Dam safety is an essential issue that needs special attention by dam owners, governmental and non-governmental institutions as well as the public at large.

One of the measures to minimize the risks would be building human resources capacity for the proper operating and management of existing and new dams in Africa.

Building the competency of stakeholders is required not only to minimize risks of failure but also to optimize the benefit of and for sustainable water resources utilization.

The main objective of this course is to identify and discuss with participants the extent of the problem and practical dam management measures for minimizing the risks of dam failure, ensure the sustainable use of the water resources in the region as well as to reduce all potential risks to people, property and the environment.

Dam Safety Management for Sustainable Hydropower in Africa

Kariba, Zambia • 16–20 September 2019

Application deadline; 7. August 2019

Course fee – USD$ 1 000,-
Fee includes course materials, accommodation and meals
COURSE OBJECTIVES
To bring together peers mainly from the African regions for dialogue, experience sharing and net-working for mutual benefit. By doing so the trainees will advance their knowledge of dam safety.

To highlight from the participants the actual problems and challenges related to dam safety and possible potential solutions to these problems.

To bring specialists in the subject matter and create a platform for knowledge transfer and skills development on procedures for dam risk identification, analysis and management techniques on the continent.

MAIN TOPICS
The course will include but not limited to the following main topics
a. Dam types, function, cause and mode of failure
b. Climate change and its impact on dam safety – regional perspective
c. Dam risk assessment and risk management techniques/principles
d. Instrumentation, surveillance, data collection and reporting
e. Dam inspection, analysis and remedial measures
f. Emergency action planning

TARGET GROUP
The course is aimed at dam operators, dam owners, managers and field level experts.

Executives of power companies, ministries, water resource and energy agencies, and relevant private sector enterprises with dam operation and management responsibility will benefit from this course.

The course will also be of value to engineers working in water resources planning and multipurpose projects.

Encouraging the active inclusion and participation of women in renewable energy.
Financial Modelling is the task of building a mathematical model designed to represent the future performance of a project, an asset or a portfolio based on facts, assumptions and projections including changes in the basic assumptions.

The modelling will apply Discounted Cash Flow (DCF) methodology with outputs like Internal Rate of Return (IRR), Net Present Value (NPV) and other ratios and parameters that will provide basis for decision-making with respect to investment, structuring of Power Purchase Agreements (PPAs), and for ranking of individual projects or project alternatives.

Risk assessment and the main terms and strategy for negotiation of PPAs will be discussed.

**COURSE OBJECTIVE**
Participants will be given the skills to efficiently develop, modify and analyse financial models for projects in the power generation sector.

Participants will also learn about PPA essentials including risks, how to structure PPAs, negotiating win-win solutions that will make projects bankable and facilitate obtaining financing.

**TARGET GROUP**
The course is designed for energy investors, Executives, Economists, Financial Analysts, Legal Advisors and those who are who involved in the sector financial forecasting models and PPAs.

Prior Knowledge of Excel is mandatory! The course assumes participants work regularly with Excel and have a basic competency in accounting (i.e. basic knowledge of interaction of P&L, CFS and BS).

**MAIN TOPICS:**
The course will cover essential topics including funding mechanics, operational analysis and investment metrics. It will give a robust platform for analysis of the planning process of a project, with emphasis on the financial considerations as well as legal and institutional framework.

Participants will learn the financial modelling techniques needed to build a best practice financial model suitable for PPA structuring, investment analysis and operational scenario evaluation.
Water storage reservoirs in parts of Africa have in the last decade been losing important portions of their water storage space to sedimentation every year.

This diminishes the reservoirs planned functions and affects the regions capacity to realize set development goals.

Sedimentation management is therefore key for the sustainable use of water resources and addresses the problems of food, water and energy insecurity.

To implement sustainable sediment management, a capacity both in terms of resources and trained manpower is essential and a priority requirement for the region.

Moreover, Africa’s hydrological variability due to climate change may bring variability in sediment transport and rates of reservoir sedimentation. Taking into consideration the effects of climate change on reservoir sediment, management is believed to be important and relevant.

**COURSE OBJECTIVE**

The main objective of the course is to identify and discuss with stakeholders the extent of the problem and practical solution options of reservoir sedimentation for optimum benefits of the water resources in the region.

The course will also contribute to the ongoing effort of mitigating the sedimentation problems of reservoirs for more sustainable uses by exploring and disseminating practical methods and strategies that are viable to apply in handling sediments deposited in reservoirs in a more economically, technically and environmentally feasible way.
MAIN TOPICS

• Focus on reservoir sedimentation
  Processes and sediment load estimation
• Impact of climate change on reservoir sedimentation
  A regional perspective
• Monitoring sedimentation in existing reservoirs
• Strategies for management of sediment in reservoirs
  Applicability and challenges to the region
• Sediment data collection and forecasting techniques
• Socio-economic and environmental impacts of sediment management strategies
• Field visit

TARGET GROUP

The course is aimed at reservoir operators, government water resource and energy agencies, reservoir owners, managers and field level experts. Executives of power companies, ministries, and relevant private sector enterprises with reservoir operation and management responsibility will benefit from this course.

The course will also be of value to engineers working in water resources planning and multipurpose projects.

Women are encouraged to apply.
Hydropower plays a vital role in reducing the world’s dependence on fossil fuels, with generally low greenhouse gas emissions. Hydropower is far larger than all other renewable technologies together.

Development of hydropower creates both positive and negative social and environmental impacts. Hydropower projects can generate big benefits, but numerous projects have also ruined rivers and caused displacement of people.

Similar to all other infrastructure projects, hydropower developments and operations should be done in a sustainable manner. Sustainable development has at least three dimensions – environmental protection, and social & economic development.

**COURSE OBJECTIVES**

The course will give the participants an introduction and some experiences in the sustainable management of water and hydropower resources. The lecturers will present state-of-the-art methodology and tools to assess the sustainability of hydropower projects, with a focus on the environmental aspects of sustainability.

The participants will learn how a sustainability assessment is conducted, environmental impact assessments are carried out, and how to find mitigating measures. Licencing procedures, legal frameworks and the implementation of international standards and directives will be addressed.

**MAIN TOPICS**

The course will include the following topics:

- Sustainability assessment of hydropower projects
- Water resources management in regulated river basins
- Modelling of water resources in reservoirs and basins with multiple water use
- Environmental impact assessment of hydropower regulations
- Minimising and mitigating environmental impacts
- Regulatory aspects of hydropower development
- Licencing and legal framework
- Compliance with international directives/standards in water management – Case EU Water Framework Directive (EU WFD)
- Climate change and the impacts on the water resources

**TARGET GROUP**

The course is aimed at personnel working on sustainability issues, water resources management and environmental impacts related to hydropower development and operation. This includes personnel working in hydropower companies, regional and national authorities and other stakeholders in hydropower projects. Engineers working in water resources planning and multi-purpose projects will also benefit from this course.

The participants should have a scientific degree or experience giving the equivalent competence.
GENERAL
All lecturers and resource persons are well-known specialists within their field, and they have extensive international and regional experience. Attending the courses is an opportunity to discuss and learn about current energy sector issues related to Hydropower and other renewables together with professionals from the continent and abroad. Participants are encouraged to bring along information that can be shared about pending energy and hydropower issues of your interest.

ADMISSION REQUIREMENTS
• A minimum of about 5 years of working experience is required.
• Applicants should hold an applicable degree or possess relevant background knowledge.
• Proficiency in English is compulsory for all the courses Notice of admission will be given shortly after the application closing date.

ICH reserves the right to accept or reject any applicant based on their qualifications and experience.

SPECIFICS FOR THE COURSE
Information on travel, detailed course programme and other relevant information will be sent to all participants in due course. Participants are expected to arrive at the venue of the course the day prior to the course start and leave no earlier than the day after end of the course.

COURSE FEE
The course fee includes lectures, materials, accommodation, meals, a social programme and fieldtrips if applicable. International travel expenses are not included. There is a reduced fee for ICH members. A limited number of sponsored seats are available for participants from countries prioritized by NORAD (Norwegian Agency for Development Cooperation). Those who would like a guaranteed seat on the course should secure their own funding.

MORE INFORMATION
Information on other courses can also be found on our website: www.ich.no or by contacting carole@ich.no

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