Implementing ITU-T International Standards to Shape Smart Sustainable Cities: The Case of Dubai

Country: United Arab Emirates

Level: Local

SDG Addressed: SDG 11 – Sustainable Cities and Communities

Summary

The administration of Dubai emphasizes that technology is an essential building block for improving quality of life. In this regard, Smart Dubai does not consider technology as an end goal but rather as a mean to achieve sustainability. Dubai has established a group of objectives that focus on happiness and quality of life, as defined by the overarching Dubai Plan 2021.

The vision of the Dubai smart city initiative aims "to make Dubai the smartest and happiest city on Earth". It focuses on addressing the most pressing urban environmental challenges and transforming the interaction between Dubai's residents and the environment and the economic and social services provided by its government using the latest technologies.

In order to measure and benchmark its smart strategy, *Smart Dubai* decided to become the first city to pilot the Key Performance Indicators (KPIs) for Smart Sustainable Cities (SSC) in May 2015. Developed based on international standards developed by ITU, Recommendations ITU-T Y.4901/L.1601 "Key performance indicators related to the use of information and communication technology in smart sustainable cities" and ITU-T Y.4902/L.1602 "Key performance indicators related to the sustainability impacts of information and communication technology in smart sustainable cities", the KPIs for SSC have provided measurable data and valuable reference points to Smart Dubai for shaping and refining its smart strategy.

Background

The Smart Dubai initiative was launched by the *Smart Dubai* Office in March 2014 to unify and enhance existing ICT initiatives from the government; enable and deliver a citywide platform for the exchange of information and transaction of daily services; and provide a common platform for the public and private sector to work together and share the benefits of a smart city. Smart city is this case is defined as the efficient use of resources; seamless service delivery; safely protected people and information; and impactful business and life experiences.

ITU, being the UN specialized in ICTs, has always been at the forefront of fostering development in SSC. In 2014, ITU-T Focus Group on Smart Sustainable Cities (FG-SSC) established the groundwork and enunciated the fundamentals for transforming the vision of cities through the systematic inclusion of ICTs in the core of the sustainability considerations for smart cities.

During the time that FG-SSC was undertaking its work, Dubai and ITU signed a cooperation agreement in May 2015 whereby Dubai committed to become the first city to pilot the KPIs related to city smartness and sustainability that were formulated by the FG-SSC.

Strategy

During the KPI assessment process, smart city activities were identified, and the collected data reflected a comprehensive integration of information communication technologies in the delivery of Dubai city services with the goal of achieving the aims of *Smart Dubai*.

The implementation of these KPIs has made Dubai the first city in the world to have analysed the smartness and sustainability of its urban services taking the Recommendations ITU-T Y.4901/L.1601 and ITU-T Y.4902/L.1602 as reference. The standards that Dubai enacted in accordance with ITU recommendations initially focused on guidelines for ICT infrastructure access and safety (T1.1 ICT), which then were used to apply to all further standards related to Smart Dubai.

Regarding the environmental aspect, several municipal organizations established requirements for air quality levels (T2.1), instructions for waste management and water sanitation services (T2.2), specifications for the monitoring of noise pollution (T2.3) and guidelines for the creation of green spaces throughout the city (T2.5). Economically, the Smart Dubai Office fostered greater productivity by adhering to regulations on providing online services to pivot towards a more service and knowledge-based economy (T1.5). Dubai also created various programs and policies to promote greater citizen participation and social inclusion by following standards on economic equality (T3.6), and public sector development (T1.7).

In addition, the city implemented various initiatives to advance its citizen's quality of life by adhering to standards on e-learning educational programs (T3.1), health services (T3.2), and safety measures related to natural and unnatural disasters as well as threats to their ICT networks and users (T3.3). Furthermore, the Smart Dubai initiative revitalized its physical infrastructure under the guidelines on roadways, water and electricity supply facilities, as well as buildings (T1.6) with the aim to significantly reduce greenhouse gas emissions and promote a more efficient society.

Results and Impact

- Dubai has introduced a secure and reliable ICT infrastructure for the provision of urban services to its citizens
- ICT-based technologies have been introduced for the delivery of water in Dubai. The city also has an effective smart metering system to monitor water consumption across the city
- Dubai has adopted the "Integrated Energy Strategy" to increase the proportion of clean energy sources (including renewable energy) in their urban energy mix

- Dubai has introduced SAAD, an e-service with cognitive computing technology to support business licensing and registration and to create an atmosphere of entrepreneurship
- Smart Dubai and DED work together to assess the impact of ICTs on economic growth to promote transparent reporting on economic initiatives
- Dubai has launched the DubaiNow app which allows for access to 2000 government services. This app was introduced with the aim of meeting the needs of the citizens and ensuring their happiness
- eComplain System was introduced in Dubai for citizens to regularly provide feedback on the public services
- Police Eye in Dubai is being used to report any suspicious activity, by locating the reported location on the map. Through this, users can contribute to the security of Dubai.
- Dubai's Minor Accident reporting allows residents to take a picture and send to the system using their mobile phones. This service (app) has been launched by Dubai Police for reporting small and minor accidents on the streets.
- Dubai has introduced several Smart SOS (Save our Soul) and wearable devices. Dubai has various service apps with location-based "Fast Emergency Alert" function. For example: There is a smart watch app that allows the user to ask for help. The app uses GPS information to provide the location of the user. These services are for citizens and residents of Dubai. The wearable and Smart SOS devices also have a new feature for the visually impaired, using which comments or complaints can be sent through the Dubai Police Application.
- Dubai's "Drive Mode" feature is both smart and innovative. It works only when the user is in drive mode. The App is capable of sending audio notifications about accidents near the user's location.
- Dubai has launched the "My Community…A City for Everyone" in 2016, which aims at turning Dubai into a disability friendly city by 2020. The objectives of this initiative aim to promote equal opportunities, drive social cohesion, build social capital and minimize social exclusion.
- Dubai has adopted the Green Mobility Initiative to promote the use of hybrid and electric vehicles which consume less fuel and reduce greenhouse gas emissions.

- The Mohammad Bin Rashid Learning Programme in Dubai focusses on integrating technologies into the existing education system. This Program was established to further advance the United Arab Emirates' education system into the next phase of development through the application of world class teaching techniques and advanced technology
- Dubai is working towards the introduction of electronic models in their hospitals which will facilitate better healthcare services to the community through tele-medicine and tele-assistance services
- RTA has introduced ICTs into Dubai's traffic system for parking management, traffic circulations and public transport.
- Dubai has introduced the Carbon Abatement Strategy 2021 to reduce CO2 emissions

Challenges and lessons learned

A major lesson learned from the case of Dubai, is the leadership role that Smart Dubai has taken to ensure that all entities work collaboratively on the smart city transition and the data collection and subsequent verification process for the KPIs. In line with this, aspiring smart cities and their entities should collaborate on the introduction of Implementing ITU-T International Standards to Shape Smart Sustainable Cities – The Case of Dubai 47 assessment frameworks that evaluate impacts of different services, and their overall contribution to the city vision. The aspiring smart city and its entities are also advised to work together to build a robust and homogeneous city profile and baseline, aligned with the strategic pillars of their respective city (dimensions), governed by a central body which could take on the leadership and monitor the transition.

In addition, it would be beneficial if aspiring smart cities documented the KPI collection process to identify and differentiate the data sources and data owners of the different indicators, subsequent to the standardization of smart sustainable city KPIs. Interested cities can use the ITU KPI-Collection Guide and adapt it to ground realities and its own collection process.

Furthermore, city stakeholders should consider establishing their own smart city dimensions based their existing governance structure and the dimensions set by the Recommendations ITU-T Y.4901/L.1601 and ITU-T Y4902/L.1602.

Cities interested in implementing the KPIs for SSC should work with all entities to establish a timeline for data collection that can ultimately be standardized. This is being suggested based on the realization that in Dubai, the best quality data for the KPIs were reported by the entities that had direct control and management over the aspect evaluated.

Potential for Replication

Cities commencing their smart city journeys, can use ITU's smart sustainable cities KPIs as a reference and guideline to initiate the process of determining strategic smart city goals to improve the sustainability and smartness of the city. Dubai's integrated approach to evolve into a smart city, along with a solid set of smart sustainable City KPIs, can facilitate the definition of global smart sustainable city goals and indicators for cities. This can be achieved through the sustained provision of guidance, methodological training, better information exchange, and the utilization of ICT tools.

Emerging smart cities could consider defining specific policies and programs for the continued professionalization of smart sustainable city experts around the globe. This could be done through the creation of technical working groups, the development of specialized alliances with universities, the elaboration of specialized academic and entrepreneurship programs, etc. These activities will instil innovation and further ensure the expansion of smart sustainable cities initiatives within the cities as well as worldwide.