Fifth expert meeting of the Working Group on Geospatial Information of the IAEG-SDGs

Geospatial Information for Sustainable Development

Global Definition of Cities and Settlements

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The goal of a Global City Definition is **NOT TO CHANGE EXISTING** administrative and statistical definitions in countries, but to adopt a functional unit for monitoring

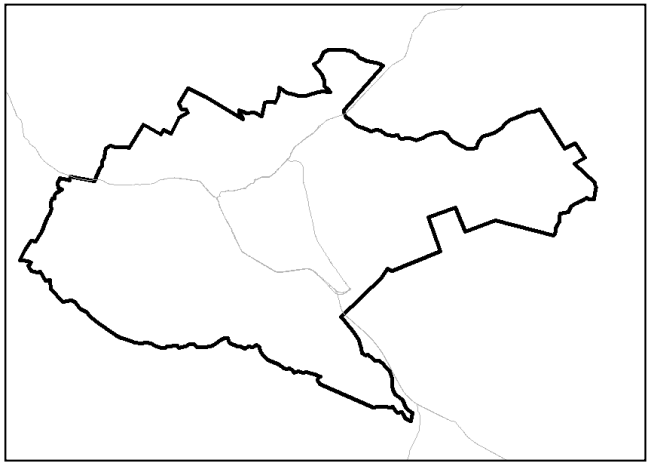
Our assessments have revealed that ….

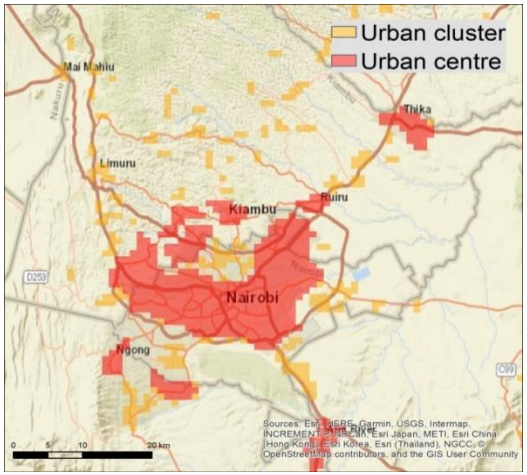
- **Countries use diverse parameters, concepts and thresholds to define city**
  - **Egs from some African Countries**

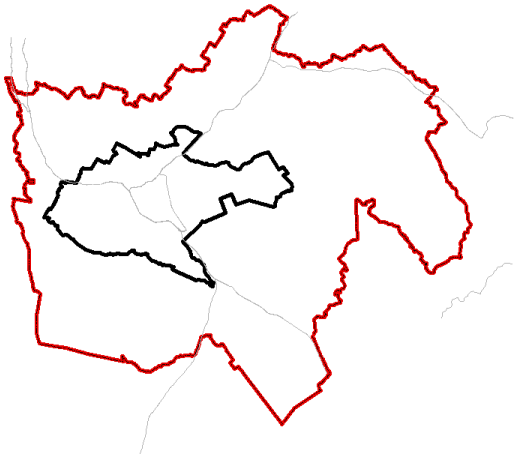
	Admin. function	Econ. function	Pop. size	Pop. density	Urban character	Pop. Thresholds
Uganda	x				x	Legal units
South Sudan	x		x		x	> 5,000
Liberia	x	x	x		x	> 10,000
Gambia	x	x	x	x		> 5,000
Kenya	x	x	x		x	> 2,000
Mali	x		x			> 5,000
Benin	x	x	x		x	> 10,000
Cameroon	x	x	x		x	>5,000
Senegal	x					

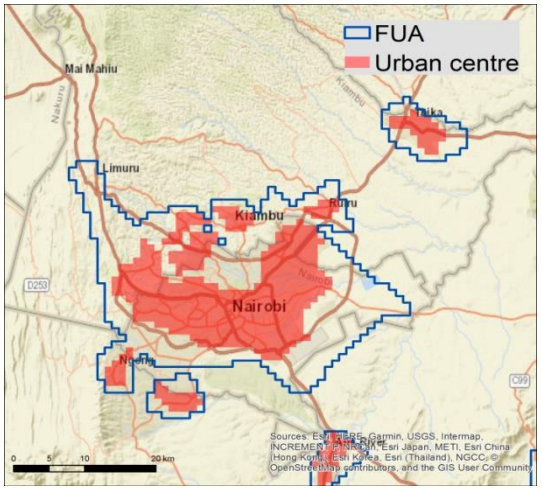
- There are major variations in statistical and administrative delineation of urban and rural areas

Implication of different criteria on data, monitoring







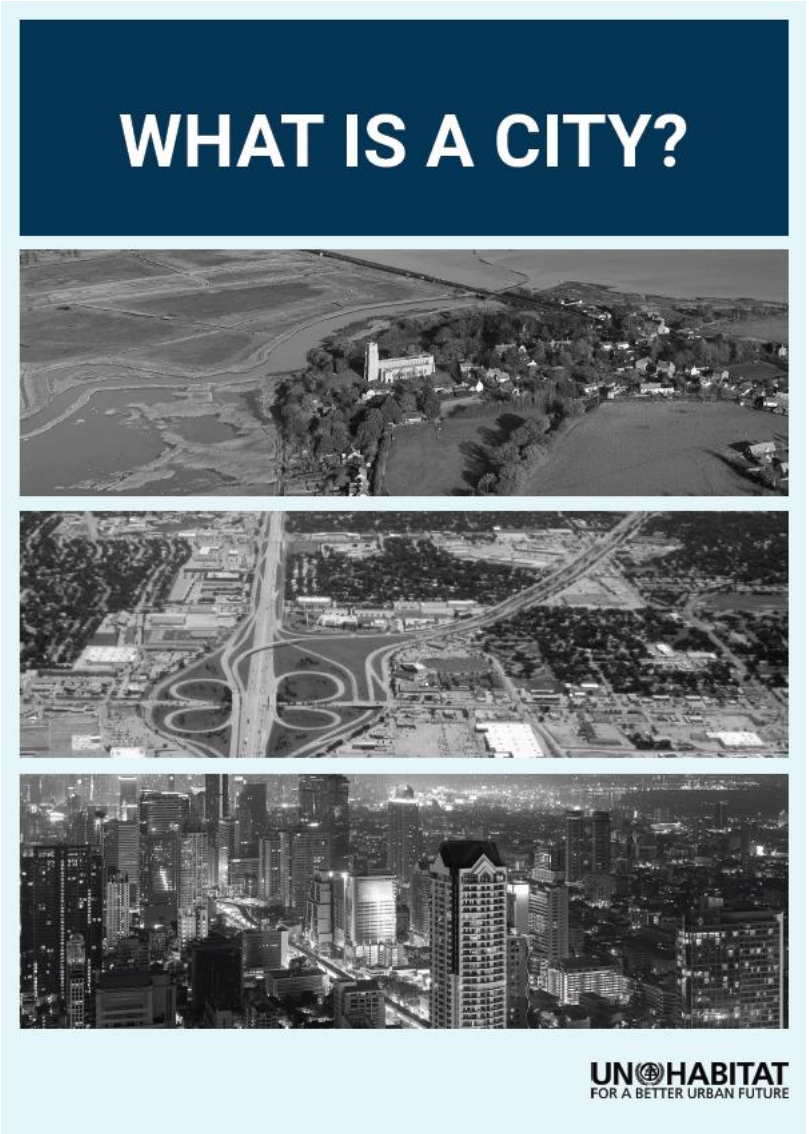


- **Non-comparability of data** – how to set benchmarks amidst mixed definitions?
- Difficulties **aggregating** data from city/local scales to **national** levels
- Biased **regional and global aggregation** & reporting
- Over/under estimation affecting real decisions, local, regional and international guidelines

Forging a functional city definition

- Following review of hundreds of country level and regionally used approaches, experts narrowed down to **two candidate definitions**
  - City as Defined by its urban extent
  - City as Defined by its degree of urbanization
- Both use GI and EO data and methods

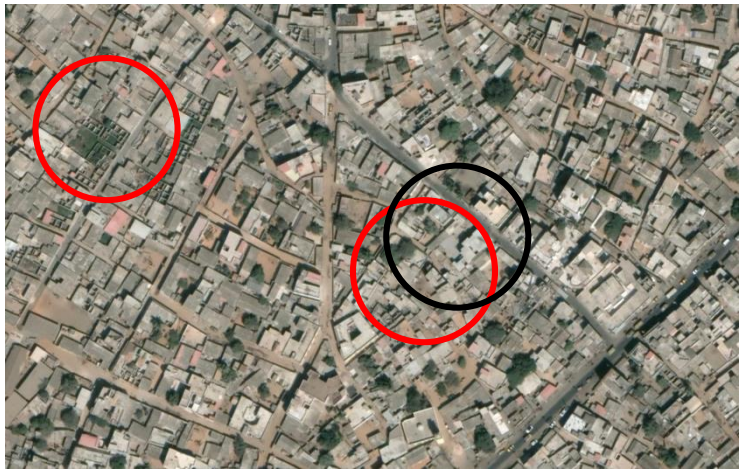
- **The common agreement**
  - Thresholds are a must
  - Better understanding of thresholds equals better definitions/ methods



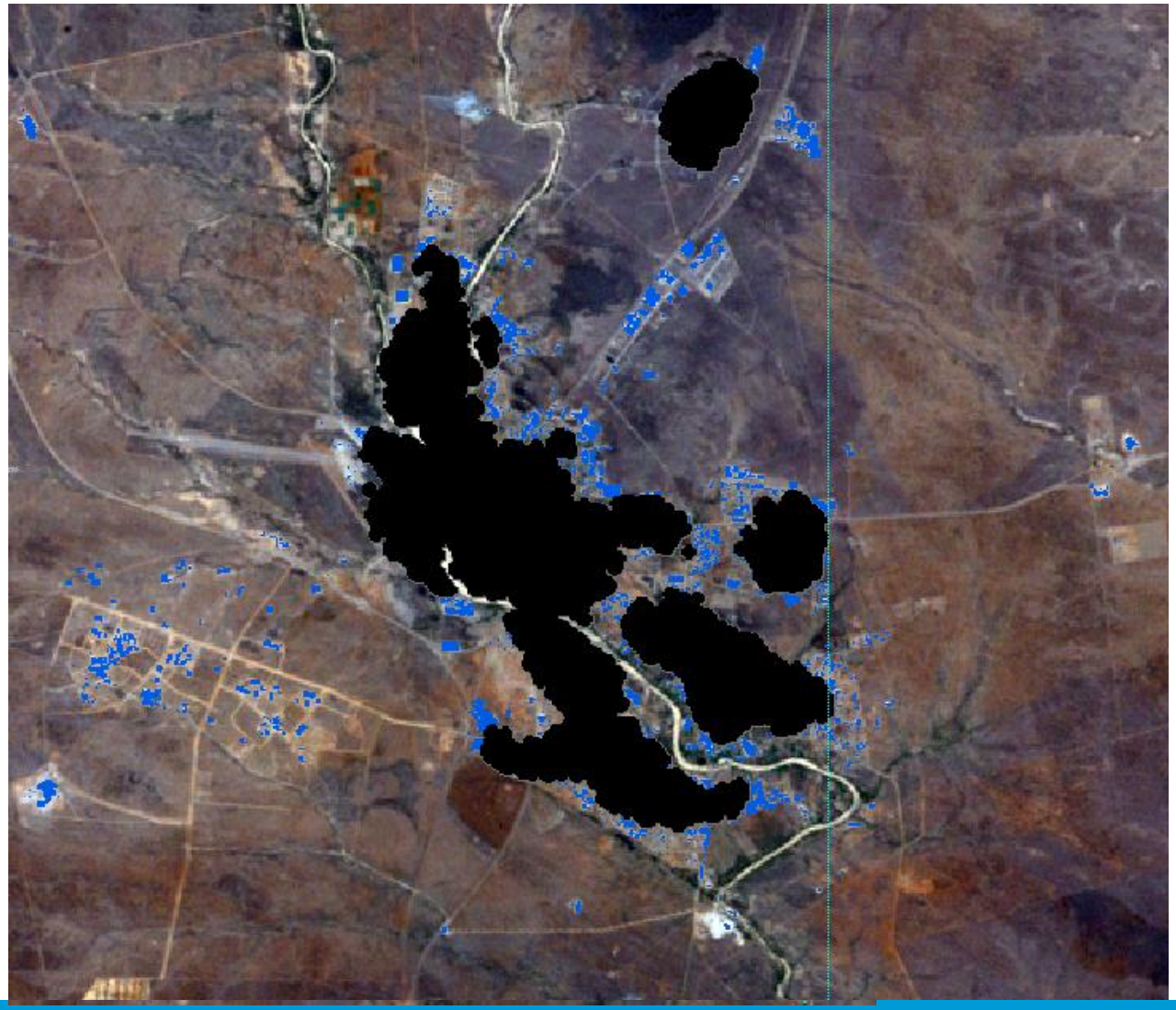
City as Defined by its urban extent

Concepts

- Built-up areas
- Walking distance radius - 1km2 circle
- Urbanness of built up areas
  - Urban built up pixels/ areas
  - Sub-urban built up pixels/ areas
  - Rural pixels/ areas
- Open space characterization
  - Fringe open spaces
  - Captured open space
  - Rural open space



City as Defined by its urban extent workflow



1. satellite imagery is classified to extract built up pixels

2. BU pixels are classified into urban, sub-urban and rural pixels based on density of sorrounding cells within 1km2 walking circle

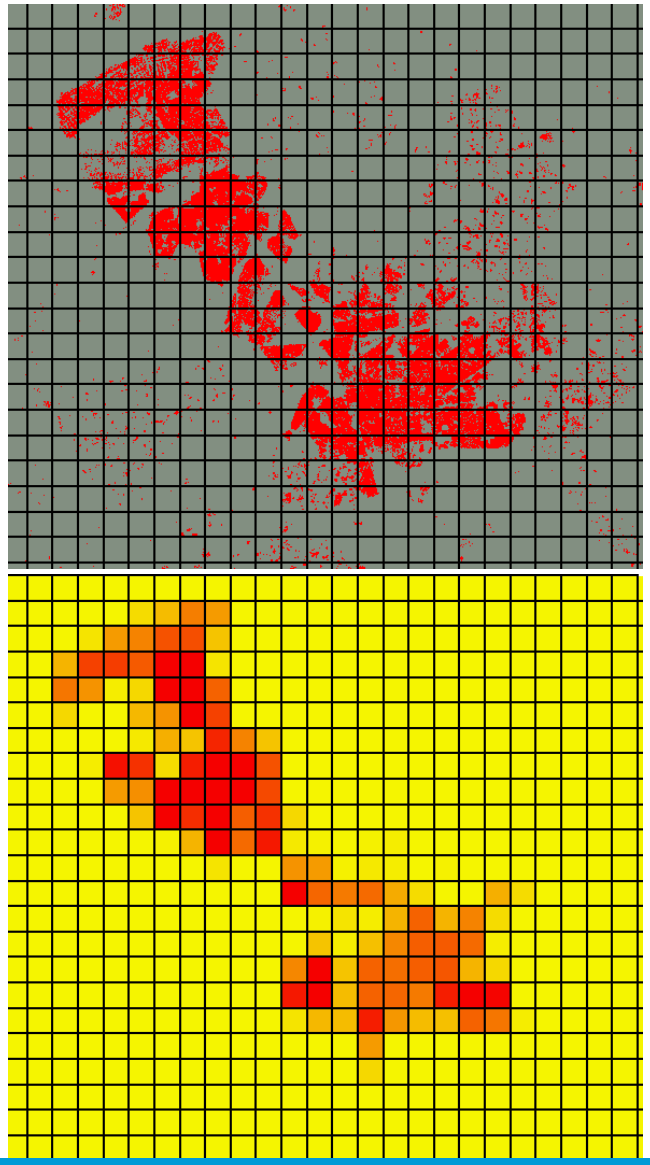
3. Open spaces are incorporated depending on size and location relative to built up pixels

4. Inclusion rule is applied and gaps are filled to create urban extent

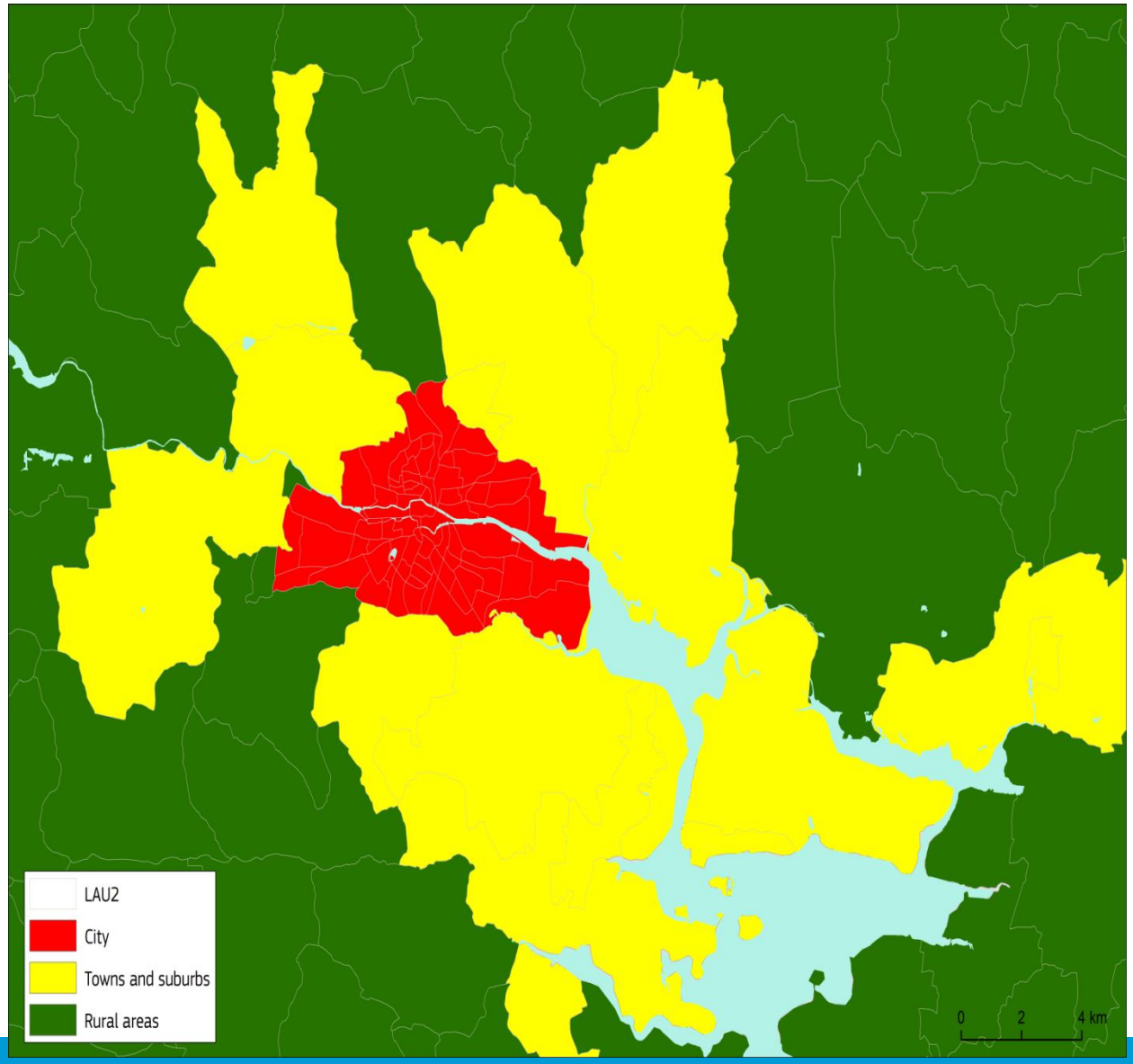
City as Defined by its degree of urbanization

Concepts

- 1 km2 grid cells
- Urban clusters
  - High-density cluster/urban centre:
  - Urban cluster:
  - Rural grid cells:
- Lowest administrative unit characterization
  - Densely populated (cities)
  - Intermediate density area (towns and suburbs)
  - Thinly populated area (rural area)



City as Defined by DEGURBA workflow



1. Population distributed to 1km2 grids based on built up area / landuses

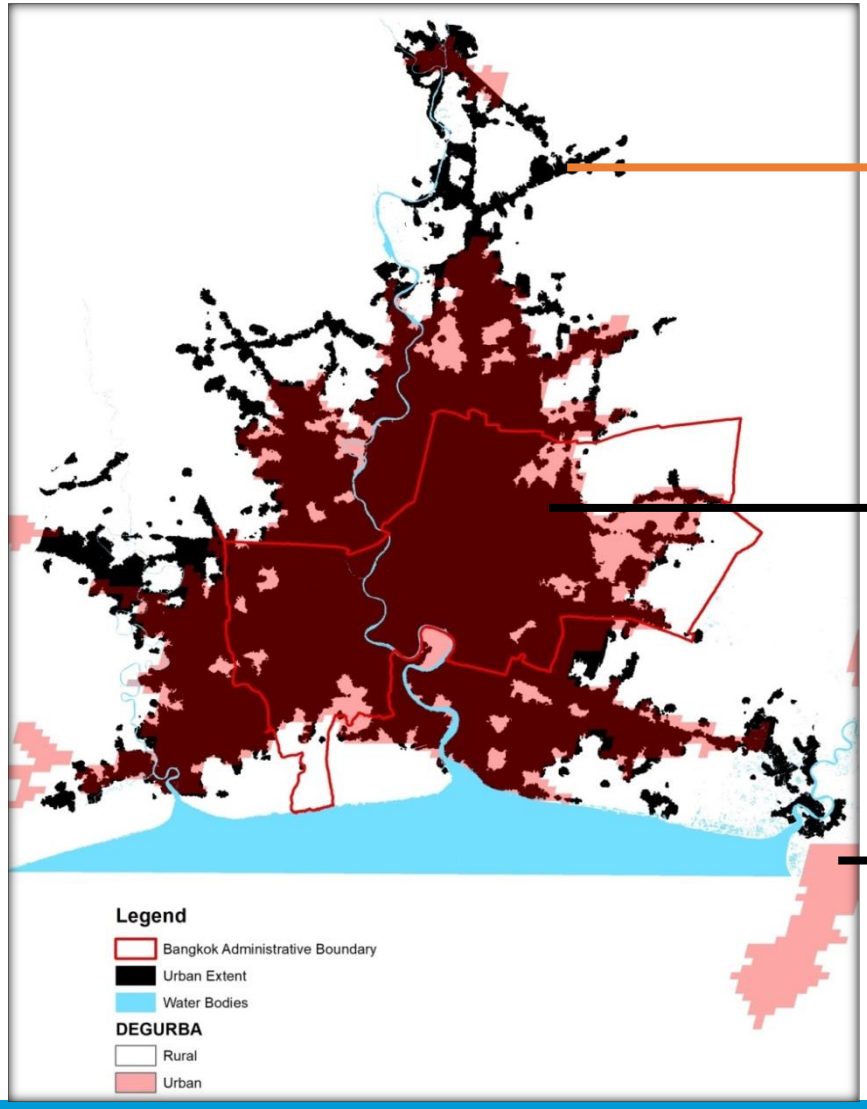
2. Character of contigous grids determined based on population density

3. Settlement clusters determined by total population of contigous grids

4. Grids meeting total population thresholds determine urbanness of LAU2

Source: European Commission Directorate-General for Regional and Urban Policy

Do the two methods produce similar boundaries?



Areas where urban extent boundaries extend beyond those of DEGURBA

Areas where the two functional boundaries overlap

Areas where DEGURBA area is larger than urban extent coverage

Some comparisons

Country definitions	Urban extent	DEGURBA
Based on legal, political, administrative delineation,	Creates hard city boundary from core criteria	City boundary follows lowest data unit character of majority grids
Considers multiple criteria, thresholds	Considers built up areas and open spaces as main criteria	Considers population density + size at 1km2 grids
Follows municipal boundaries/ policy and action units	Does not consider municipal boundaries	Does not consider municipal boundaries

What we are doing and next steps

- Together with EC, introducing and piloting DEGURBA to countries outside Europe (Sep 2018 – Aug 2019)
- Comparing results from both methods to official boundaries
- Piloting indicator computations using resultant boundaries
- Sharing technical details of methods to countries, capacity building them to pilot and provide feedback
- Still work in progress – submission to StatCom in 2020

Some feedback from countries

- The methods are realistic to urban character but create variations in country level statistics
  - How do we monitor at different level to policy/decision making level?
- Acceptability of methods to political/ decision making class – subjective to context
- Methods ignore other key determinants of urban settlements e.g economic function, provision of services
- Criteria for both methods is unclear
  - Why selected built up area densities?
  - Why population density and size thresholds?
- We need capacity to do it ourselves so we can choose what works for us

THANK YOU

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