



DHI MARKET AREA: CLIMATE CHANGE

# WATER RESOURCE MANAGEMENT

## Overcoming climate change-induced extremes in water resources

Both developed and developing countries face serious challenges in the water sector due to overexploitation of limited and unevenly distributed water resources. In the future, these challenges will be exacerbated by rapid population growth and increasing urbanisation on one hand and by the impacts of climate change on the other. The changing climate will bring greater extremes – ranging from longer periods with droughts to more extreme rainfalls and thereby, more frequent and severe flooding. Predicted climate change trends may be consistent. However, quantitative predictions are uncertain due to the inherent uncertainties in future CO<sub>2</sub> emissions as well as in climate model predictions. This means that climate change impact assessments will remain uncertain and any adaptation measure must necessarily be robust and flexible enough to adjust to these uncertainties. Such adaptation measures include improving disaster risk management, building adaptive capacity, incorporating water resources planning and ensuring that infrastructure is resilient to climate change.

### THE CHALLENGES

- Assessing the uncertainty of climate change predictions
- Determining the effects of climate change on the hydrological system
- Determining the effects of autonomous development on water resources
- Planning and projecting water resources under uncertain conditions
- Establishing design criteria in a changing climate

### OUR APPROACH

Adaptation to the growing climate change-induced stress on water resources requires a holistic approach. Integrated Water Resources Management (IWRM) approaches — combined with tools forecasting the changed availability and use of water — play an important role in managing water resources. We're a leader in the field of integrated land and water resource management, which, combined with our physical models of water environments and ecology, offers a comprehensive framework. This enables a better understanding of the impacts of climate change on water environments as well as the interaction between the atmosphere and the hydrological cycle. Moreover, it helps in planning for climate change adaptations.

### OUR SOLUTIONS

- Downscaling of climate change projections from General and Regional Climate Models
- Flood forecasting systems for disaster risk management
- Water resources planning and projections
- Capacity building/adaptive capacity building
- Drought forecasting
- Climate Change Impact Assessment
- Studies on water quality and freshwater ecosystems
- Outlining adaptation measures and strategies

**THE ULTIMATE GOAL** EFFECTIVE ADAPTATION OF WATER RESOURCES TO CLIMATE CHANGE IMPACTS

There is medium confidence that **droughts will intensify** in the 21<sup>st</sup> century in some seasons and areas, due to reduced precipitation and/or increased evapotranspiration

*IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)*

## OUR TOOLS AND SERVICES

We have a wide variety of tools and services to help in adapting water resources to the inevitable impacts of climate change. These include:

- climate change Decision Support Systems (DSS)
- water resources adaptation plans
- establishing flood forecasting systems
- determining future extremes/design criteria
- Climate Adaptation Guidelines for water resources
- MIKE Powered by DHI software suite
- capacity building and training by THE ACADEMY by DHI

Contact us: [info@dhigroup.com](mailto:info@dhigroup.com)  
For more information, visit: [www.dhigroup.com](http://www.dhigroup.com)