

# Capacity Development on SDGs Indicators' Monitoring and Reporting

Indicator 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

Capacity Building Webinar,  
Series of SDG Webinars for the Arab Region  
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UN-HABITAT



**DATA AND ANALYTICS**

KNOWLEDGE AND INNOVATION BRANCH

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## Outline

- Rationale for monitoring indicator
- Indicator components and concepts
- Computation
- Emerging challenges and opportunities
- Data for Arab States



People sit at Jeevanjee Gardens during lunch break © Mark Ojal

## Rationale - Why monitor

- Public space (including streets) **affect urban functionality** and urban prosperity - attracts investment, increases property value
- Contributes to value added to a **city's** cultural, historical and architectural endowment, thus its **attractiveness**
- Supports **inclusion**, equity and socio-cultural interaction
- Enhances **safety** - Well-designed and well-maintained streets and public spaces can help to reduce fear of crime and violence and contribute to improved safety.
- Improves **public health** - physical and mental
- Increases **mobility**, productivity
- Improves the **environment** – e.g Green and open public spaces
- Promoting **inclusion** – which is achieved through creation and/or improvement of spaces to be friendly to women, children, youth and the elderly
- **A city's provision for, or need to provide these spaces is thus important**



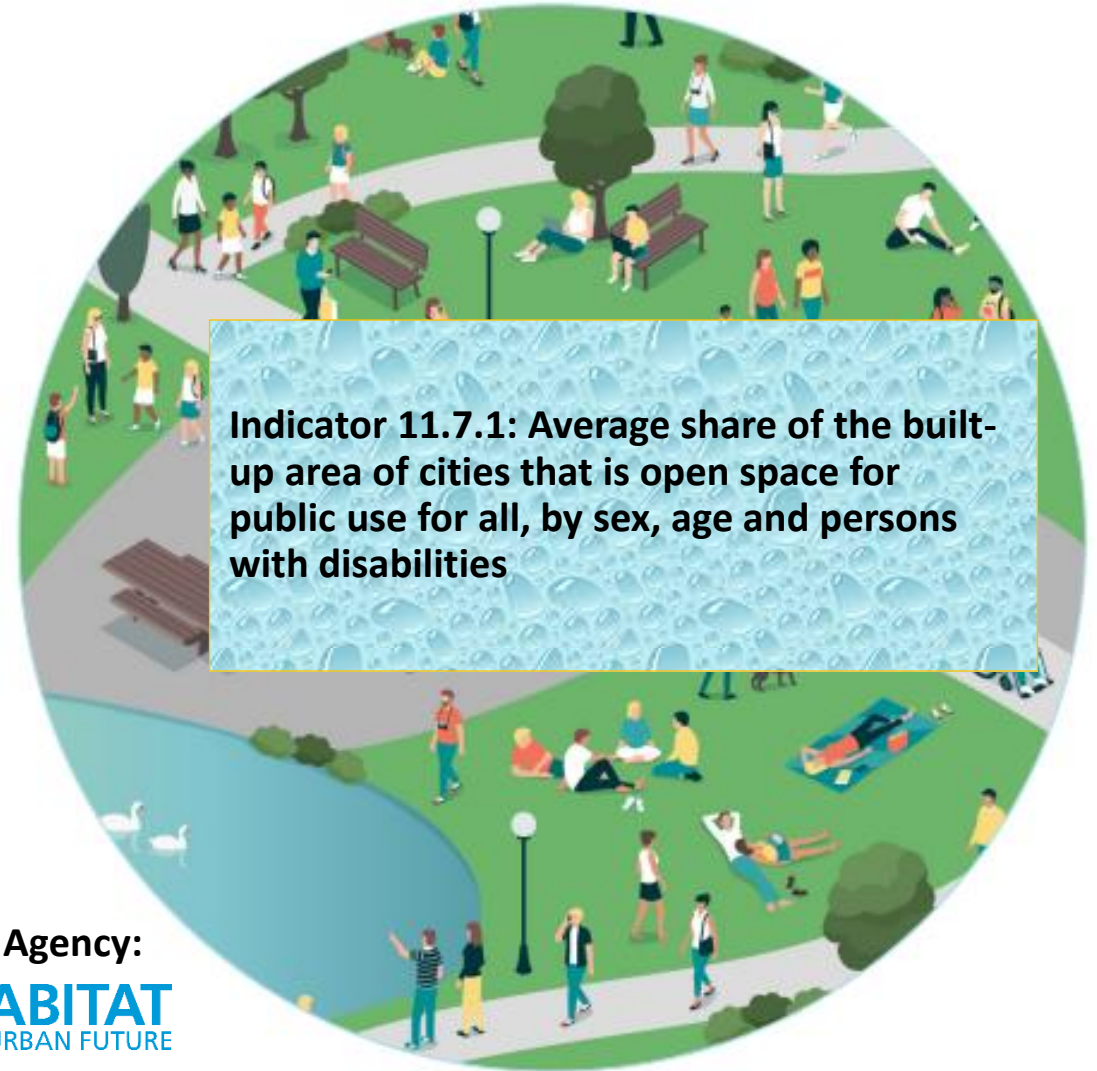
People from all walks of life enjoy at Uhuru Park © Sayyid Azim/AP

# Indicator Components



**Target 11.7: By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities**

**Tier II indicator**



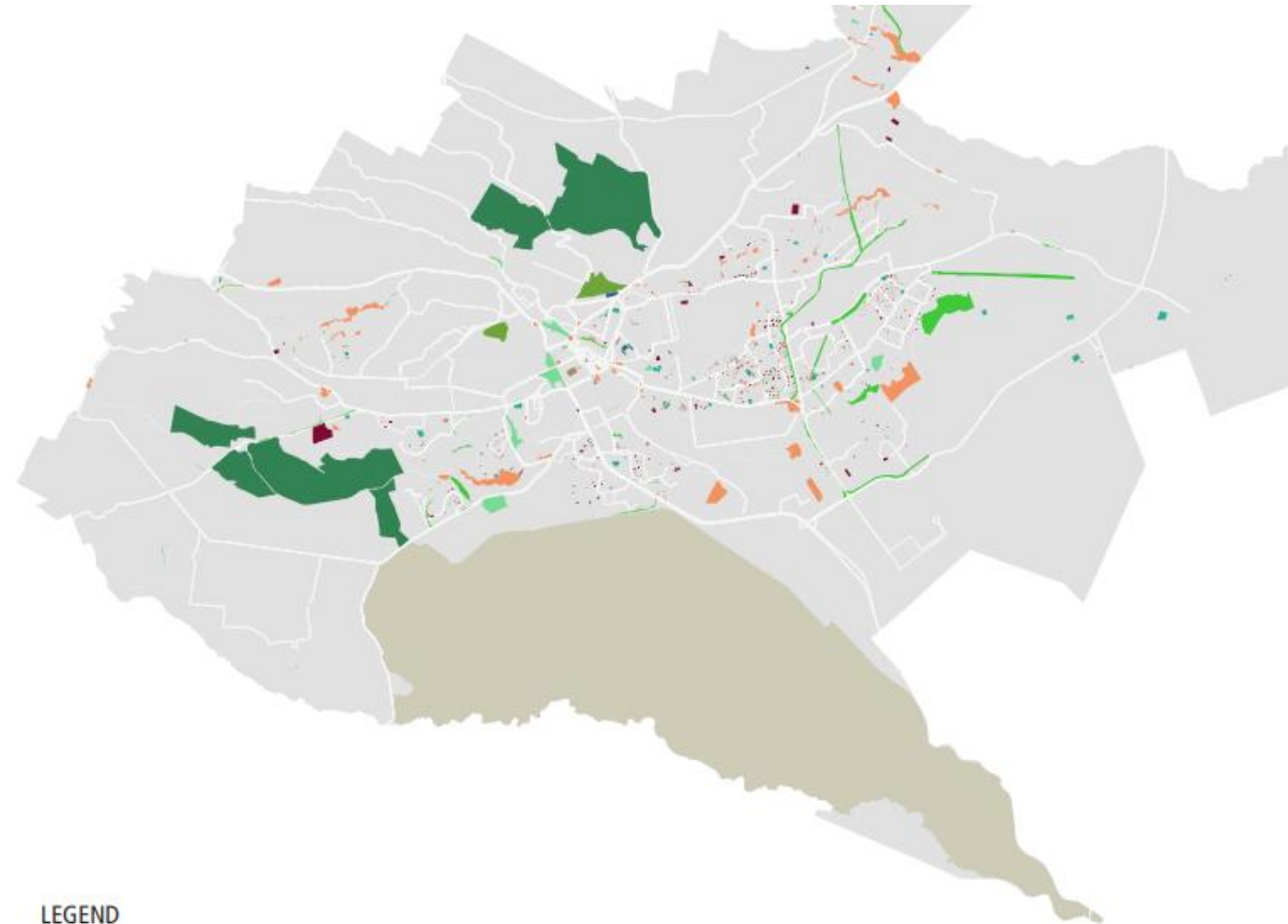
**Indicator 11.7.1: Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities**

**Custodian Agency:**

**UN HABITAT**  
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# Definition of concepts

- **Public Space** – “all places publicly owned or of public use, accessible and enjoyable by all for free and without a profit motive” (The Charter of Public Space). Officially constitutes-
  - **Streets** - *avenues and boulevards, squares and plazas, pavements, passages and galleries, bicycle paths, sidewalks, traffic islands, tramways and roundabouts.*
  - **Public Open Spaces** - undeveloped land that is accessible to the public, and that provides recreational areas for residents and enhances environmental quality. *E.g.s parks, gardens, playgrounds public beaches, riverbanks and waterfronts.*
  - **Public facilities** - high maintenance amenities that are publicly owned and maintained and are accessible to users without any charge, e.g.s public libraries, civic/community centres, public sports facilities.
  - **Public commercial spaces** - areas in which the socio-economic dimension of the city is always expressed. *E.g.s markets, accessible commercial fixed premises, public venues*



## LEGEND

 Sports field	 Squares	 Playgrounds	 Parks & Gardens	 Infrastructure Rights of Way
 Cemeteries	 Courtyards	 Others	 Urban forests	 Nature reserves

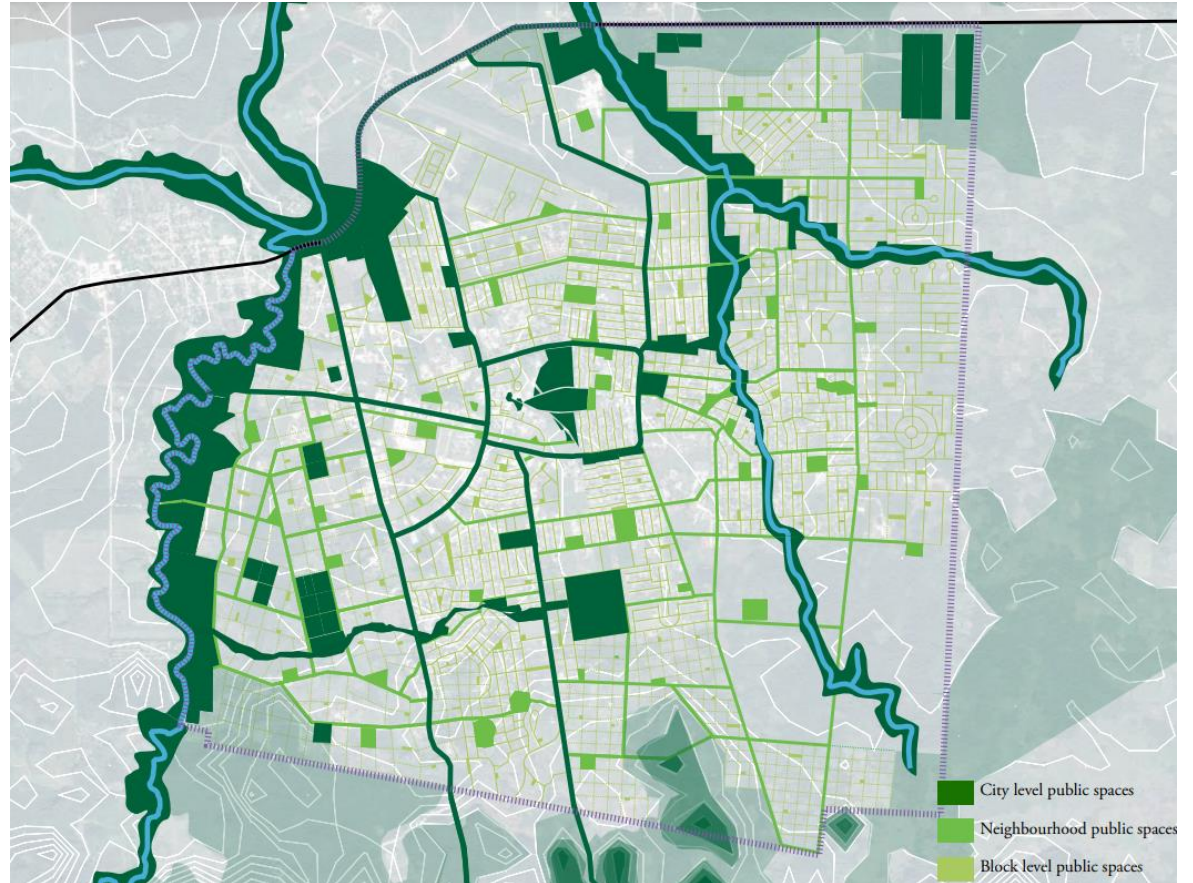
Above: A map showing typologies of public open spaces in the city county

- **Indicator 11.7.1 measures only streets and public open spaces**

# Categorization of Public Open Spaces

Public open spaces can be categorized into four broad levels, based on their individual sizes and catchment (how far a user might travel to visit them):

- 1. Local/pocket open public spaces** – These are small *parklets* that service the recreation needs - averages 0.03 to 0.04 Ha.
- 2. Neighborhood public open spaces** – these are larger spaces which serve the recreational and social needs of a community – averages 0.04 and 0.4 Ha.
- 3. District/city open spaces or city open spaces** – these spaces are mainly designed to provide for organized formal sport – averages 0.4 to 10 Ha.
- 4. Regional open space/Larger city parks** – these are substantial facilities for organized sport, play, social interaction, relaxation and enjoyment of nature- range between 10 and 50 hectares.
- 5. National/metropolitan open public spaces** – these are large spaces whose areas range from 50 and 200 Ha.



Source: UN-Habitat/public space programme, City-wide public space strategies: Guide for local governments, draft report 2018

# Indicator Computation Components

## Components

1. Land allocated to streets (area)
2. Open public spaces (area) and estimated population with access to public open spaces (percentage)

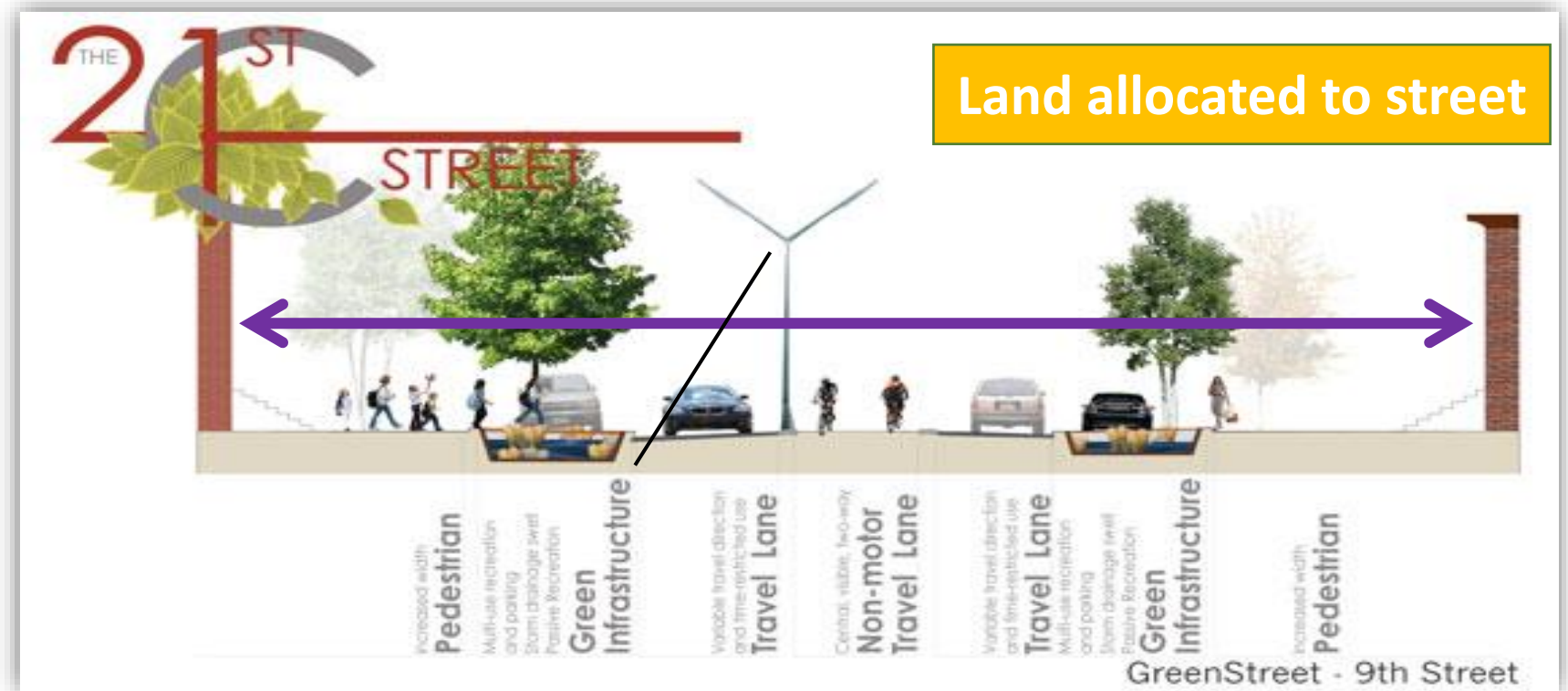


Image source: <https://nyc.streetsblog.org/2008/11/06/designing-nyc-streets-for-the-21st-century/>

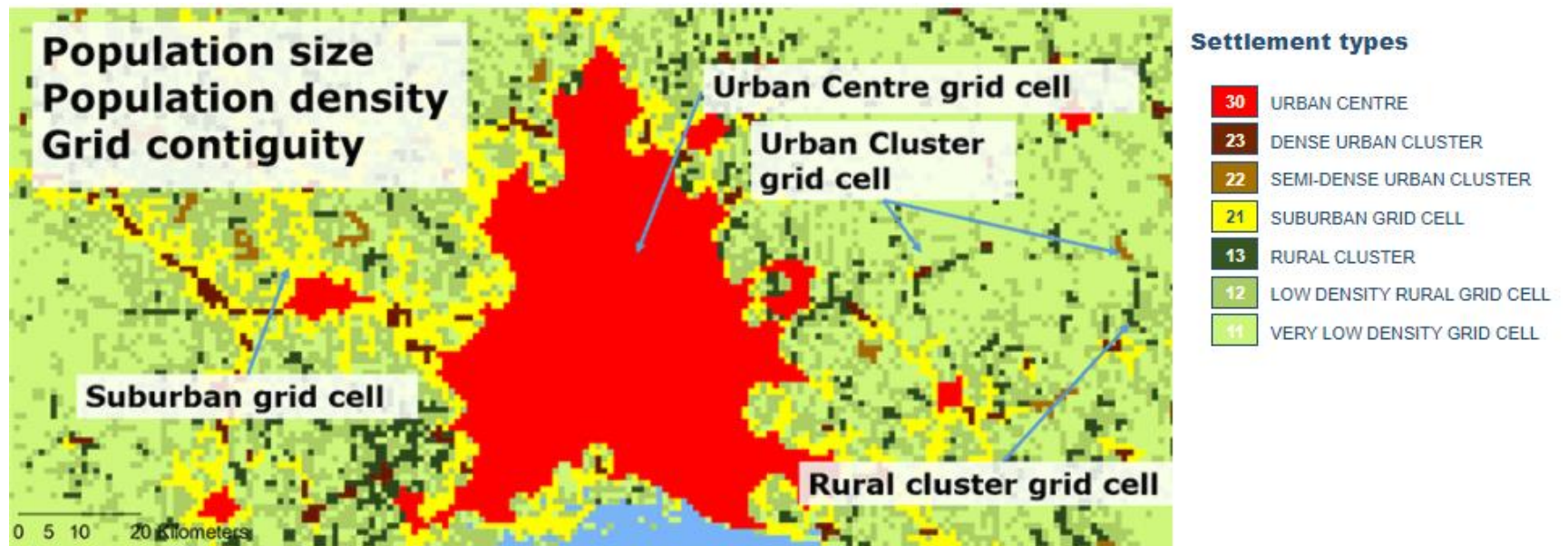
**Land allocated to streets** – total area of urban surface consumed by all forms of streets – the thoroughfare, walkways, green areas, etc

# Component 1: Computing Land Allocated to Streets

- **Approaches**

- Method 1: Where streets data exists
- Method 2: Where no street data exists, but exists in open data or easy to generate
- Method 3 : Where no street data exists, and data is not easy to generate

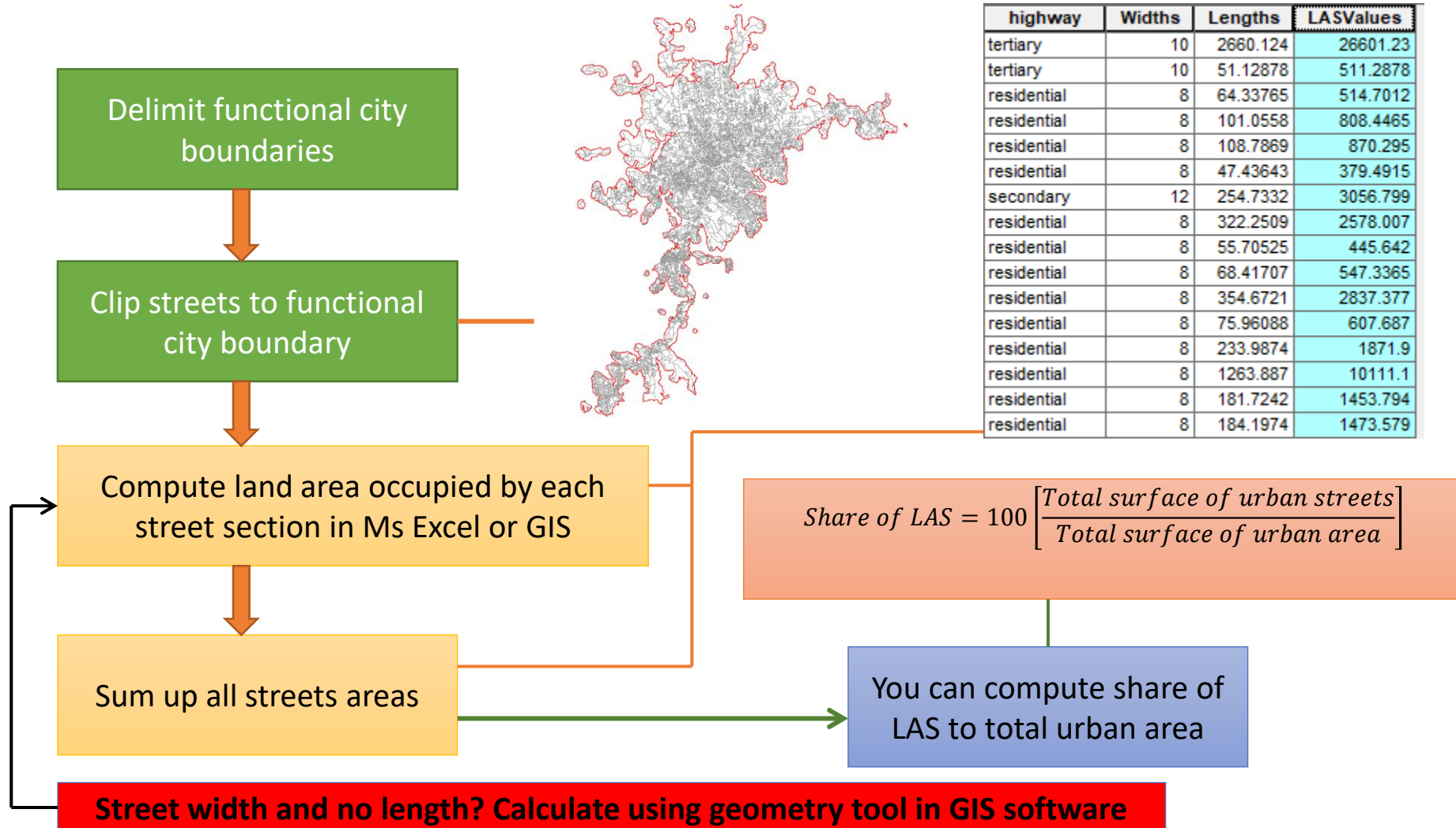
Delimitation of the functional city boundaries should always be the first step in the computation of this indicator, since it helps narrow down the scope of data collection (refer to presentation on city definition)





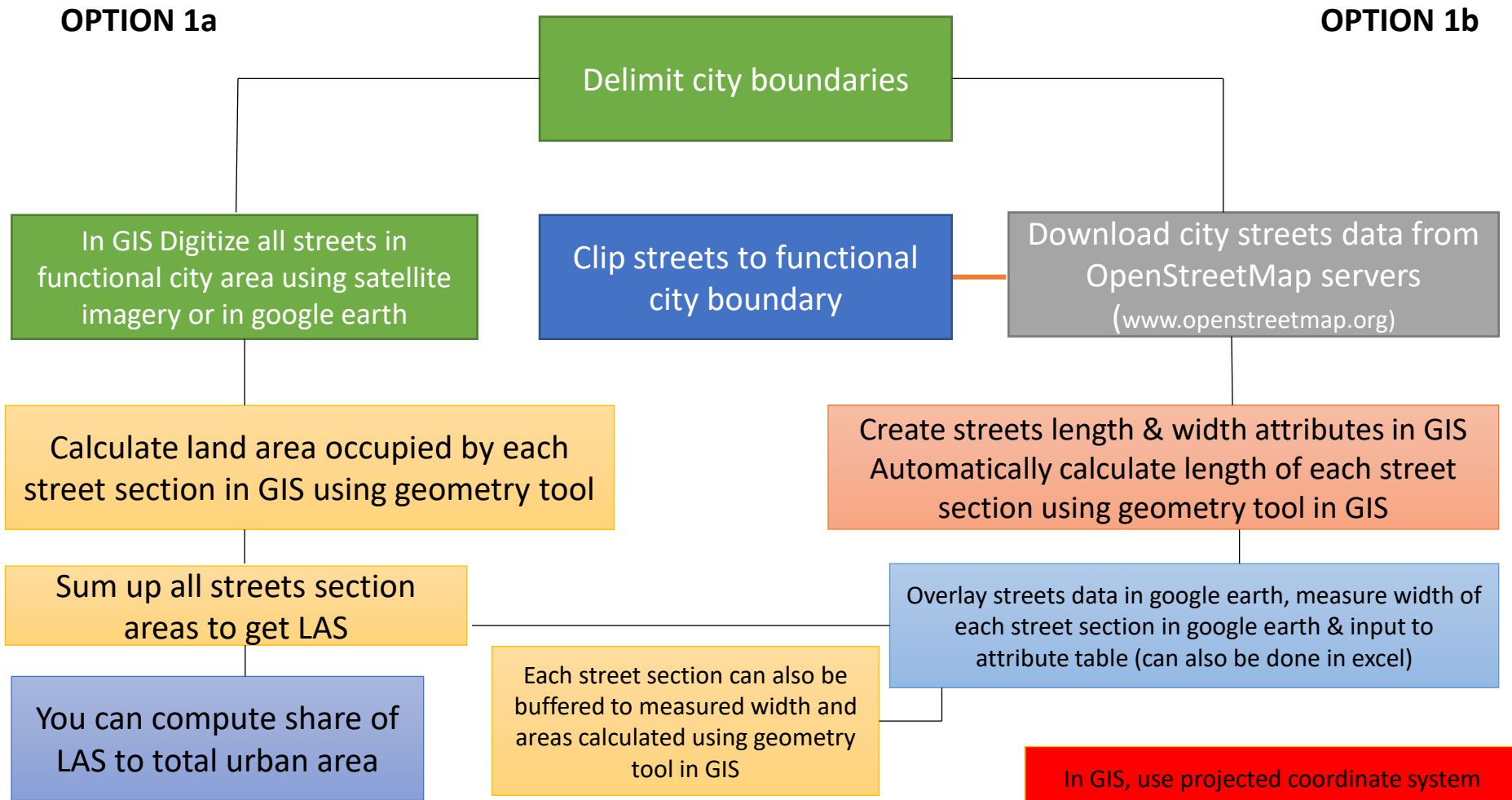
# Land Allocated to Streets: Method 1 - Applies where data on roads, lengths and widths exists

Method 1: Estimation of the land allocated to streets (LAS) where street length and width exist



# Land Allocated to Streets: Method 2A – Applies where open data can be accessed or streets can be digitized

## Method 2: Estimation of the land allocated to streets (LAS) where street data not existing



## Gaps in Open Data



### Notes:

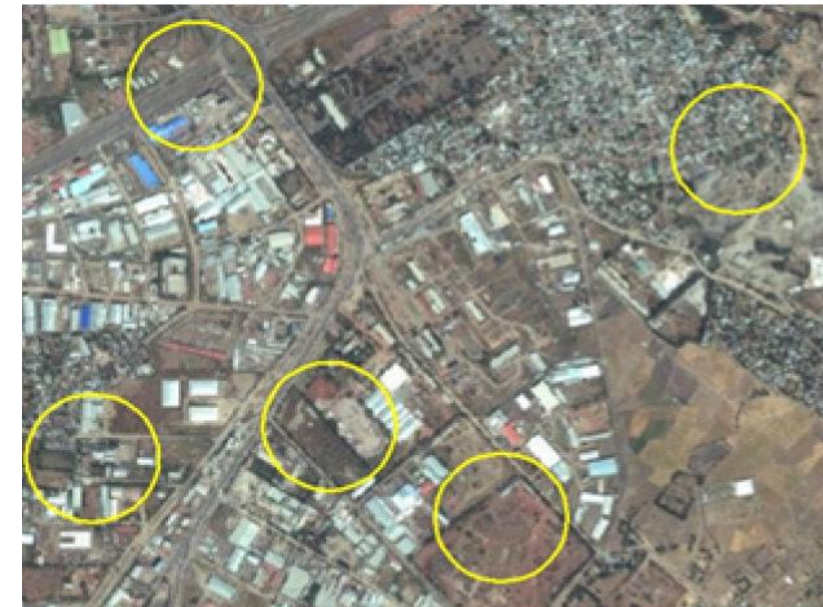
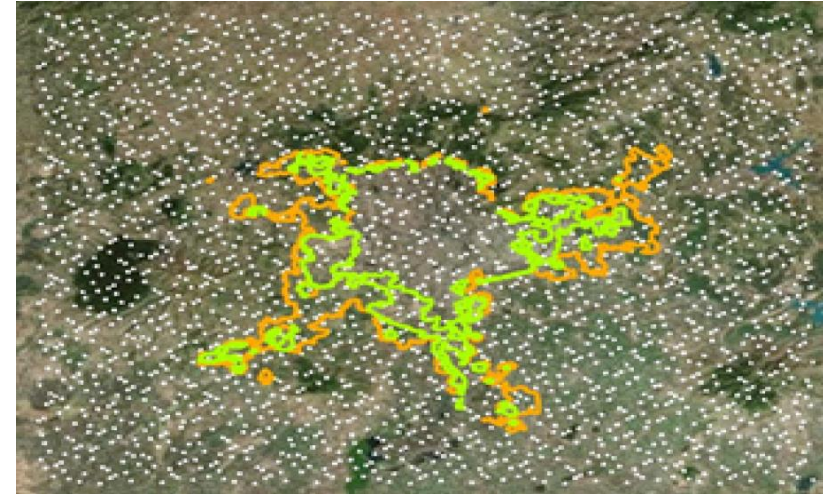
- 1) The Open Street Map is often not complete and needs validation and updating
- 2) Roads are classified based on the OSM classification, but widths of roads are not in the attribute tables (different cities have different widths for the same class of roads)

In GIS, use projected coordinate system

## Land Allocated to Streets: Method 3 – Applies where no street data exists, and data is not easy to generate

### Method 3: Estimation of LAS where street data not existing: Spatial Sampling

- Using functional city size, create a sampling frame in GIS software.
  - Halton Sequence of Points is proposed as sampling method because it generates better spatial distribution and can generate the same points for the same area when applied repeatedly using same input values
- Sampled points should be proportional to the city size for high accuracy – **variance calculator** can be used to determine number of required points per city
- Buffer each sampled point to a radius of 178.4 meters, so as to attain a sampling area of 10 hectares.
- Digitize all streets in each locale and measure their areas in GIS software
- Compute total city LAS by averaging LAS for each sampling area

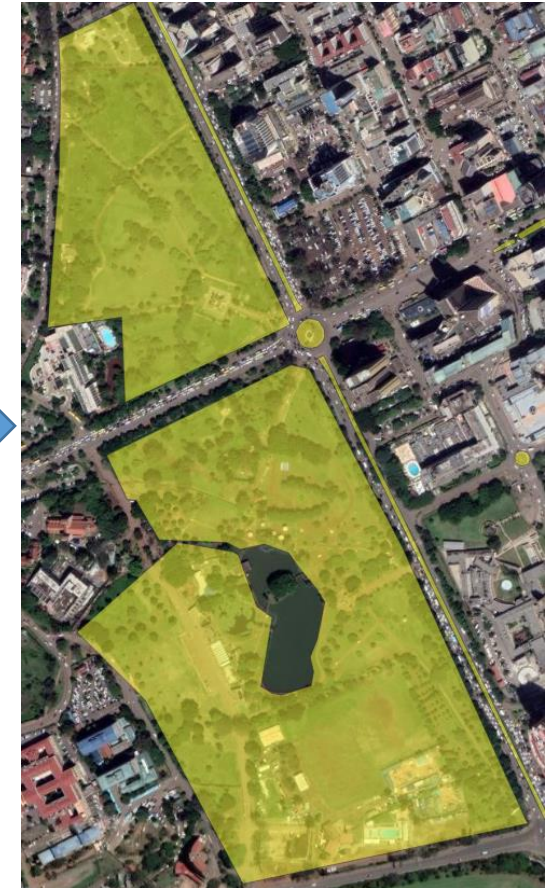
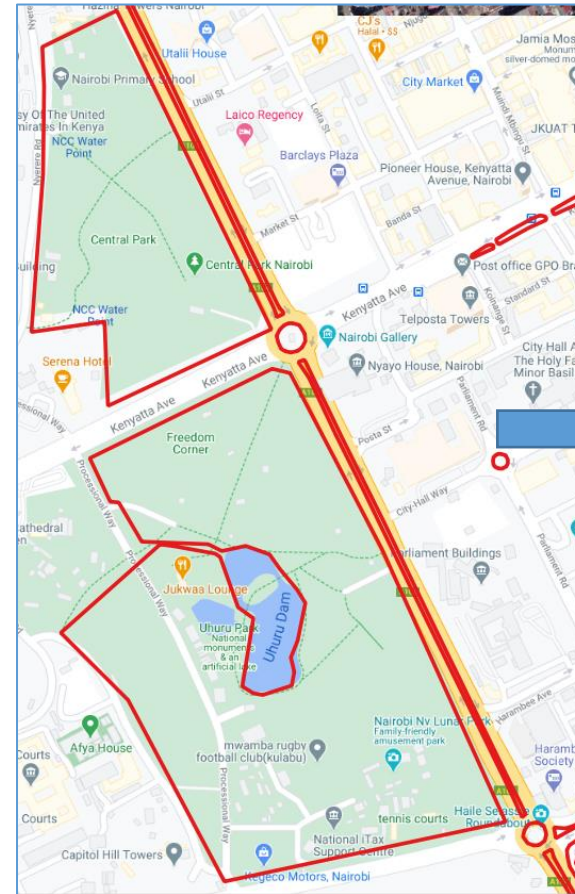




# Component 2: Estimation of the share of city land allocated to open public spaces (OPS)

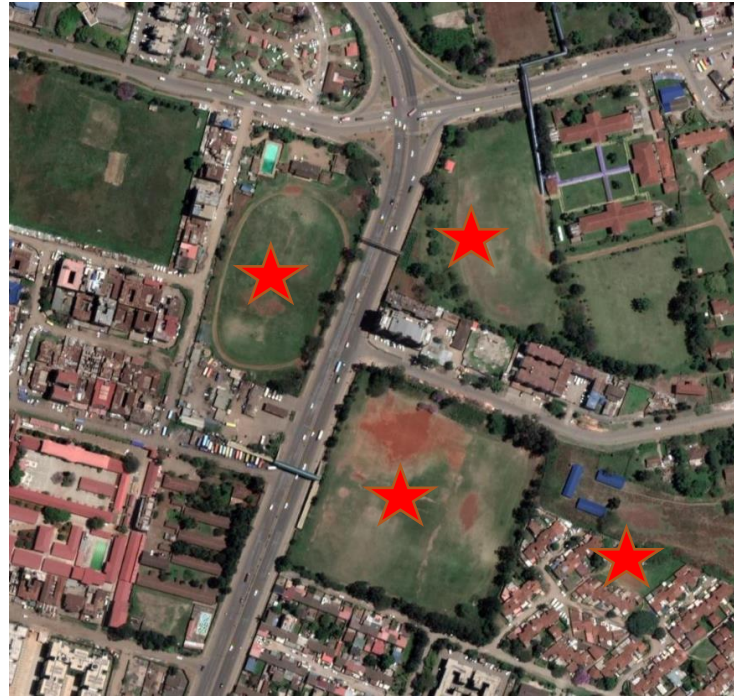
**Approach 2: In absence of city level data, satellite image based analysis helps create baseline data**

- Extract potential open public spaces from satellite imagery/ google street map etc based on character, structure, shape of spaces – local knowledge on location of spaces helps reduce error
  - Some imagery platforms contain detailed and labelled data on open spaces eg. google streets, openstreetmap
- Validate data through expert consultations, participatory desktop mapping, cross checking with city plans, etc.
  - UN-Habitat has developed a tool for ground validation of the spaces which is openly available for cities.
- Compute actual amount of land occupied by open spaces



# Need for OPS Data Validation

Are these open spaces?



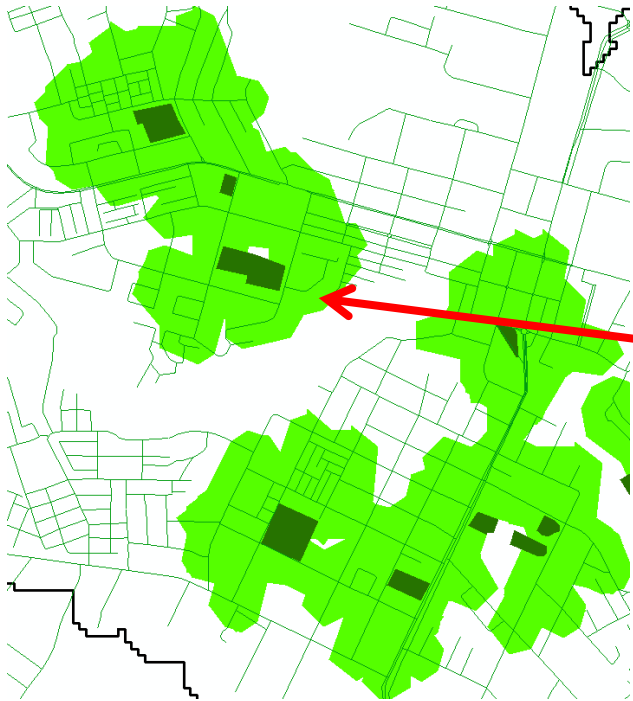
## Validation Options

1. Field visits
2. Meeting with local experts
3. Google earth open street view –
  - Allows for on-the-fly identification and pre-validation of Open Public Spaces
  - Based on 360 degrees 3D view of a potential space to validate based on given criteria – e.g presence of resting benches, etc

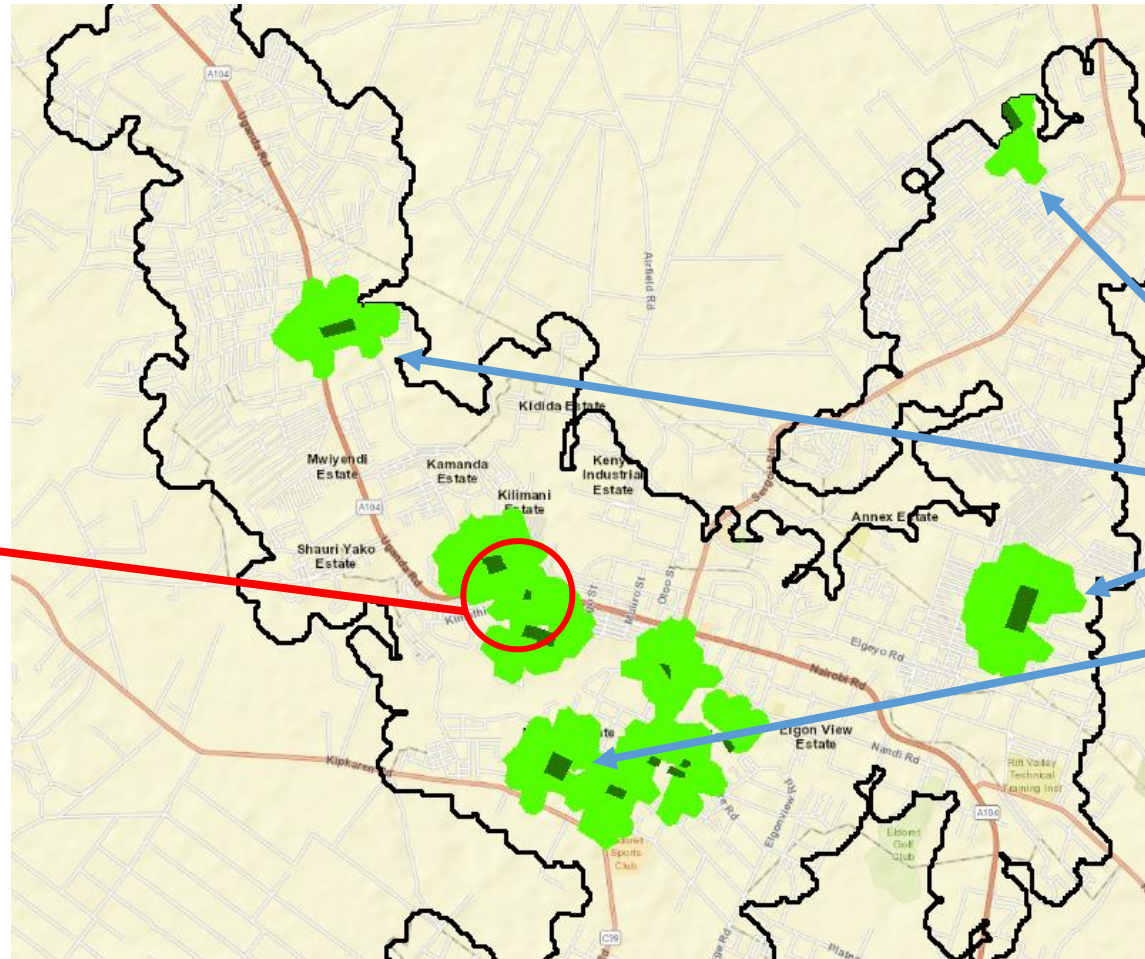


# Delimit areas with access to identified open public spaces

Create service areas using GIS tools



Example of Eldoret



NOW...

Estimate population with access to open public spaces

How many people live in the enclosed areas?

- Access to open public spaces is measured by delimiting areas within 400 meters walking distance along street network
- Service areas created in GIS using network analyst extension; Service areas for all spaces merged to avoid double counting



# Estimate population with access to open public space

- Estimate the total population in city by overlaying with a the population layer e.g. High Resolution Settlement Layer, GHS-Pop, High Resolution Settlement Layer, WorldPop, or locally created population grid, and summarizing population.

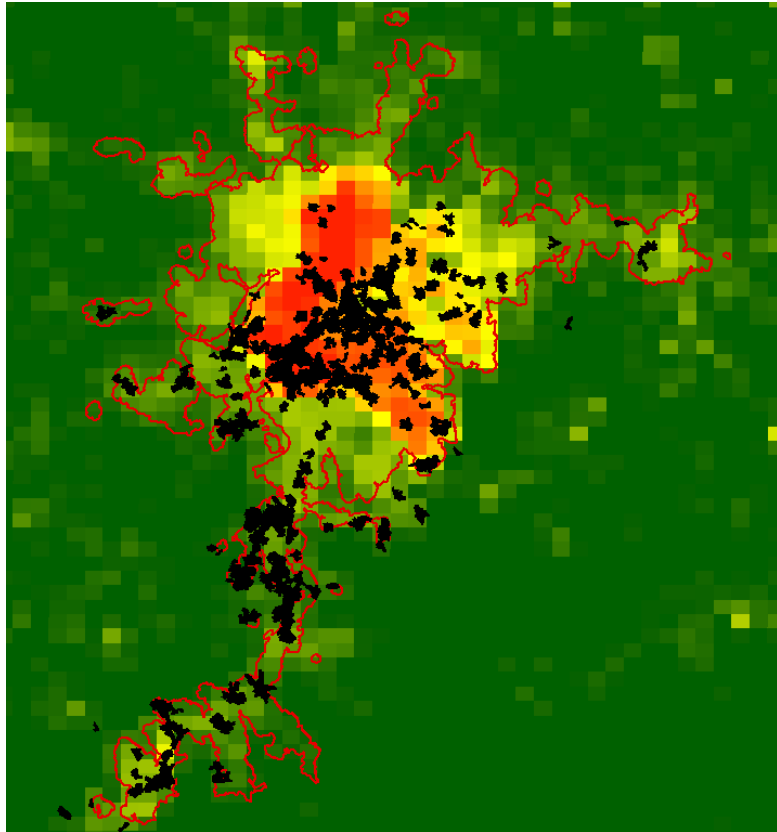
## Compute Indicator

$$\text{POPS} = 100 \left[ \frac{\text{Total surface of Open public space} + \text{Total land allocated to streets}}{\text{Total urban area}} \right]$$

$$\text{Access} = 100 \left[ \frac{\text{Total population within 400m walking buffers to OPSs}}{\text{Total urban population}} \right]$$

- **Disaggregate by:**
  - Age
  - Gender
  - Persons with disabilities

There is a major challenge of disaggregating the indicator by different groups where high resolution population data is lacking



# Data and Reporting for Arab States

## UN-Habitat's Support

Link with NSOs – data survey questionnaire, follow-up meetings, technical sessions, meetings

### SDG Indicator 11.7.1 Reporting Form

This is a tool to compile city and national official estimates for persons with disabilities".

#### Background

In 2015, the international community adopted the 2030 Agenda world-wide, ensuring that no one is left behind. The related Sustainable Development Goal is "inclusive, safe, resilient and sustainable", acknowledging that

As the custodian agency and as part of the monitoring and reporting built-up area of cities that is open space for public use for all, but information on indicator 11.7.1 as calculated using the international by your country will be verified, compiled and provided to UNS accurate information will be key in ensuring integrated and sus

#### Instructions

This tool is an Excel spreadsheet with three sheets. Sheet one provides for information on why the indicator is not being reported for and geospatial analysis processes. The information requirements available.

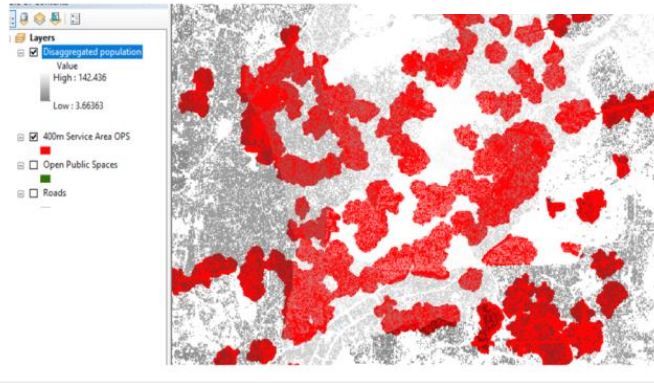
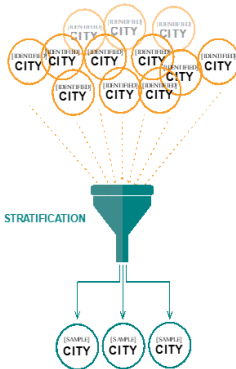
The calculations should be based on the following documents:  
a) Metadata for indicator 11.7.1  
b) Step by step module for computation for indicator 11.7.1

1. In sheet 2 (Public space indicators), please fill in
2. Enter your Country Name in row 5
3. Enter the names of the capital city and other cities
4. For each category of location (row 9 onward), (level population) may be useful in populating column H. Cells (
5. Enter data sources and year data collected in respective cells where such is applicable. Please also add any r
6. Go to row "Prepared by": Enter your name and
7. Go to row "Date": Enter the date the estimate
8. If your country is not collecting data or reporting (reporting)

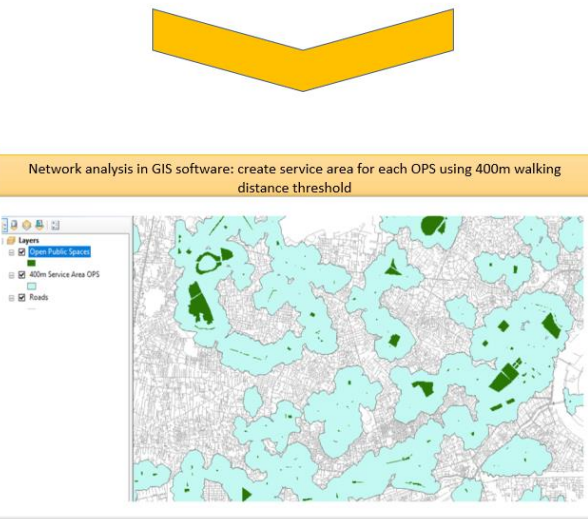
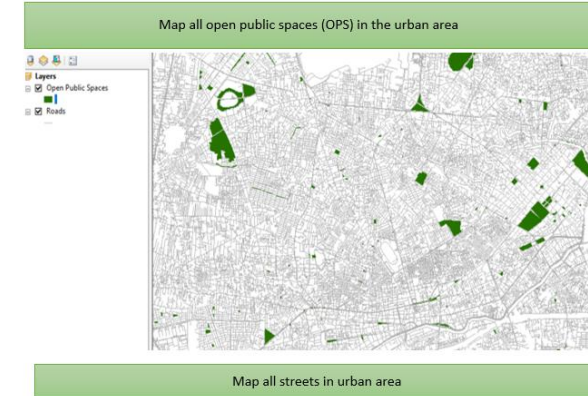
#### For more information:

If you need further information before using this tool, kindly contact (Dennis.Mwaniki@un.org) or by phone at +254 20762 4266/33

Select analysis city/urban areas (all urban areas in country or representative sample of cities)



Calculate % share of population within the service areas to total city/urban area population



<https://data.unhabitat.org/pages/guidance>

# Data and Reporting

## Data Collection Template

### a) National Indicator Value

	% Share of Land allocated to streets within urban areas	% Share of Land allocated to open public spaces within urban area	Average share of the urban area that is open space for public use for all (%)	Share of urban population within 400m walking distance to public open spaces (%)	Data Sources	Data reference year (please indicate if multiple years apply for different data)	Notes / comments (including links to relevant data sites)
National Average			0				

### b) City Specific Indicator Values

	Total city/urban area	Total population within city/urban area	Land allocated to streets within urban area	Land allocated to open public spaces within urban area	Average share of the urban area that is open space for public use for all (%)	Total urban population within 400m walking distance to open public spaces along street network	Share of urban population within 400m walking distance to public open space (%)	Data Sources	Data reference year (please indicate if multiple years apply for different data)	Notes / comments (including links to relevant data sites)
City/urban area 1_Name					#DIV/0!		#DIV/0!			
City/urban area 2_Name					#DIV/0!		#DIV/0!			
City/urban area 3_Name					#DIV/0!		#DIV/0!			
City/urban area 4_Name					#DIV/0!		#DIV/0!			
City/urban area 5_Name					#DIV/0!		#DIV/0!			
City/urban area 6_Name					#DIV/0!		#DIV/0!			
City/urban area 7_Name					#DIV/0!		#DIV/0!			
City/urban area 8_Name					#DIV/0!		#DIV/0!			
City/urban area 9_Name					#DIV/0!		#DIV/0!			
City/urban area 10_Name					#DIV/0!		#DIV/0!			
City/urban area 11_Name					#DIV/0!		#DIV/0!			

Reasons	Code	Select appropriate code
Multiple data requirements that cannot be addressed by the available data	1	
No data are available to calculate the SDG indicator	2	
Out of scope of official statistics	3	
Indicator is not relevant for the country	4	
Lack of understanding of methodology	5	
Lack of technical capacity	6	
Lack of data collection systems for generating required data (e.g. GIS)	7	
Other (please specify)	8	
If you are using a proxy indicator, please provide the definition and related methodology		
Any additional comments		

Prepared by:	
Date:	

Prepared by:	
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<https://data.unhabitat.org/pages/guidance>

# UN-Habitat Data Support

DATA BY THEME ▾

RESOURCES ▾

SDGs and NUA ▾

Download Spreadsheet	Explore Data	Indicator Title	Description
<a href="#">Download Spreadsheet</a>	<a href="#">View Data</a>	SDG 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	Data on a) the estimated share of urban areas allocated to streets, b) estimated share of urban areas allocated to open public spaces c) estimated share of urban areas in both streets and open public spaces, and d) estimated share of urban population within 400 meters walking distance along the street network to an open public space.

# UN-Habitat Data Support

## Urban Indicators Database

City	Country	Estimate_Year
Bahrain	Bahrain	2020
Al_Qhurdaqah	Egypt	2020
Port Said	Egypt	2020
Baghdad	Iraq	2020
Amman (Includes Az-zarqa)	Jordan	2020
Kuwait	Kuwait	2020
Baalbek	Lebanon	2020
Tripoli	Lebanon	2020
Azrou	Morocco	2020
Casablanca (includes Mohammedia)	Morocco	2020
Fez	Morocco	2020
Fikh Ben Salah	Morocco	2020
Maknes	Morocco	2020
Marrakesh	Morocco	2020
Midelt	Morocco	2020
Oujda	Morocco	2020
Safi	Morocco	2020
Sefrou	Morocco	2020
Tanger	Morocco	2020
Temara	Morocco	2020
Sohar	Oman	2020
Al-Quds	Palestinian territories	2020
AlKhor	Qatar	2020
Ad-Dammam	Saudi Arabia	2020

26	Al-Jubayl	Saudi Arabia	2020
27	Al-Madinah	Saudi Arabia	2020
28	'Ar'ar	Saudi Arabia	2020
29	Ar-Rass	Saudi Arabia	2020
30	Ha'il	Saudi Arabia	2020
31	Raf?a'	Saudi Arabia	2020
32	Taif	Saudi Arabia	2020
33	Al Qadarif	Sudan	2020
34	Bur Sudan	Sudan	2020
35	Sinjah	Sudan	2020
36	Wad Madani	Sudan	2020
37	Al_Qayrawan	Tunisia	2020
38	Banzart	Tunisia	2020
39	Monastir	Tunisia	2020
40	Qabis	Tunisia	2020
41	Susah	Tunisia	2020
42	Tozeur	Tunisia	2020
43	Tunis	Tunisia	2020
44	Dubai	UAE	2020
45	Abu Dhabi	UAE	2020
46	Al Ain	UAE	2020
47	Al Fujayrah	UAE	2020
48	Adan	Yemen	2020
49	Tarim	Yemen	2020

# Focal Persons in the Region

- NSO Contact list with contacts for all countries
- Contacts include:
  - Agency/ Office name
  - Name
  - Job title
  - Unit/Division
  - E-mail
  - Phone number
  - Organization's website
  - Is this person a contact person for all SDG related matters or for a specific SDG Goal or indicator only? (Please specify below)
  - Please indicate what types of communications the contact person prefers to be informed about. Check all that apply.
  - Any additional information
- Most countries with several contacts

	Country/Territory	Agency/Office Name	Salutation	Contact Person's First Name	Contact Person's Last Name	Job Title	Unit/Division	Email	Phone Number
1	Egypt	Central Agency for Public Mobilization and Statistics (CAPMAS)	Mr.	Khairat	Mohamed Barakat	President		pres_capmas@capmas.gov.eg	00202-2402
81	Egypt	Central Agency for public Mobilization and statistics (CAPMAS)	Mr.	Emad	Alaswad	Researcher	SDGs / Population Statistics Sector	dev.emad@gmail.com	2010227414
82	Egypt	Central Agency for public Mobilization and statistics (CAPMAS)	Mr.	Moheb	Victor	Statistician	SDG Unit	moheb_v@capamas.gov.eg	2010047585
83	Egypt	Central Agency for public Mobilization and statistics (CAPMAS)	Ms.	Reem	Elsybaey	Senior statistician	SDG Unit	Reem_i@capmas.gov.eg	2010226414
84	Iraq	Central Statistical Organization	Mr.	azher	alallaq	statistician senior	human development	azherazher2000@yahoo.com	9647708505
121	Iraq	Central Statistical Organization	Ms.	Rana	Khalil	Chief statistician	Department of Human Development Statistics	eatheer@ymail.com	9647736675
122	Iraq	Central Statistical Organization	Ms.	Zainb	ALaameri	Senior Chief Statistical	SDGS	stamony_23@yahoo.com	0096479012
123	Jordan	Department of Statistics (Dos)	Mr.	Mohammad	Ayasrah	Statistician	Sustainable Development Unit (SDU)	ayasrah@dos.gov.jo	9627778051
134	Jordan	Department of Statistics (Dos)	Mr.	Mohammad	Khalaf	Director of SDGs Unit at Dos	SDG's Unit	<a href="mailto:mohammad.khalaf@dos.gov.jo">mohammad.khalaf@dos.gov.jo</a> ; <a href="mailto:mohd.khalaf30@Gmail.com">mohd.khalaf30@Gmail.com</a>	0096279585
135	Kuwait	Central Statistical Bureau	Ms.	Monya	AlQabandi	Assistant Undersecretary for	Statistical Sector	<a href="mailto:malqabandi@csb.gov.kw">malqabandi@csb.gov.kw</a>	



## Some Data Sources

- **City open space and streets database** – The most important data source; map and name of streets, lengths, widths, condition, etc
- **Local knowledge** –
  - E.g.s community and local leaders, NGOs working on the ground, etc
  - key source of data on public open spaces – locations, usability, conditions
- **Open source datasets**
  - **OpenStreetMap** – most important open source streets resource, downloadable data in GIS compatible formats
  - **Google Earth** – can be used as a baseline for initial identification and digitization of open public spaces, to estimate widths of streets as well as to check completeness of street data from openstreetmap
  - **Landsat and Sentinel imagery** – data usable for delimitation of city boundaries based on built up expanse
- **Analytical databases**
  - Atlas of urban – urban extent data, some streets data
  - Global Human Settlements Layer and Global Urban Footprint – built up area data



THANK YOU