



**ITU Regional Workshop on “Prospects of Smart Water Management (SWM) in Arab Region”
Khartoum-Sudan, 12 December 2017**

A close-up photograph of a green leaf with a single water droplet about to fall into a pool of water, creating ripples. The background is a soft, out-of-focus bokeh of yellow and green light.

ICTs for Water Management

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Outline

Global Water Issues

ICTs and Water Management

Key Stakeholders Involved in ICTs and Water Management

Smart Water Management Opportunities and Challenges

ITU works on SWM & ITU Regional Pilot Project on Smart Water Management



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Water is vital for life, development, and the sustainability of the environment!





Global Water Issues-1



- 1.2% of all water on earth is available for human use.
- 40% shortfall of the available global water supply is expected by 2030, according to the UN.
- In many regions, a stable supply of good-quality water can no longer be relied on by companies to grow their business.
- In the World Economic Forum's 2016 Global Risk Report, the water supply crisis has been identified as the greatest risk to society over the next decade.
- ❖ Water is a precious natural resource, vital for life, development and the environment. It can be a matter of life and death, depending on how it occurs and how it is managed.
- ❖ Abundance is a problem. Scarcity is a problem. A perfect balance that meets the society water demands, without exceeding the unmanageable threshold of water supplies is crucial for the effective management of the resources.
- ❖ Water can be an instrument for economic survival and growth. The vice versa is also true !

“Inadequate water quantities or bad quality water can be a limiting factor in poverty alleviation and economic recovery, resulting in poor health and low productivity, food insecurity and constrained economic development.”

By (Niyi Gbadegesin and Felix Olorunfemi, 2007)





Global Water Issues-2



- ❖ Water Scarcity and stress
- ❖ Climate Change
- ❖ Rising global population
- ❖ Improper water governance and management
- ❖ Aging of infrastructure
- ❖ Lack of investment





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ICTs and Water Management-1



ICTs offer valuable opportunities to improve the productivity and efficiency within the water sector, with the aim of contributing to the sustainability of the resource. ICTs technologies allow the continuous monitoring of water resources, providing real-time monitoring and measuring, making improvements in modelling and problem diagnosis, thus enabling proper maintenance and optimization of all aspects of the water network.



The increasing availability of more intelligent, ICT-enabled means to manage and protect the planet's water resources has led to the development of smart water management (SWM). The SWM approach promotes the sustainable consumption of water resources through co-ordinated water management, by integrating ICT products, solutions and systems, aimed at maximizing the socio-economic welfare of a society without compromising the environment. SWM can be applied to multiple sectors (e.g. industries, agriculture) and urban environments.





ICTs and Water Management-3



Smart Water Management (SWM) :

SWM seeks to promote the sustainable coordinated development and management of water resources through the integration of ICT products, tools and solutions such as:

- Sensors, Smart meters and Smart pipes
- GIS
- Cloud Computing
- SCADA Systems
- Web Based communications platforms



Smart Water Management (SWM) Technologies:



Source: greatlakes.org

Smart Combined Sewer Overflows: Efficient optimisation is achieved through intelligent management systems.



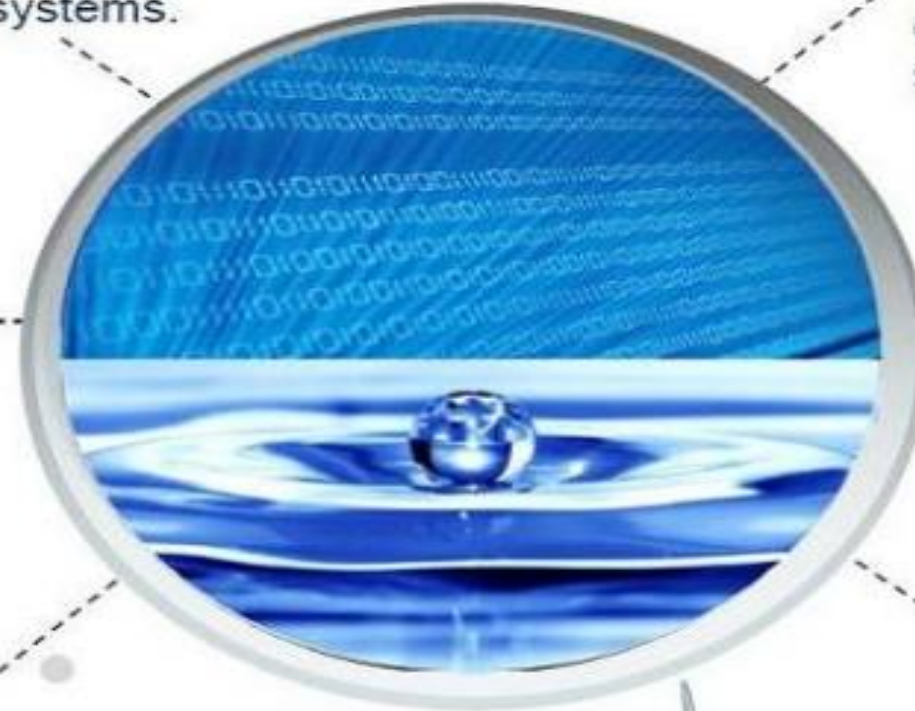
Source: organo.co.jp

Smart Ultrapure Water: A series of sensors can ensure high water quality and monitor conditions in the system.



Source: treehugger.com

Smart Water Supply Management: Water resources and environment can be managed to ensure sufficient supplies and quality.



Smart Irrigation and Agriculture: Commercial uses of water can be optimised to ensure sustainable use.



Source: agreenstarlandscape.com

Smart Wastewater Management: Wastewater can be managed to monitor quality and levels.



Source: usa.siemens.com

Smart Water Distribution Management: Water in utility grids can be monitored to optimise distribution and asset management.



Source: precisionmeters.co.za

Source: Google Images



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Key Stakeholders Involved in ICTs and Water Management



1. Stakeholders who have influenced “ICTs and smart water management”

- ICT corporations and organizations
- Academia and research institutes
- Non-governmental and community-based organizations
- Corporate entities, businesses and the industry

2. Stakeholders who have a direct impact on “ICTs and smart water management”

- Water industries and utilities
- Municipalities, governments, and international governmental organizations (IGOs)





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Smart Water Management Opportunities



ICT use in smart water management has a wide application and a clear set of benefits, such as:

- Real time monitoring and improve water access
- Reduce consumption and non-revenue water
- Save energy and reduce operational costs
- Integration into smart sustainable cities(SSC)
- Environmental flow integration
- Greater public involvement





Smart Water Management Challenges



Current challenges to implementation of SWM in countries include a lack of:

- **Standardization**
- **Policies**
- **ICT governance**
- **Incentives/funding**
- **Awareness**





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ITU works on SWM



- Established in June 2013, ITU-T Focus Group on Smart Water Management (FG-SWM) acts as an open platform for smart water management stakeholders ([Click here](#))
- The Focus Group completed its work on 2nd March 2015 and submitted the deliverables to ITU-T Study Group 5 ([Click here](#))
- The smart water management related works is now being tackled by ITU-T Study Group 5 ([Click here](#))
- In Collaboration with and the United Nations Education, Science and Cultural Organization (UNESCO), developed the Partnering for solutions: ICTs in Smart Water Management ([Click Here](#))
- [Smart Water Management Resources](#) (*Resources highlighted here reflect how ICTs can be used to ensure the sustainable use and management of our global water resources*)



**Partnering for solutions:
ICTs in Smart Water Management**





ITU Regional Pilot Project on Smart Water Management



Background

- A call for interest was sent out to stakeholders in the Arab region in 2015 to collect suggestions for pilot projects in the area of smart water management. As a result a committee was formed to evaluate the suggested projects and the decision was to proceed in elaborating the suggested project from the Ministry of Communications in Egypt.
- This project was formulated over the course of one and half years with MCIT along with various other stakeholders including Ministries of Defense, Agriculture and Irrigation, ITI, and UNDP ICT Trustfund.
- This project was signed between H.E Minister of ICT in Egypt and the Secretary General of the ITU on the 12th of May 2016 in Sharm El Sheikh.





Project Objective

To optimize the management/exploitation of the local groundwater aquifers and expand agricultural land through efficient land reclamation by developing an effective groundwater management model

Expected Results

There 7 expected results for the project the following are the key ones:

- A portal/Web-based application to raise the awareness of the “Smart Groundwater Management” developed.
- Demonstration of an active knowledge sharing platform consisting of investors, farmers, experts, academics, stakeholders, and ministries staff to efficiently manage water resources.
- Provide batch and/or Real-Time data for Decision Making Model for optimized groundwater management and energy saving purposes.
- Availability of a model for aggregating, analyzing and disseminating effective information for optimizing the management of the local groundwater (aquifer) and enhancing agricultural land reclamation in the targeted areas.



Progress of the Project

- A scoping mission to inspect the project site was conducted in March 2017
- The required ICT equipment to monitor, evaluate and communicate the data of the selected well was imported and installed in September 2017
- Efforts are under way to develop the mobile application and web portal to manage the incoming data among all the relevant stakeholders





Thank You

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