International Seminar On United Nations Global Geospatial Information Management
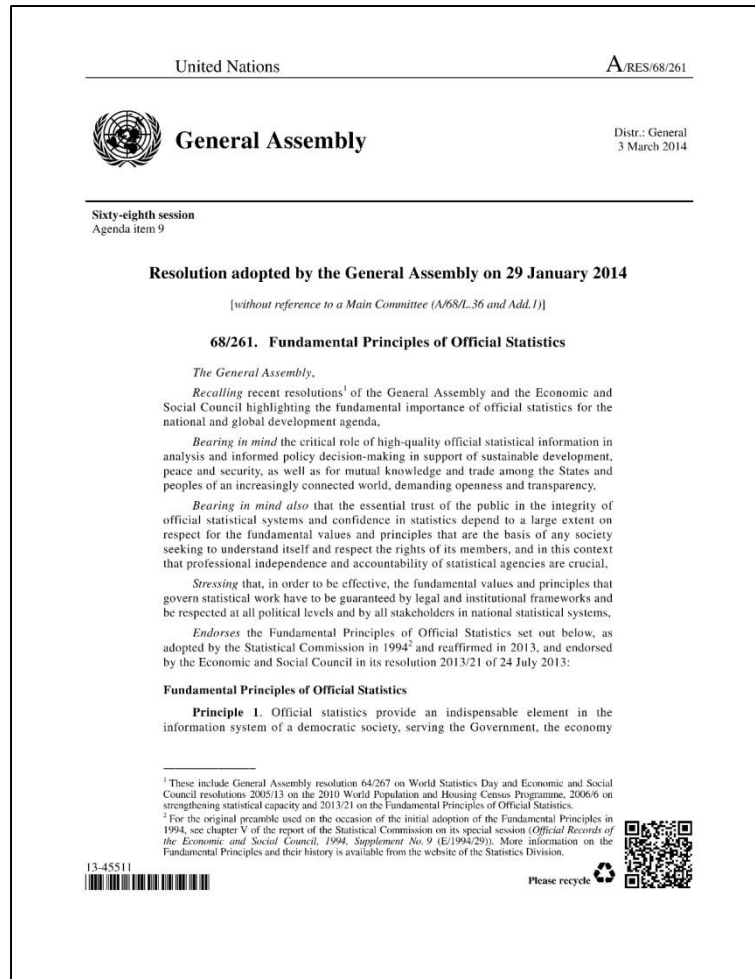
Disaggregation according to geographic location the need and the challenges

6th – 7th November 2018
Tribe Hotel, Nairobi, Kenya

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UN-HABITAT

Data disaggregation within the SDGs monitoring framework

GA Resolution 68/261 …
Sustainable Development Goal indicators should be **disaggregated**, where relevant, by **income, sex, age, race, ethnicity, migratory status, disability and geographic location, or other characteristics**, in accordance with the Fundamental Principles of Official Statistics

Disaggregation by geographic location: What it entails
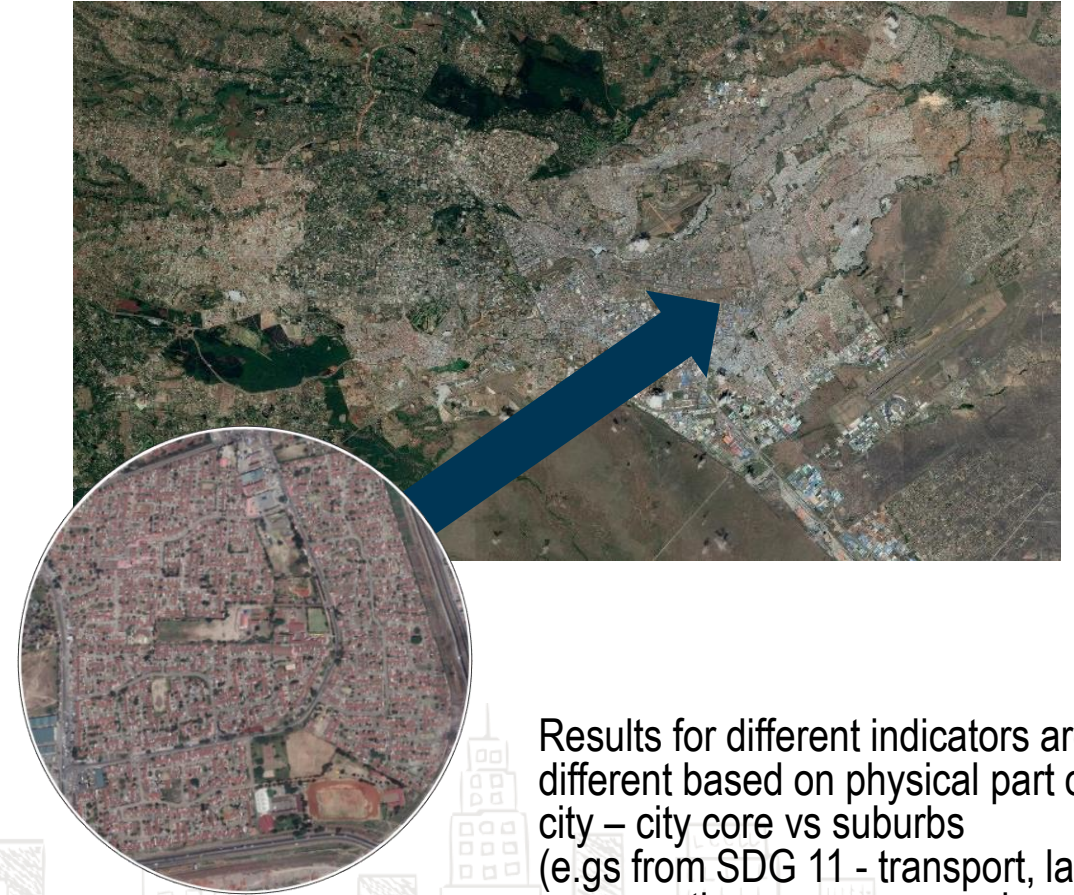
Identification and measurement of:

- Rural vs urban settlements


- Slum vs non-slum settlements

- Broad rural/urban vs specific area – e.g case of disaster indicators

Results for different indicators are different based on physical part of city – city core vs suburbs (e.gs from SDG 11 - transport, land consumption, open space, slums etc)

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Why disaggregate data by geographic location?

- Variations in human settlements dynamics
- Cities are not the same
  - Inter-city variations

Tokyo, Japan   Delhi, India   Accra, Ghana

  - Intra-city variations,
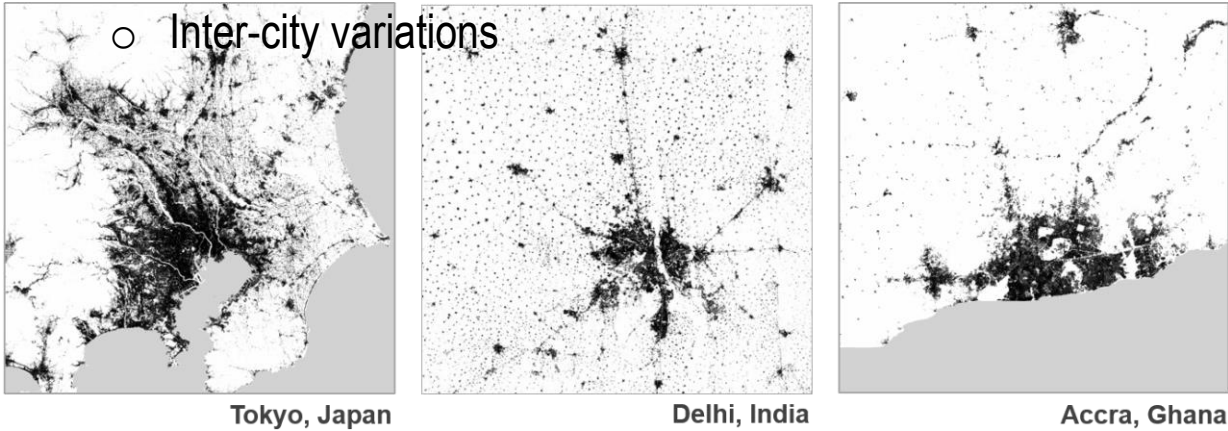
- The most marginalized populations are mostly uncounted and/or undercounted

- Better understanding of marginalization variations = Inclusive development

Slum population increase

2014 883 million
2010
2005
2000 807 million

SDGs and spatial monitoring

MDGS disaggregation covered..

- Slum HH versus non-slum
- Urban HH versus rural
- Planned settlements versus un-planned settlements
- Density analysis/crowdedness
- Access to basic services versus no access.
- Secure tenure
- Age, gender, wealth, key populations, etc

SDG Goal 11 overview

Make cities and human settlements inclusive, safe, resilient and sustainable

Spatial Indicators

Geospatial data, adequate technology and management system will be needed for the **measurement** of the spatial indicators of the Goal 11

Spatial disaggregated data provides relevant information for policy-makers to decide on local-level **allocation of resources** and monitoring of equitable outcomes

11.1 Housing and Slums

11.2 Sustainable Transport

11.3 Participatory Planning

11.4 Cultural Heritage

11.5 Disaster Reduction

11.6 Air Quality and Waste Managment

11.7 Public spaces

11.a Rural-urban and regional planning

11.b Mitigation of Climate Change, Resilience

11.c LDCs support – buildings

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Selected indicators of different towns and city sizes in some African countries

	Employment Rate	Self-Employ. Rate	Net School enrol. Primary	Net School enrol. Second.	Literacy Rate	Girl/Boy ratio - Primary	Girl/Boy - Secondary	Improved sanitation	Improved Water Supply	Electricity	Gas/elec/Coal as cooking fuel
MALI											
Rural	*60.9*	*33.5*	*41.0*	*15.4*	*28.0*	*0.77*	*0.38*	*75.2*	*24.5*	*8.8*	*11.9*
Urban	*50.1*	*44.4*	*75.0*	*42.1*	*63.0*	*0.95*	*0.62*	*97.0*	*63.9*	*65.8*	*43.7*
XXS	50.1	28.6	58.4	12.9	31.0	0.47	0.09	96.3	52.8	26.9	4.8
XS	56.7	34.1	50.8	14.6	27.2	0.59	0.29	94.2	51.9	13.9	3.9
S	52.8	41.8	52.1	28.0	45.4	0.87	0.46	86.9	55.3	37.6	20.7
M	47.5	45.5	68.5	42.1	56.1	0.93	0.54	89.7	69.4	49.5	21.7
L	44.8	41.5	72.8	43.8	66.6	0.93	0.63	92.8	61.6	50.9	24.5
XL	50.6	44.3	74.7	42.6	62.6	0.93	0.56	97.7	50.5	52.8	15.9
XXL	50.9	45.3	78.4	43.3	65.4	0.98	0.68	99.0	70.3	79.1	63.8
SWAZILAND											
Rural	*22.5*	*27.4*	*77.9*	*32.9*	*94.9*	*0.93*	*1.04*	*74.3*	*49.6*	*21.2*	*15.3*
Urban	*51.3*	*20.2*	*66.9*	*40.8*	*97.7*	*1.03*	*1.14*	*88.5*	*86.9*	*64.9*	*87.1*
XXS	51.6	13.6	67.7	41.6	96.8	1.03	1.11	79.9	85.5	71.9	74.8
XS	60.1	11.2	64.7	41.5	95.8	1.05	1.03	86.1	93.1	58.6	88.6
M	50.7	22.7	58.3	33.6	98.2	1.03	1.19	91.3	86.2	62.2	93.1
L	50.3	23.2	70.1	43.3	98.1	1.02	1.15	91.3	87.1	63.9	89.6

XXL: > 3000, XL: 1000-3000, L: 500-1000, M:100-500, XS: 50-100, XXS:<50 (thousand inhabitants)

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Selected indicators of different towns and city sizes in some African countries

	Employment Rate	Self-Employ. Rate	Net School enrol. Primary	Net School enrol. Second.	Literacy Rate	Girl/Boy ratio - Primary	Girl/Boy - Secondary	Improved sanitation	Improved Water Supply	Electricity	Gas/elec/Coal as cooking fuel
TOGO											
Rural	72.7	91.1	76.9	32.6	64.7	0.86	0.45	20.9	28.3	8.5	10.6
Urban	62.5	69.5	80.6	57.5	86.3	1.07	0.81	83.6	78.2	75.6	86.9
XXS	59.7	74.8	83.8	60.5	87.4	1.01	0.55	58.6	39.6	45.6	34.7
XS	59.5	77.2	82.6	59.3	82.1	0.96	0.52	40.4	33.7	46.5	36.0
S	59.4	75.9	83.5	56.8	87.5	0.99	0.57	54.1	66.2	67.1	54.5
M	63.0	76.5	80.3	46.3	71.7	0.98	0.57	46.6	51.0	58.1	71.7
L	57.3	70.6	83.1	62.9	89.6	1.06	0.73	72.4	65.6	72.1	78.8
XL	66.1	68.3	80.0	54.9	84.9	1.10	0.90	96.7	90.4	85.4	97.3
XXL	62.7	67.6	79.4	58.1	87.4	1.07	0.87	91.0	82.7	75.6	94.7
MALAWI											
Rural	58.9	84.6	72.1	7.3	82.2	1.02	0.87	2.1	70.0	1.9	4.4
Urban	54.4	47.3	80.1	30.7	96.1	1.03	1.01	20.5	94.0	37.8	58.2
XXS	51.6	42.9	85.1	33.4	96.4	1.02	0.98	19.7	95.1	38.4	24.7
XS	52.8	51.2	82.3	30.0	94.1	1.01	1.09	19.1	97.2	34.7	29.2
S	53.7	60.6	77.9	27.7	94.5	1.03	0.99	16.6	96.0	29.0	34.0
M	53.3	63.2	77.8	24.1	93.8	1.03	1.02	18.3	95.7	27.0	32.5
L	52.7	39.2	80.6	34.8	96.8	1.05	1.00	37.4	97.5	49.5	50.9
XL	54.7	43.9	80.6	31.6	96.6	1.03	1.02	20.5	93.2	39.7	66.1

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Box–Plot of Poverty Rate by City Size
By Country
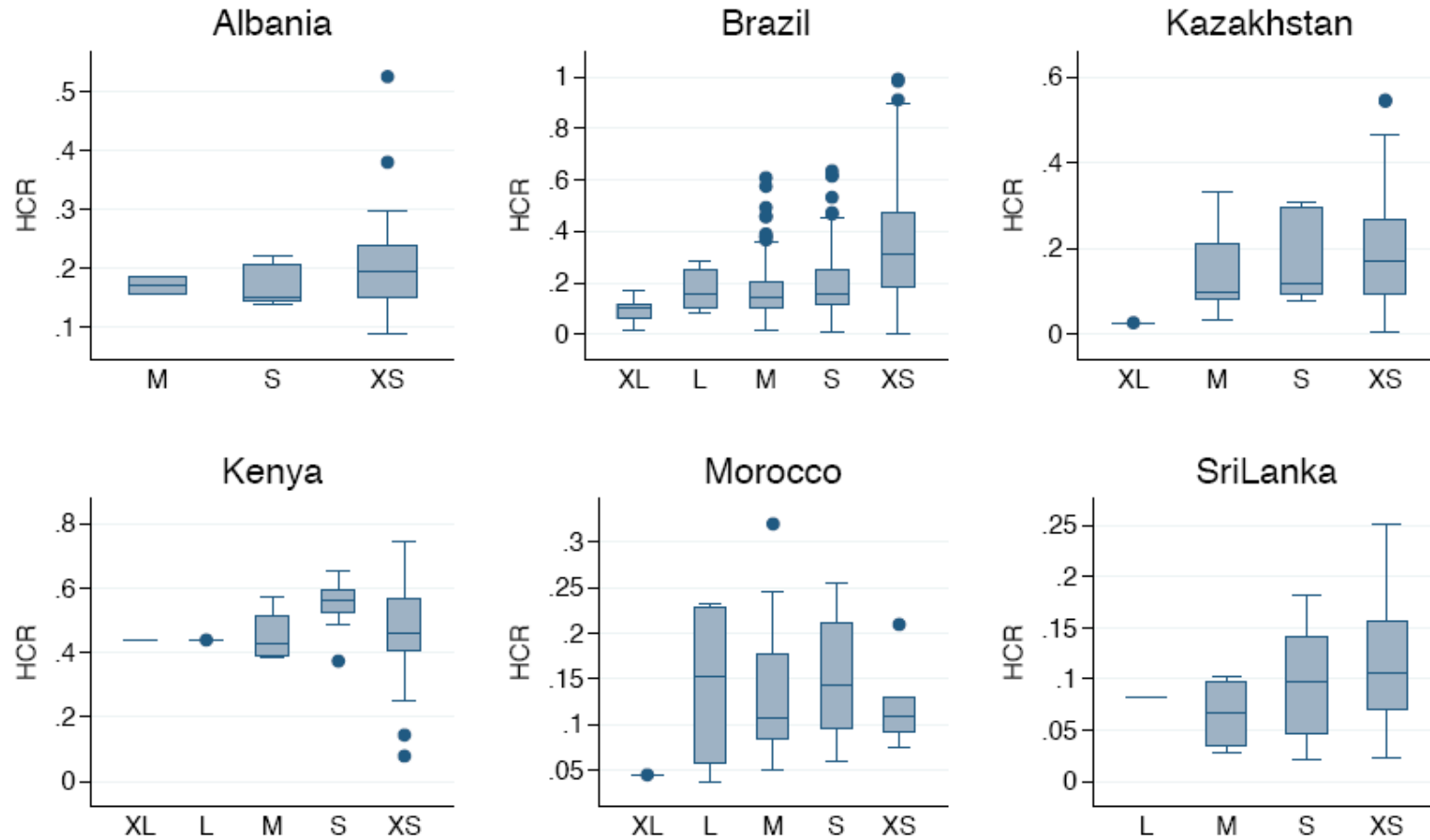
Note: XL: >1,000, L: 500–1,000, M: 100–500, S: 50–100, XS: < 50 (thousands inhabitants)

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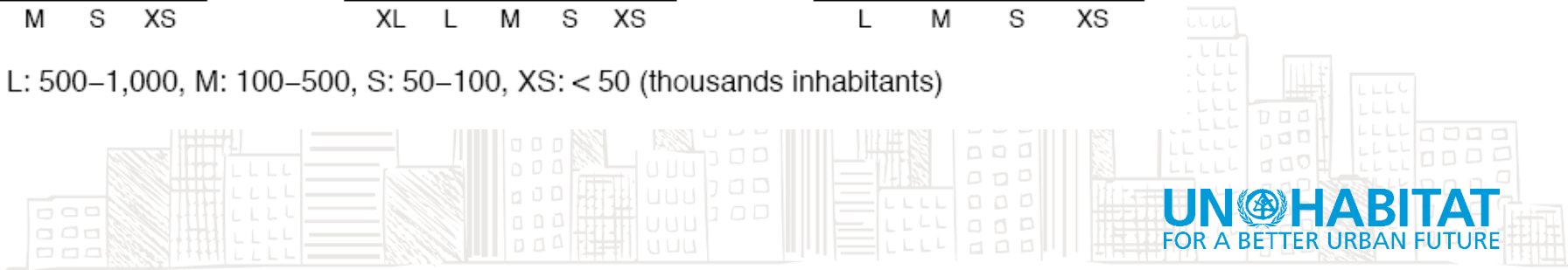
In Nairobi Slums....

Among the population aged five years and above, HIV/AIDS and tuberculosis **account for about 50% of the mortality** burden.

Children under the age of five years have more than four times the mortality burden of the rest of the population, mostly due to pneumonia and diarrheal diseases.
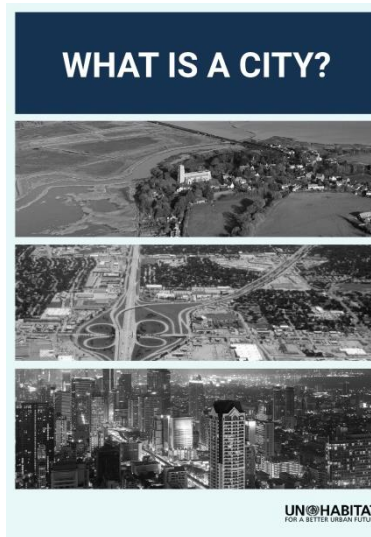
The overall mortality burden per capita is **205 YLL/1,000 person years.**

Reference: "The burden of disease profile of residents of Nairobi's slums: Results from a Demographic Surveillance System: Catherine Kyobutungi*, Abdhalah Kasiira Ziraba, Alex Ezeh and Yazoumé Yé 2008"
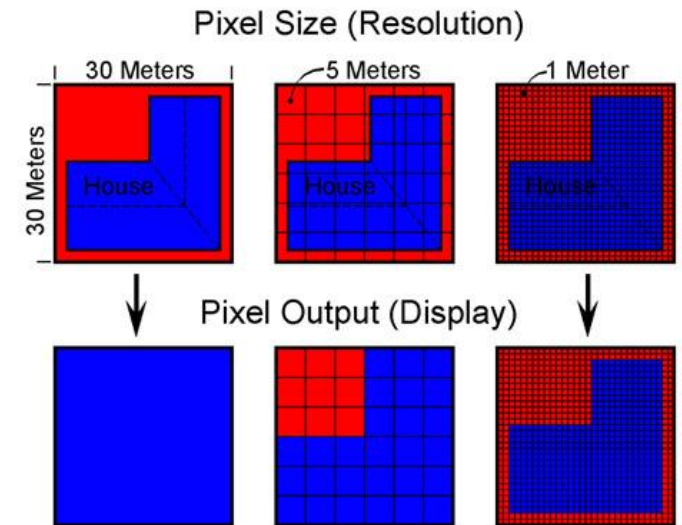
SDG urban disaggregation will focus on

- Spatial forms of services distribution;

- Spatial forms of accessibility and transport networks;

- The amount of urban expansion between cities and over time;

- Density of the urban extent between cities and over time;

- levels of saturation of the urban extent of cities by their built-up areas. (Saturation = built up area/urban extent);

- The composition of the added built up areas of cities (the relative shares of infill, extension, leapfrog, and inclusion);

- Spatial forms of shape compactness of the urban extent of cities, both between cities and over time;

- Land use mix analysis/ disaggregation e.g land allocated to streets;

- Spatial forms of productivity, infrastructure(public spaces), environmental impacts, social inclusion, etc;

Challenges around disaggregation by geographic location

- **Current data resolution is coarse** – mostly focuses on national, urban, rural levels.
  - high resolution disaggregated data is resource intensive

- **Challenges of city definition**

- **Varying contexts requiring more training of models** – e.g separating slums from non-slums

- **Capacities of countries to implement multiple layers of disaggregation for hundreds of indicators**

- **Limited capacity at local levels for integration of GI and EO to support disaggregation**

Freely available image resolution is coarse, high resolution products are expensive

WHAT IS A CITY?

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Pixel Size (Resolution)

30 Meters   5 Meters   1 Meter

House   House   House

Pixel Output (Display)

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Challenges around disaggregation by geographic location

Inconsistency in Geographic information and census data units makes estimations difficult

- **Different paces of change in spatial vs statistical data resolutions**

- Sometimes validation is required for data acquired from EO and GI methods, which is resource and time consuming

- The challenge of aggregating disaggregated city-level data to national level

Validating data acquired from EO and GIS is resource and time consuming

Some emerging opportunities

- Geospatial technologies offer high value for timely, consistent, accurate and low cost disaggregation

- Growing geospatial community generating and disseminating high resolution data

- Increasing uptake of emerging technologies by countries easing data generation processes