

Goal 11

Target number: 11.7

Indicator Number and Name: 11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities

Agency: UN-Habitat

Has work for the development of this work begun? Yes

Who are the entities, including national and international experts, directly involved and consulted in developing the methodology/and or data collection tools?

UN-Habitat is the lead in global reporting and is directly working with national statistical agencies for reporting at national levels. UN-Habitat and other partners including other private and regional commissions are leading the efforts of building national capacities to monitor and report on this indicator. The following partners were consulted in the development of this indicator: UNSDSN, European Commission, New York University, World Bank, UNFPA, UN-DESA, ICLEI, DANE, Penn Institute, Tellus Institute, Centre for Livable cities, DANE, ESRI, INEGI, New School-New York, GvSig, ICL, WCCD, Urban Institute, ESA, NASA, EC, etc.

What is the involvement of or how do you plan to involve National Statistical Systems in the development of the methodology?

UN-Habitat has a global network of urban observatories who work closely with the National statistical systems in many countries to collect and monitor urban spaces and indicators. These networks have been used to engage national statistical agencies, regional bodies and international organizations in the further development of this methodology. In addition, member states were consulted directly. A methodological development and review phase was concluded in January 2017, where experts agreed that the method proposed was agreeable and was already being applied in several cities and countries.

Please briefly describe the process of developing the methodology for the indicator

UN-Habitat organised several expert consultations (virtual and Face-to-Face), in collaboration with several partners involved in the development of this methodology. The consultation involved representatives from national statistical agencies, independent scholars and representatives of the private sector and the civil society. The consultation focused on harmonization of definitions and standards such as the city, public spaces, safety, etc. A global guide on public spaces was developed which is now available for many countries and cities as an updated version of 2017 see: <https://unhabitat.org/wp-content/uploads/2015/10/Global%20Public%20Space%20Toolkit.pdf>.

Several countries and cities are now involved in mapping the open public spaces and accounting for their share of land in cities or urban areas.

Please indicate new international standards that will need to be proposed and approved by an intergovernmental process (such as UNSC) for this methodology.

This indicator required setting new international standards and agreeing on concepts prior to global data collection. Definitions such as the 'Built-up area' which is currently defined as that part of a city which is

the contiguous area occupied by buildings and other impervious surfaces including the urban vacant areas in and around them but excluding rural areas beyond the urban fringe, were discussed through EGM and global consensus agreed upon. Also the population definition to be applied for this indicator was discussed with a global agreement reached. Currently, the ‘population’ of a city is defined as the sum of the population in the set of administrative districts that together encompass the ‘built-up area’ of that ‘city’ in the year that measurements are taken. The method for computation was also discussed as part of the international standards to be agreed upon. Currently we have proposed the method to estimate the area of public space based on three steps: a) spatial analysis to delimit the built-up area of the city; b) estimation of the total open public space and; c) estimation of the total area allocated to streets.

When do you expect the methodological work on this indicator to be completed?

The work was completed in June 2017 and now pilots and direct data collection is on-going to test the reporting mechanisms at the city level and aggregating at the national levels. Today, a significant amount of data is available from the urban expansions project work implemented in 200 global sample of cities. Also cities participating in the City prosperity Initiative are reporting data on open public spaces.

Are data and metadata already being collected from the National Statistical System for one or more components of this indicator?

Yes,

If yes, please describe:

Data for this indicator has been generated for several cities based on secondary data sources that come from the National Statistical Systems and complemented by GIS data from other partner sources (European Commission, GvSig, etc). Analysis has been done for over 300 cities which form part of the City Prosperity Initiative and urban expansions project led by UN-Habitat.

How do you plan to collect the data?

Data for this indicator comes from various sources including Household survey data to map public spaces, GIS data from various partners, land use maps from National statistical systems and city planning departments, and supplementary data is being collected via mobile phone mapping and data collection technologies. This includes a substantive amount of data used for local validation of the open spaces attributes.

If the indicator involves multiple components from different data sources, please describe how each individual component of the indicator will be collected here.

Each country national government take responsibility on data collection and validation for data of this indicator. Efforts are in place not to excessively over burden countries in the data collection through simplifying and sharing the most cost effective way to undertake the data collection using GIS initially and ground-truthing steps.

Household level data is available from the rosters of many national statistical systems. Additional GIS /maps data is available from National statistical systems.

GIS data and satellite images with high resolutions are being obtained from other third party agencies such as European space agency, Google, NASA etc and shared with countries and cities.

Land use maps are being obtained from city planning departments. Additional data such as access, safety is collected using mobile phone based technologies that we developed in-house.

With what frequency is data expected to be collected?

Data is collected now but meaningful reporting will be every 4 years depending on the national statistical calendars of various countries. Household's level survey data is available from every 3-5 years. GIS and land use maps data will be available every three years, while Mobile data collections will happen every two years, with updates in subsequent years.

Is there a process of data validation by countries in place or planned for this indicator?

Yes

If yes, please briefly describe:

Capacity building exercises are ongoing at regional and at country levels. Data is being validated at a country level and the team at UN-Habitat together with other partners are providing technical support for both data collection and validation at city and national levels.

If you have any additional comments that you believe would be helpful to IAEG-SDG members in analysing the work plan and methodological development of the indicator, please provide them here:

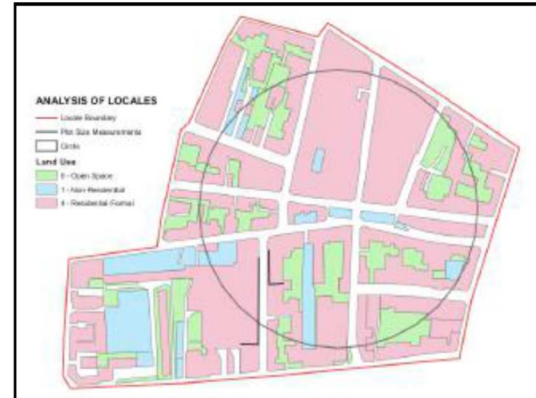
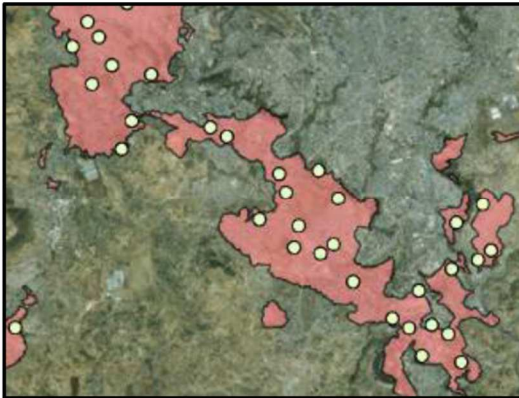
This indicator has been collected for over 300 cities as part of the city prosperity initiative under UN-Habitat and the urban expansions project. The methodology development was finalized and a full database compiled with several data pointed now featured. In our view (UN-Habitat), this indicator should be Tier II due to the volume of already available data collected and accumulated in the last three years. The current method of computation is described below;

Methods for Computation of the Proposed Indicator:

The method to estimate the area of public space is based on three steps: a) spatial analysis to delimit the built-up area of the city; b) estimation of the total open public space and; c) estimation of the total area allocated to streets.

- a. ***Spatial analysis to delimit the built-up area.*** Delimit the built-up area of the urban agglomeration and calculate the total area (square kilometers). Land use maps, inventories to be locally generated to identify public spaces if possible complemented by fieldwork.
- b. ***Computation of total area of open public space.*** Map and calculate the total areas of open public space within the defined urban boundaries based on the built-up area. The inventory of open public spaces is digitalized and vectorised using GIS software to allow computation of surfaces. The total of open public area is divided by the total built-up area of the city to obtain the proportion of land allocated to public spaces.
- c. ***Estimation of the land allocated to streets.*** Calculation of the total area allocated to streets based on sampling techniques with a random sample of 10 hectares locales is selected out of a complete listing of the all hectares locales that form the city, using the built-up area definition indicated above.
 - The sampling relies on a **Halton Sequence of coordinates** that, when repeated, always selects the same points (see figure 1)

Figure 1: The spatial distribution of randomly selected 10-hectare locales in an area of Addis Ababa, Ethiopia, built between 1990 and 2012 (left); and the analysis of a 10-hectare locale in Paris, France (right).



- **Locales** are defined as a set of city blocks surrounded by streets, and bounded by the medians of all blocks that intersect the randomly selected 10-hectare circle (see figure 1). Blocks are considered built-up if more than half of the block is built-up.
- The **share of the land in streets** in the locale is then calculated as the **ratio** of the area of the locale in streets and boulevards and the total built-up area in the locale.
- The **share of the land occupied streets** in the locale is then calculated as the **ratio** of the area of the locale occupied by streets and boulevards and the total built-up area in the locale.
- The average share of land in streets in a given city is then calculated by sampling more and more locales until the **variance between the shares of land in streets declines below an agreed-upon value**. Using this stopping rule, it becomes possible to obtain a statistically reliable average value.⁴⁵

$$= \frac{\text{Share of the built up area of the city that is open space in public use (\%)}}{\text{Total surface of open public space + Total surface of land allocated to streets}} \\ \text{Total surface of built up area of the urban agglomeration}$$

(as of July/August 2018)