Summary Report

1. Background:

The ITU Regional Workshop on "Prospects of Smart Water Management in Arab Region" took place on 12 Dec 2017 at Alsalam Rotana Hotel, Khartoum and was hosted by Sudatel Telecom Academy (SUDACAD). The event reflected the growing importance of use of ICTs on water resources management in Arab region.

2. Participation:

More than 150 participants representing 12 countries from Arab region, Africa and Europe attended the workshop: Egypt, Somalia, Sudan, Mauritania, Comoros, Djibouti, Syria, Oman, Malawi, Tunisia, Morocco, Palestine and UK.

3. Documentation

The workshop was paperless. 16 presentations were delivered during the workshop. Relevant documentation, including Agenda, Presentations, photos and final report are made available at the event website.

4. Opening Ceremony:

Eng. Ebrahim Alhaddad, Regional Director, ITU Arab Regional Office, expressed his gratitude to Excellency Mr. Mutaz Musa, Minister of Water Resources, Irrigation and Electricity and to Mr. Sami Youssef, Vice President, Sudatel Telecom Group and Dr. Ahmed Hassan, Director General of SUDACAD for hosting and honoring one of the important ITU activities in the use of ICTs to manage one of the most important scarce sources which is the water.

During his speech, Mr. Alhaddad highlighted the following issues:

- Economic growth, climate change and population growth affect the availability of water resources
- United Nations estimates, 85 per cent of the world's population live in the driest half of the planet, 783 million people do not have access to clean water, nearly 2.5 billion people do not have access to adequate sanitation, 6 to 8 million die annually from the effects of water-related disasters and diseases.
- Water scarcity is a real issue that will grow in the near future due to the effects of climate change, population growth and economic growth.
- There is also a lack of information on methodologies for measuring water demand and supply for domestic and economic sectors as well as the effects of ICT on water management.
- Where ICTs can play a special role in this regard through a number of technologies that help to better, manage and distribute water, as well as identify and classify the role played by information and communication technologies to help measure and distribute water as a result of environmental issues.
- Technologies such as GIS, remote sensing, intelligent measurement, telemetry, geo-modeling, geospatial data and ICT platforms for smart cities have created better and cost-effective water management opportunities in so-called smart water management, the title of our meeting.

Mr. Alhaddad concluded his opening speech by thanking SUDACAD staff and speakers who had shared their knowledge and experiences with members.

Dr. Yahia Abdalah, Director General of NTC-Sudan, on behalf of the Minister of ICTs, welcomed the participants and thanked the ITU and SUDACAD for organizing this important workshop. Dr. Yahia emphasized the role ICT could play in managing water resources and highlighted the ICT ministry and NTC policy on smart water management.

Dr. Ahmed Hassan, Director General of SUDACAD-Sudan and on behalf of SUDATEL Telecom Group, welcomed the guests of the country participating in the workshop and thanked the ITU and the speakers for coming to Sudan to share their subject knowledge. Dr. Ahmed presented SUDACAD establishment history, how SUDACAD became a member of the ITU CoEs Network and its longstanding partnership with ITU.

Dr. Ahmed wrap-up his speech and confirmed the continuous commitment of Sudatel to the activities of the ITU. He also pointed out the major role of Sudatel in building the ICT infrastructure in Sudan in order to lead the move for a technological era.

H. E. Mr. Mutaz Musa, Minister of Water Resources, Irrigation and Electricity, thanked the ITU and SUDACAD for organizing this important workshop. H. E. Mr. Murtaz Musa stressed that the scarcity of water in the Arab region is a fait accompli and that it is confined to limited sources such as Nile water,

groundwater and seawater desalination. He pointed to the poverty of the Arab region in general in these resources, in addition to the scarcity of rain, which negatively affects agricultural production.

During his speech, he highlighted the following:

- There is no policy, no economy, no peace, no quiet, no development, no knowledge, and no knowledge of water. Without the water, the Arab region will be fragile and unintegrated in the civil life and vulnerable to the erosion of its social fabric. He referred to the 17th SDGs adopted by the United Nations.
- The Government of Sudan has put the water issue on the top of its priorities and developed a strategy to achieve (Zero thirst) by 2020.
- The ICTs is providing an accurate information on the soil and timing of irrigation for farmers, which enabled the increase of agricultural production in Sudan by more than 42% (Satellite based project in Gazira Scheme).
- The implementation of one of the successful projects: "development of control of electricity generation" which was reflected in the quality of performance.
- The tremendous development of the ICTs sector in Sudan, which enabled the state to control the entire Nile River in all monitoring stations and across the Sudan so that the information is available about the conditions of the Nile and its main branches 24 hours.

H. E. Mr. Mutaz Musa, the Minister of Water Resources, Irrigation and Electricity, thanked the ITU and SUDACAD for their kind efforts on raising the awareness on the importance of the ICTs for managing the water resources.

5. Main points that emerged during the discussions at the workshop and recommendations were:

- Water Scarcity is a real issue which will grow in importance in the near future compounded by the effects of climate change, rising populations and economic growth;

- There is a lack of information about methodologies on measuring water demand and supply for domestic and economic sectors as well as on the impacts of ICTs for water management;

- The water footprint could be an important indicator for assessing the water needs for various products and economic activities and to assess the impacts on water systems elsewhere (through estimates of green, blue and grey water footprints).

- Policy decisions should be taken on the basis of actual water footprint at the production location, and local impacts of the water footprint based on vulnerability and scarcity.

- Using ICTs can help a lot to improve water efficiency use in agriculture;

- There is a lack of consistency on the amount that could be saved from use of ICTs.

- A common methodology for assessing the impact of ICTs on water consumption in agriculture and production of goods is necessary.

- Improving the overall water use efficiency is important in order to minimize the losses in the system and distribute the available water for agriculture in an equitable way;

- For effective water management, a large amount of data is collected from various sources (e.g. rivers, utility networks, weather, etc.). By collecting them into one intelligent operations centre, a holistic view is created and this enables effective cooperation between various stakeholders. The data can also be extended to serve other domains such as emergency response, electricity, traffic, etc;

- With the impact of climate change, availability of information about current conditions in a particular situation, on a timely basis, is crucial for decision making in water resource management;

- There is a need for Climate change adaptation technologies pertaining to the water resources sector and foster knowledge sharing and replication among countries.

- Technologies such as Sensors, Smart meters and Smart pipes, semantic sensor web, geographical information systems, remote sensing, climate smart agriculture, M2M and smart pipes, smart metering, telemetry, geographic 3D modeling of geospatial data for the web and smart city ICT platforms are creating better and cost effective opportunities for smart water management.

- In recognition of the important role ICTs play in the water management sector, ITU Regional Office for Arab Region is requested to share the best practices of the ITU pilot project on SWM with Arab countries and specifically with countries in the Nile river basin.

- Develop and foster the adoption of international standards, best practices, and policies for smart water management through the use of ICT to improve both water and energy footprints, taking into account life cycle assessments.

- Evaluate countries, standard performance indicators, and industry best practices for smart water management through the use of ICT and help countries to better utilize their water resources including different types of water.

- Standardize the methodologies for estimating the impact of ICTs on improving water conservation; the ICT applications and services for smart water management so as to ensure interoperability and benefit from economies of scale; technologies for intelligent decision making for smart water management; and use of geographic 3 D modelling of geospatial data for use in geographical information systems and on the Internet; and open data platforms to enable interoperability of smart water solutions.

- Bridge the gap between ICT, water, environment, energy experts and policy makers, to encourage the integration of ICT into water and energy policies so as to improve knowledge on the state of water availability and consumption, increase environmental resilience, tackle climate change impacts, and enhance energy efficiency and water demand management with the help of a cost benefit analysis of ICT tools. Promote the use of open data platforms in water management to empower innovation in the field.

- Promote green products and services based on international standards that are developed on life cycle assessment, and raise awareness on the blue, green, and grey water footprints of commonly used products, services, and economic activities.

- Work on the ICTs and SWM stakeholders by raising awareness about the potential of ICTs in water management especially among farmers and beneficiaries in general, encourage water education, training and skill development of water authorities in order to enhance expertise in smart water management applications and organize similar workshops on an annual basis to review progress made.

- Enhance cooperation at international, regional, and national level, between organizations, research institutes, governments, and civil society, on the use of ICT in smart water management, and encourage developed countries to support efforts in developing countries. Create business models that would encourage partnerships among stakeholders through win- win solutions.

- Integrate ICT policies in the on-going dialogue on smart water management in organizations such as the UN Water, World Meteorological Organization (WMO), Food and Agricultural Organization (FAO) and United Nations Environment Programme (UNEP), and others.

- Carry out pilot and flagship demonstration projects to demonstrate "smart" ICT solutions for water management in agriculture, industrial processes, and domestic water consumption and quality, by utilizing new technologies and standards for smart water management, and benchmarking the situation in different countries. Identify strengths and weaknesses of implementation strategies, and report success stories and cost implications in dealing with the challenges met, and innovative solutions used.

- Experiences from Malawi, Japan, South Korea, Egypt and Sudan on different use of ICTs technologies on irrigation and agriculture were shared.

- Pilot study should be conducted about ICT role/implementation in water leak detection (non-revenue water). To be considered (if possible) in the next year plan of ITU.

- Strategies (with breakdown) in face of water challenges need to be more highlighted.

- More focus needed for innovative solutions for water challenges

- Recurrence workshops should be carried out on more frequent bases to raise awareness on technology transfer and capacity building.

- The methodology, results, and recommendations of the pilot study of SMW conducting in Egypt should be disseminated through specific workshop/focus groups.