

# BASIN-WIDE DAM INVENTORY AND DAM SAFETY RISK MANAGEMENT FRAMEWORK FOR NILE BASIN



## PROJECT DETAILS

### EXECUTING AGENCY

The Nile Equatorial Lakes Subsidiary Action Program (NELSAP-CU) is the implementing agency of this Flood and Drought Risk Mitigation project. It is part of the Nile Cooperation for Climate Resilience (NCCR) project.

NELSAP-CU is implementing this Thematic Area in consultation with the Eastern Nile Technical Regional Office (ENTRO).

### PROJECT DURATION

This project will be executed in four (4) years from July 2021 up to June 2025.

### LOCATION

The project is located within the Nile River Basin.

### PARTICIPATING STATES

Burundi, DR Congo, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania and Uganda.

### DEVELOPMENT PARTNERS

The Project is financed by The World Bank through the Cooperation in International Waters (CIWA) Trust Fund.

## POTENTIAL HAZARD CLASSIFICATION OF DAMS IN THE NILE BASIN REGION

55

dams  
Low Hazard

55 Dams in the Nile Region have been classified as low hazard

352

dams  
Moderate hazard

352 Dams in the Nile Region have been classified as moderate hazard

209

dams  
Significant hazard

209 Dams in the Nile Region have been classified as of significant hazard

28

dams  
High hazard

28 Dams in the Nile Region have been classified as high hazard

« The overall objective of this project is to develop a geo-referenced inventory of dams in the Nile Basin that describes their key characteristics including size, purpose, ownership, and establishment of a standard dam information system / database and develop a tiered risk management approach to dam safety in the basin that takes into consideration the transboundary reality of the basin. »



JULY 2024



DAM INVENTORY AND DAM SAFETY RISK MANAGEMENT FRAMEWORK REVIEW WORKSHOP PARTICIPANTS, MARCH 2024, NAIROBI, KENYA

### OUTLINE OF MAJOR ACTIVITIES OF THE PROJECT

Key Activities under this project will be:

- a) Basin-wide Inventory of Dams
- b) Preliminary Dam Classification
- c) Dam Risk Screening using Risk Index
- d) List of Dams for Detailed Dam Safety Assessment

### IMPORTANCE OF THE PROJECT

« This project will build dam safety management capacity in the NEL region by strengthening institutional environment for dam safety and improving information base that is essential for the development and management of dams in the Nile Basin. »

### BENEFITS OF THE PROJECT

The dam inventory serves as a vital foundation for dam safety regulation in the Nile basin. It provides a comprehensive overview of dams in the Basin countries, including their important features such as size, type, age, condition, and purpose.

This data is crucial as the countries embark on establishing and strengthening their dam safety units and foster collaboration to effectively manage the safety of the dams in the basin. The followings are some of the benefits of the project for the countries and region as whole:

- The dam inventory will provide each country with essential information on its dams, enabling identification of potential safety hazards. This information will facilitate prioritization of dam safety investments and rehabilitation, focusing resources on dams with the greatest risk:

### KEY PROJECT ACTIVITIES TIMELINES

<b>AUG 2022</b>	<b>INCEPTION REPORT &amp; INCEPTION WORKSHOP</b>
<b>APR 2023</b>	<b>TRADITIONAL DATA COLLECTION</b>
<b>APR 2023</b>	<b>ANALYTICAL PRODUCTS</b>
<b>SEPT 2023</b>	<b>DRAFT PRELIMINARY DAM CLASSIFICATION REPORT</b>
<b>SEPT 2023</b>	<b>DRAFT DAM RISK MANAGEMENT FRAMEWORK REPORT</b>
<b>MAR 2024</b>	<b>DAM SAFETY WORKSHOP</b>
<b>MAY 2024</b>	<b>FINAL PRELIMINARY DAM CLASSIFICATION REPORT</b>
<b>MAY 2024</b>	<b>FINAL DAM RISK MANAGEMENT FRAMEWORK REPORT</b>
<b>JULY 2024</b>	<b>DAM INVENTORY DATABASE</b>
<b>JULY 2024</b>	<b>FINAL REPORT WITH LIST OF DAMS FOR DETAILED ASSESSMENT</b>

- The inventory will help guide future dam safety programs by identifying dams requiring inspections, maintenance, or rehabilitation. This proactive approach helps prevent dam failures; The basin-wide dam inventory will create a uniform and standardized system for sharing dam-related data among riparian countries;

- The dam safety risk management framework will encourage collaboration on dam safety measures. Countries can share best practices, technical expertise, and resources for dam inspections, maintenance, and risk reduction strategies. The framework will foster a shared culture of dam safety across countries.

- By proactively managing dam safety, the risk of dam failures and transboundary environmental disasters is significantly reduced.



DAM SAFETY REVIEW WORKSHOP

## MAJOR PROJECT ACTIVITIES

### 1. Basin-wide Inventory of Dams

#### 1.a. Traditional Data Collection

Consultation on methodology and development of a standard data collection template (for database attributes) - in a workshop with member countries.

Collection of dam registers and supporting documentation from national focal points and other agencies in the Nile basin countries (energy, agriculture, mining, water resources management, etc.)

Collection of information from existing dam records for the Eastern Nile and the Nile Equatorial Lakes countries in the dam information / inventory available ENTRO and NELSAP.

Data cleaning and validation.

**1.b. Enhanced Data Collection** (concurrent with traditional data collection but under a separate contract funded by the World Bank).

Development and calibration of remote sensing tools to detect barriers (dams) and/or water bodies (reservoirs).

Analysis of satellite imagery for the basin using remote sensing tools.

Database enhancement by integrating additional dam information from RS survey.

#### 1.c. Preliminary Dam Classification

Potential Consequences Classification according to ENTRO Reference Dam Safety Guidelines (dam class information from national systems also collected during inventory);

Preliminary Risk Classification based on four parameters: reservoir capacity, dam height, population at risk, and potential downstream damage (none, low, moderate, high).

Done using readily available information, i.e. information obtained during the inventory from national authorities and supplemented by remote sensing data.

Preparation of geo-referenced dam inventory.

Preliminary results circulated to NBDSTWG.

Presentation and validation of findings of inventory and preliminary classification - to be agreed on in a workshop with member countries.

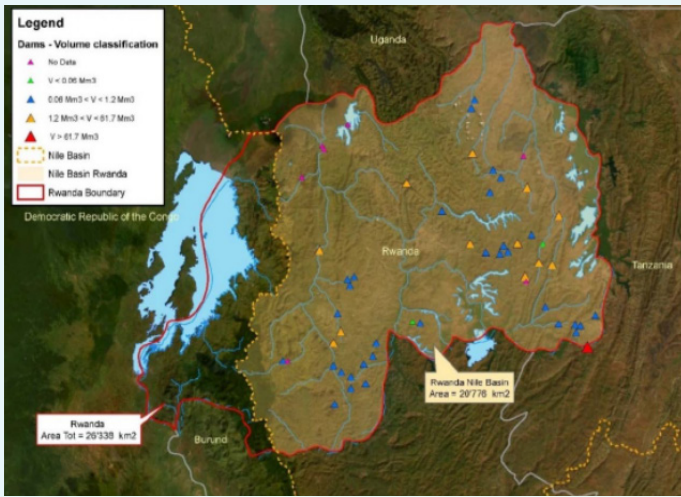
#### 1.d. Analysis & Synthesis

Development of a database using agreed database architecture.

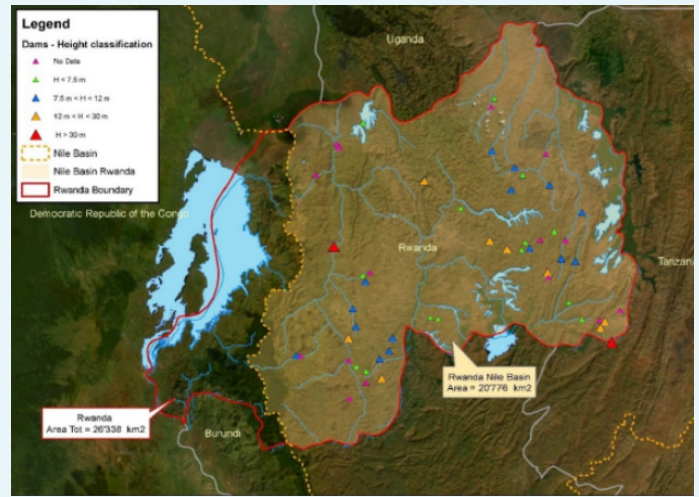
Analytical products (e.g. maps, reports, etc.)



RUSUMO DAM. PICTURE FROM NELSAP ARCHIVE

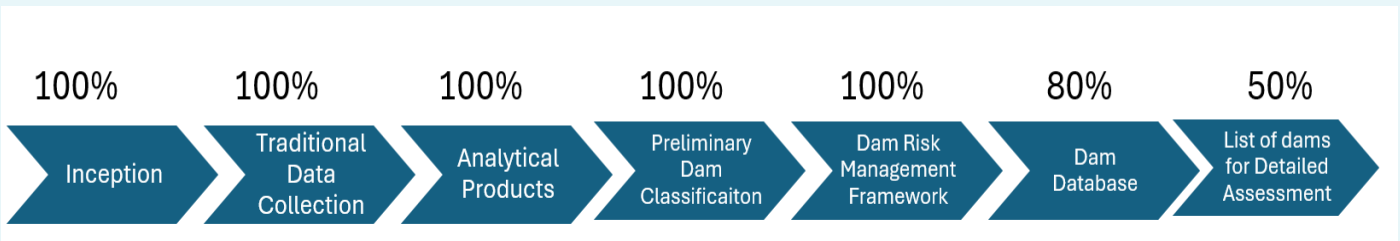


NILE BASIN IN RWANDA, VOLUME CLASSIFICATION



NILE BASIN IN RWANDA, HEIGHT CLASSIFICATION

## COMPLETED SO FAR



## 2. Risk Screening using Risk Index (Risk Framework Tier 1, All Nile Basin Dams)

### 2.a Development of Risk Index Scheme

Select relevant measures for indexing risk (validated through workshops with member countries).

Risk determined by 4 overarching factors:

1. Technical Characteristics (largely related to dam design)
2. Existing Conditions (largely related to current conditions of the dams)
3. Dam Safety Plan (organizational and management set-up for dam safety).
4. Potential Hazard (storage capacity, potential loss of life, socio- economic and environmental impacts of failure)

Assign Weights to Risk Index factors (through workshops). Proposal for overall risk framework and detailed Risk Index for endorsement by NILETAC and NILECOM.

### 2.b. Detailed Dam Safety Assessment

Develop list of dams for which detailed dam safety assessment are needed, to inform application of risk

index scheme. (This will be done based on the countries consultations, documents review and field visits of activity 1a)

## ABOUT NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAM

The Nile Equatorial Lakes Subsidiary Action Program Coordination Unit (NELSAP-CU) headquartered in Kigali, Rwanda, is one of the two investment programs of the Nile Basin Initiative (NBI), the other being the Eastern Nile Subsidiary Action Program (ENSAP), headquartered in Addis Ababa, Ethiopia and known as Eastern Nile Technical Regional Office (ENTRO). NELSAP-CU was established in December 1999 by the Council of Ministers for Water Affairs with a mission to “contribute to the eradication of poverty, promote economic growth, and reverse environmental degradation in the Nile Equatorial Lakes (NEL) region, within the overall NBI’s shared Vision of sustainable socioeconomic development and the equitable use of and benefit from Nile Basin water resources.”

NELSAP-CU is governed and reports to the Council of Water Ministers from 10 Nile Basin membership states of Burundi, DR Congo, Kenya, Rwanda, Tanzania, Uganda, Egypt, Ethiopia, South Sudan and Sudan.

**NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAM (NELSAP-CU) KIGALI CITY TOWER, 5TH FLOOR,  
P. O. Box 6759, KN 81 STREET KIGALI, RWANDA TEL: (250) 788 307 334 TWITTER: NELSAPCu, FACEBOOK: NELSAPCu/**

**EMAIL: NELSAPCU@NILEBASIN.ORG WWW.NELSAP.NILEBASIN.ORG**