

## Africa's needs and challenges discussed beside Lake Victoria ...

Nearly 500 delegates representing 54 nations met beside Lake Victoria, Uganda, from 10 to 12 July, for AFRICA 2023 - the Fourth International Conference and Exhibition on Water Storage and Hydropower Development for Africa. Of the 54 nations represented, 30 were African, and as the conference closed, feedback suggested that this was one of the most constructive gatherings to date to support hydro development in Africa, in terms of practical issues being addressed and valuable new contacts being made. There were 80 participants from Uganda, including many from UEGCL and the Ministry of Energy and Mineral Development, and at least 15 papers focused on some of Uganda's major hydro schemes on the Nile. Two study tours provided an opportunity to visit these.

The conference and exhibition, organized by Aqua-Media in partnership with ICOLD, and with strong local support from UEGCL and the Ministry of Energy and Mineral Development, took place at the Speke Resort Munyonyo, beside Lake Victoria.

The African delegations were generally headed by CEOs of national utilities, or officers from ministries of energy of water or regional development authorities. The two major IFIs supporting development across the continent, the World Bank and African Development Bank, were strongly represented in many of the sessions. On the day preceding the conference, the ESMAP Division of the World Bank hosted a Workshop on Hydropower for representatives of its client countries, and others with significant unexploited hydro potential; most participants then opted to attend AFRICA 2023.

### Plenary opening session

Uganda's Minister of Energy and Mineral Development, the Hon Dr



Left, UEGCL's CEO, Dr Harrison Mutikanga, giving his opening remarks; and, Elin Hallgrimsdottir of ESMAP, World Bank Group.



Ruth Nankabirwa, was the guest of honour in the Opening Ceremony. She spoke of the importance of hydropower for Uganda, reminding delegates that 96 per cent of the country's electricity comes from renewable sources, and 80 per cent from hydropower. She described hydro as key to the economic transformation of the country, and she reported on some key policy reforms actioned by her Ministry, some aimed at encouraging more private sector investment.

ICOLD President Michel Lino, in his opening, underlined ICOLD's core value of dam safety, stressing that it must be the top priority for every engineer.

Klaus Jorde, ExCo Secretary of IEA-Hydro, gave delegates a global perspective on hydropower, pointing out that according to IEA's report 'Net zero by 2050 – a Roadmap for the Global Energy Sector', hydro capacity will need to double by 2050, along with major increases in solar and wind power. He stressed the need for more storage and pumped-storage, and felt that this was not high enough on the agenda of decision makers.

Elin Hallgrimsdottir of the ESMAP division of the World Bank Group reassured delegates of the strong commitment of the World Bank to

hydropower, both large and small projects, and she gave some examples of the major projects in which the Bank is involved, such as Ruzuzi III, Mpatamanga and Rusumo Falls. She pointed out the importance of refurbishing, and taking the opportunity to modernize, existing and aging water infrastructure.

Angela Nalikka, of the African Development Bank drew attention to her Bank's leading role in supporting transformational regional hydro developments, in the context of the African Union's PIDA initiative-(Programme for Infrastructure Development for Africa). She told delegates that the AFDB had financed 15 major regional schemes over the last 15 years, representing a total of \$2.5 billion, and in addition co-financing this had totalled a further \$4 billion.

A powerful address was given by Dr Quentin Shaw, ICOLD's Vice President for the Africa region, and President of ICOLD's African Regional Club, in which he drew attention to some problems of EPC contracts for African schemes. He put forward some strong recommendations to African nations in terms of them building capacity and increasing independence in project implementation (see also ICOLD News, p26).

In the second part of the plenary session, delegates heard of the potential and development plans in three of the 30 African nations present: Cameroon, with a vigorous programme of hydro development under way, and South Sudan and Liberia both with pressing needs to exploit their considerable energy potential further, to accelerate socio-economic development.

Adrian Towa, Head of Development of EDC, Cameroon, outlined his country's plans for further development within its development plan to 2030; he reported that a total of 16 projects had been studied, some of the larger ones on the Sanaga river, and others on the border with Congo.

Monie Captan, CEO of the Liberia Electricity Corporation, described his Government's plans to transition

*The speakers from the Opening Plenary session, either side of the Hon Dr Ruth Nankabirwa, Minister of Energy and Mineral Development. After her speech she declared the conference open, and toured the exhibition.*



## ... and practical solutions and recommendations put forward



Left, Michael Abebe, who led a session on dam safety in the Nile Basin; and, Luciano Canale, who chaired the session dedicated to the trinational Ruzizi III project.

to green renewable energy as the country's primary generation base, and reduce dependence on imported energy. The way forward, he said, would be both hydropower and solar; the Mt Coffee plant is to be expanded, he said, and a cascade of plants is to be developed on the St Paul river, starting with a new 150 MW scheme.

Tom Remis, Under-Secretary at the Ministry of Energy and Dams in South Sudan, reported to delegates that in his country the electricity access rate was just 7 per cent, and annual per capita consumption just 1-3 kWh. The country's complete lack of power infrastructure was the main obstacle to socio-economic development.

His presentation then demonstrated the abundant hydro potential of Liberia, and the projects identified, which could not only meet needs within the country, but also find a market in the East Africa Power Pool. The country is meanwhile currently having to use diesel and heavy fuel oil.

### Technical sessions focus on practical support for Africa

As well as the importance of accelerating new much needed projects in a number of African nations, another key issue discussed in several sessions was that of keeping existing infrastructure (powerplants, dams and appurtenant works) safe and well maintained.

Many of the world's leading experts on dam safety, and on O&M, equipment safety, and refurbishment, shared their expertise, and put forward valuable recommendations.

Three tracks of parallel sessions spanned a wide range of topics aimed to be of practical value to the African

delegations. Josephine Ossiya, Financial Director of Bujagali Energy Ltd, Uganda, led discussions on finance, with participation from the African Development Bank, World Bank, and financial consultants from the private sector.

William Fru of the African Development Bank chaired a session on planning and design. He highlighted two important issues. First that dormant periods during project preparation could distort project plans. There could be long lead times involved in project planning in Africa, which could be a problem if project objectives would change or be expanded over time. Furthermore, owners and consultants needed to agree on what specific aspects of old studies would require updating.

Fru also pointed out that hydro-power planning and design in Africa needed more structure: the session revealed thoughts on whether some aspects of studies (for example hydrological studies) could be standardized.

Another point raised was the problem of disparity of data between nations. It was agreed that it would be beneficial to standardize minimum data requirements for project design across the continent.

Many aspects of technology were addressed over the three days, from hydropower equipment, civil engineering, dam safety and monitoring techniques, to sedimentation management, reservoir operation and hydrology, flood control, climate change adaptation and resilience, and environmental and social issues.

One session was dedicated to the Ruzizi III trinational scheme, with its many unique characteristics; it will benefit a total of 30 million people in Rwanda, Burundi and DRC. Another

session focused on some other major African cross-border projects, such as Baynes and Rusumo Falls. There was a general session on dam safety, bringing together many renowned ICOLD experts, and another specifically focusing on dam safety in the Nile Basin.

The session on the Nile Basin, chaired by ICOLD Hon Vice President Michael Abebe of Ethiopia, focused on management experience, capacity gaps, and efforts being made to bridge those gaps. Some dam failures in the region were discussed, and the lessons which had been learnt from them.

There was a strong recommendation for the practice of risk-informed decision making, and to create more awareness creating processes, involving high level officials.

The creation of a Basin-Wide Dam Safety Framework was suggested, and the establishment of a geo-referenced inventory of dams, as well as a regional dam safety training centre.

### Kampala Declaration

The AFRICA 2023 closing plenary session began with brief outcomes from some of the technical sessions which had run in parallel. This was followed by the launch of the Kampala Declaration, by Dr Quentin Shaw, President of ICOLD's African Regional Club (ARC). This had been compiled, on behalf of participants, by ARC (its President and Past Presidents), the President of ICOLD, Officers of UEGCL, and Aqua-Media International, to capture the agreements and aspirations which had emerged from discussions at AFRICA 2023, and to recognize the needs of the African nations in relation to future water storage and hydropower development.

*(See the full text of the Kampala Declaration on the next page.)*

*From left: Tom Remis, Under-Secretary at the Ministry of Dams in South Sudan; Dr Quentin Shaw, ICOLD Vice President for Africa; Adrian Towa, Head of Development at EDC, Cameroon; and Monie Captain, CEO of the Liberia Electricity Corporation.*

A more detailed report of all sessions is currently being compiled, in collaboration with those who chaired them, and will be published in Issue 5 of *Hydropower & Dams*. Meanwhile, a photo gallery appears in the Past Events section of the Aqua-Media website, with scenes from the opening plenary, the technical sessions, social events, and exhibition.







The Fourth International Conference and Exhibition on  
**Water Storage and Hydropower Development for Africa**  
10 to 12 July 2023, Kampala, Uganda



## Kampala Declaration on Water Storage and Hydropower Development in Africa

After three days of deliberations, dealing with Africa's challenges and opportunities in water storage and hydropower development, the conference participants recommended to make the following declaration.

### Preamble

The world population is expected to increase from 7.7 billion in 2017 to between 9.4 and 10.2 billion by 2050. More than half of this anticipated growth is expected to occur in Africa (+ 1.1 billion).

Over the last 100 years or so, more than 60 000 large dams have been built around the world, but only 5 per cent of these are located in Africa. Consequently, the average per capita storage capacity in Africa, which is a measure of climate vulnerability, remains very low, at an average of approximately 200 m<sup>3</sup>/year. This figure can be compared with 3400, 4800 and 6000 m<sup>3</sup>/year for Brazil, Australia and the USA, respectively. To date, Africa has developed less than 10 per cent of its technically feasible hydropower potential. The total installed capacity is approximately 35 GW, generating 151 TWh/year, while there is approximately 15 GW of generation capacity currently under construction [H&D World Atlas, 2022]. Still, more than 30 per cent of the African countries have less than 15 per cent access to electricity.

The 2022 IPCC Report identified the fact that the considerable development constraints leave Africa highly vulnerable to climate hazards. Increasing extreme weather and climate events continue to increase the exposure of millions of people in Africa to flooding and acute food and energy shortages.

In a reaction to population growth, and in an effort to improve water and energy supplies to mitigate climate change impacts, many African countries are striving to develop untapped hydropower potential and to develop more irrigable land.

The Programme for Infrastructure Development in Africa (PIDA), endorsed in 2012 by the continent's heads of state and governments, laid out an ambitious, long-term plan for closing Africa's infrastructure gap. In the water and power sector, PIDA calls for an expansion of hydroelectric power generation capacity by more than 54 GW and an increase in water storage on the continent by 20 000 km<sup>3</sup>. With these critical infrastructure gaps, there are also constraints in the form of human capacity and financial resources on the part of the implementing agencies.

The aim of the Fourth International Conference and Exhibition on Water Storage and Hydropower Development for Africa was to bring together experts, policymakers, planners, civil societies, development partners, consultants, contractors and researchers from all over the world to focus on issues of specific interest for Africa, in the field of water storage and hydropower development.

*The collective attendance of the Fourth International Conference and Exhibition on Water Storage and Hydropower Development for Africa state that:*

1. We recognize the critical insufficiencies in water storage and hydropower infrastructure in the region. We underscore the need for more water storage and hydropower facilities to meet the growing demand in respect of energy, food security and adaptation to the impacts of climate extremes;
2. We recognize the financial constraints in bridging the infrastructure gaps in water and energy in Africa. Considering the crucial role of infrastructure in minimizing risk in respect of energy and food security, water scarcity and flood management, we call on the regional and international funding agencies to increase their engagement with African countries on financing new water storage and hydropower development projects, as well as supporting the upgrading of existing projects;
3. We take note of the negative impacts of climate change on hydropower generation, food production, water security, safety of water infrastructure, etc, and we call on governments to strengthen their capacity and to promote international cooperation in mobilizing access to finance to develop climate resilience-related water infrastructure;
4. We take note of the great importance of water storage dams and hydropower facilities in various declarations, including the 'Beijing Declaration on Hydropower and Sustainable Development' (2004), the 'World declaration on Dams and Hydropower for African Sustainable Development' (2008) and the 'World declaration on Dam Safety' (2019). We reaffirm our commitment to continue to support the objectives of these declarations;
5. We take note of ICOLD's findings on dam failures, observing that all dam failures recorded since 2000 have occurred during the first five years of operation and have mostly been associated with design errors (inadequate geotechnical investigations and/or insufficient spillway capacity). We call on government and private developers to review their practices and allocate adequate resources to investigation and the project preparation phase so as to ensure dam safety above all else;
6. We recognize that the planning, design, construction and operation of dams and hydropower infrastructure requires expertise and competence in different disciplines (geology, geotechnology, hydraulics, hydrology, mechanical and electrical engineering, etc) and a lack of expertise in the project cycle leads to increased project risks, implementation time and cost. We call upon governments, dam owners, development partners and ICOLD to increase their support and commitment in building and strengthening institutional and technical capacity and skills at all levels;
7. We recognize the limited participation of African countries in international and regional conferences and forums and the lack of cooperation in the exchange of experience among African countries. We recommend countries to strengthen their ICOLD national committees and to collaborate with ICOLD (Africa Regional Club) to develop a mechanism for experience-sharing between developed and developing countries;
8. We take note of the vital importance of the Fourth International Conference and Exhibition on Water Storage and Hydropower Development for Africa in bringing government officials, planners, experts, policymakers, donors and civil societies together to discuss and exchange ideas on regional issues, in promoting the exchange of best practice and lessons learned on dams and hydropower development and in generating innovative ideas for decision makers. We recognize and thank the organizers, Aqua-Media International, ICOLD, and the national, regional and international supporting organizations for organizing such a highly technical and inclusive conference in Africa;
9. Finally, we recognize and thank the Government of Uganda for supporting and hosting this very important international conference.

*Kampala, Uganda, 12 July, 2023*