Sustainable cities in the GCC countries

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Water sectors are under pressure from growing demand, cost of new infrastructures, increasing energy prices and aging water systems. Through intelligent water network solutions known as Water-Smart Cities, water utilities will be, remotely, monitored, maintained and managed, and consumption will be evaluated, assessed and optimized. These solutions will, accurately, map losses due to leaks, waste and evaporation, and take targeted corrective action.

Smart Cities is a new concept for modern cities using cutting-edge technologies to monitor and supply information which is used to manage assets and resources efficiently. This includes water and power plants, water supply networks, wastewater management, traffic and transportation systems, information systems, government and private buildings, and other community services.

This paper will highlight the effects of poor management of water resources on the sustainability and prosperity of cities. Without proper water quality and quantity no civilization will be initiated or even maintained. Smart water policy is the first step towards water-smart city; it will promote water efficiency regulations and improve water management practices. New technologies, strategic policies and effective implementation of demand management are the key issues for a successful water-smart city.

Climate change effects resulted in more frequent droughts and floods, unpredictable temperature variations, in addition to growing populations and high consumption would lead to insecure water resources. Therefore, the need for rapid, cost-effective actions that can save water on a large scale became a necessity.

Combination of information and communication technologies and internet of things (IoT) is the heart of smart cities to optimize the operation efficiency of the city services and connect officials and citizens to consumption data and other data, allowing for real-time responses.

The IoT as a technology holds great potential to solve water scarcity through smart, instant and predictable management. In every part of the water cycle, IoT can be utilized to manage water resources better and reach efficient and optimal results. It includes cloud connection for real-time analyses and automated alerting sensors and meters that enable data capture over large distances.

Water-Smart City includes all related sectors; residential, industrial and agricultural. The three sectors share the main features of water-smart city including remote alert, quality track, central control and smart metering systems. Water solutions are one of the main solutions of the smart city concept and should have more emphasis from the water specialists as it is the future management tool for water resources.