



DHI MARKET AREA: SURFACE & GROUND WATER

DAMS AND RESERVOIRS

Sustainable design and optimum operation of dams and reservoirs

Dams and reservoirs contribute to economic development by securing water supplies, generating power and regulating river flows. Dam designers require reliable hydrological assessments to ensure the structure is viable, while also minimising impacts to the environment and local communities. Dam operators must often balance conflicting needs, such as mitigating floods, maximising hydropower production and maintaining the reliability of water supplies. Operations are becoming more sophisticated as the demand for efficiencies in water and power increase, while at the same time as dam safety remains of paramount importance.

Our theoretical and practical knowledge, along with our numerical modelling tools help to optimise the design and operation of dams and reservoirs. Our modelling tools form the backbone of sophisticated but easy to use Decision Support Systems (DSS) that enhance robust decision-making, ranging from long-term planning assessments to real-time dam operations.

THE CHALLENGES

- Balancing the economic benefits of dams with environmental and social impacts
- Achieving optimal operations for multi-purpose dams that balance conflicting needs
- Optimising operations of networks of reservoirs over short- and long-term time horizons
- Designing efficient spillways
- Identifying and managing risks of dam failure
- Increasing the longevity of dams via sediment management
- Minimising water quality, eutrophication and temperature issues in the reservoir and in dam releases

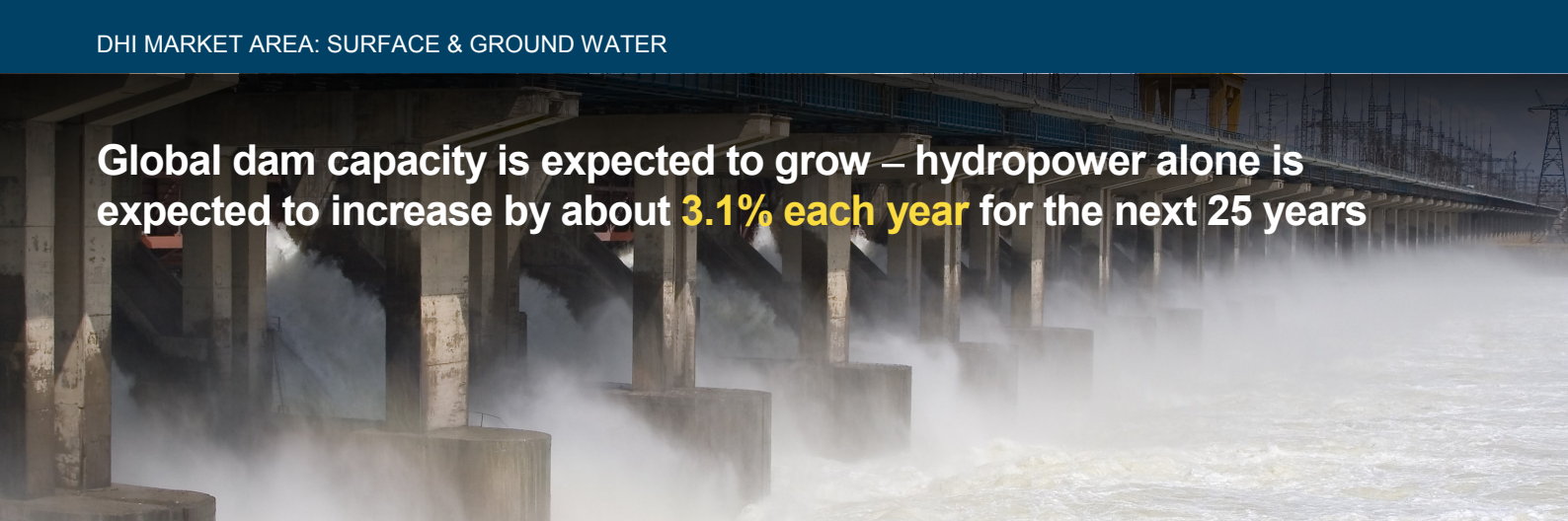
OUR APPROACH

We adopt a holistic approach towards the sustainable design and operation of dams and reservoirs. Our wide range of services include hydrological, hydrodynamic and water quality modelling and analyses, and providing advanced DSS for planning and real-time operation.

OUR SOLUTIONS

- Feasibility studies
- Catchment hydrology and yield analyses
- Optimising operations for multiple uses such as hydropower, irrigation, water supply, and flood control — for planning or real-time operations
- Water quality analyses and management
- Real-time information systems
- Reservoir inflow forecasting
- Trans-boundary impact assessments
- Dam break analyses
- Spillway design and optimisation

THE ULTIMATE GOAL SUSTAINABLE DESIGN AND OPTIMUM OPERATION OF DAMS AND RESERVOIRS



Global dam capacity is expected to grow – hydropower alone is expected to increase by about **3.1% each year** for the next 25 years

OUR TOOLS AND SERVICES

We can effectively help you with the sustainable design and operation of dams and reservoirs. Our tools and services include:

- river basin planning
 - water allocation modelling
 - multi-objective optimisation
 - water use auditing
 - catchment hydrology, including snow and glacier runoff
 - reservoir inflow forecasting
 - dam operations for flood control and water delivery
 - spillway design and performance
 - dam break analyses
 - reservoir water quality
 - dam sediment management
 - climate change assessments
 - Decision Support Systems (DSS)
 - capacity building and training by THE ACADEMY by DHI
- MIKE Powered by DHI software tools:
 - MIKE HYDRO Basin
 - MIKE 11
 - MIKE FLOOD
 - MIKE 21C
 - MIKE 3
 - MIKE ECO Lab
 - CFD modelling
 - PLANNING and REAL TIME

Contact us: info@dhigroup.com
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