoes mainly targeted other species such as *Chrysichthys spps and Oreochromis niloticus.* Foot Fishers that targeted mainly *Oreochromis tanganicae were* 53.23% and others were 46.79%.

3.10 Fishing gear by type and equipment

This section refers to the specialized tools and equipment used by artisanal fishers in smaller, localized fishing operations. They include a range of equipment such as handlines, gillnets, traps, hooks, and small boats, adapted for use in Lake Tanganyika, and nearshore environments. Understanding these specific gear types is crucial for supporting community-based fisheries management and ensuring the sustainability of small-scale fishing practices.

3.10.1 Encircling gears

Encircling gears on Lake Tanganyika are mostly used to target the Lake Sardine (*Limnothrissa miodon*) and sprat (*Stolothrissa tanganicae*). Other species targeted may include Perches (mainly *Lates stapperssii*). Each Lake Tanganyika riparian country had a different preference in terms gear use (**Figure 11**). Thus, the distribution of encircling gears was very different for each of the four riparian countries. Burundi had more of Lift nets than any of the other encircling gears. Zambia, on the other extreme side of the Lake, used more of Ring nets and Beach seine. The distribution of encircling gears for Tanzania and DR Congo showed intermediate use when compared to Zambia and Burundi. The Lift nets and Ring nets were predominant in Tanzania while DR Congo used more of Beach seines than any other Country.
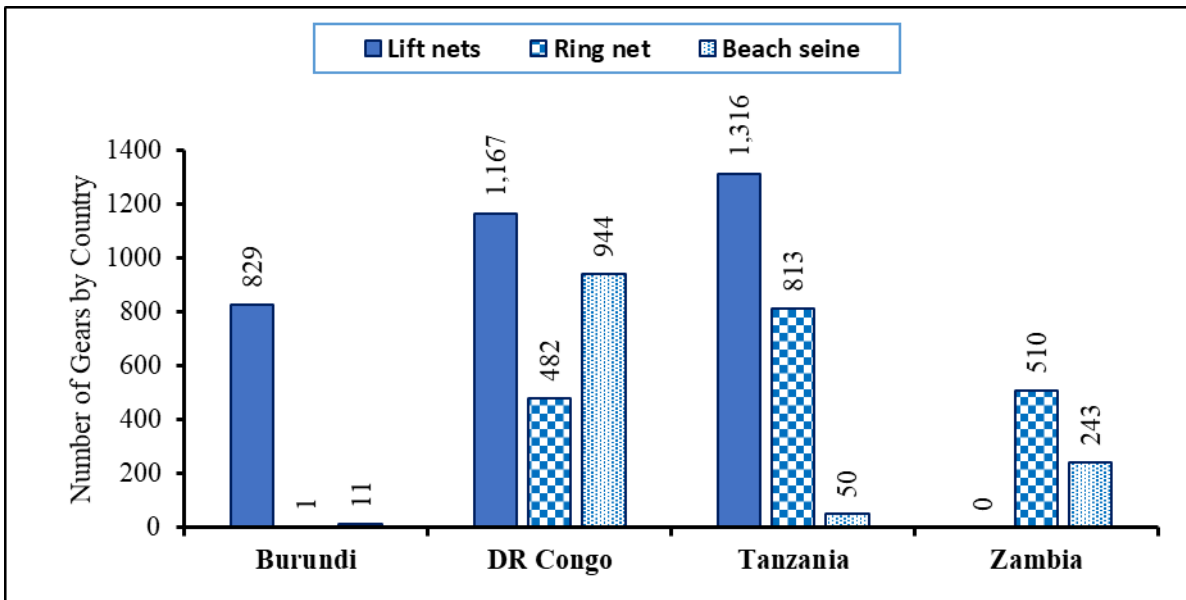
Figure 10: Encircling gear on Lake Tanganyika

3.10.2 Gillnets gears

Figure 12 displays the mesh-size distribution of gillnets in Lake Tanganyika. The most common mesh size was 3.0 inches (76mm), followed by 1.5 inches (38mm) and 3.5 inches (89mm), respectively. The distribution of these gillnets across countries was as follows: Burundi had 7,349, the DRC had 12,146, Tanzania had 6,402, and Zambia had 9,476. Compared to 2011, the total number of gillnets in the entire lake was 31,806, reflecting an increase of approximately 11.2% in gillnet numbers across Lake Tanganyika.
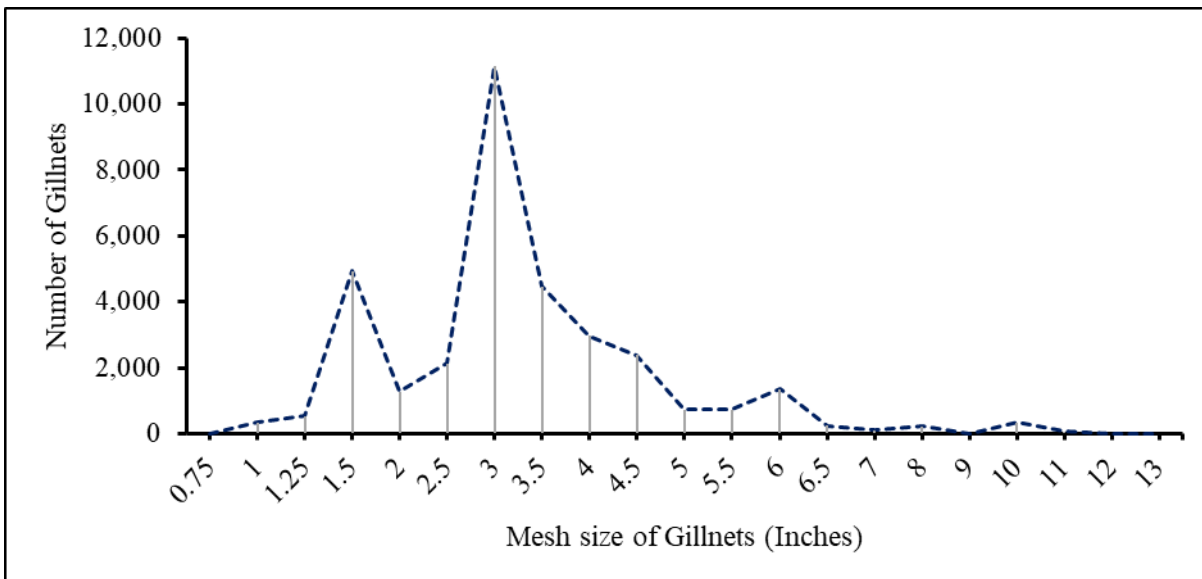
Figure 11: Distribution of gillnets by mesh size on the Lake Tanganyika in 2024

In terms of gillnet use, DR Congo was the main user of gillnets followed by Zambia, then Burundi, and Tanzania was the least (**Figure 13**).

The regional frame survey census conducted in 2024, indicated that the number of monofilament nets in the Lake was 6,382. The distribution of monofilament nets in each country was as follows; 55 in Burundi, 3,075 in the DRC, 2,795 in Tanzania, and 457 in Zambia as shown in Figure No.13. In terms of percentage distribution, 48.18% of all the monofilament nets were in the DRC and 43.80% in Tanzania. Zambia and Burundi had 7.16% and 0.86 respectively. These results indicated the presence of illegal nets in the lake, and member countries should plan joint efforts to eliminate this type of illegal gears which endanger the sustainability of fishery resources.
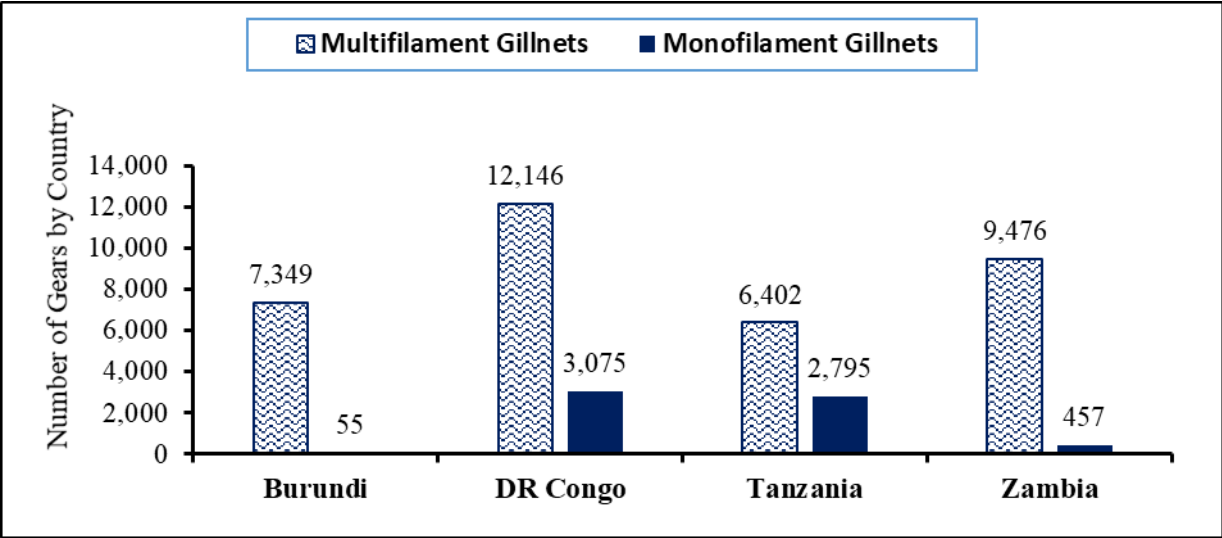
Figure 12: Gillnets operating on Lake Tanganyika

3.10.3 Hooks

In 2024, a total of 2,875,750 hooks were observed across Lake Tanganyika. This marked a significant increase from the 537,126 hooks observed in 2011, amounting to nearly five times the previous count, totalling 2,338,876 hooks. The distribution of these hooks was categorized as follows: handlines accounted for 1,214,707 (42%), hook and line for 7,392 (0.2%), and

longlines   for   1,653,651   (57.5%).   Refer   to   Figure   13   below.
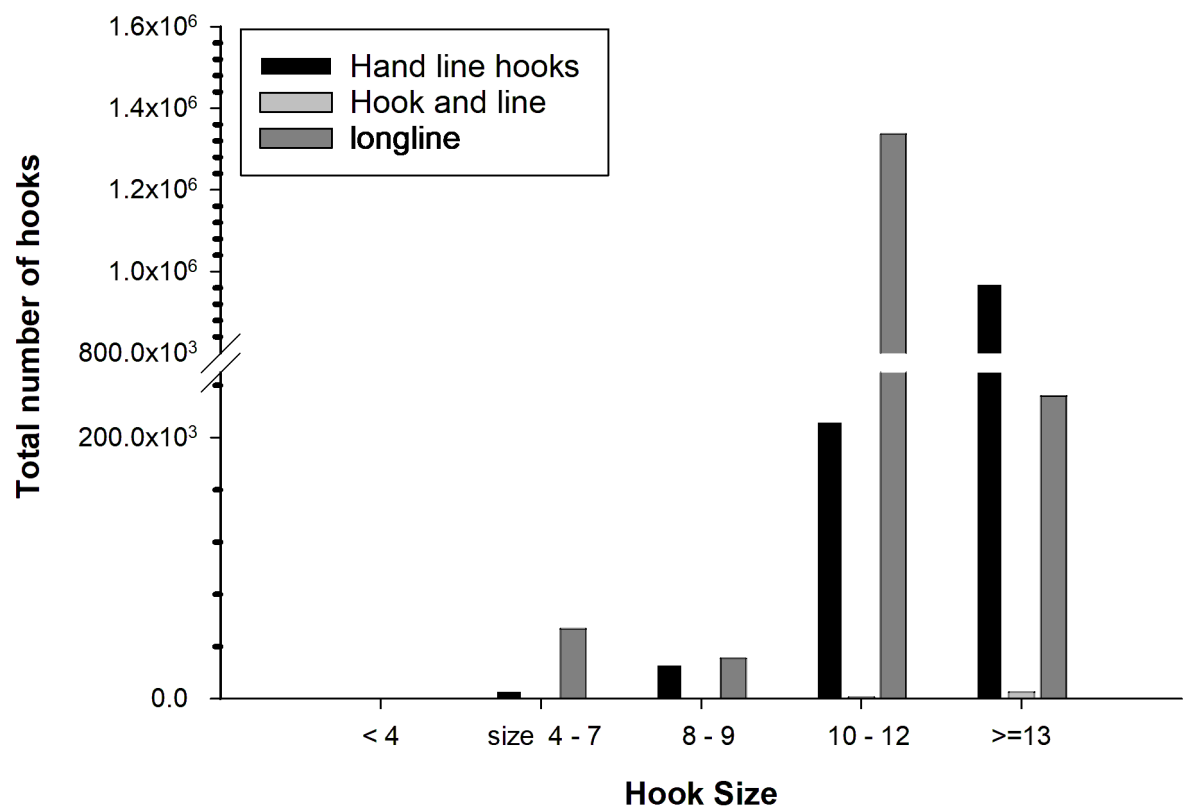
Figure 13: Distribution and number of hooks in Lake Tanganyika

3.10.4 Lift nets

A total of 3312 lift nets were counted throughout the entire Lake in the frame survey for 2024. Burundi is the state that utilizes the least amount of this type of gear, Tanzania is leading by 39.73%, followed by the Democratic Republic of the Congo, where fishermen use 35.24 % of these gears. This gear was not discovered in Zambia during this survey. The riparian states are directed by the Lake Tanganyika charter for the sustainable management of fisheries to utilize lift nets with a minimum knot size of 6 mm for unstretched mesh or 12 mm for stretched mesh. Upon comparing our findings with this charter requirement, none of the gear was deemed to be illegitimate.

A comparison of the results of the survey conducted in 1995 and 2011 revealed that the total number of lift nets had declined from 2973 to 2309; however, in 2024, the trend was changed with an increase of 1003 (43.44%) to 3312. The declining trend between 1995 and 2011 was caused by some lift net fishermen moving to ring nets, which were introduced in the mid of the 2000s.

3.10.5 Other gears

i. **Mosquito net**

The results of the Lake Tanganyika frame survey indicated the presence of mosquito nets in fishing. This practice was observed more in Tanzania than in the other three countries, with 161 mosquito nets recorded. In Zambia, there were only 3 mosquito nets.

ii. **Beach seine**

In 2024, Lake Tanganyika Frame Survey, there were a total of 1,248 Beach seine nets in the entire Lake, with 0.88% in Burundi, 75.64% in the DRC, 4.01% in Tanzania, and 19.47% in Zambia. Additionally, compared to the Frame Surveys conducted in 1995 and 2011, the number of Beach seine nets has increased by 110.45%, from 593 in 2011 to 1,248 in 2024. This is an indication of persistence of Illegal fishing in partner states; thus, member countries should intensify efforts to combat this type of net as it is illegal.

iii. **Traps**

Traps are among the essential fishing gears used in fishing activities across the entire lake. Traps are primarily used at river entrances and by small-scale fishers, especially foot fisher. The results of Lake Tanganyika survey for 2024 conducted in the four riparian states showed the presence of 315 (24.19%) traps in Burundi, 58 (4.45%) in the DRC, 929 (71.35%) traps in Tanzania, and no traps were found in Zambia. Usually, fishers using traps targets; *Lates mariae, Oreochromis tanganicae, Tilapia rendalli, Tilapia spp* and *Clarias gariepinus*.

iv. **Ringnet**

The 2024 fisheries frame survey identified a total of 1,806 ring nets used across the entire Lake Tanganyika region. This represents a significant increase in fishing activity over the past three decades, with a noted 180% rise in the number of ring nets since the 2011 survey. Figure 5 indicates that Tanzania was the leading country in using this gear as it has 45.02% and then it was followed by Zambia which had 28.24% and DRC had 26.69%, and Burundi had 0.06%. This surge could be attributed to various factors such as improved fishing technology (use of multiple auxiliary boats carrying lights), increased fishing effort to meet rising demand for fish (the gear can also be used illegally during daytime in both offshore and onshore parts of the lake), or enhanced economic reliance on fisheries.

v. **Scoop net**

The limited number of scoop nets, totaling only 28, and their concentration in remote areas suggest that this fishing method is becoming increasingly rare. The absence of scoop nets in Zambia and Burundi further underscores this trend. The continued decline, as observed since Coulter's 1991 report, indicates that scoop nets are being phased out or replaced by other fishing methods.

3.10.6 Lamps

In 2024, the total number of lamps observations in the entire lake was 154,018, compared to 23,321 in 2011, marking a nearly fivefold increase from the previous survey. Most notably, there has been a shift from kerosene lamps, which were predominant in 2011, to battery-powered lamps. Considering the rising use of battery-powered lamps, it is essential for the Contracting States to commission a study on their application and suitability for ensuring the future sustainability of fisheries resources in Lake Tanganyika.

DR Congo had the largest percentage of Lamps (45%) on Lake Tanganyika, followed by Burundi and Tanzania. Zambia had the least share. In terms of light source, battery was the most common followed by solar (**Figure 16).** Lamps were used as a fish attracting mechanism for Lift nets and Ring nets. Other Encircling gears such as seine nets did not use lights.
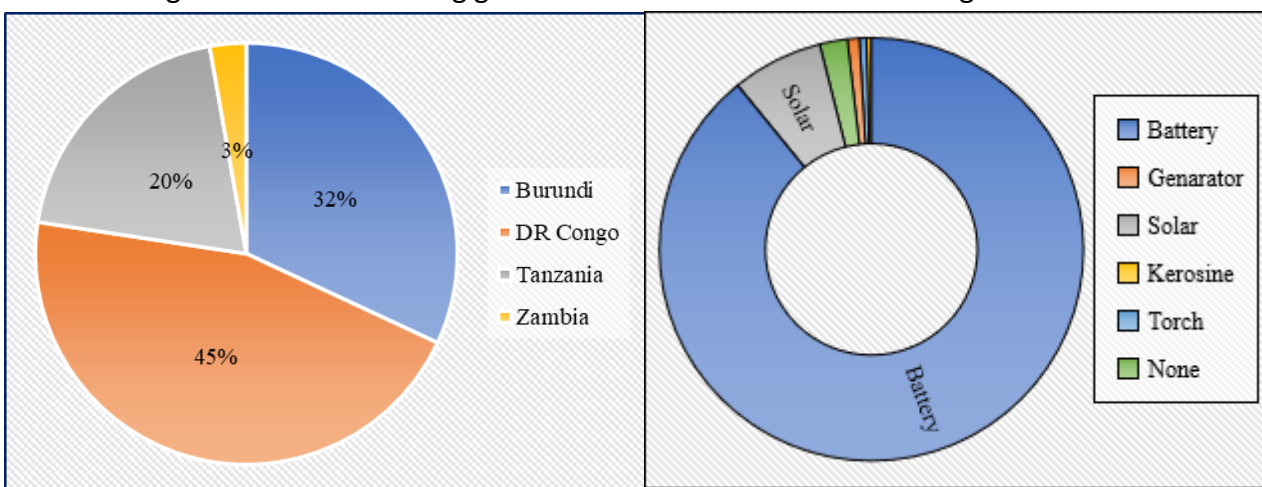
Figure 14: Distribution of Lamps and Source of power for Lamps operating on Lake Tanganyika in 2024

3.11 Other amenities at landing sites.

At country level, Burundi recorded an increase in the percentage of fishing villages with access to most social amenities except for Anti-retro Virus, Schools and HeLTAh Facilities which recorded a decline. Conversely in DRC, the majority of fish landing sites reported a decline in access to social amenities except Drinking Water which reported an increase from 15 to 19 percent between the two survey periods. In Tanzania, landing sites recorded access to all social amenities apart from electricity which reported a drop from 67 percent in 2011 to 45 percent in 2024. A decline in access to HeLTAh Facilities and Schools was reported in Zambia from 35 to 26 percent and 82 to 46 percent respectively (figure 17).

There were new areas of interest in the 2024 Frame Survey that were not reported in 2011 and 1995. These include Mobile money agents, Bank facilities and Alcohol joints.

Burundi reported the highest percentage of landing sites with Mobile Money Services (100%) and Bank facilities (32%). Meanwhile, Zambia recorded lowest at 32 and 2 percent for both Mobile Money Services and Bank Facilities respectively.
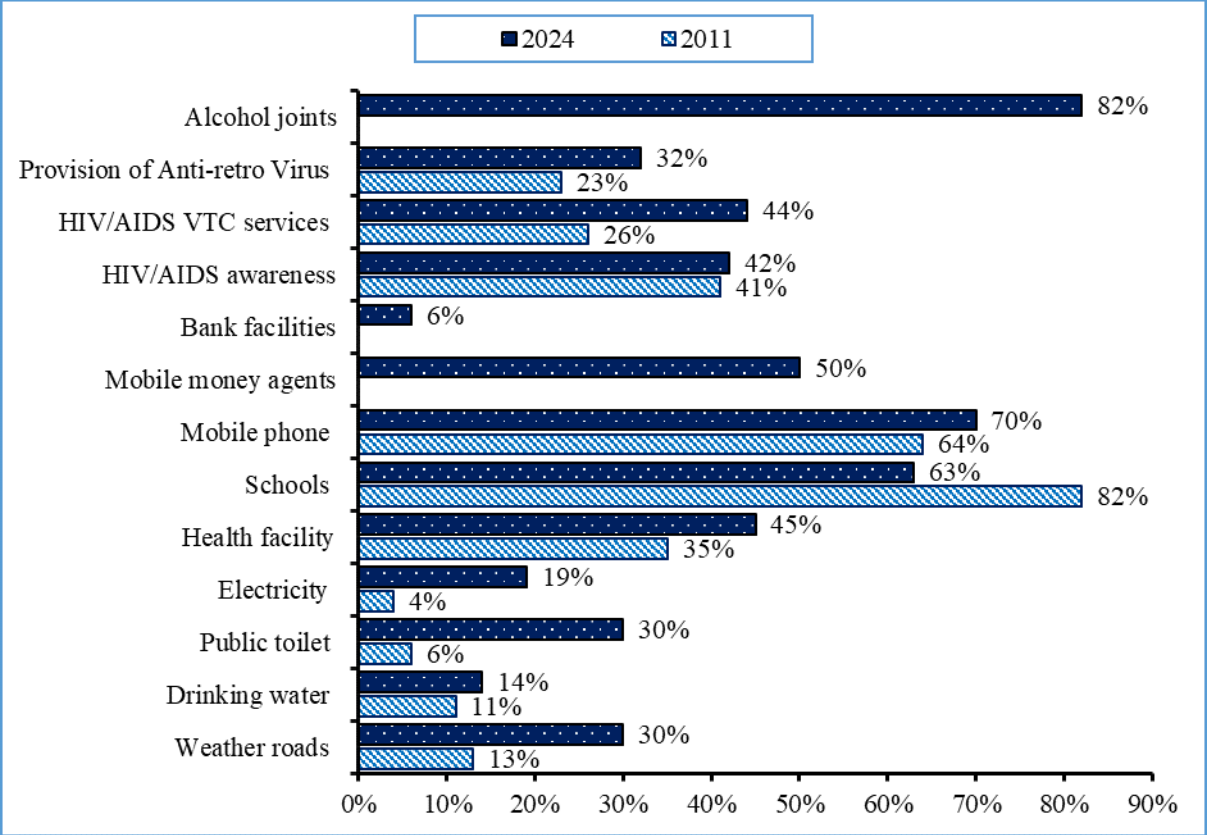
Figure 15: Percentage of Landing Sites with Social Amenities on Lake Tanganyika

3.12 CROSS-CUTTING ISSUES IN THE FISHERIES SECTOR

3.12.1 HIV/AIDS

In the ongoing fight against HIV/AIDS figure 7, there has been noticeable improvement in the provision of services at our landing sites. Specifically, 14 sites in Burundi, 45 in the DRC, 79 in Tanzania, and 61 in Zambia regularly offer awareness-raising programs. This totals to 199 sites out of 470 around the lake.

Over the period from 1995 to 2024, HIV/AIDS awareness services steadily increased by 34%. Similarly, HIV-VCT services across the entire Lake Tanganyika region saw a significant rise of 38%. Furthermore, there was a 27% increase in the availability of ARV services, underscoring substantial progress in HIV-related Health Care delivery.

3.12.2 Women involved in fishing

From the results of the 2024 fisheries frame survey on Lake Tanganyika, women are involved in post-harvest activities namely; fish trading (24,016 women, or 52%) and processing (22,994 women, or 44 %), while in terms of fishing, we have 1264, or 3% as owners and 548, or 1% directly involved in fishing.

Table 2: Women involved in fishing

Settings	Women				Total
	Burundi	**DRC**	**Tanzania**	**Zambia**	
Fishers (Women)	0	137	338	12	487
Craft Owners	222	610	419	13	**1264**
Fishmongers	1365	11774	11554	2323	**27016**
Fish Processors	1560	12481	5586	3367	**22994**
Total	**3208**	**25002**	**17897**	**5715**	**51822**

4. CHALLENGES ENCOUNTERED

i. The rise in water levels in some areas limited the mobility of enumerators during data collection and caused an increase in the budget.

ii. Weather changes, such as winds and large waves, affected cruising to some landing sites during data collection though this didn't affect the results of the survey.

iii. The frame survey was conducted while the lake was closed, which affected data collection for a few types of fisheries, such as foot fishers, as most of them were not found in their localities.

5. RECOMMENDATIONS AND CONCLUSIONS

From the frame survey finding, the following recommendations are proposed;

i. Results shows that illegal gears such as monofilament has increased across all the Contracting States, it is high time to strengthen the MCS activities in all countries;

ii. Contracting States have to harmonize vessels registration and licensing system so as to curb issues of illegal practices;

iii. Partner state should impose regulations that prohibit importation of illegal gears in the region;

iv. Partner state should set out funds for conducting frame survey regularly;

v. Infrastructures such as cold rooms, drying racks are few across the lake, riparian countries should take strong measure to facilitate construction of those fisheries' infrastructure that are climate smart related and;

vi. Use of Co-Management (BMUs, CBOs, Fisheries Associations) as a tool for participatory fisheries management should be strengthened in all countries.

vii. Contracting States should have a harmonized regional fisheries legal framework.

viii. Contracting States to commission a study on their application and suitability of the battery-powered lamps for ensuring the future sustainability of fisheries resources in Lake Tanganyika

In conclusion, the frame survey is a crucial activity that helps resource managers and users to understand the socio-economic activities at the landing sites, address issues of post-harvest losses, and gather other essential details for proper planning for the sustainable management of aquatic ecosystem and community benefits. We encourage the government to continue improving landing facilities, including access to power, roads, and industries, which will boost economic activities in our fishing communities around Lake Tanganyika.

6. REFERENCES

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7. Annexes

Table 3: Summary of Lake Tanganyika fisheries regional frame survey results for 2024 by countries

S/N	Item	Burundi	DRC	Tanzania	Zambia	Total 2024
1	Total number of landing sites	25	250	104	91	**470**
2	Total number of fishers	12,784	31,320	32,757	9,062	**85,923**
2.1	Number of Foot fishers	51	126	769	8	**954**
2.1	Number of male fishers	12,723	31,183	32,419	9,000	**85,325**
2.1	Number of female fishers	61	137	338	62	**598**
3	Total no of Fishing crafts including foof fishers and rafts	6,788	14,115	12,409	3,335	**36,647**
3.1	Number of registered Fishing crafts	-	80	4,554	15	**4,649**
4	Outboard engines for Propulsion	4,398	8,984	9,728	2,163	**25,273**
5	Mean quantity of fuel used by Outboard engines	250	201	184	134	**192**
6	**Number of crafts**	**8,489**	**7,147**	**4,630**	**3,913**	44,179
6.1	Planked Canoe	5,349	13,058	11,653	3,331	**33,391**
6.2	Boat	691	1,952	913	578	**4,134**
6.3	Dug out	1,390	941	367		**2,698**
6.4	Foot Fishers	49	116	389	4	**558**
6.5	Catamaran	1,010	1,080	1,308		**3,398**
7.0	Fishing Gears					
7.1	Gillnets	7,138	11,035	6,390	9,386	**70,836**
7.2	Dagaa fishing gears - Number of Liftnet mesh size 6 - 7 mm TO >8 mm	945	1,410	1,305	-	**3,660**
7.3	Total Long line hooks size < 4> TO >= 13	226,329	181,161	48,765	4,927	**461,182**
7.4	Number of long line hooks using different bait types	152,409	176,966	69,475	3,963	**402,813**
7.5	Handline hooks	76,079	12,585	1,070,095	59,772	**1,218,531**
7.6	Number of handline hooks using different bait types	77,268	12,395	1,055,833	59,147	**1,204,643**
7.7	Not registered crafts	7,349	12,146	6,402	9,476	**35,373**
7.8	Other gears	49,204	70,016	30,505	4,293	**154,018**
7.8.1	Small seines	250	1	500	1	**752**
7.8.2	Scoop nets		21	7		**28**
7.8.3	Beach/Boat seine	11	944	50	243	**1,248**
7.8.4	MOSQUITO NET			161	3	**164**
7.8.5	Beach seine	11	944	50	243	**1,248**

S/N	Item	Burundi	DRC	Tanzania	Zambia	Total 2024
7.8.6	Traps/Baskets	315	58	929		**1,302**
7.8.7	Ring Net	1	482	813	510	**1,806**
7.8.10	Monofilament	55	3,075	2,795	457	**6,382**
8.0	**Sources of light**					
8.1	Battery	1,009	1,295	1,792	420	**4,516**
8.2	Generator		41	5		**46**
8.3	Solar		58	269	25	**352**
8.4	Kerosine		2	5	12	**19**
8.5	Torch		25		2	**27**
8.6	None		102	1	4	**107**
9	Total number of lamps	49,204	70,016	30,505	4,293	**154,018**

Table 4: Summary of 1995, 2011, 2024 Frame Surveys

SN	Item	1995	2011	2024
1	**Landing Sites**			
1.1	Number of landing sites	786	672	470
1.2	Number of landing site with BMUs		44	-
1.3	Number of landing sites on islands	9	36	19
1.4	Number of active members of BMU			7,491
1.5	Fishers died by boat capsizing due to bad weather in the past one year at the landing sites			903
2	**HIV/AIDS services**			
2.1	Landing sites with HIV awareness raising		39	199
2.2	Landing sites with HIV-VCT services		25	205
2.3	Landing site with HIV-ARV services		22	151
2.4	Landing sites with services to HIV/AIDS orphans/widows			111
2.4.1	Monetary			23
2.4.2	Food			27
2.4.3	Shelter			8
2.4.4	Medical Treatment			94
2.4.5	Clothing			8
3	**Crafts not in operational**	345	485	
3.1	Number of derelict crafts	346		
3.2	Number of fishing crafts damaged but repairable	757	2,179	4,761
3.3	Number of fishing craft under construction			
4	**Transport crafts**			

SN	Item	1995	2011	2024
4.1	Total number of transport crafts	493	3	7,679
4.2	Number of transport crafts (fish)			6,661
4.3	Number of transport crafts (other goods)		27	1,018
5	**Landing site facilities**			
5.1	Landing sites with primary schools		292	295
5.2	Landing sites with bandas (Fish shed)			45
5.3	Landing sites with mobile network		170	327
5.4	Landing sites with heLTAh clinic		129	212
5.5	Landing sites with bank facilities			30
5.6	Landing sites with mobile money agents			234
5.7	Number of landing sites with alcohol joints			386
5.8	Number of alcohol joint on landing sites			2,123
5.9	Landing sites with cold rooms			32
5.1	Landing sites with working cold rooms			29
5.11	Landing sites with non-working cold rooms			3
5.12	Landing sites with drying racks			176
5.13	Landing sites with smoking kilns			234
5.14	Landing sites with Pantoons			9
5.15	Landing sites with jetties			23
5.16	Landing sites with Pantoons/Jetties			
5.17	Landing sites with electricity supply		4	88
5.18	Landing sites with public toilets		20	68
5.19	Landing sites with potable water		38	139
5.2	Landing sites accessible by all-weather roads		32	139
5.21	Landing sites with Fish Stores			37
5.22	Landing sites with boat repair facilities		28	333
5.23	Landing sites with net repair facilities			285
5.24	Landing sites with engine repair facilities		49	192
5.25	Number of landing sites with BMU office			137
5.26	Landing sites with fishing gear shops		39	66
6	**Fisheries staff**			
6.1	Number of landing sites attended by fisheries staff		33	395
6.1.0	Landing sites visited by fisheries staff at different frequencies		33	
7	**Non-fishing economic activities**			
7.1	Private owned Landing sites			62
7.2	Fenced Landing sites			20
7.3	Alpha Tanganyika Flavour			
7.4	Number of artisanal fish processors		15,469	17,352
7.5	Number of boat owners			34,967
7.6	Number of fish traders		1,014	27,016
7.7	Number of mongers		8,369	22,994
7.8	Tax collection tendered at the LS			116
7.9	Fish movement permit issued at the LS daily			230
7.10	Number of female boat owners			1,368
8	**Fishers**			
8.1	Total number of fishers	44,957	94,871	85,923
8.2	Number of Foot fishers			954
8.3	Number of male fishers			85,325
8.4	Number of female fishers			598
9	**Fishing crafts**			

SN	Item	1995	2011	2024
9.1	Total No. of fishing crafts including foot fishers and rafts	18,048	34,363	36,647
9.2	Total No. of fishing crafts excluding foot fishers	853		23,561
9.3	Total No. of auxiliary boats	123	1,357	13,731
9.4	Number of registered fishing crafts		2,538	4,649
9.5	Number of Licensed Crafts			5,765
9.6	Number of Unlicensed Crafts			14,022
9.7	Mode of Propulsion			
9.8	Number of crafts using Outboard engines by	5,235	1,689	5,486
	0-25 HP			17,231
	26-40 HP			2,121
	41-65 HP			348
	>65 HP			87
9.9	Number of crafts using Inboard engine			
9.10	Number of crafts using Paddle			10,258
9.11	Number of crafts using Sails		1,568	3,487
9.12	Number of crafts towed		1,089	
10	**Craft types**			
1	Planked Canoe	9,170	15,919	33,391
2	Boat		20	4,134
3	Dug out	3,005	3,676	2,698
4	Foot Fishers			558
5	Catamaran	3,397	6,179	3,398
11	**Fishing Gears**			
11.1	Gillnets by size	237		
11.1.1	0.75			15
11.1.2	1			345
11.1.3	1.25			526
11.1.4	1.5			4,938
11.1.5	2			1,274
11.1.6	2.5		8,487	2,125
11.1.7	3			11,147
11.1.8	3.5			4,463
11.1.9	4			2,970
11.1.10	4.5			2,380
11.1.11	5			735
11.1.12	5.5			719
11.1.13	6			1,347
11.1.14	6.5			241
11.1.15	7			96
11.1.16	8			218
11.1.17	9			1
11.1.18	10			343
11.1.19	11			66
11.1.22	NR			1,424
	Number of gillnets < 3		8,487	9,223
	Number of gillnets >= 3		23,319	24,816
	Total number of gillnets	6,300	1,806	35,373
11.2	Dagaa fishing gears by size			
11.2.1	Number of Liftnet <8 mm		294	1,587
11.2.2	Liftnet = 8 mm		1,150	1,041
11.2.3	Number of Liftnet mesh size 6 - 7 mm		189	392

SN	Item	1995	2011	2024
11.2.4	Number of Liftnet mesh size > 8 mm		78	640
	Total number of Lift nets	1,596	2,309	3,312
11.3	Long line hooks by size	755		
11.3.2	Number of Long Line hooks size 4 â€" 7			53,478
11.3.3	Number of Long Line hooks size 8 - 9			30,935
11.3.4	Number of Long Line hooks size 10 - 12			137,124
11.3.5	Number of Long Line hooks size >= 13			232,018
	Total Long line hooks	13,040	537,126	461,182
	Number of long line hooks using different bait types			402,813
11.4	Handline hooks	747		1,218,531
	Total			1,204,643
11.5	Other gears			
11.5.1	Small seines			752
11.6.2	Scoop nets	308		28
11.6.3	Beach/Boat seine	227		1,248
11.6.4	MOSQUITO NET	601		164
11.6.5	Beach seine	723		1,248
11.6.6	Traps/Baskets			1,302
11.6.7	Ring Net	350	644	1,806
11.6.8	Long			-
11.6.9	Short			-
11.6.10	Monofilament			6,382
12	**Sources of light**			
12.1	Battery			4,516
12.2	Genarator		1,179	46
12.3	Solar			352
12.4	Kerosine	7,635	23,321	19
12.5	Torch			27
12.6	None			107
12.7	Other Sources			
13	**Total number of lamps**	10,156		154,018

Table 5: Comparison of the Results of the 1995, 2011 and the 2024 Frame Survey

S/N	Parameters	Burundi			DR Congo			Tanzania			Zambia			TOTAL			Change 1995 to 2011	Change from 2011-2024
		1995	2011	2024	1995	2011	2024	1995	2011	2024	1995	2011	2024	1995	2011	2,024		
1	No landing sites	54	44	25	417	304	250	208	239	104	107	96	91	786	683	470	-13%	-31%
2	Non active vessels	345	239	520	757	2179	2619	911	1290	1022	250	264	600	2263	3972	4,761	76%	20%
3	Active vessels	1063	2997	6788	9439	16202	14115	3951	9977	12409	1427	2320	3335	15880	31496	36,647	98%	16%
	Total vessels	**1408**	**3236**	**7308**	**10196**	**18381**	**16734**	**4862**	**11267**	**13431**	**1677**	**2584**	**3935**	**18143**	**35469**	41,408	**95%**	17%
4	No of fishers	2021	8202	12784	26308	51625	31320	12510	26612	32757	4118	8420	9062	44957	94859	85,923	111%	-9%
5	No fishers per active vessel	1.9	2.7	1.9	2.8	3.2	2.2	3.2	2.7	1.9	2.9	3.6	2.7	2.8	3	2	6%	-22%
6	Active Catamaran units	680	264	1010	1350	2,16 9	1080	1194	2,52 5	1308	0	5	0	3224	4963	3,398	54%	-32%
7	Active Apollo units	0	468		23	396		0	0		0	0		23	864	-	3657%	-100%
8	Active Planked units	543	1,48 5	5349	4958	7,96 2	13058	2834	6,31 9	11653	1378	1,61 5	3331	9713	17381	33,391	79%	92%
9	Active dug out units	46	28	1390	2382	3,03 9	941	577	515	367	46	3	0	3051	3585	2,698	18%	-25%
10	Active Metallic units	96	0		1	0		1	0		86	0		184	0	-	-100%	
11	Active Others	14	20		1018	30		234	9		85	683		1351	742	-	-45%	-100%
12	Transport vessels	29	NA	223	464	NA	1252	22	NA	4696	82	NA	1508	597	NA	7,679	NA	

Table 6: Number of crafts operated with handline hooks using different bait types in Lake Tanganyika - 2024 Frame Survey

Type of bait	Countries				Total	% No. of
District	Burundi	DRC	Tanzania	Zambia		hooks
Crab			12		12	0.86
N/A						
Kambale/Isomvyi/Mulonge/Inshinga		1	8	11	20	1.44
Furu			8		8	0.57
Ngogo/Nsokolo			4	2	6	0.43
Mormyrus			1		1	0.07
Dagaa/indagara	2	6	44		52	3.73
Minyoo/vers/EarthWorms	28	85	321	30	464	33.31
Majani ya ziwani/Algae/herbes aquatiques		8	2		10	0.72
Wadudu/Termite/Insectes	27	12	144	6	189	13.57
Ugali	1	10	255	1	267	19.17
Vyura/Frog/Grenouille			1		1	0.07
Sabuni/soap/savon		9	26	23	58	4.16
Hakuna chambo/No Bait/Pas d'appÃ¢	21	14	219	48	302	21.68
Not Recorded						
Kuku/poulet/chicken						
cassava/Muhogo/manioc		1	1	1	3	0.22
Mastacembelus						
Grand Total	**79**	**146**	**1046**	**122**	**1393**	100

Table 7:Number of fishers targeting different fish species

Species	Burundi	DRC	Tanzania	Zambia	Total	% No. of fishers
Stollothirssa tanganicae	4378	11518	11990	2648	30534	35
Lates stappersii	6735	13737	16972	4138	41582	49
Oreochromis tanganicae	59	1920	1224	200	3403	4
Others	1612	4145	2571	2076	10404	12
Total	12784	31320	32757	9062	85923	100

Table 8: Number of fishers targeting different species in Lake Tanganyika - 2024 Frame Survey

Species	Burundi	DRC	Tanzania	Zambia	Total	% No. of fishers
STT	4378	11518	11990	2648	30534	35.5
LS	6735	13737	16972	4138	41582	48.4
LSM	387	217	85	158	847	1
OIT	59	1920	1224	200	3403	4
LSL	427	164	151	5	747	0.9
BEJ	355	703	664	122	1844	2.1
MG	266	337	64	61	728	0.8
HS	11	4	183	257	455	0.5
VKK	32	16	19	6	73	0.1
PA	2	1	8		11	0
TLN	8	3	2		13	0
LD	78	334	568	93	1073	1.2
CG	31	22	142	18	213	0.2
TF			26	141	167	0.2
VMP	6		151	6	163	0.2
SD			1		1	0
SNG		12	38		50	0.1
nsg			149		149	0.2
LPL			69		69	0.1
YFF			16	14	30	0
NP	1				1	0
LTG	4	28	5	7	44	0.1
PRK		4	42		46	0.1
XET			18		18	0
NDG		23	25	2	50	0.1
GML			24		24	0
AO		32	36	10	78	0.1
LPC			13		13	0
HA	1	822			823	1
MLMB	3	81	7		91	0.1
ECY			4		4	0
TLC			4		4	0
ME			9		9	0
MR			8		8	0
OR		39	10		49	0.1
CST		68	2	6	76	0.1
LMM		1235	21	1165	2421	2.8
BD			2		2	0
BB			2	2	4	0
AMC			1		1	0
XEH			1		1	0
SL			1	3	4	0
Total	12784	31320	32757	9062	85923	100

Table 9: Number of gears targeting different species in 2024 Frame Survey

Gear type	Total No. of gear	Target species	Burundi	DRC	Tanzania	Zambia	Total No. of gears	% No.
LN	3,307	STT	674	757	1061		2492	75.4
		LS	151	376	254		781	23.6
		BEJ	3		1		4	0.1
		LSL	1				1	0
		LMM		29			29	0.9
GN	34,037	LS	994	5980	1478	565	9017	26.5
		MG	2240	112	56	80	2488	7.3
		LSM	1456	202	146	1194	2998	8.8
		HS	70	2	727	5164	5963	17.5
		BEJ	415	143	824	282	1664	4.9
		VKK	7	10	5	600	622	1.8
		LD	953	3771	381	260	5365	15.8
		LSL	211		54		265	0.8
		CG	183				183	0.5
		OIT	351	1078	1000	101	2530	7.4
		TF			7		7	0
		SD			2		2	0
		SNG		2	299		301	0.9
		nsg			642		642	1.9
		YFF			5		5	0
		LTG	1		8	400	409	1.2
		PRK		2	34		36	0.1
		NDG		6	17		23	0.1
		AO			33		33	0.1
		MLMB	3	95	1		99	0.3
		VMP			33	3	36	0.1
		TLC			3		3	0
		ME			15		15	0
		MR			8		8	0
		LPL			390		390	1.1
		BB			2		2	0
		CST			1	1	2	0
		LMM		350		403	753	2.2
		TLN	160	3			163	0.5
		HA		13			13	0
HL	1,177,681	LS	55748	9653	1022030	53308	1140739	96.9
		LSM	515	30	1759	261	2565	0.2
		LSL	1782	1414	1635	600	5431	0.5
		BEJ	12102	22	853	1244	14221	1.2
		MG	1874	340	1971	888	5073	0.4
		HS	1270		437	150	1857	0.2

Gear type	Total No. of gear	Target species	Burundi	DRC	Tanzania	Zambia	Total No. of gears	% No.
		VKK	533	7	157		697	0.1
		OIT	433	54	809	189	1485	0.1
		LD	3	7	304	163	477	0
		TF			995		995	0.1
		VMP	77		414		491	0
		CG	1157	2	92		1251	0.1
		LPL			194		194	0
		YFF			204	963	1167	0.1
		XET			185		185	0
		GML			202		202	0
		LPC			142		142	0
		HA		145			145	0
		ECY			172		172	0
		TLC			3		3	0
		NDG			24	8	32	0
		CST			2		2	0
		SNG			19		19	0
		PA		1	30		31	0
		AO			3		3	0
		AMC			1		1	0
		XEH					0	0
		STT		1			1	0
		SL				100	100	0
BS	1,218	OIT	1	74	2		77	6.3
		STT	1	541	12	136	690	56.7
		LS	8	55		43	106	8.7
		LD		3	17	2	22	1.8
		BEJ		35	14	4	53	4.4
		nsg			4		4	0.3
		HA		152			152	12.5
		LMM		62		46	108	8.9
		MG		4		1	5	0.4
		TF				1	1	0.1
LL	455,719	BEJ	32819	5278	30600	815	69512	15.3
		LS	139132	153254		572	292958	64.3
		MG	8299	4677		150	13126	2.9
		LSL	29922	2433	5480		37835	8.3
		TLN					0	0
		LD	10439	1523		10	11972	2.6
		LSM	347	12384		340	13071	2.9
		CG	3870	26	1450	814	6160	1.4
		NP	170				170	0

Gear type	Total No. of gear	Target species	Burundi	DRC	Tanzania	Zambia	Total No. of gears	% No.
		SNG		7	6958		6965	1.5
		LTG		25	70		95	0
		AO			3		3	0
		TF			903	1	904	0.2
		PA			800		800	0.2
		BD			1850		1850	0.4
		SL			80	2	82	0
		HA		6			6	0
		BB				100	100	0
		OIT				110	110	0
DM	-	BEJ	0				0	0
SP	34	PA	1				1	2.9
		CG	8		25		33	97.1
RN	1,720	STT		320	546	211	1077	62.6
		LS		92	262	175	529	30.8
		LMM		5	2	64	71	4.1
		LD			1		1	0.1
		NDG		2			2	0.1
		OIT		17		5	22	1.3
		LSM		15		1	16	0.9
		BEJ				2	2	0.1
MN	161	OIT			113		113	70.2
		CG			1		1	0.6
		LS			1		1	0.6
		nsg			2		2	1.2
		STT			13	2	15	9.3
		LD			26		26	16.1
		BEJ			2		2	1.2
		LSL			1		1	0.6
TR	1,254	OIT	80	18	468		566	45.1
		CG	140	30	410		580	46.3
		TLN	95	1			96	7.7
		PA			5		5	0.4
		BEJ		1	6		7	0.6
CN	14	OIT			5		5	35.7
		BEJ			3		3	21.4
		LD			6		6	42.9
MF	6,056	LS		251	2155	52	2458	40.6
		OIT	54	232	139	108	533	8.8
		HS	1			103	104	1.7
		LD		10	137	25	172	2.8

Gear type	Total No. of gear	Target species	Burundi	DRC	Tanzania	Zambia	Total No. of gears	% No.
		CG		10	2		12	0.2
		BEJ		2	143	8	153	2.5
		TLN			80		80	1.3
		LSL		52			52	0.9
		LTG		406			406	6.7
		CST		1510			1510	24.9
		AO		571			571	9.4
		LSM		1			1	0
		HA		4			4	0.1
SN	28	OR		19	7		26	92.9
		STT		1			1	3.6
		LS		1			1	3.6
		Total	308,754	208,717	1,092,928	70,830	1,681,229	100

Table 10: Number of gillnets by vertical panels recorded in 2024 Frame Survey in Lake Tanganyika

No of Pannels	Country				Total	Total percentage
	Burundi	Tanzania	Democratic Republic of Congo	Zambia		
1	2	2,406	6,106	598	9,112	27.78%
2	244	493	1,842	1,055	3,634	11.08%
3	976	265	230	1,393	2,864	8.73%
4	1,775	53	407	1,457	3,692	11.26%
5	460	330	871	607	2,268	6.91%
6	916	10	560	78	1,564	4.77%
7	110	1	40	253	404	1.23%
8	13	8	19	161	201	0.61%
9	4	15		7	26	0.08%
10	628	377	208	2,792	4,005	12.21%
11		1			1	0.00%
12	87	191	9		287	0.87%
13	52	412	1		465	1.42%
14	510	36		1	547	1.67%
15	321	530	14	355	1,220	3.72%
16	1,048	834	621	9	2,512	7.66%
Total	7,146	5,962	10,928	8,766	32,802	100.00%

Table 11: Number of gillnets of different mesh sizes mounted in 1 - 16 vertical panels in 2024 Frame Survey

Gillnet by mesh sizes	No. of panels (Range from 1 to 16	Countries Burundi	DRC	Tanzania	Zambia	Total No. Of gillnets
0.75	1					0
	2		11			11
	3					0
	4		4			4
1	1		36			36
	2		4			4
	5			Gillnet by mesh sizes by Pannels+I167:AV174		296
	6			6		6
1.25	1	1	129	8		138
	2		3	6		9
	3			15		15
	4				160	160
	5		12			12
	6	2				2
	7			1		1
	10		100	8		108
	14			1		1
	16			80		80

Gillnet by mesh sizes	No. of panels (Range from 1 to 16	Countries Burundi	DRC	Tanzania	Zambia	Total No. Of gillnets
2.5	1		271	200	12	483
	2		88	12	266	366
	3		29		306	335
	4		53	1	8	62
	5		19	20	35	74
	6		32			32
	7		5		80	85
	8		6	2		8
	10		2		550	552
	12		3			3
3	1		20822	1312	322	3716
	2		650	237	151	1038
	3	10	39	184	389	622
	4	6	323	27	427	783
	5		783	14	106	903
	6	495	289	1	66	851
	7	100			166	266
	8			6	10	16

1.5	1		2815	450	78	3343		9				7	7
	2	14	155	11	183	363		10	412	100		1132	1644
	3	6	5	3	27	41		11					0
	4	302	2		160	464		13		1			1
	5	100			156	256		14	310				310
	6	116				116		15	26	5	3	2	36
	7	2				2		16	47	400	92	5	544
	8				1	1	3.5	1	1	76	94	144	315
	9	3				3		2	220	447	148	40	855
	10	3				3		3	380	18	13	161	572
	12	2				2		4	608		6	101	715
	16	4				4		5	159	1			160
2	1		138	196	40	374		6	150	156			306
	2			23	321	344		7		35			35
	3		3	4	180	187		8	4				4
	4			2		2		10	190		350	200	740
	5				10	10		11					0
	6				12	12		12	45		1		46
	8		13			13		13	50		2		52
	12		6			6		14	200				200
	15				2	2		15	245			150	395
	16		157		3	160		16	55		3		58

	Number of panels (Range 1 to 16	Countries				Total number of gillnets
		Burundi	RDC	Tanzania	Zambia	
4	1		116	125		241
	2	3	3	32	81	119
	3			33		33
	4	202	7		600	809
	5		10		100	110
	6	152	6			158
	7	1			7	8
	8				80	80
	9	1				1
	10				910	910
	11			1		1
	12	5				5
	13	2				2
	14				1	1
	15					0
	16	470		2		472
4.5	1		27	10		37
	2			2	11	13
	3	194	126	5	240	565
	4	51				51
	6		6	3		9
	8	4			70	74
	9			15		15

	Number of panels (Range 1 to 16	Countries				Total number of gillnets
		Burundi	RDC	Tanzania	Zambia	
5.5	4			1		1
	10			3		3
	12			190		190
	14			12		12
	15				200	200
	16	1	12	200		213
6	2	4	35			39
	3	200				200
	4	600		6		606
	5	200				200
	6		6			6
	8	3				3
	10	2				2
	15	50				50
	16	241				241
6.5	1					0
	2		200			200
	4			4		4
	14			23		23
	15			14		14
7						
	2		55			55
	4				1	1

Group	Item	A	B	C	D	Total
	10	4		16		20
	13			410		410
	15			513		513
	16			452		452
5	1		5	5	2	12
	2			22	1	23
	3	185	6	8		199
	4		14	6		20
	5	1	1		200	202
	6	1	54			55
	7	7				7
	8	1				1
	10	15				15
	12	35				35
	14					0
	15		9		1	10
	16	4	48	1	1	54

Group	Item	A	B	C	D	Total
	5			40		40
8	1			16		16
	2				1	1
	10	1				1
	16	200				200
9	16	1				1
10	1			298		298
	2			5		5
	4			4		4
	6			1		1
	10	1		6		7
	16	25				25
11	1			53		53
	2			2		2
	5			5		5
	6			6		6

Table 12: Number of handline hooks using different bait types in Lake Tangan

District	Crab	N/A	Kambale/Isomvyi/Mulonge/Inshinga	Frogs	Ngogo/Nsokolo	Mormyrus	Sardine/Dagaa/indagara	EarthWorms/Minyoo/vers/	Majani ya ziwani/Algae/herbes aquatiques	Wadudu/Termite/Insectes	Ugali	Vyura/Frog/Grenouille	Sabuni/soap/savon	Hakuna chambo/No Bait/Pas d'appÃ¢	Not Recorded	Kuku/poulet/chicken	cassava/Muhogo/manioc	Mastacembelus	Grand Total	
Burundi							1	24		24	2			314					365	
DRC				1				46	206	12	60	31		38	154			13		561
Tanzania	49		122	22	31	3	508	2673	40	1564	1514	4	213	2081					8824	
Zambia			134		10			368		86	15		451	685			3		1752	
Total	49		257	22	41	3	555	3271	52	1734	1562	4	702	3234			16		11502	
% No. of hooks	0.43		2.23	0.19	0.36	0.03	4.83	28.44	0.45	15.08	13.58	0.03	6.10	28.12			0.14		100.00	

Table 13: Number of longline hooks using different bait types in Lake Tanganyika - 2024 Frame Survey

District	Crab	N/A	Kambale/Isomvyi/Mulonge/Inshinga	Frogs	Ngogo/Nsokolo	Mormyrus	Dagaa/indagara	EarthWorms Minyoo/vers/	Majani ya ziwani/Algae/herbes aquatiques	Wadudu/Termite/Insectes	Ugali	Vyura/Frog/Grenouille
Burundi			170				4280	4650	150	22617	3280	
DRC				3				11	758	2590	5869	2659
Tanzania				900	900		1330	12538		11800	2480	
Zambia		500	747		1	3	4	1190			16	
Total		500	920	900	901	3	5625	19136	2740	40286	8435	
% No. of hooks		0.12	0.23	0.22	0.22	0.00	1.40	4.75	0.68	10.00	2.09	

Sabuni/soap/savon	Hakuna chambo/No Bait/Pas d'appâ	Not Recorded	Kuku/poulet/chicken	cassava/Muhogo/manioc	Mastacembelus	Grand Total
18442	98620	200				152409
	2262	162814				176966
7800	30177			1550		69475
19	1383			100		3963
28523	292994	200		1650		402813
7.08	72.74	0.05		0.41		100.00