TERMS OF REFERENCE FOR CONDUCTING A FEASIBILITY STUDY ON THE CONSTRUCTION OF A DAM TO REGULATE THE LAKE TANGANYIKA WATER LEVEL AT THE LUKUGA RIVER JUNCTION.

JUNE 2025

0. INTRODUCTION

Lake Tanganyika is located at an altitude of approximately 773 m above sea level, in the western part of Albertine Rift Valley. With a length of 677 km, an average width of 50 km (72 km at its widest point), a surface area of 32,900 km², a coastline of 1,828 km and a maximum depth of 1,471 m, it is the second largest lake in Africa after Lake Victoria, the second deepest lake in the world after Lake Baikal in Russia and the longest freshwater lake in the world.

Lake Tanganyika is shared by four riparian countries: Democratic Republic of Congo (DRC) (45%), Tanzania (41%), Burundi (8%) and Zambia (6%). With exception of the eastern and northern shores, the lake is confined by the steep slopes of the Rift Valley, especially on its western shore, which reaches 2,000 m above sea level. This limits the lake's catchment area to 231,000 km². The catchment area extends over the territory of five countries: Tanzania (67%), DRC (16%), Zambia (7%), Burundi (6%) and Rwanda (4%).

Two main rivers flow into Lake Tanganyika: Rusizi River, which flows into the northern part of the lake from Lake Kivu, and Malagarazi River, which flows into the eastern side of the lake. There is only one major outlet, Lukuga River, which flows into the Congo River watershed.

As for variations in the water levels of Lake Tanganyika, based on available observation data from 1846 to date and modelling studies that have been published previously (Serrat-Capdevila et al., 2018; Otieno Odongo&Partners, 2013), all these studies and observations show that Lake Tanganyika has experienced variations in its level at different times. For example, the highest level of the lake in 1878 was 783.3 m; the second highest level was 777.1 m (in 1964), while in 2024, the level of the lake was 777.32 m. It should also be noted that the lake has experienced periods of low water levels. The lowest levels of Lake Tanganyika have been recorded several times over the last few centuries: in **1902**, the minimum level was 772.5 m, and in **1938**, there was a significant drop in the level.

These fluctuations in the water levels of Lake Tanganyika have adverse consequences on communities living along the lake, including the destruction and flooding of infrastructure and public property, and the deterioration of water quality, etc.

1. CONTEXT AND JUSTIFICATION

Lukuga River is the only outlet from Lake Tanganyika that can influence the Lake Tanganyika water level and is also an important river flow in the region. It is located in the Democratic Republic of Congo and flows for almost 350 km to join the Lualaba, which is the upper reaches of the Congo River. Its source is

located on the Katanga highlands, near Musofi, where it performs major economic, ecological and social functions.

In 2013, at the request of LTA Member States, COMESA commissioned a study financed by the World Bank to propose solutions to the problem of insufficient depth in the ports due to a drop in the Lake Tanganyika water level. This study concluded that the dam could only regulate 6 to 18% of the lake's outflow (evaporation + Lukuga outflow) and that the dam would become irrelevant at the 772.7 m level (bottom of the Lukuga river bed).

The study strongly recommended regular dredging of all the harbours and, on a case-by-case basis, additional measures to reduce the entry of sediment into the ports and to carry out reforestation and erosion control measures.

In 2024, following the spectaculary rise of water levels in Lake Tanganyika, which caused significant material damage and loss of life, an extraordinary meeting of the Lake Tanganyika Authority Conference of Ministers was held on 3rd October 2024 to specifically examine this issue. At the end of this meeting, the feasibility study on the construction of a dam to regulate the Lake Tanganyika water levels was recommended as one of the priority actions to be taken in the short term. It is thus in this particular context that this work is being carried out.

In light of the above, it is now necessary to consider the construction of a regulating dam at the junction of the lake and the Lukuga River in order to:

- Stabilise the Lake's water level;
- Provide for useful measures to reduce or avoid flooding in ports;
- Ensure better control of the flow into the Lukuga River;
- Enable sustainable economic development (irrigation, energy, navigation, etc.).

Before starting construction work, a technical, economic, environmental and social feasibility study is therefore required to assess the options for building the dam and to draw up a cost estimate for the project.

2. OBJECTIVES OF THE ASSIGNMENT

2.1 General objective:

Assess the overall feasibility of constructing a regulating dam at the junction of Lake Tanganyika and the Lukuga River.

2.2 Specific Objectives:

- Conduct a hydrological, hydraulic, and hydro-morphological analysis of the Lake Tanganyika outflow system;
- Assess the technical options for the optimal functioning of the proposed dam.
- Analyse the environmental and social impacts (preliminary ESIA);
- Propose the optimal site for the dam;
- Provide a preliminary design and a detailed estimate of construction costs;
- Identify the applicable legal and regulatory requirements.

3. EXPECTED RESULTS

- Complete feasibility study report (technical, economic, environmental, social);
- Hydraulic model of the lake-river system;
- Map of affected or beneficiary areas;
- Preliminary design of the dam (dimensions, materials, operation, etc.);
- Overall cost estimate (works, equipment, services, expropriations, contingencies);
- Preliminary action plan for the project implementation.

4. SCOPE OF THE ASSIGNMENT (PROPOSED METHODOLOGY)

The assignment will include (but is not limited to) the following tasks:

- Collecting and analysing existing hydrological and topographical data;
- Field surveys (bathymetry, geotechnical, etc.);
- Study of water regulation needs;
- Development of several technical scenarios;
- Cost-benefit analysis of each scenario;
- Consultations with local stakeholders;
- Preliminary risk analysis (technical, environmental, social);

• Drafting and presentation of the final report in both English and French.

5. DURATION OF THE ASSIGNMENT

The assignment is scheduled to last **6 months**, broken down as follows:

- Preparatory phase and data collection: 30 days
- Technical studies and modelling: 2 months
- Environmental and social analysis: 30 days
- Preparation of preliminary project and cost estimates: 30 days
- Drafting and validation of reports: 30 days

N B: the work can be carried out simultaneously depending on the profiles of the consultants in the team.

6. PROFILE OF THE CONSULTANT/FIRM

The firm or consortium must meet the following criteria:

• Proven experience in feasibility studies for dams or hydraulic projects;

• Multidisciplinary team (hydraulic engineer, geotechnical engineer, environmentalist, economist, sociologist);

• Experience in similar contexts in Africa or tropical areas;

• Ability to produce a reliable cost estimate based on international standards.

7. EXPECTED DELIVERABLES

- Inception report
- Mid-term report
- Preliminary draft project for the dam
- Cost estimate for the construction (engineering, materials, labour, management, etc.)
- Final report including technical annexes (in French and English)

8. TECHNICAL AND FINANCIAL PROPOSALS

The consultant/firm must submit a technical and financial proposal to Lake Tanganyika Authority Secretariat. The document must be no more than 25 pages long. The proposal must include the following elements:

A) The technical proposal must include

i. A cover letter
ii. The methodological approach to be used to carry out the assignment in order to achieve the expected results. The applicant (firm) must briefly explain how this will be done.
iii. The work plan, which must include the programme of activities for the field mission, dates for meetings (virtual or in person) and submission of the final report. This work must be completed within 180 days
iv. A list of experts and their CVs
v. The timeline for the assignment,
vi. References proving their relevant experience.

The consultant must submit a schedule containing the methodology and detailed work plan indicating the activities to be carried out in sequence with their corresponding durations or dates.

B) The financial proposal must indicate:

- The total cost of the assignment in USD (all taxes included)

- Payment terms (due date): preferably in three instalments

- The total budget for this activity is USD 60,000 (SIXTY THOUSAND US DOLLARS).

All activities for this project must not exceed that amount.

9. MONITORING AND VALIDATION PROCEDURES

A technical committee of monitoring experts will be set up by Lake Tanganyika Authority to validate each stage and deliverable of the study. Meetings will be held as necessary to better supervise and guide the work.

10. TERMS AND CONDITIONS FOR SUBMITTING PROPOSALS

Your bid should be sent to the Executive Director of Lake Tanganyika Authority Secretariat via his personal assistant, Ms Christelle Nijimbere, at the email address chistelle.nijimbere@lta-alt.org with a copy to Lake Tanganyika Authority Directorate of Environment at the email address: irnkina@yahoo.fr or jeremie.nkinahatemba@lta-alt.org .

11. TENDER SCHEDULE

Activity	Date
Publication of terms of reference	21st July 2025
Deadline for submission of bids at 16:00	5th August2025
Date of bid review and selection	11th August 2025
Signature of contract	21st August 2025
Final report submission	21st January 2026

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