

UEGCL hydropower dams ensure water and energy security

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The Uganda Electricity Generation Company Limited (UEGCL) was incorporated in 2001 to establish, acquire, operate and maintain electricity generation facilities in Uganda. Hydropower generation accounts for over 84% of Uganda's 1,182 MW installed Capacity. The goal of the National Development Plan III is to ensure increased household incomes and improved quality of life of Ugandans through an overall theme of Sustainable Industrialization for inclusive growth, employment and wealth creation. To this end, UEGCL has expanded its portfolio to include project development of Hydropower Plants (HPP) and other renewable energy projects including: 183 MW Isimba HPP, 600 MW Karuma HPP, other small HPPs like Muzizi (44MW), Nyagak III (5.5MW), Muziba (11MW) etc.

Uganda has over 200 dams for different multipurpose uses including: electricity, agriculture, irrigation, mining, water supply etc. These dams are designed based on the hydrological data, geology, use, material etc., and ought to be maintained prudently to ensure water and environment safety. Properly planned, designed, constructed and maintained dams contribute significantly towards fulfilling water supply and energy requirements. Dams and reservoirs which are properly located in the river basin do not alter the natural geometry of the river as their discharges provide the necessary flow to enhance water quality, maintain daily flow and support the natural habitat. UEGCL going concern is to ensure that

future planned multipurpose dams are constructed and operated with a balance between economic and environmental benefits in harmony with integrated water resource management.

Dam safety is a critical part of UEGCL, and as a Country, in 2019 Uganda subscribed to the International Commission on Large Dams (ICOLD) under the name Uganda Commission on Large Dams (UCOLD) to ensure and promote sustainable use of our dams. UEGCL aims to ensure efficient, safe, reliable & secure energy for consumers by coordinating with Ministries and Agencies and Departments e.g. Ministry of Water & Environment, Ministry of Energy & Mineral Development, Electricity Regulatory Authority, National Environmental Management Authority, Directorate of Water Resources Management, through ensuring compliance to Permit Guidelines and Environmental regulations.

In August 30, 2020, lives were lost in the Kiira power dam boat tragedy raising concerns regarding our dam and public safety that ought to be enshrined in our Dam Safety Regulatory Framework. Dam Safety Regulatory frameworks need to be developed as part of a holistic strategy for water management that is integrated in basin and regional planning processes, as they save the taxpayer and Government of Uganda high costs associated with rehabilitation and desilting of reservoirs.

As a major stakeholder in the development of dams in Uganda, UEGCL incorporates land use and climate change



Muziba Small Hydropower Plant flooding in April 2020, attributed to reservoir silting

effects in the design and development of dams. The Large dams, defined as either those with a height of at least 15 m from the lowest foundation to crest, or dams between 5 - 15 m and impounding more than 3 million cubic meters, are designed to sustain a 1 in 10,000-year flood according to ICOLD regulations.

UEGCL ensures that impacts of climate change are considered during design, construction and operation of dams...

Dam failures can arise due to overtopping, foundation defects, internal erosion/piping etc. Dam safety is central to public protection and economic security especially with growing downstream populations and rapid urbanization which places dual pressures on the dams to provide increased services. It is therefore, important for countries to adapt legal and institutional frameworks that can ensure the safety of dams. According to the World Bank Publication by Wilschert et al., 2020, such frameworks enable dams to provide water supplies to meet domestic

and industrial demands, support power generation, improve food security, and strengthen resilience to floods and droughts, hence building safer communities.

UEGCL instituted a robust Dam Safety Unit that monitors and ensures early detection of defects that may lead to potential dam failures. In addition, during construction of the dams, UEGCL ensures strict supervision of the materials used in dam construction and adequate maintenance. Such coordination with the Ministry of Water & Environment helps to ensure safety of dams in Uganda and is a basis for the institutionalization of UCOLD. Different stakeholders in the Food-Water-Energy Nexus that are concerned with dams are bound to benefit from UCOLD.

UEGCL also develops and implements Water Source Protection Plans enshrined in the broader Catchment Management Plans of the Ministry of Water & Environment to ensure that the development of hydropower dams along the different rivers do not negatively impact on the communities. These Plans are rigorously discussed with the major stakeholders and local communities, and developed throughout the lifetime of the

hydropower projects. An example is the ongoing tree planting activity along the Isimba reservoir on the River Nile that saw over 50 hectares of land covered by indigenous trees in 2019/2020. The local communities are directly in charge of the tree planting exercise, and are actively engaged

in looking after them until they mature while utilizing the same land for agriculture. This is a win-win solution as UEGCL benefits from environmental restoration while ensuring that the dams are not silted in a long run due to erosion activities.



Bugungu Forest Plantation in Bulwale District planted in 2006 by UEGCL. It is an offset for Kiira Power Station development

Despite efforts to ensure water and environmental safety, UEGCL has also suffered from effects of the immense land use changes associated with catchment degradation due to urbanization and developments around their dams, and extreme climate conditions. For example, the recent 2020 flooding saw the Nile Cascade Dams (Nalubaale-Kiira, Bujagali and Isimba) suffer National black-outs due to floating vegetation; the most prominent was the August 14, 2020 occurrence that resulted from a large 5 Acre floating island that docked at the Nalubaale Dam, Uganda's oldest dam. While, we ensure to harvest and remove water weeds and hyacinth upstream of the dam, our long term plan is installation of floating booms upstream of dams and beacons further to ensure public safety, therefore, support good catchment

management practices/interventions that ensure water and environment security.

Generally, UEGCL is on course to meet her objective to deliver at least 1300 MW by 2023 with the overall aim of providing safe, cheaper and reliable power to aid sustainable industrialization for inclusive growth, employment and wealth creation for Ugandans, in tandem with the NDP III. Together with Ministry of Water & Environment and the Ministry of Energy & Mineral Development, UEGCL through UCOLD is committed towards improving the Dam Safety Regulatory framework in Uganda that will support safe dams and save lives as we continue to ensure sustainable development, construction, operation and maintenance of dams during the whole hydropower project life cycle.



World Water Day - March 22nd, 2021

Together with Uganda Electricity Generation Company Limited (UEGCL) and the Directorate of Water Resources Management of the Ministry of Water and Environment (MWE), Uganda Committee on Large Dams (UCOLD) commemorates the World Water Day March 22nd, 2021 with a theme to **ensure water and environment security for socio-economic transformation in Uganda**. Uganda was formally inaugurated as 101st member of the International Commission on Large Dams (ICOLD) on June 14, 2019 at the 87th Annual General Meeting in Ottawa Canada under the name UCOLD.

UCOLD is a professional organization that brings together various stakeholders concerned with development of techniques for planning, design, construction, operation and maintenance of dams in Uganda. Uganda has over 250 dams for different multipurpose uses including: agriculture, water supply, navigation, irrigation, hydropower generation, mining, etc. We are committed towards ensuring safety of dams and the public around the dams to ensure sustainable development and management of Uganda's water resources.

**Safe dams, Safe lives
Happy World Water Day!**

183 MW ISIMBA HPP

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