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KPIs on Smart Sustainable Cities



Why do cities need KPIs?

Cities are the hubs of innovation that drive economic development, however, in the nascent period of a city's growth, urbanization can have adverse effects on the environment and on its citizens.

As we move forth on striving to achieve the Sustainable Development Goals (SDGs), cities have been encouraged to use information and communication technologies (ICTs) to address urban challenges and provide a better quality of life to its inhabitants.

Consequently, the Smart Sustainable Cities (SSC) paradigm has gained momentum. Using ICTs offers urban stakeholders: (i) **the benefit of efficiency in urban operations and services**, (ii) **means to improve quality of life (QoL)**; and (iii) **the cultivation of environmental sustainability**.

At this stage, it is important to be able to measure the performance of various smart sustainable city ventures. One such approach for measurement is provided by key performance indicators (KPIs) that facilitate the monitoring of the progress achieved in smart sustainable city transitions.

Get ready to innovate today for a sustainable tomorrow!

As the establishment of SSC is a long term process and cannot be achieved overnight, it is essential that a set of indicators are defined that would not only allow for comparability but would also promote sustainable development along with each city being able to quantify improvements as time passes.

In this regard, the [United for Smart Sustainable Cities \(U4SSC\)](#) initiative has developed a set of international key performance indicators (KPIs) for Smart Sustainable Cities (SSC) to establish the criteria to evaluate ICT's contributions in making cities smarter and more sustainable, and to provide cities with the means for self-assessments to achieve the sustainable development goals (SDGs).

These indicators have been developed to provide cities with a consistent and standardized method to collect data and measure performance and progress to:

- Achieving the Sustainable Development Goals (SDGs);

- Becoming a smarter city; and

- Becoming a more sustainable city.

You cannot manage what you cannot measure!

City leaders will benefit from these KPIs in terms of strategic planning and measurement of the city progress towards their individual smart city goals.

The indicators will enable cities to measure their progress over time, compare their performance to other cities and through analysis and sharing allow for the dissemination of best practices and set standards for progress in meeting the Sustainable Development Goals (SDGs) at the city level.

Each indicator forms part of a holistic view of a city's performance in three dimensions: Economy, Environment and Society and Culture. Each of these dimensions provides a separate view of progress and when reported together provide a holistic view of a smart sustainable city.

Within each dimension, there are sub dimensions that focus on more specific areas of performance and progress. An example is the ICT infrastructure sub-dimension which provides a more in-depth view at how ICTs are deployed and used within a city.

The indicators are further sub-divided into core and advanced indicators. Core indicators are those that should be able to be reported on by all cities, provide a basic outline of smartness and sustainability and higher levels of performance can generally be achievable. Advanced indicators provide a more in-depth view of a city and measure progress on more advanced initiatives, however, they may be beyond the current capabilities of some cities to report or implement.

These indicators will also form the basis for the U4SSC Smart Sustainable City Index. The index will collect the reported indicators values along with data about the profile of the city to provide a comparative ranking of cities. Each indicator has been chosen through a process of review and input by international experts and UN agencies, programmes and secretariats to ensure that the data collected supports the SDGs, is relevant to measuring progress in becoming smarter and more sustainable and provide a basis for comparison.

The KPIs for SSC aim to assess how the use of ICTs has an impact on the environmental sustainability of cities.

Implementing SSC KPIs also help businesses to grow by boosting the performance and consistency of the desired outcomes.

These KPIs also allow for the demonstration of the feasibility of rapidly progressing towards the set energy and climate objectives at the city level, while proving to citizens that their quality of life (QoL) and local economies can be improved by consistently measuring energy efficiency and reduction of carbon emissions using ICTs.

These KPIs will also foster the dissemination of efficient SSC models and strategies by bringing various cities on a level playing field and allowing for the progress towards a low carbon future.

The intention of identifying the KPIs is to establish the criteria to evaluate ICT's contributions in making cities smarter and more sustainable, and to provide the cities with the means for self-assessments.

It is desirable that cities can quantify their achievement according to their goals. Therefore, by utilizing these indicators, cities as well as their stakeholders can also objectively assess the extent to which they may be perceived as smart sustainable cities.

Surging forward with U4SSC SSC KPIs

The evaluation of SSC using U4SSC KPIs aims to improve the urban functionalities, improve quality of life, and ensure environmental, economic and social sustainability.

U4SSC believes that SSC projects will thrive based on their ability to identify, define, and monitor their actions.

As the goals for moving towards increased smartness and sustainability differ between cities, based on their economic power or/and population growth etc., cities are encouraged to use internationally standardized KPIs before they embark on their SSC journey.

Over 50 cities worldwide are already implementing these KPIs, including Dubai, Singapore, Manizales, Montevideo, Maldonado, Foshan, Wuxi, Guangshan, Kairouan, Pully, Moscow, Valencia and Rimini have asked ITU for assistance in guiding them in the SSC process and implementing the U4SSC KPIs.

Cities are expected to significantly benefit from using these KPIs that take into account the elements of a smart sustainable city that crucially rely on ICT and offer a credible measure of progress on SSC transitions.

KPIs Principles

Comprehensiveness: The set of indicators should cover all the aspects of SSC. The indicators of evaluation should be aligned to the measured subject, i.e., ICT and its impact on the sustainability of cities.

Comparability: The KPIs should be defined in a way that data can be compared scientifically between different cities according to different phases of urban development, which means the KPIs must be comparable over time and space.

Availability: The KPIs should be quantitative and the historic and current data should be either available or easy to collect.

Independence: The KPIs in the same dimension should be independent or almost-orthogonal i.e., overlap of the KPIs should be avoided as much as possible.

Simplicity: The concept of each indicator should be simple and easy to understand for the urban stakeholders. The calculation of the associated data should also be kept intuitive and simple.

Timeliness: This refers to the ability to produce KPIs with respect to emerging issues in SSC construction.

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