



DHI MARKET AREA: SURFACE & GROUND WATER

# IRRIGATION

## More crop for the drop – improving irrigation system efficiencies

Irrigated agriculture represents 20% of the total cultivated land, but contributes up to 40% of the total global food production. It's expected that the world will need 70% more food by 2050 (based on 2005 levels) to cope with growing populations and changing diets. Irrigation provides a means to meet this increased demand. However, water supplies are limited — which means current irrigation systems and practices must be more efficient in the future.

Many of the irrigation systems around the world have the potential to increase water use efficiency from around 35% to 75% or more. These increases in efficiency can partly be met by improving the operation of irrigation schemes — including the introduction of smart technology (from on-farm soil moisture and weather sensors to canal automation), improved re-use and enhanced reservoir and river operations. Savings made in irrigation allow the water to be used for other purposes, such as environmental management. There is also a significant scope for increased use of treated wastewater in irrigation.

### THE CHALLENGES

- Improving irrigation system efficiencies
- Balancing water supply and demand
- Understanding system constraints
- Assessing and forecasting crop water demand
- Optimising system operation
- Reducing seepage and operational losses
- Managing salinity and water quality
- Understanding groundwater-surface water interactions
- Balancing environmental and economic objectives
- Quantifying potential storage capture and re-use
- Achieving efficient drainage without water logging

### OUR APPROACH

The strength of our approach lies in the assessment and design of integrated, flexible solutions which meet multiple objectives. We achieve this through close collaboration with end-users and managers, adapting each solution to the scope and local conditions — whether in industrialised or developing countries.

### OUR SOLUTIONS

- Irrigation canal system design
- Canal control and automation
- System efficiency improvements
- Irrigation demand forecasting
- Water auditing
- Salinity management
- Simulation of complex irrigation schemes
- Incorporating irrigation schemes into catchment-wide management planning
- Reservoir operation

**THE ULTIMATE GOAL** IMPROVED IRRIGATION SYSTEM EFFICIENCIES



**80% of global water use is for irrigation**, but there is often potential to double the efficiency of irrigation schemes

## OUR TOOLS AND SERVICES

We can provide you with everything you need to improve the efficiencies of your irrigation system. Our tools and services include:

- hydraulic analysis of canal and pipe networks and the operation of structures
- real-time operations
- groundwater interactions and conjunctive use
- long-term planning and system optimisation
- water allocation assessment
- water quality modelling
- rainfall radar systems and remote sensing
- capacity building and training by THE ACADEMY by DHI
- MIKE Powered by DHI software tools:
  - MIKE 11 — river modelling
  - MIKE SHE — integrated catchment modelling
  - FEFLOW — simulation model for subsurface flow and transport processes
  - MIKE BASIN — integrated river basin planning
  - REAL TIME — river operations and early warning
  - PLANNING — investment planning and decision support

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