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





# ITU and Smart Sustainable Cities

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- ITU is the United Nations specialized agency for information and communication technologies (ICTs) and is committed to supporting cities around the world and their evolution to become smart and sustainable.
- In October 2015, ITU and the United Nations Economic Commission for Europe (UNECE) agreed on the following definition for smart sustainable cities:

*“A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects.” ITU, 2015.*

# ITU and Smart Sustainable Cities

- The key activities that ITU carries out in supporting SSC are summarized in the image to the right ->



Development and implementation of standards

**ITU-T Study Group 5** on  
"Environment, climate change and  
**ITU-T Study Group 20** on  
"Internet of things and smart cities



Research and pre-standardization work

**Focus Group on Data Processing Management (FG-DPM)**



Open platform for knowledge sharing and forward looking research

**United for Smart Sustainable Cities (U4SSC)**



Awareness raising

**Worldwide events**

- They respond directly to one of the greatest challenges of developing Smart City initiatives, which is the fragmentation of agencies and stakeholders in carryout Smart City activities with the lack of global standards as guidance.

# U4SSC and the Key Performance Indicators for Smart Sustainable Cities

- Established on May 18, 2016, the U4SSC initiative serves the international platform for knowledge sharing and developing best practices linked to smart sustainable cities.
- This global platform was created in response to the United Nations ***Sustainable Development Goal*** (SDG) 11: “Make cities and human settlements inclusive, safe, resilient, and sustainable.” Unlike other smart city platforms, this initiative is open to all interested parties who wish to contribute to its work.



# U4SSC and the Key Performance Indicators for Smart Sustainable Cities

- The indicators are based on Recommendation ITU-T Y.4903/L.1603 on “*Key performance indicators for smart sustainable cities to assess the achievement of sustainable development goals*”.

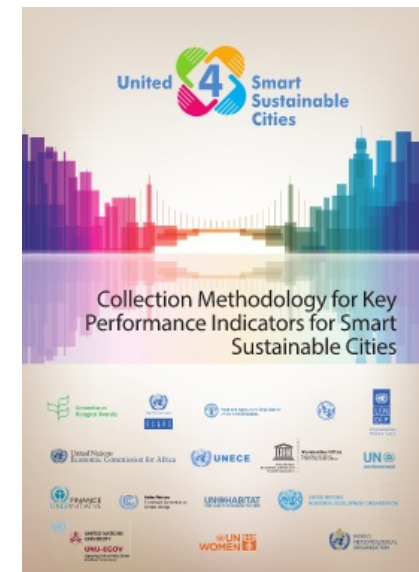
- The *objectives* of the KPIs are mainly the followings:
  - 1) Functioning as *a diagnostical tool* for cities to evaluate their smart strategies and projects
  - 2) Evaluate a city’s progress in *meeting the United Nations’ SDGs at the city level*.

- The KPIs are sorted into *three* key dimensions: 1) *Economy*, 2) *Environment*, and 3) *Society and Culture*.



# Implementing the KPIs for SSC: the Case of Moscow

- In 2018, Moscow partnered with ITU to pilot the KPIs.
- The city's commitment to smart sustainable transition, including its '*Information City*' and the upcoming '*Smart Moscow 2030*', makes Moscow the ideal partner to join the U4SSC's KPI project.
- The project consisted of three phases:
  - *The First Phase*: Collecting the necessary data to report to the KPIs with supports from ITU
  - *The Second Phase*: Performing an onsite validation and certification process
  - *The Last Phase*: Preparing this case study



# Highlights of Moscow's Smart Sustainable City Initiatives – Dimension #1: Economy



## High Connectivity:

The Moscow City Government provides its inhabitants with **free Wi-Fi access** across the city's streets, parks and other public and pedestrian areas.

This includes close to 18 300 public Wi-Fi hotspots all over the city.



## Traffic Control and Smart Public Transportations:

Moscow's **intelligent traffic control system** includes more than 2 000 traffic lights, 3 500 traffic detectors and 2 000 CCTV cameras.

The **public transport system** has been revamped using IT-based tracking and signalling control technologies to increase efficiency.



# Highlights of Moscow's Smart Sustainable City Initiatives – Dimension #1: Economy

## Housing and Utility Services:

- **The Moscow Resource Monitoring and Management System** has equipped public apartments and social facilities with housekeeping meters for cold and hot water as well as heating.

## City Vehicle Management:

- All of Moscow's municipal vehicles (more than 32 000) are tracked and monitored through **GLONASS**.

## Others:

- Moscow has invested over 1.6 billion US dollar in its **My Street** program which oversees the redevelopment of over 216.3km of streets and 2417 buildings.
- The city has been delivering over 200 **e-services** for its citizens via digital platforms such as **mos.ru** which can be accessed through desktops and mobile applications.





# Dimension #1: Economy – Lessons Learned and Moscow’s Progress in the meeting the related SDGs

## High Connectivity

- Lessons: Provision of such high level of access to the internet at little or no cost ***promotes the use of e-services*** without the burden of network costs. It also empowers citizens by making ICT related solutions ***accessible*** and ***accountable***.
- One of the SDG’s target that was met by these initiatives:
  - ***Target 9.C: “Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.”***

## Traffic Control and Smart Public Transportations:

- Lessons: An adaptive traffic control system that utilize real-time data from in-road sensors and cameras to manage traffic is key to ***reduce idling time for public transits*** and ***encourage citizens*** to use public transportation, improving a city’s traffic flow.
- One of the SDG’s target that was met by these initiatives:
  - ***Target 11.2: “By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older person”.***

\*Please check the case study for a completed list.



# Highlights of Moscow's Smart Sustainable City Initiatives – Dimension #2: Environment



## Green spaces:

The “**Million Trees**” programme, which started in 2013, is the largest landscaping programme in the city.. Over 94,000 and 2 million shrubs have been planted since its implementation.



## Smart building and energy monitoring:

Moscow's power company has rolled out an **IoT-based control system for utility resources** which will detect how much electricity, water and heating a building consumes. The system currently covers more than 3 500 municipal buildings and more than 30 000 residential buildings, enhancing them with automated water and power consumption metering and billing.



## Dimension #2: Environment – Lessons Learned and Moscow's Progress in the meeting the related SDGs

### Green spaces:

- Lessons: Green space and their accessibility are important elements that would lead to a higher quality of life for the city's inhabitants.
- One of the SDG's target that was met by these initiatives:
  - **Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management.**

### Smart building and energy monitoring

- Lessons: Buildings' energy consumption account for a high percentage of a city's emission. At present, only 0.26 per cent of water metres in Moscow are smart metres. Similarly, only 14.35 per cent of all electricity metres installed in the city are smart meters.
- One of the SDG's target that was met by these initiatives:
  - **Target 7.3: "By 2030, double the global rate of improvement in energy efficiency."**

\*Please check the case study for a completed list.



# Highlights of Moscow's Smart Sustainable City Initiatives – Dimension #3: Society and Culture



## Unified Medical Information Analysis System (UMIAS):

Launched in 2011, *the UMIAS is the digital management system* that maintains the e-health records of 78 per cent of Moscow's inhabitants.

Since its launch, UMIAS has reduced lines in clinics by a factor of 2.5.



## Education:

Started in 2016, *the Moscow Electronic School project* seeks to build digital school records, to enable online registration, and to create an electronic library with textbooks, lesson scenarios and a large volume of curricula. To date, Moscow's teachers have created more than 500 000 content units.



# Highlights of Moscow's Smart Sustainable City Initiatives – Dimension #3: Society and Culture

## Education (Cont.):

- 100 per cent of students in Moscow have **access to ICT facilities in school**. Dedicated Wi-Fi points were made available in each classroom by the end of 2018.

## E-governance:

- **Our City** is a feedback channel where residents can comment on officials and utility service issues. The online forum relies significantly on mobile applications and encourages a community of citizen users who will help to keep their local government accountable.
- **Active Citizens** is an online referendum system, accessed through a website and corresponding mobile application, that allows citizens to vote on city development matters. These referendums have empowered residents to play a greater role in influencing the policies of their city.



Our City's interface

## Dimension #3: Society and Culture – Lessons Learned and Moscow’s Progress in the meeting the related SDGs

### Health Care:

- Lessons: ICT-based healthcare systems such as the UMIAS are imperative to improve the accessibility of health services. The SDG’s indicators/targets that were reported/met by these initiatives:
- One of the SDG’s target that was met by these initiatives:
  - **Target 3.8: “Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.”**

### Education:

- Lessons: Moscow’s cloud based educational platform provides students and teachers alike with the fundamental ICT skills. The lack of such skills continues to be the key barrier of preventing vulnerable groups such as women from enjoying the benefits of ICTs.
- One of the SDG’s target that was met by these initiatives:
  - **Target 5.B: “Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.”**

\*Please check the case study for a completed list.



## Dimension #3: Society and Culture – Lessons Learned and Moscow's Progress in the meeting the related SDGs

### e-governance:

- Lessons: e-governance systems such as Active Citizens and Our City play a pivotal role in receiving inputs to public policies from citizens, as well as bring accountability and transparency to city's officials.
- The SDG's targets that were met by these initiatives:
  - ***Target 16.7: Ensure responsive, inclusive, participatory and representative decision-making at all levels.***
  - ***Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.***

\*Please check the case study for a completed list.



# Feedback from Moscow

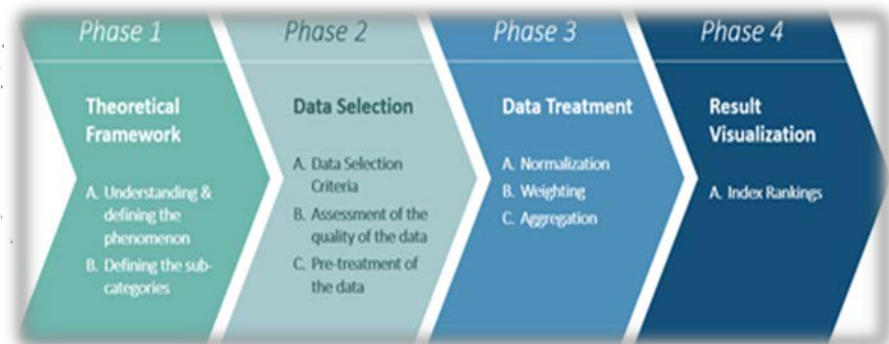
- Moscow has suggested improving the clarity of the definitions of the KPIs, in order to help cities to pinpoint the data sources needed for the KPIs.
- Moscow has also proposed the following potential new KPIs that would enhance the participating city's profile generated through the reporting of those KPIs:
  - 1) Average cost of housing / average salary;
  - 2) Volume of online transactions / volume of operations for cash;
  - 3) Changes in average salary over years;





# Global Smart Sustainable Cities Index

- Data collected for the KPIs for SSC will be used to develop *the Global Smart Sustainable Cities Index*, which is a tool intended to show the effectiveness of a city's smart initiatives and its progress in reaching the SDGs in comparison to other cities.
- The Index is currently being developed by ITU and Smart Dubai.



Planned Phases for Construction of the ITU Index



**Thank you!**