

A digital water future – potential and challenges

Digital World

- Quantity of information now available is unprecedented in human history
- We have the ability to measure, sense and monitor the condition of almost everything
- Digital services transforming many aspects of our world
- How about water?

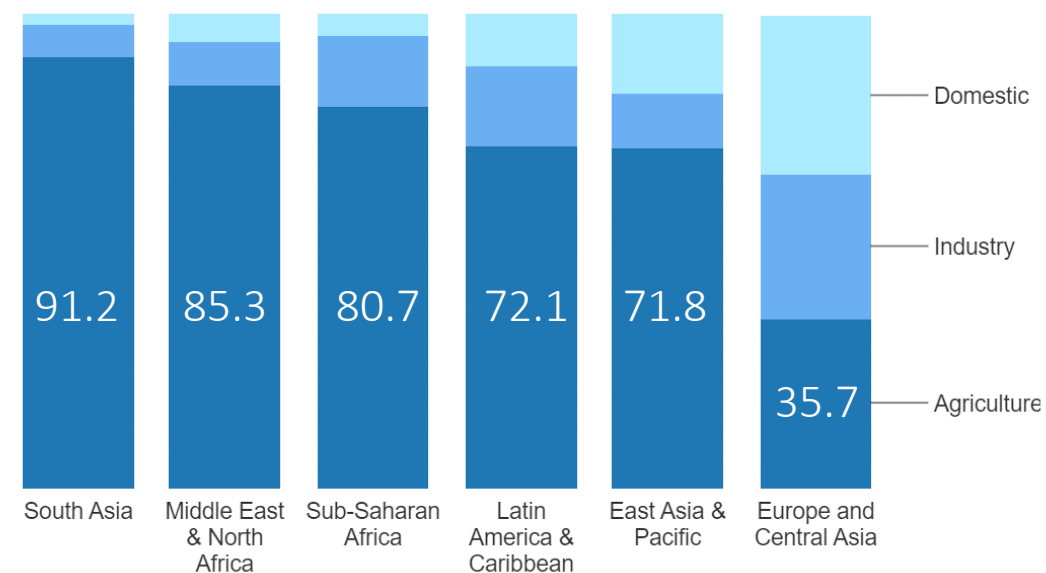


Digital Water – Background

- Urbanization
 - 70% will live in cities by 2050
- Agricultural water use
 - 70% of freshwater used for food production
- Climate change
 - 80% of the world population under threat to water security due to human caused climate change

Globally, 70% of Freshwater is Used for Agriculture

Share of freshwater withdrawals by sector (%) in 2014

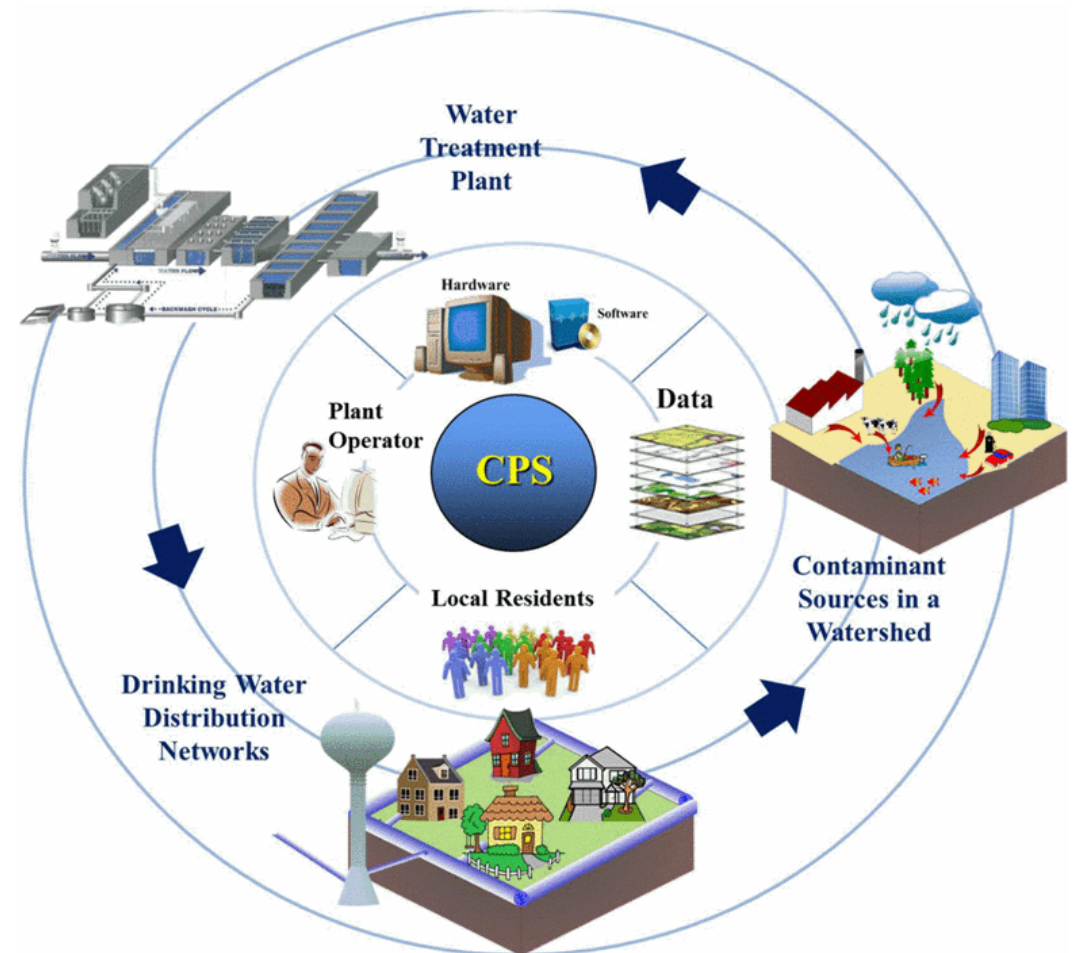


Source: World Bank – Water Development Indicators.
<https://data.worldbank.org/indicator/er.h2o.fwag.zs>

Digital Water – Building Blocks

- Information and Communication Technologies (ICT)
- Sensors
- Data from all sources
- Analytics (AI/modelling)
- Software
- Control technologies
- Robotics

Cyber-Physical Systems



Source: Imen, S. and Chang, N.B., 2016, April. Developing a cyber-physical system for smart and sustainable drinking water infrastructure management.
<https://ieeexplore.ieee.org/abstract/document/7478983>

~ Digital Water – Example

Challenge: One in three people worldwide lack reliable access to safe drinking water at affordable prices

- ‘Water Kiosk’ or ‘Water ATM’
 - Dispense water instead of cash
 - Solar-powered
 - Cloud-connected
 - 24/7 access to water
 - Cheaper than any other outlet
 - Rechargeable cards topped up by mobile phone



Source: Project Breakthrough - Water ATMs making a splash in India.
<http://54.82.98.118/briefs/piramal-sarvajal-water-atms-making-a-splash-in-india/>

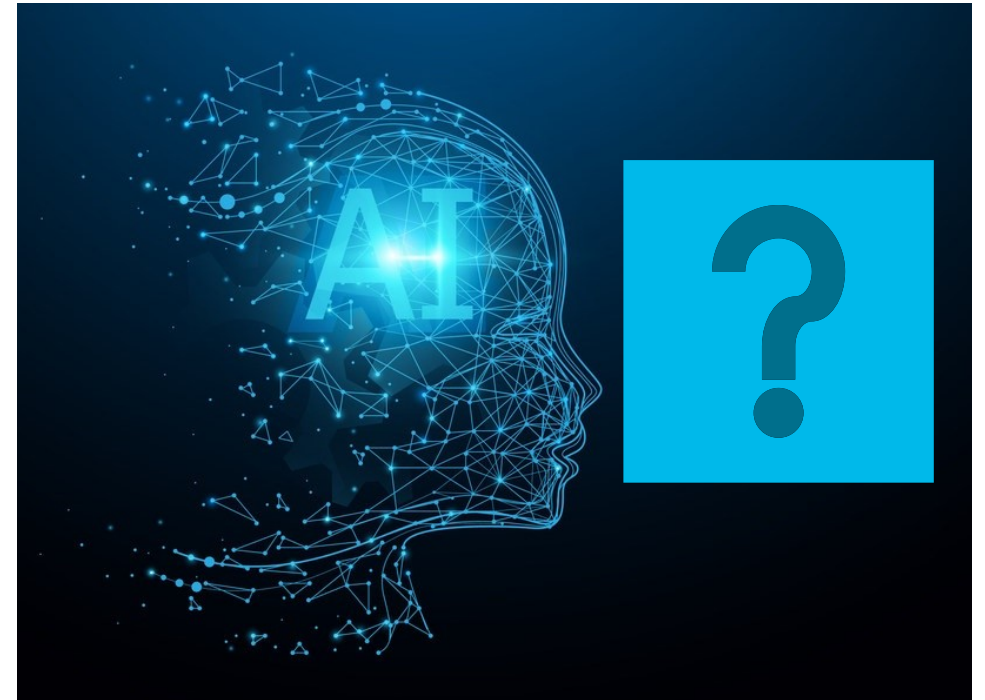
Digital Water – Bright Future

- Big data
- Integration of data from various sources
- Better models – Digital twins
- Bigger role for Artificial Intelligence
- Informed decision making
- More resilient cyber-physical systems and services
- Cloud services



~ Digital Water – A word of caution

- Security
- Privacy
- Legal concerns
- Ethical concerns
- IT skills
- Access to technology and the Internet



Digital Water is already here!

Source: IWA Digital Water White Paper 2019