

Modelling of inflow conditions and hydropower generation at the Akagera River, East Africa

H. Kling, Senior Hydrologist, AFRY Austria GmbH, Austria
R. Faber, Senior Hydraulic Expert, AFRY Austria GmbH, Austria

Short abstract

The Akagera River is the largest tributary of Lake Victoria in East Africa. The river basin is shared between Rwanda, Burundi, Tanzania and Uganda. The Regional Rusumo Falls Hydroelectric Project (RRFHP) is located at the border between Tanzania and Rwanda with an overall installed capacity of 80 MW. The sparse availability of continuous hydro-meteorological measurement data in the basin poses a challenge for estimation and forecasting of hydropower generation. These data gaps can be overcome by merging ground-based station measurements, satellite observation data and advanced hydrological and hydraulic modelling tools. This contribution will present the methods used for simulation of the hydropower generation at RRFHP, as part of a World Bank funded study coordinated by NELSAP, where the specific focus was on the impact assessment of a river avulsion at Lake Rweru on downstream hydropower generation.

The Authors CVs

Dr Harald Kling is senior hydrologist at AFRY (former Pöyry) and has 20 years of professional experience. He holds an MSc in Water Management and a PhD in Hydrology from the University for Natural Resources and Applied Life Sciences in Vienna, Austria. At AFRY he is responsible for climate change impact assessments as well as the development of operational inflow forecasting systems to support hydropower operations, currently in use for example at the Niger and Zambezi rivers. At ICOLD he is a member of Technical Committee Y Climate Change.

Dr Rudolf Faber joined AFRY (former Pöyry) in 2008 and works as senior hydraulic expert and hydrologist. He obtained an MSc in Water Management and a PhD in Hydrology from the University for Natural Resources and Applied Life Sciences in Vienna, Austria. He is specialized in applying advanced hydrodynamic models including CFD and has vast experience in flow modelling for hydropower, river-lake flow systems, flood management, and hydrologic analysis. He worked on numerous hydropower projects in Europe, Asia, Africa and South America, including complex river-lake-hydropower interaction problems and hydraulic dam failure analyses.