



The Fourth International Conference and Exhibition on  
**Water Storage and Hydropower  
Development for Africa**

Speke Resort Munyonyo Conference Centre, Lake Victoria, Uganda

**10 to 12 July 2023**

Organizers:

THE INTERNATIONAL JOURNAL ON  
**HYDROPOWER  
& DAMS**

in partnership with:



International supporting organizations include:



ICID-CIID



Local supporting organizations:



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# MISSION

The objective of the regional conferences for AFRICA, co-hosted by **Aqua~Media International** and **ICOLD**, in collaboration with the governments of the host countries, is to bring together a group of experts from all parts of the world to focus on issues of specific interest for Africa, in the field of water storage and hydropower development.

Typically, participants include high-level representatives of ministries and utilities, private development groups, consulting practices, international and regional development banks, contractors, and equipment suppliers.

Themes begin with project identification and planning, progress through to financing,

design, environmental protection, social aspects, and then construction, operation, maintenance and refurbishment.

Cross-border collaboration for transboundary schemes, challenging sites and climate resilience, as well as capacity building and training, are topics that always feature high on the agenda.

**AFRICA 2023** will be the fourth conference and exhibition in this series. The first took place in Addis Ababa, Ethiopia, in 2013, under the auspices of the African Union, with a keynote address from the Commissioner for Energy and Industry. The second was held in Marrakech, Morocco in 2017, under the High Patronage of HE King Mohammed VI.

AFRICA 2019 moved south to Windhoek, Namibia, and had strong participation from NamPower, the Global Water Partnership - Southern Africa, and the Southern African Power Pool. The World Bank, African Development Bank, and the African Union, have all contributed much to the programmes.

**Uganda** is an enthusiastic local partner for **AFRICA 2023**. International delegates and accompanying persons will meet in beautiful surroundings, for three days of sessions, preceded by workshops and training seminars, and followed by tours to hydro schemes.

There will be plenty of additional networking opportunities, and cultural excursions.



# STEERING COMMITTEE

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# UGANDA HOSTS AFRICA 2023



## Uganda as host country

Uganda, also known as the Pearl of Africa, ranks among the most active African nations for the recent and current construction of water infrastructure and hydropower plants, and is therefore the ideal host country for **AFRICA 2023**, which will take place from Monday 10 to Wednesday 12 July 2023.

The international conference and exhibition will take place at the luxurious **Speke Resort Munyonyo** where numerous high-level meetings have taken place, such as the G77 Summit. The resort, with its large modern conference centre, and accommodation in various categories, is located on the shore of **Lake Victoria**, the largest lake in Africa, and second largest freshwater lake in the world. The lake is the source of the mighty Nile river, and the basis for existing and future major hydro schemes in Uganda, and other countries within the river basin.

The conference is being organized and hosted by Aqua~Media International, in partnership with the International Commission on Large Dams. The local partner is UEGCL, with its Steering Committee headed by Dr M Kayondo. Other international supporting organizations include ICID, IEA and CHINCOLD.

## Warm welcome from the Government of Uganda

During a visit to Kampala in February 2019, a delegation from Aqua-Media attended a number of planning meetings. The programme and study tours were discussed and have subsequently been planned in collaboration with the UEGCL Steering Committee.

In 2019, together with UEGCL's CEO Dr Harrison Mutikanga, and Chairperson, Eng Proscovia Njuki, Alison Bartle was welcomed to a meeting at the Ministry of Energy, where strong support was expressed for the conference.

President Museveni had recently called for more conferences on water and energy, during the AfWA Congress in Kampala. It was agreed that rural development, small hydro, capacity building and environmental aspects would feature on the conference agenda.

At subsequent meetings, strong support for **AFRICA 2023** was also expressed by the Permanent Secretary for Water; the Commissioner for Water and President of UCOLD, and the Managing Director of the National Water and Sewerage Corporation.

Uganda will have plenty of input to the programme from experts within the power and water sectors.

## Uganda's hydropower

Hydropower currently supplies nearly 90 per cent of electricity in Uganda. The country has always had a strong commitment to developing its substantial potential. Five large hydro plants are in operation: Nalubaale (180 MW); Kiira (200 MW); Bujagali (250 MW); Isimba (183 MW); and Achwa (42 MW). Now, construction of the 600 MW Karuma scheme is reaching completion, and several small schemes are under construction. UEGCL is also implementing the 44.7 MW Muzizi scheme.

Large schemes, at the feasibility study stage, planned on the Nile, include Agayo (840 MW), Oriang (450 MW) and Kiba (390 MW).

An agreement has been signed for a 14 MW cross-border scheme with Tanzania, and a 1.75 MW mini hydro scheme is going ahead on the border with Kenya, as part of the Angoloko multipurpose scheme.

The small hydro potential of the country is thought to exceed 400 GWh/year.

Uganda's planners, developers and engineers therefore have plenty of experience to share with their counterparts from all around the world, on dam construction, hydropower development, O&M, powerplant refurbishment, and environmental protection.



## PRE-EVENT

### HALF DAY EXCURSION

After registration on the morning of Sunday 9 July, a half-day local excursion will offer a chance to see the Kabaka palace and lake in Kampala, and learn about the Baganda history and culture. The lake was created in 1880 as an 'escape corridor' but is now a conservation area hosting many species of birds.

After lunch together, there will be a visit to the Baha'i Mother Temple of Africa. The group will then continue to the Uganda Museum to view exhibits of traditional culture, archaeology and history.

The last visit will be to a local market of traditional crafts made by, and supporting, disadvantaged members of the local community, particularly widows, youth and the disabled.



We regret that the Small Hydro Training Workshop, which was previously offered as a pre-Conference event, has had to be cancelled this year. This regular feature of our annual and regional events will resume at HYDRO 2023 in Edinburgh, and so will take place on Sunday 15 October. We sincerely regret any inconvenience to those wishing it to take place at AFRICA 2023. Those who had already booked will be entitled to a full refund, or to join the excursion described above.

## AMI HYDROPOWER FOUNDATION

This is an independent charitable foundation, governed by an international board of trustees. It was set up in 2007 with the principal aim of facilitating the participation of delegates from less developed and developing countries, and countries with current economic difficulties, to the conferences hosted by Aqua-Media International. This includes the annual HYDRO conferences which take place in Europe, and the regional conferences in ASIA and AFRICA. Priority will generally be given to: young engineers and students; those from countries with active programmes of hydropower and/or water resources development under way; and, those with the greatest scope to disseminate knowledge gained from the conference on their return to their home countries.

Further details of the application process for funding can be found at: [www.hydropower-dams.com/foundation/](http://www.hydropower-dams.com/foundation/)

Fully completed applications, with supporting references, must be received by the organizers at least 5 weeks prior to the date of the conference, to allow sufficient time for processing by the trustees.

Successful applicants will normally be granted assistance to cover the conference registration fees, and in some cases accommodation. This will cover the conference papers, and the meals within the conference period (included in the social programme).

Travel expenses will generally not be covered, although, in some exceptional cases, contributions towards travel costs may be granted.

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If you or your company would like to make a donation to the Foundation, you will have the opportunity to do so at the time of registration. The Foundation can be contacted at: [AMIHF@hydropower-dams.com](mailto:AMIHF@hydropower-dams.com)



# CONFERENCE SESSIONS

## MONDAY 10 JULY - MORNING

### Opening plenary session - Part 1

- Welcome and Conference Preview - *Alison Bartle, Director, Aqua-Media International*
- Welcome message from ICOLD - *Michel Lino, President, International Commission on Large Dams*
- Welcome message from UEGCL and UCOLD - *Dr Eng Harrison Mutikanga, CEO, UEGCL*
- Opening address - *Angela Nalikka, African Development Bank*
- Opening address - *Klaus Jorde, International Energy Agency*
- Opening address from the World Bank - *Elin Hallgrimsdottir, Energy Sector Management Assistance Program (ESMAP), The World Bank Group*
- Opening address - *Alfred Okot Okidi, Permanent Secretary, Ministry of Water and Environment*
- Opening address - *Irene Batebe, Permanent Secretary, Ministry of Energy and Mineral Development*
- Speech and official opening of AFRICA 2023 - Guest of honour: *Hon Dr Ruth Nankabirwa Ssentamu, Minister of Energy and Mineral Development*

### Opening plenary session - Part 2

- Addressing some challenges of project development and sustainability in Africa - *Dr Quentin Shaw, Chairman, ICOLD African Regional Club*
- Short overviews will follow, of potential, needs, challenges and development plans in a selection of African nations. There will be reports from South Sudan, Liberia, Mozambique, Cameroon and others to be announced.

## MONDAY 10 JULY - AFTERNOON

### Session 1: Potential and planning for water resources and hydropower development in Africa

Chair: **Dr Eng H. Mutikanga, CEO, UEGCL, Uganda**

- Development of a water infrastructure investment framework under the Kenya Water Security and Climate Resilience Project (KWSCRIP) - *T. Kendall Egis, France; A. Soullignac, Independent Economist, France*
- Opportunities for power and water along the Nile: Open-mindedness for supporting the economic development - *F. Lemprière, HydroCoop, France; L. Deroo and A. Chapuis, ISL, France*
- Kafue Gorge Lower hydropower project: Launching large-scale hydro development in southern Africa - *O.K. Ystgaard, P.M. Heggli and E. Aamot, Norconsult AS, Norway*
- GIS and RS-based identification of hydropower potential site: A case study of the Okhunwan sub-basin in Benin-Owena River basin, Nigeria - *O.A. Fasipe, Energy Commission of Nigeria; O.C. Izinyon, University of Benin, Nigeria*
- Vertical accuracy assessment of SRTM and ALOS-PALSAR digital elevation models over the middle section of the Shire river in Malawi - *R.S. Barrera, Multi Consult, UK*

### Session 2: Civil works - Design and construction

Chair: **M. Rogers, Stantec, USA**

- Challenges, innovations and lessons learnt from construction and monitoring of the first water filling of the Karuma hydropower project tailrace tunnels - *H.K. Mukasa, C. Kyalisima, G. Akuhe and S. Agaba, Uganda Electricity Generation Company Ltd, Uganda*
- Overcoming soil-related challenges in the design and construction of the Julius Nyerere project's saddle dams in Tanzania - *Prof A.A. Elashaal, ENCOLD, Egypt*
- Geotechnical characterization of conglomerate formation for Koysha dam - *G. Pittalis, A. Delisio, C. Roassini and V. Millesi, Studio Ing. G. Pietrangeli Srl, Italy*
- Influence of cofferdam on scour potential at Kariba dam - *E.F.R. Bollaert, AquaVision Engineering Sàrl; S.Z. Mhlanga, Zambezi River Authority, Zambia*
- Construction of powerplant II at Cambambe: Performance of the intake tunnels - *S. Ferreira, A. Pereira da Silva and R. Pistone, COBA Engineering and Environmental Consultants, Portugal; R. Costa, COBA Angola Ltd; A. Carlos, GAMEK, Angola*

- Construction of the Thiba dam in Kenya, allowing for two annual rice harvests - *H-C. Claassen, Strabag, Germany*

### Session 3: Finance, project structuring and legal issues

Chair: **J.O. Ossiya, Chief Financial Officer, Bujagali Energy Ltd, Uganda**

- Financing needs for sustainable hydropower in West and Central Africa - *P. Karki, The World Bank*
- Addressing the risks in hydropower investment: Perspective of a private investor - *A. Rousselin, EDF, France*
- (Contribution from the African Development Bank) - *O. Vajeth, AfDB*
- Assessing the fiscal risks of hydro power projects in Uganda: The case of Nyagak III - *N.A. Rugaba, S. Mubiro and A.K. Ssozi, Uganda Electricity Generation Co. Ltd, Uganda*

### Session 4: Planning and design for hydro and water resources schemes: African case studies

**William Fru, Hydropower Specialist, African Development Bank**

- The Sendje hydro project in Equatorial Guinea: Future plans and benefits - *J. De Lorenzo, N. Rydland Fjoesne and V. De Genot de Nieukerken, AFRY, Switzerland; E.M. Oyono Abang, GE Projectos, Equatorial Guinea*
- Santiago pumped-storage project in Cape Verde: Design for energy arbitrage and the provision of grid services - *A.J.A. Pereira da Silva and J.C. Morais, COBA, Portugal; P. Manso, MHyd, Switzerland; M. Vera Cruz, LuxDev, Luxembourg; N. Sauviat, Artelia, France; R. Evora, Ministry of Industry, Trade and Energy, Cape Verde*
- Mini pumped-storage plant in Martinique Island, Caribbean Sea - *B. Peltié and L. Deroo, ISL Ingénierie, France; A. Balcells, BCN Hydro, Spain; D. Payre, Nature and People First; J-P. Maurand, Méridiam, France*
- The benefits of high voltage direct current transmission in the Cameroonian energy supply system - *C. Kenfack Mouafo, N. Wehbring and J. Saat, RWTG Aachen University, Germany/Cameroon*
- Determining the optimum capacities for the Maguga expansion and the lower Maguga hydropower projects - *E. Lillie, Knight Piésold Consulting, South Africa*

### Session 5: Transboundary projects

**Stella Mandago, Principal Power Engineer, African Development Bank**

- Linking solar and wind power development in East Africa with operation of the Grand Ethiopian Renaissance Dam - *Prof Dr Sebastian Sterl, World Resources Institute - African Regional Office, Ethiopia*
- Rusumo Falls 80 MW Hydropower project: Updates on the transboundary scheme - *T. Vincent, Artelia, France; D.G. Protulipac, RRFHP-NELSAP; N. Karitanyi, RPCL, Rwanda; D. Panayotidis, AECOM, Canada*
- Towards effective data sharing on the Zambezi river basin: The case of the cascade hydropower dam operators in Mozambique, Zambia and Zimbabwe - *R.J. Guale, Hydropower of Cahora Bassa, Mozambique; C. Chisense, Zambezi River Authority, Zambia; P. Van der Zaag, IHE Delft, Netherlands*
- Socio-economic benefits of the Baynes project for Angola and Namibia - *Muyenga Muyenga, Permanent Joint Technical Commission on the Cunene River Basin*
- Transboundary water resource investment prioritization using scenario-based multi-criteria decision support tools: A case study of Nile Equatorial Lakes investment programme - *M.A. Rashid and S.O. Eltoun, NELSAP, Rwanda*

### Session 6: The HYPOSO project: Hydropower solutions for developing and emerging countries

Co-chairs: **B. Pelikan, Consultant, Austria, and D. Malone, HPAU, Uganda**

The findings of the EU-supported research project HYPOSO will be discussed with respect to two African target countries: Uganda and Cameroon, including results of the analysis of the small hydropower framework conditions, and recommendations on how to facilitate small hydro projects in the two countries. The selected pilot sites in each country and the outcomes of the prefeasibility studies for those sites will be presented.

- The HYPOSO Project: An opportunity for joint efforts in working for more sustainable hydropower - *I. Ball, Wirtschaft und Infrastruktur GmbH & Co Planungs KG, Germany*

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- Counting the benefits: A quick review of the HYPOSO project; the case for Uganda - *D. Malone, Hydropower Association of Uganda*
- The framework conditions for small hydropower development and the outcomes of the HYPOSO project: The case for Cameroon - *J. Kenfack, Solar HydroWatt, Sarl, Cameroon*
- HYPOSO pilot projects in Uganda and Cameroon - *B. Pelikan, Consultant, Austria*
- General discussion on the outcomes of the HYPOSO initiative

## TUESDAY 11 JULY - MORNING

### Session 7: O&M, upgrading and refurbishment

Chair: **L. Mouvet, Hydro Partners, Switzerland**

#### (a) Operation and maintenance

- Operation and maintenance of hydro equipment - *J. Gummer, Hydro Consult Pty Ltd., Australia*
- Best maintenance practice in an African context - *M. Adigeh, Voith Hydro East Africa Consultancy PLC, Ethiopia; M. Claessen, Voith Hydro, Germany*
- Operating hydropower plants in Southern Africa: Lessons learned for the African context - *C. Burger, L. Verwey and H. Hattingh, Serengeti Energy, South Africa*
- Combining engineers and operators for audits and expertise: A wider approach for wider benefits - *F. Armand and P. Mosele, EDF Hydro Engineering, France; G. Duc, GD Hydro Consulting, France*
- Cost-effective methods of controlling water-borne debris - *C. Rogers, Bolina Booms Ltd, UK*

### Session 7: O&M, upgrading and refurbishment - contd.

Chair: **L. Mouvet, Hydro Partners, Switzerland**

#### (b) Upgrading and refurbishment

- Modernization and uprating of Kainji, Nigeria, from 760 to almost 1000 MW - *A. Vetter, AFRY Ltd, Switzerland; L. Audu and J. Villegas, Mainstream Energy Solutions Ltd, Nigeria*
- Study for rehabilitation and optimization of the Nalubaale and Kiira hydro plants at the outflow of Lake Victoria in Uganda - *C. Meyer and C. Siemer, Tractebel Engineering, Germany; J.I. Sempewo, Uganda Electricity Generating Company Ltd, Uganda*
- Refurbishment of Nalubaale dam in Uganda - *K. Otim and A.N. Gitta, Eskom, Uganda; L. van Vuuren and J. du Plessis, Gibb (Pty) Ltd, South Africa; T. Guillemot and M. Lino, ISL Ingénierie, France*
- Eleyele dam and intake waterworks - *O. Jullien and S. Gsell, Tractebel Engineering, France*
- Rehabilitation of Mwadingusha hydropower plant, in DRC - *T. Jacob, A. Meric, C. David and Y. Favrel, Gruner SA, Switzerland*
- Installation of a 500 t 'needle cofferdam' on the spillway gates of Kariba dam - *C. Bleton, Hydrokarst, France*

### Session 8: Civil Engineering: Dam and foundation materials

Chair: **Dr Malcolm Dunstan, Malcolm Dunstan & Associates, UK**

- Calibrated finite element modelling of the low stress relaxation creep behaviour of an RCC arch-gravity dam - *Q.H.W. Shaw, ARQ Consulting Engineers, Mauritius; R.O. Cassells, ARQ Dams, South Africa*
- Geomembrane systems to build safe dams reducing costs, and a case history in Africa - *G. Vaschetti, V. Verdell, F. Tronel and A. Scuero, Carpi Tech, Switzerland*
- Tropical residual soils: An Overview - *Dr A.F. Chraïbi, Damtech, Morocco*
- RCC mix and application of a single 63 mm layer at the Kafue Gorge Lower dam in Zambia - *Shuncaï Ning, Zhaoxun Deng, Shichao Geng, Mingchang Qing, Yuanguang Liu, Qingguo Zhou and Junjie Jin PowerChina Bureau No.11 Co Ltd, China*
- Numerical simulation of temperature control measures for mass concrete of the Karuma underground powerhouse in Uganda - *Xu Wenqiang and Qiang Sheng, Hohai University; Hu Zhengkai, PowerChina Huadong Engineering Corporation Ltd; and Bie Yajing, North China University of Water Resources and Electric Power, China*

### Session 9: Hydropower equipment and powerplant safety

Chair: **D. Paschini, EDF, Peru**

- MyHPPSimulator, a didactic tool for transient phenomena in hydroelectric powerplant - *S. Alligné, C. Landry, A. Beguine and C. Nicolet, Power Vision Engineering Sarl; Switzerland; A. Zebre and D.G.M. Kouame, CIE, Côte d'Ivoire*
- An engineering solution for adjusting the pre-stress forces of a distributor - *O. Mousseff, P-H. Letellier and Y-L. Beck, EDF Hydro, France*
- Research on a firefighting system to meet NFPA standards for the Karuma powerplant in Uganda - *Chen Dingli, Xu Zheng, Luo Yuzhen and Wu Haifeng, PowerChina Huadong Engineering Corporation Limited, China*
- Main transformer design modification to include a fast depressurization system at the Karuma hydropower project, Uganda - *O. Aryanyijuka and S. Ssekatawa, Uganda Electricity Generation Company Limited, Uganda*
- Design and supply approach for hydromechanical equipment in remote areas - *P. Zenocchini and S. Lazzaro, ATB Riva Calzoni SpA, Italy*

### Session 10: Dam safety

Chair: **M. Lino, President, ICOLD**

- Improved contractual strategies to improve the safety of dams - *M. Lino, ISL, France; L. Canale, Scatec, Norway; S. Giraud, Plan J. Consulting, France; and B. Geisseler, Geisseler Law, Germany*
- Dam safety concepts, principles and framework - *M. Abebe, ENTRO, Ethiopia, L. Hattingh, Hattingh Anderson Associates, South Africa; D. Hartford, BC Hydro, Canada; R. Charlwood, Consultant, USA; A. Zielinski, Consultant, Canada; and Zeping Xu, IWHR, China*
- The risks caused by rising Lake Victoria levels and COVID 19 to dam safety: Case study of the River Nile cascade, Uganda - *K.G. Opolot, East African Power (EAP); O. Geatano, Structural-X Ltd, Uganda; N. Andrew, PAC SpA, Uganda; A. Jiménez, Sedicon Latinoamérica SA, Costa Rica*
- Nachtigal 420 MW hydropower project: Risk analysis and safety plan - *G. Dautois and T. Vincent, Artelia, France; J. Ntsama, NHPC, India*
- Comprehensive dam safety review of the Nalubaale and Kiira power stations in Uganda - *C.R. Donnelly, Hatch, Canada; A. Nankaja Gitta and K. Otim, Eskom, Uganda*
- Deformation monitoring of large gravity dams using multitemporal sentinel-1SAR interferometry - *S. Salumu Zahera and M. Fuamba, Polytechnique Montréal, Canada*
- A self-calibrating neural network for forecasting the water level of Lake Victoria I aimed at sluice gate control - *A. Kasedde, M. Kayondo, M. Mukulu and M. Akurut, UEGCL, Uganda*

### Session 11: Climate change and resilience planning

Chair: **Dr H. Kling, AFRY, Switzerland**

- Engineering experience in hydrology to assess climate resilience: Example of a hydro project in Gabon - *T. Mathevet, A. Valery and D. Surla, EDF Hydro, France*
- Climate change resilience, adaptation, and mitigation communication strategy for water storage and hydropower development in Africa - *W. Okaka, Kyambogo University, Uganda*
- Climate change resilience in the rehabilitation of transboundary water storage infrastructure: The Kariba dam rehabilitation project - *C. Vengesa and M.C. Munodawafa, Zambezi River Authority, Zimbabwe*
- Climate resilience assessment for Cahora Bassa - *R. Guale, E. Nhantumbo, M. Mahunguana and N. Savaio, Hidroelectrica de Cahora Bassa, Mozambique; H. Kling, P. Stanzel and M. Fuchs, AFRY, Switzerland*
- Hydrological risks for hydropower generation in Cameroon - *B. Ndongo, Ministry of Environment, Cameroon; L. Podie, World Bank, Cameroon; N. Fjoesne and S. Martin, AFRY, Switzerland; H. Kling and F. Lerche, AFRY, Austria*

## TUESDAY 11 JULY - AFTERNOON

### Session 12: The Ruzizi III regional hydropower project

Chair: **L. Canale, Project Director, Ruzizi III Energy Ltd (REL)**

The Ruzizi III Regional Hydropower Project is a unique public-private partnership (PPP) hydro project designed to feed the grids of Burundi, DRC, and Rwanda (Contracting States). It is being developed by the private sector and will be funded by the private sponsors and Contracting States, with six development banks, using

# CONFERENCE SESSIONS

blending private equity, concessional and non-concessional debts, and grants. It is the first regional project designed as a PPP, that will use a common regional water resource to generate power to be shared equally between three countries, benefiting nearly 30 million people living in the Great Lakes region.

The project has reached an unprecedented maturity level with all technical and E&S studies finalized and the ongoing EPC procurement process which has finally pushed the Ruzizi III project into the financing framing phase, crowding in a pool of lenders who have already committed funding to cover the investment cost.

Presentations:

- **Blended financing structure for a cross-boundary hydro PPP** - L. Canale, REL, Rwanda; A. Karmali and S. Zahid, IPS, Kenya
- **Ruzizi III dam and hydro plant: Design considerations for a sustainable scheme** - C. Nieto, and A. Pittion-Rossillon, Tractebel Engineering, France; L. Canale and L. Kassana, Ruzizi III Energy Ltd, Rwanda
- **Addressing environmental and social impacts for the Ruzizi III project:** - A. Kayitare, REL, Rwanda; M. Johnsen, Scatec, Norway
- **Shaping the EPC contract strategy for the Ruzizi III regional project** - M. Tahir, L. Canale and P. Rae, REL, Rwanda; P. Parlett, Scatec, Norway

Technical discussions in the session will focus on the physical definition of the new project, with emphasis on the site investigation campaign carried out during COVID-19 international restrictions and security threats.

The progress of procurement activities will be described, focusing on cross-border issues and the innovative approach of hybridizing the FIDIC EPC/Turnkey Contract (2017 Silver Book) with elements from the recent FIDIC Conditions of Contract for Underground Works (2019 Emerald book) to manage ground condition risks better and monitor evolution of the final electricity tariff. The description of the financing arrangements built up, by blending very diverse financing instruments, will show how the best trade-off is achieved and how the final electricity tariff can be minimized and kept at an affordable and very competitive level for the region.

## Session 13: Dam safety in the Nile river basin

**Chair: M. Abebe, Hon. Vice President of ICOLD, and Consultant, Ethiopia**

- **Dam safety regulatory framework and institutional arrangements in the Nile basin** - L. Hattin, Consultant, South Africa; K. Lyon, World Bank; M. Abebe, ENTRO, Ethiopia
- **Regulatory frameworks for dam safety: Assessment, findings and recommendations from a World Bank perspective** - K. Lyon, The World Bank, USA
- **Building dam safety management capacity in a transboundary context** - M. Abebe, Hon Vice-President of ICOLD, and Independent Consultant, Ethiopia
- **Situation assessment of dam safety and development of dam safety risk management framework in the Nile basin** - A. Aman, Regional Dam Safety Coordinator, NELSAP, Rwanda
- **Risk-informed decision-making approach for dam safety assessment: Lessons learned from Eastern Nile countries** - F. Shiferaw, Yerer Engineering, Ethiopia
- **Dam incidents in the Equatorial Lakes region** - A. Aman, NELSAP, Rwanda
- **Seismic hazard of large dams in the Nile Basin, with emphasis on the Grand Ethiopian Renaissance Dam (GERD), Ethiopia** - A. Aman, NELSAP, Rwanda; M. Wieland, Consultant, Switzerland; and T. Mammo, Addis Ababa University, Ethiopia

## Session 14: Reservoir operation and hydrology

**Co-Chairs: I. Konate, Chief Power Engineer, African Development Bank  
Dr G. Cloete, Namibia University of Science and Technology**

- **Lake Victoria and timing of extreme lake levels** - P. Mason, Damsolve Ltd, UK
- **Suggested modifications to operation and safety of Sudanese dams after the Grand Ethiopian Renaissance Dam** - H.A.M.A. Omer and M. Osman, Ministry of Irrigation and Water Resources, Sudan
- **Flood control experiences at Isimba caused by increased discharges from Lake Victoria** - C. Mwase, M. Akurut and W. Manirakiza, UEGCL, Uganda
- **Modelling of inflow conditions and hydropower generation at the Akagera river, East Africa** - H. Kling and R. Faber, AFRY Austria GmbH, Austria
- **A combination of ADCP and image processing methods for accurate discharge measurement** - I. Hansen and R. Düster, SEBA Hydrometrie GmbH & Co KG, Germany; S. Peña-Haro and B. Lüthi, Phototrack AG, Switzerland
- **Risk and uncertainty analysis of hydrological models for hydropower development: Case study of the River Aswa basin in northern Uganda** - O. Genason, Riompa Engineering, Uganda; O. Geatano, E&E Consultancy, Uganda; K.G. Opolot, East African Power (EAP), Uganda; K. Enock, Busitema University, Uganda
- **Rainfall variability and trend analysis in the Volta basin in Ghana and its impact on hydro generation** - P.T. Padi and A.N. Wabab, Volta River Authority, Ghana

## Session 15: Dam monitoring

**Chair: C.R. Donnelly, Consultant, Canada**

- **Safety monitoring process and analysis of dam behaviour** - E. Barros-Maurel, T. Guilloteau and A. Simon, EDF Hydro, France
- **Frequency of inspections and monitoring for hydraulic structures: Case study of gravity dams** - K.G. Opolot, East African Power (EAP); O. Geatano, Structural-X (U) Ltd, Uganda; D. Kimera, Busitema University, Uganda; and K. Otim, Uganda Electricity Generating Company Ltd, Uganda
- **The development of alkali aggregate reaction (ARR) at the Kainji spillway structure after 50 years of operation** - S. Ehlers, AFRY Switzerland Ltd, Switzerland
- **A proactive approach to enhance inspection of hydropower structures: The Isimba hydro plant, Uganda** - D.E. Mukwanason, C. Mwase and A. Semagulu, Uganda Electricity Generation Company Limited, Uganda

## WEDNESDAY 12 JULY - MORNING

## Session 16: Small hydropower - I

**Chair: P. Duflon, Andritz Hydro, France**

- **A portfolio development of small, run-of-river hydropower in Uganda** - W. Mpumwire, Frontier Investment Management, UK; A. Noble, WSP, Australia
- **'Compact-ize' your powerplant: Benefits of multiple smaller units** - S. Fisel, M. Harbach and J. Schnapp, Andritz Hydro GmbH, Germany
- **The Hydroshaft powerplant 2.0: Advantages and new possibilities of a modular turnkey solution** - B. Alapfy, TU Munich, Germany; T. Eder, Global Hydro Energy GmbH, Germany; F. Böttger, Gesellschaft für Planung, Maschinen- und Mühlenbau Erhard Muhr mbH, Germany; N. Rütger, Technical University of Munich, Germany
- **Lessons learnt in recovering a small hydro project damaged by severe floods during the COVID-19 pandemic** - D. Kanumale, C. Mugisha, R. Dissanyake and I. Seneviratna, Saems Engineering Ltd, Uganda

## Session 17: Work of IEA's Technical Collaboration Programme

**Chair: Klaus Jorde, International Energy Agency Hydro TCP, Austria**

- **The IEA Technology Collaboration Programme on Hydropower and its ongoing research activities** - Klaus Jorde, ExCo Secretary, IEA Hydro TCP, Austria
- **The IEA Renewable Energy Market report on Hydropower** - Y. Abdelilah, IEA Headquarters, France (Pre-recorded talk)
- **Task 15 'Maintenance Works and Decision-Making for Hydro Facilities': Some RENOHydro project results** - Christophe Nicolet, Power Vision Engineering, Switzerland
- **Task 9 'Hydropower Services' with some XFLEX results** - Christophe Nicolet, Power Vision Engineering, Switzerland and Prof Cécile Münch-Alligné, HES-50, Switzerland
- **Task 16 'Hidden and untapped hydropower potentials'** - Vincent Denis, MhyLab, Switzerland

## Session 18: Environmental and social aspects - I

**Chair: Dr A. Emadak, World Bank, Côte d'Ivoire**

- **Social impacts and rock excavation challenges within the community at regional Rusumo Falls hydropower project** - L.E. Uwantege, D.G. Protulipac and E.E. Nyabeeya, NELSAP; N. Karitanyi, Rusumo Power Company Ltd, Rwanda
- **Lessons learnt about major resettlement in West Africa: The case of Souapiti hydropower dam in Guinea** - N. Tomczak, Tractebel Engineering SA, France; I.S. Keita, PAHS, Guinea
- **Resettling ancestral spiritual heritage in the development of 6.6 MW Nyagak III hydro plant** - M. Otim, N.A. Rugaba and A.O. Oroma, Uganda Electricity Generating Company Ltd, Uganda
- **Geological mapping to assess social and environmental impact of possible slope instabilities along the Karuma reservoir, Uganda** - S. Ceriani and V. de Genot de Neukerken, AFRY Switzerland Ltd, Switzerland; I. Kifamulusi, AFRY, Uganda
- **Analysing the impact of floating islands and water weeds on hydropower dams: A case study of the White Nile cascade** - B. Nakwany, R.N. Lule and P. Tumwine, Uganda Electricity Generation Company Ltd, Uganda

# CONFERENCE SESSIONS

## Session 19: Small hydropower- II

Chair: V. Denis, Myhlab, Switzerland

- Efficient management of e-flow in small hydro projects: Ugandan and Sri Lankan experience - S. Banda, East African Power (EAP), Rwanda; K.G. Opolot, EAP, Uganda
- Constructing a mini hydro plant to exploit the cooling water at a thermal plant: An example in Croatia - S. Bojić, Energy institute Inc; D. Božičević, Power Generation Company as a member of HEP Group, Croatia
- Small hydro success story in Uganda - S. Sharma and C. Bholowalia, Voith Hydro Pvt Ltd, India
- Cascade of three small hydro plants on the Giciye river in Rwanda - M. Schober, Gugler Water Turbines GmbH, Austria; J. Museminari, Rwanda Mountain Tea Ltd, Rwanda

## Session 20: Hybrid renewable energy systems

Chair: M. Bernicot, ISL, France

- Is hydro-solar THE tool for the energy transition in Africa? - L. Deroo, F. Lempérière and C. Philibert, Hydrocoop, France
- Hydro and solar hybridization: A major case in Liberia- S. St-Pierre and G. Dautois, Artelia, France; K-L. Mingdièbe, WAPP, Benin
- Exploring hybrid RE sources to mitigate energy needs in Nigeria - I. Ekpo, Nigerian Hydropower Association, Nigeria; O. Fasipe, V. Eniola, I. Gbaja and C. Oguallili, Energy Commission of Nigeria; J. Aikhuele, Trinity Solar Inc., USA
- Development and optimization of the Tain hydro-solar energy project, Ghana - M. Heider, P. Schäfer and A. Wetzel, Fichtner GmbH & Co KG, Germany

## Session 21: Environmental and social aspects - II

Chair: Dr A. Emadak, World Bank, Côte d'Ivoire

- Management of floating non-woody debris in equatorial climates - P. Meeks, Worthington Products, Inc, USA
- Establishing solutions for prawn passage at large African dams: A biological control for schistosomiasis - A. Fryer and G. Bilotta, Fishtek Consulting, UK
- Remote sensing for monitoring fish spawning sites of a large hydro reservoir in a lowland region - L. Jurevicius and P. Punys, Vytautas Magnus University, Lithuania
- Environmental assessment and daily monitoring of water quality for the Cahora Bassa reservoir and its tributaries, using satellite-based data analytics technologies - E. Nhamumbo, R. Guale and B. Insa, Hidroeléctrica de Cahora Bassa, Mozambique; H. Bernert, P. Bauer and K. Schenk, EOMAP GmbH & Co KG, Germany
- Assessing the effectiveness/sufficiency of computation of e-flows in Ugandan hydropower development - B. Ampire, G.O. Kadapawo and E. Mugoda, East African Power, Uganda; M. Onzere, Makerere University, Uganda

## WEDNESDAY 12 JULY - AFTERNOON

## Session 22: Capacity building

Chair: Dr Q. Shaw, ARQ Consulting Engineers, South Africa

- The future safety and sustainability of Africa's hydropower and dams lies in building its own capacity - W. Manirakiza, Uganda Electricity Generation Company Ltd, Uganda; A.F. Chraibi, Dam Tech, Morocco; F. Sonuga, ICOLD Capacity Building Committee, Nigeria; A. Nombre, Burkina Faso Committee on Dams, Burkina Faso
- O&M team preparation and structuring: Case of the Nachtigal hydropower plant - P. Bellet, NHPC, Cameroon
- A young graduate's place on a large hydropower project: A case of the 600 MW Karuma plant - S. Kalokwera, UEGCL, Uganda
- An analysis of learning needs and technical training solutions for the hydropower business - M. Noske, M. Kaufmann and S. Schrötle, Voith Hydro GmbH & Co. KG, Germany

## Session 23: Spillway safety, operation and innovation

Chair: Dr P. Mason, Damsolve, UK

- Innovative duckbill spillway to boost water supply - F. Denys, Zutari, South Africa
- Overflow spillway for the Kikagati hydropower plant in Uganda/Tanzania - A. Wetzel and I. Vučković, Fichtner GmbH & Co. KG, Germany

- Upgrading spillways with fusegates: The case study of Pikes Creek dam auxiliary spillway - F. Del Rey and E.A. Rabias, Hydroplus, France; H. Kocahan, Hydroplus, USA
- Piano Key Weirs at the Jiji-Mulembwe hydropower project - O. Human and F. Denys, Zutari, South Africa

## Session 24: Sedimentation management

Chair: Prof A. Schleiss, Consultant, Switzerland

- Reservoirs, sedimentation, innovations? - L. Deroo, ISL, France
- An integrated approach for circular sediment management in reservoirs - K.A. Meerse and J.T.M. Wijnands, Royal IHC, Netherlands; A. Omer and S. Giri, Deltares, Netherlands; H.H.M. Ekkelenkamp and E. Besseling, Netics BV, Netherlands
- Sediment in a reservoir: Comparison between a mathematical Model (Rusle) and measured data - A. Brasca, L. Tatti and A. Cagiano, Studio Ing. G. Pietrangeli, Italy
- Selective application of ensembles of sediment yield models to improve catchment-scale sediment yield predictions - E. Okiria and K. Noda, Gifu University, Japan

## Closing Plenary Session

- Outcomes of the conference presented by some session chairpersons
- Welcome to future Aqua-Media and ICOLD events
- Thank you to supporting organizations and co-sponsors
- Closing of AFRICA 2023 sessions

Farewell Gala Dinner at the Peace Hub, Speke Resort





# SPEKE RESORT MUNYONYO



## SPEKE RESORT MUNYONYO

It seems appropriate for international experts to be discussing hydropower and water storage at a venue named after the explorer who discovered the source of the River Nile. The venue is also located on the shores of Lake Victoria, the largest lake in Africa. The location is close to Kampala, and to Entebbe international airport.

The meeting rooms to be used for the AFRICA 2023 sessions, workshops, exhibition and social events are within a luxurious 5\* complex, spanning about 100 ha.

Two state-of-the-art congress centres have been designed to blend discreetly with lush tropical vegetation and blossoming trees, vast lawns, elegant restaurants, an equestrian centre, a marina, and of course a panoramic view of the 68 000 km<sup>2</sup> lake.

The venue provides all that is necessary for the smooth running of a major international event, and has plenty of experience of doing so. The resort is well accustomed to welcoming heads of state to Commonwealth meetings,

and G77 Summits; the hospitality, security, efficient service and high quality cuisine reflect this well.

When not engaged in conference activities, or if staying on for a holiday, delegates can take advantage of an Olympic-sized swimming pool, nine restaurants and bars, fishing or bird-watching on the lake, riding at the equestrian centre, playing golf, or simply keeping fit in a conventional gym.

Bedrooms can be booked, as part of the registration process, in three categories at the resort; all are tastefully designed and decorated, and well equipped, with free WiFi, facilities to make hot drinks, fridges, complimentary water, and large TVs.

Accommodation has been blocked in some low-budget category rooms, and at alternative venues, including some offering apartments to be shared.

*More details of accommodation options are given on the registration website.*

*NB: Beware of scam accommodation bureaux claiming to represent this conference.*



# EXHIBITION AND SPONSORSHIP

A modern and spacious Pavilion close to the conference rooms will provide an excellent setting for the exhibition, which will take place in parallel with the **AFRICA 2023** Conference.

Exhibition space is generally sold in units of 6 m<sup>2</sup> (with some areas reserved for larger pavilions). Each space reserved includes white panelling, a table, two chairs, spotlights and, a company name sign. The price for each stand unit (6 m<sup>2</sup>) is US\$3650.

Lunch and refreshments will be served each

day in the exhibition hall, to ensure that international participants have plenty of time to visit the exhibitors.

Various opportunities are also still available to sponsor or co-sponsor social activities, such as apéritifs, lunches, and coffee breaks; or, items such as water coolers, bags and more. This is a memorable way of bringing your organization to the attention of the international participants.

If your organization is actively involved in water resources or hydropower development in the African region, you should not miss

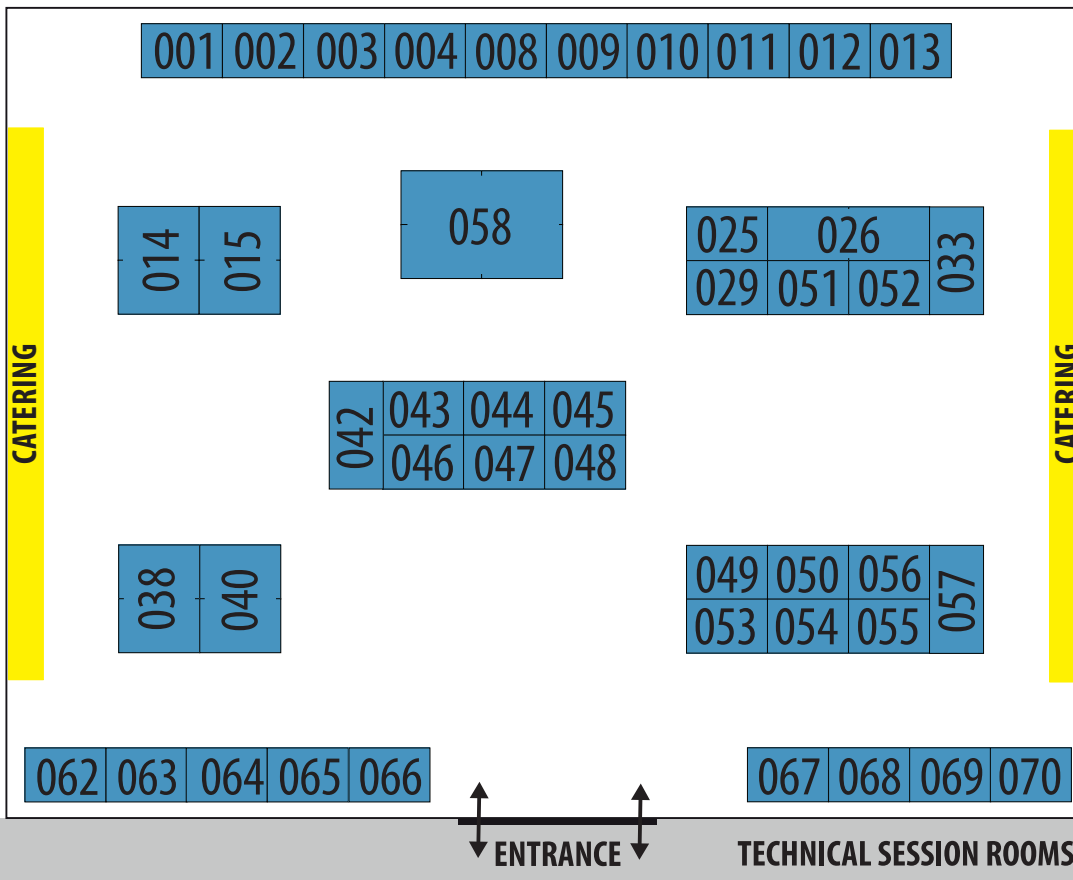
this opportunity to be represented at this event, which will bring together high level delegations in a region of the world with the greatest potential for future development.

For more details of the exhibition or sponsorship opportunities, contact: [sales@hydropower-dams.com](mailto:sales@hydropower-dams.com)

**A FEW STANDS ARE STILL AVAILABLE**  
**We recommend booking as soon as possible to ensure your preferred position is available.** We publish regular updates of available spaces on our website, and in email updates.



# EXHIBITION PLAN



# AFRICA 2023 EXHIBITORS

Company Name	Website	Stand No.
AFRY Switzerland Ltd	<a href="http://www.afry.com">www.afry.com</a>	069
Aqua~Media Intenational Ltd ( <i>H&amp;D Journal</i> ), UK	<a href="http://www.hydropower-dams.com">www.hydropower-dams.com</a>	026
Arab Contractors, The, Egypt	<a href="http://www.arabcont.com">www.arabcont.com</a>	052
Artelia, France	<a href="http://www.arteliagroup.com">www.arteliagroup.com</a>	013
ATB Riva Calzoni SpA, Italy	<a href="http://www.atb.group">www.atb.group</a>	047
B Fouress Pty Ltd, India	<a href="http://www.bflhydro.com">www.bflhydro.com</a>	009
C. Richard Donnelly Consulting, Canada		015
Canadian Dam Association	<a href="http://www.cda.ca">www.cda.ca</a>	015
Carpi Tech, Netherlands	<a href="http://www.carpitech.com">www.carpitech.com</a>	053
COBA, Portugal	<a href="http://www.cobagroup.com">www.cobagroup.com</a>	012
Coletanche, France	<a href="http://www.axter.eu/coletanche">www.axter.eu/coletanche</a>	002
Dar Al-Hansadah Consultants (Shair and Partners), Uganda	<a href="http://www.dar.com">www.dar.com</a>	014
Dolsar Engineering Inc. Co., Turkey	<a href="http://www.dolsar.com.tr">www.dolsar.com.tr</a>	049
DSD Noell GmbH, Germany	<a href="http://www.dsd-noell.com/en">www.dsd-noell.com/en</a>	043
EDF, France	<a href="http://www.edf.fr">www.edf.fr</a>	065
Fishtek Consulting, UK	<a href="http://www.fishtek.co.uk">www.fishtek.co.uk</a>	056
Freyssinet, France	<a href="http://www.freyssinet.com">www.freyssinet.com</a>	038
Global Hydro Energy GmbH, Austria	<a href="http://www.global-hydro.eu">www.global-hydro.eu</a>	057
Gugler Water Turbines GmbH, Austria	<a href="http://www.gugler.com">www.gugler.com</a>	048
Hibbard Inshore, LLC, USA	<a href="http://www.hibbardinshore.com">www.hibbardinshore.com</a>	068
Hydro Maintenance Service, Italy	<a href="http://www.hmservice.ch">www.hmservice.ch</a>	067
Hydro Operation International Ltd, Switzerland	<a href="http://www.hydrooperation.com">www.hydrooperation.com</a>	064
Hydrokarst Group, France	<a href="http://www.hydrokarst.fr">www.hydrokarst.fr</a>	054
Hydroplus, France	<a href="http://www.hydroplus.com">www.hydroplus.com</a>	038
ICOLD (International Commission on Large Dams)	<a href="http://www.icold-cigb.org">www.icold-cigb.org</a>	062
Irem SpA, Italy	<a href="http://www.irem.it">www.irem.it</a>	066
ISL Ingénierie, France	<a href="http://www.isl.fr">www.isl.fr</a>	046
Končar Group, Croatia	<a href="http://www.koncar.hr/en">www.koncar.hr/en</a>	045
Mapei Middle East and East Africa, UAE	<a href="http://www.mapei.com">www.mapei.com</a>	004
MECO Engineers, Canada	<a href="http://www.mecoengineers.com">www.mecoengineers.com</a>	015
Mhylab, Switzerland	<a href="http://www.mhylab.com/home.php">www.mhylab.com/home.php</a>	001
Muhr, Germany	<a href="http://www.muhr.com">www.muhr.com</a>	033
Ossberger GmbH + Co. KG, Germany	<a href="http://www.ossberger.de">www.ossberger.de</a>	008
Power Vision Engineering Sàrl, Switzerland	<a href="http://www.powervision-eng.ch">www.powervision-eng.ch</a>	001
Ruzizi III Energy Ltd, Rwanda	<a href="http://www.ruzizi3.com">www.ruzizi3.com</a>	051
Sadafzar Co. Ltd, Iran	<a href="http://www.sadafzar.com">www.sadafzar.com</a>	029
Scotta SpA, Italy	<a href="http://www.scotta.it">www.scotta.it</a>	003
SEBA Hydrometrie GmbH & Co. KG, Germany	<a href="http://www.seba-hydrometrie.com">www.seba-hydrometrie.com</a>	011
Siba Consultancy, Engineering, Energy Ltd Company, Turkey	<a href="http://www.sibaelektrik.com">www.sibaelektrik.com</a>	044
Sisgeo S.r.l., Italy	<a href="http://www.sisgeo.com">www.sisgeo.com</a>	025
SMEC International Pty Ltd, Kenya	<a href="http://www.smec.com/au">www.smec.com/au</a>	070
Sogea Satom, France	<a href="http://www.sogea-satom.com">www.sogea-satom.com</a>	038
Strabag International, Germany	<a href="http://www.strabag-international.com">www.strabag-international.com</a>	063
Studio Ing. G. Pietrangeli Srl, Italy	<a href="http://www.pietrangeli.com">www.pietrangeli.com</a>	055
Tractebel, France	<a href="http://www.tractebel.engie.com">www.tractebel.engie.com</a>	040
UEGCL, Uganda	<a href="http://www.uegcl.com">www.uegcl.com</a>	058
Valvotubi S.R.L., Italy	<a href="http://www.valvotubi.com">www.valvotubi.com</a>	010
Worthington Products Inc, USA	<a href="http://www.tuffboom.com">www.tuffboom.com</a>	042

## INDUSTRY SPONSORS INCLUDE:



# TECHNICAL STUDY TOURS



Two post-conference study tours are offered to participants, and we aim to keep details the same as previously announced. They will depart on the morning of 13 July.

## Tour A – East: Owen Falls, Bujagali and Isimba (2.5 days)

On the first day, it is planned for the group to travel by coach from Kampala to **Owen Falls dam** on the White Nile, completed in 1954, and the location of Uganda's first major hydro plant. There are two powerplants today: **Kiira 200 MW**, and **Nalubaale 180 MW**.

In 2002, the Government, through UEGCL, awarded a concession to Eskom Uganda Ltd for operation, management and maintenance of the plants; the concession period recently ended, and the plants were handed back to UEGCL (see *H&D* Issue 2, 2023).

The dam has been affected by alkali silica reaction, and a refurbishment project is to take place soon. Another problem at Owen Falls is that of water hyacinths in the reservoirs, which require regular clearance.

The second technical visit will be to the **250 MW Bujagali scheme** on the Victoria Nile, completed in 2012. It was constructed as a public-private partnership project, with World Bank financing. It is about 8 km downstream of Owen Falls. Bujagali regulates the flows into the Victoria Nile from Lake Victoria and develops a gross head of about 22 m.

The project includes a 3300 m<sup>3</sup>/s capacity main spillway with two radial gates and one flap gate, a 1200 m<sup>3</sup>/s capacity emergency spillway, a 30 m-high clay core rockfill embankment type dam and a 30 m-high



concrete gravity dam. It has a concrete powerhouse structure, with an integral intake, five double-regulated Kaplan turbines, and a 132 kV substation.

There will also be a chance to see the centre known as the 'Source of the Nile', and the monument to John Hanning Speke, the British explorer who was the first European to reach Lake Victoria, and made several expeditions to establish the source of the Nile.

The final technical visit will be to the **183 MW Isimba scheme**, about 44 km from Bujagali. It was commissioned in March 2019. This comprises a concrete gravity dam, a clay-core rockfill dam, and a powerhouse equipped with four vertical Kaplan units.

There will be two overnight stays in Jinja, with return to Kampala on the third morning.



## Tour B – North: Karuma construction site (3 days)

This tour will involve a journey north by coach, with a lunch stop en route, which is provisionally planned to be at the town of Kabalega.

The technical highlight of the tour will be a visit to the site of the **600 MW Karuma**



**dam**, reaching completion on the Victoria Nile.

Karuma dam is a 20 m-high RCC gravity structure, with a crest length of 312 m. The first 100 MW unit at the plant is scheduled to begin operation in October this year. When fully commissioned, it, together with some small schemes, will increase Uganda's installed capacity to nearly 2000 MW.

The dam is the largest of its type in East Africa, and it will impound a reservoir with an area of 2737 ha, and a length of 35 km.

Dinner and an overnight stay are planned to be at the **Chobe Safari Lodge**. A game drive is planned for the following morning at Chobe. The group will then travel on to Paara, for an overnight stay at the **Paara Safari Lodge**.

An evening or early morning game drive is planned at Paara, before the journey back to Kampala. En route, it may be possible to stop briefly at the site of the proposed future Murchison Falls hydro project.

*Travel to the sites will be by luxury coach with the services of a tour guide.*

*UEGCL engineers will be available at the hydropower and dam sites to give a short briefing followed by tours around the facilities.*

*Picnics with boxed lunches may be enjoyed near the reservoirs on some days, and dinner will be served each night at the hotels.*



# ACCOMPANYING PERSONS' TOURS



*Working with knowledgeable local ground agents, we have planned a three-day package of tours for accompanying persons, combining cultural visits and traditions, flora and fauna against stunning landscapes, and an animal sanctuary reached by a boat ride across Lake Victoria. Lunches together will be included each day, and travel will be by luxury coach with an experience guide.*

## **Monday 10 July** **Ngamba Island Chimpanzee Sanctuary and Botanical Gardens**

Surrounded by the peaceful waters of Lake Victoria, the Ngamba Island Chimpanzee Sanctuary is home to 52 orphaned and rescued chimpanzees. The group will travel by coach to Entebbe, where they will take a boat across to the sanctuary which provides an exceptional opportunity to closely observe these fascinating great apes in a unique setting. You will spend time viewing the chimpanzees and learning about their rehabilitation and the work of the Chimpanzee Trust.

Lunch will be served on the Island before the return trip by boat to Entebbe, where



participants will then visit the expansive and tranquil Botanical Gardens. Walking through the gardens, there will be an opportunity to see plenty of wildlife, including black and white colobus monkeys, tree squirrels and some of the 115 species of birds (which include the famous shoebill bird, as well as colourful crowned cranes) Between the native trees, plants and flowers, there are also pockets of thick rainforest.

## **Tuesday 11 July** **Szebibwa Falls, Mabira Forest and the Source of the Nile**

Heading East on the second day, participants will make a first stop at the spectacular Szebibwa Falls. These waterfalls were created by the river flow being constrained by a narrow opening of rocks. The tour will then continue to the Mabira Forest, where there will be a chance to see hundreds of butterfly and bird species, as well as a wide range of animals including primates.

The group will then continue to Jinja for lunch, before visiting the Source of the Nile Park with its great historical significance. There will be a boat trip on the lake to view the source itself.



## **Wednesday 12 July** **Traditional craft paper making from banana leaves**

On the final day, the group will have a chance to meet and be entertained by children who were orphaned or have been underprivileged, and are now housed, cared for and educated by a charitable organization called 'Ghetto Kids'.

There will be an opportunity to visit the home, learn more about the charity and its achievements, before watching a performance by some of the children.

During the afternoon, participants will continue to Papercraft, an environmentally friendly local factory where they will have the opportunity to take part in the various stages of creating craft paper, from cutting down the banana leaves to forming a piece of craft paper. Having had an early start, the group will return to the Speke resort in good time to rest before the Farewell Dinner in the evening.

*Accompanying persons are also invited to the evening social events, and can book for the cultural excursion in Kampala for all participants, on Monday 10 July.*



# BOOKING CONDITIONS

The Conference AFRICA 2023 - 4th International Conference on 'Water Storage and Hydropower Development for Africa' is being organized by *Hydropower & Dams* (Aqua~Media International) in partnership with the International Commission on Large Dams, with event management by Event Management Services (EMS).

## On-line Registration

You can register on-line via the *Hydropower & Dams* website at: [www.hydropower-dams.com](http://www.hydropower-dams.com)

This is a secure site. Registrations will be handled by Event Management Services on behalf of Aqua~Media. You will receive an acknowledgement of registration on completion of this process; this is not a confirmation (until payment is received).

The organizers reserve the right not to accept applications for attendance (for example, but not exclusively, if applicants are not working in the field of hydro, or if there could be a conflict of interest with the mission of the conference, the organizers, or any policy of the host country).

In the unlikely event of any difficulties using this system, please contact Event Management Services (see contact details below).

## Picking up conference documents and badges

The registration desk will be open from 09.00 hrs on Sunday 9 July 2023, at the Speke Resort Munyonyo Conference Centre. Pre-registration on line is generally required.

## Payment

Payment for all services (fees, hotels, tours) must be made in US dollars (US\$) and received in advance of the Conference. Payment is possible:

- On-line by Visa or Mastercard
- By bank transfer (see details on the registration site);
- All fees paid by credit card will be charged in US dollars (US\$).

## Accommodation

The Conference organizers have negotiated rates at hotels in several price categories at Speke Resort Munyonyo Conference Centre, Lake Victoria, and some other apartments and hotels in the vicinity.

Accommodation bookings are being handled by Event Management Services. Please include your hotel booking at the time of registering (using the on-line booking system). Beware of scam accommodation bureaux who falsely claim to represent AFRICA 2023. We recommend that you do not pass credit card details to them. We strongly recommend that bookings are made as soon as possible, and preferably before the end of September. Payment must be made in full at the time of booking.

## Disclaimer

All best endeavours will be made to present the programme as published. The AFRICA 2023 organizers and their agents reserve the right to alter or cancel, with-

out prior notice, any arrangements, timetable, plans or other items relating directly or indirectly to AFRICA 2023 for any cause beyond its reasonable control. The organizers are not liable for any loss or inconvenience resulting from such alteration, but in the unlikely event of cancellation, would refund fees. The Tours are subject to minimum numbers. Tour places are subject to availability on a first-come first-served basis. Full payment for tours must be received at the time of registration.

## Cancellations

Cancellations must be made in writing to Event Management Services. Cancellation charges will be payable as shown in the Table below.

Substitution of delegates after a reservation has been made is acceptable before the Conference, and no extra fee is payable. Any necessary refunds (see Table below) will be made after the Conference.

## Liability/Insurance

The registration fees do not include the insurance of participants against personal accidents, sickness, cancellations by any party, theft, loss or damage to personal possessions. The organizers accept no responsibility for death, injury, loss or accident, delays arising from any act or default of any person, or any other matter arising in connection with conference services or transport. The organizers make no warranty in this connection.

All services provided are subject to local laws. Arrangements for the Conference have been made in accordance with UK and Ugandan Law.

Delegates, exhibitors and tour participants are strongly advised to take out adequate personal insurance to cover risks associated with travel, accommodation, cancellation and theft or damage to personal belongings.

The organizers reserve the right to amend any part of the Conference programme or arrangements, if necessary. In the very unlikely event that it is necessary to cancel any of the Conference arrangements, an appropriate refund will be made and thereafter the liability of the organizers will cease.

## Passport and Visa Requirements for Uganda

It is the responsibility of all participants to check their passport and visa requirements. Please contact the Ugandan embassy or consulate in your country if in doubt about requirements. In some cases, letters of invitation from Aqua-Media in the UK and one of our partner organizations in Uganda may be necessary. The process could take several weeks, **so we strongly urge participants requiring visas to start the application process in good time.** If you require a letter of invitation to facilitate your visa application, please let us know at the time of registering, and provide your full name, date of birth, passport details, and proposed dates of arrival and departure. Letters to assist with obtaining visas can only be provided to registered or invited participants, and these letters do not imply an invitation to the conference without payment of registration fees.

**As soon as a registration is confirmed, a number of expenses are incurred by the organizers; therefore the following cancellation conditions apply:**

Date cancellation received	On or before 2 June 2023	3 June to 25 June 2023	On or after 26 June 2023
Registration for the Conference	10% of fee will be forfeited	50% of fee will be forfeited	No refund
Technical Excursions (Study Tours)	10% of fee will be forfeited	No refund unless place can be resold	No refund
Accommodation	10% of price will be forfeited	No refund unless place can be resold	No refund

NB: Separate booking conditions apply to Exhibition Stands, and these will be sent directly to Exhibitors by our Sales & Marketing Department.

**A reduced registration fee is available for subscribers to *Hydropower & Dams*. See booking information form for details.**

## CONTACT DETAILS

**For enquiries concerning registration and accommodation, contact:**

**Africa 2023 Secretariat, Event Management Services (EMS) • email: [africa2023@ems-ltd.org](mailto:africa2023@ems-ltd.org) • Tel: +44 1225 258 013**

**For further details of the programme, please contact:**

**Hydropower & Dams, PO Box 285, Wallington, Surrey, SM6 6AN, UK.**

**Tel: + 44 (0)20 8773 7244 • Fax: + 44 (0)20 8773 7255 • Email: [africa2023@hydropower-dams.com](mailto:africa2023@hydropower-dams.com)**

# BOOKING INFORMATION



The online AFRICA 2023 registration system is open , and bookings can be made via:  
[www.hydropower-dams.com](http://www.hydropower-dams.com)

For any queries, please contact: (email) [africa2023@hydropower-dams.com](mailto:africa2023@hydropower-dams.com) ~ Tel: +44 (0) 20 8773 7244

Prices for each delegate category and conference activity are given below.

**NB: Accommodation details are available on the registration system. Rooms have been arranged in various price categories at the Speke resort, as well as some other nearby locations, including apartments.**

**DELEGATE FEE** Includes attendance of the conference and exhibition; documentation; lunches and refreshments during the conference; full social programme.

(until 19 May) US\$1040 (from 20 May) US\$1130

**REDUCED DELEGATE FEE - For current personal subscribers to *Hydropower & Dams***

(until 19 May) US\$960 (from 20 May) US\$1050

(Subscription number will be required when registering)

**FEE INCLUDING NEW SUBSCRIPTION TO *H&D*** - Six issues from No. 4, 2023 + Atlas + Maps

(until 19 May) US\$1170 (from 20 May) US\$1260

(This represents a saving of about 40 per cent on the normal *H&D* subscription rate)

**SPEAKER FEE** Includes all facilities described above for Full Delegates, plus an additional reception on Sunday 9 July. NB: This fee applies to one person per paper (main author or presenter)

US\$ 635

**FIRST EXHIBITOR FEE** (One full participant fee is included with exhibition booking).

US\$0

**SECOND + THIRD EXHIBITOR FEE** (Fee per person for up to two additional exhibitors):

US\$820

This includes all benefits available to full delegates

**SMALL HYDRO TRAINING SEMINAR** (Full day on Sunday 9 July):

US\$50

**ACCOMPANYING PERSON FEE** (For family members, partners or friends not colleagues attending the conference or exhibition).

The fee includes the excursions each day, with lunch, and the evening social events. Cost for registering as an accompanying person:

US\$350

**HALF-DAY CITY EXCURSION** (on Sunday 9 July; includes lunch). Cost per person:

US\$80

**DONATION TO THE AMI HYDROPOWER FOUNDATION:** There is an opportunity when registering to make a donation to the AMI Hydropower Foundation, a charitable foundation, set up by Aqua-Media and governed by a board of international trustees. It exists to facilitate the participation of delegates from less developed countries at the annual Hydro Conferences.

**TECHNICAL TOURS:** Prices include transportation, meals, guides, entrance fees on sightseeing trips, and hotels.

**Tour A:** East, to Owen Falls (Kiira and Nalubaale plants), Bujagali and Isimba

Single room: \$460 Per person sharing a double room: \$350

**Tour B:** North, to Karuma (on the Victoria Nile); includes two game drives from Safari lodges

Single room:\$875 Per person sharing a double room: \$775

**DIETARY REQUIREMENTS:** These may be specified on the online registration system (including, for example, vegetarian, vegan, kosher, halal, gluten free, etc).

**VISA REQUIREMENTS:** You can apply for an invitation letter to support your visa application during the on-line registration process.

NB: Attendance of the Welcome Reception and Farewell Dinner are included within the registration fees for all participants. However, we request a nominal contribution of US\$ 10 per event for those wishing to attend, to encourage a firm commitment to participate. This is important to enable us to assess numbers for catering, and avoid food wastage.