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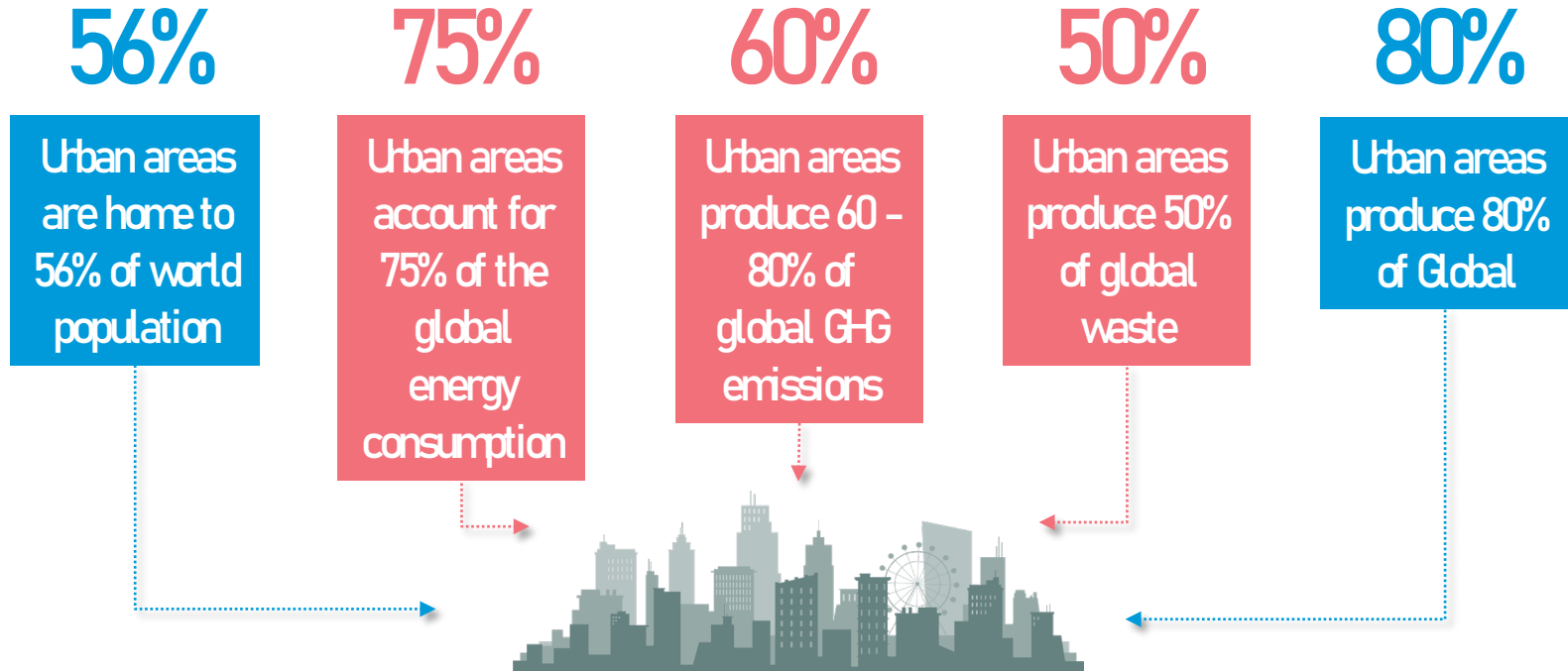
Copernicus Emergency Management Service: Integrating Disaster Risk Data in Policy

Applications in support of urban trends monitoring

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Cities, the epicenter on the fight for sustainability



“The battle for sustainable development will be won or lost in cities”

UN-Deputy Sec Gen, June 2015

UN-Habitat focus is on attainment of sustainable cities and human settlements



Our Mandate:

To promote socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all.



Our Key Focus Areas:

- Enhanced Shared Prosperity for Cities & Regions
- Effective Urban Crisis Prevention & Response
- Strengthened Climate Action & Improved Urban environment
- Reduced Spatial Inequality & Poverty in Communities across the Urban-Rural Continuum

Our work is anchored on scientific data, rigorous research and analysis

Supporting sustainable urbanization entails:

- Clear understanding of human settlement systems (and needs) in diverse contexts
- Supporting production of accurate, up to date data
- Encouraging commitment to, and implementation of data-informed actions – demonstration of value for action based on data
- Direct support through pilot projects, policy development and implementation, etc
- Good/ best practice documentation, sharing and knowledge transfer
- Multi-stakeholder, expert and partner engagements

Data availability remains a key impediment to attainment of sustainable urbanization – calling for enhanced efforts to continuously produce open source data across human settlements

Earth Observation and Geospatial Information Supporting Urban Monitoring

Some application of EO & GI in current urban monitoring efforts include;

1. Implementing the DECURBA harmonized approach
2. Tracking spatial urbanization trends – SDG11.3.1
3. Understanding distribution and levels of access to public transport – SDG11.2.1
4. Understanding availability, distribution and access to open public spaces in cities – SDG11.7.1
5. Mapping urban deprivations and informal developments – SDG11.1.1
6. Tracking changes in green areas in cities – NUA/UMF

Products from Copernicus GHSL are significantly contributing to these urban data needs



Earth Observations Toolkit for
SUSTAINABLE CITIES
AND HUMAN SETTLEMENTS

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DATA TOOLS USE CASES LEARN GET INVOLVED



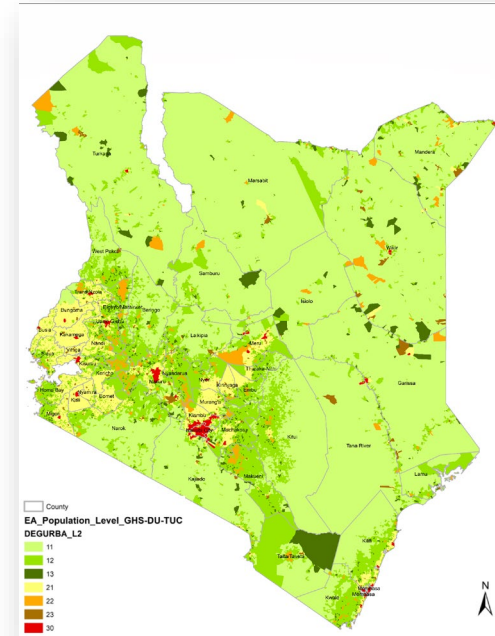
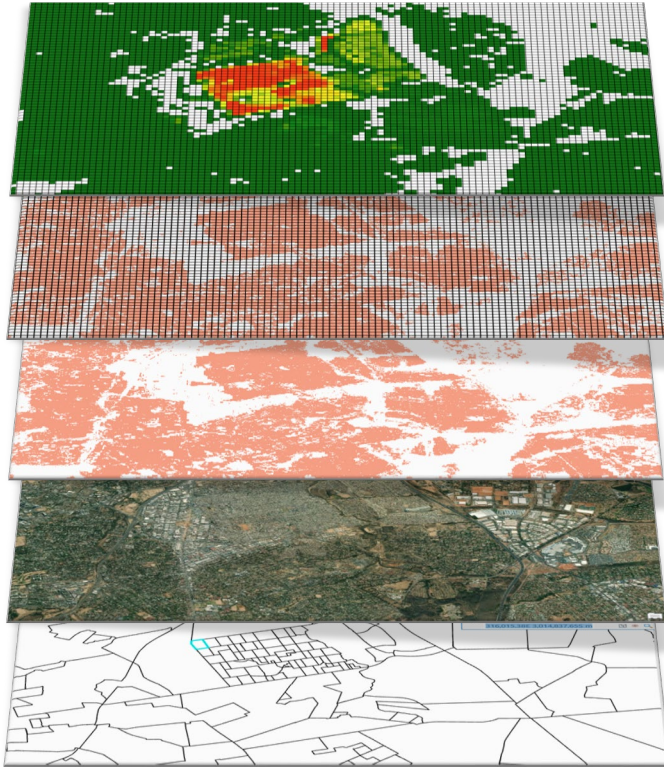
<https://eotoolkit.unhabitat.org>

The EO Toolkit for Sustainable Cities and Human Settlements was developed to further advance work on use of earth observations and geospatial information

Population Grids and City Definition

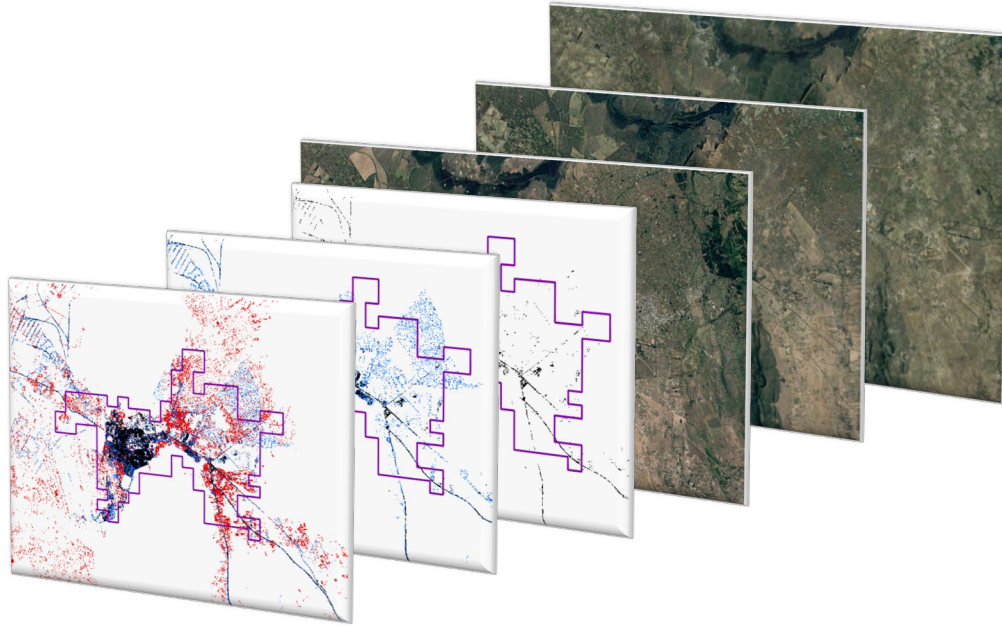
Harmonizing definitions, the rural urban continuum

Integration of Satellite data, population and admin data –
GHS-built/impervious services used as input for DEGURBA
implementation across countries



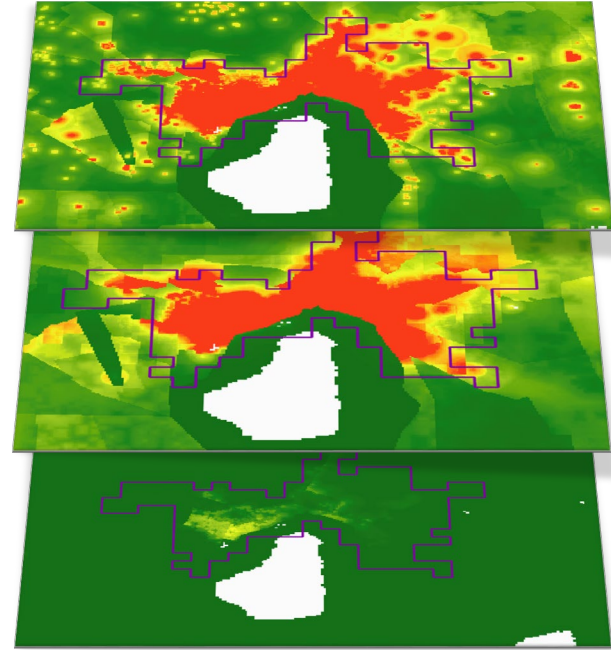
Urbanization Monitoring

Urban Expansion



Data: Satellite data from imagery, local or global datasets eg GHSL

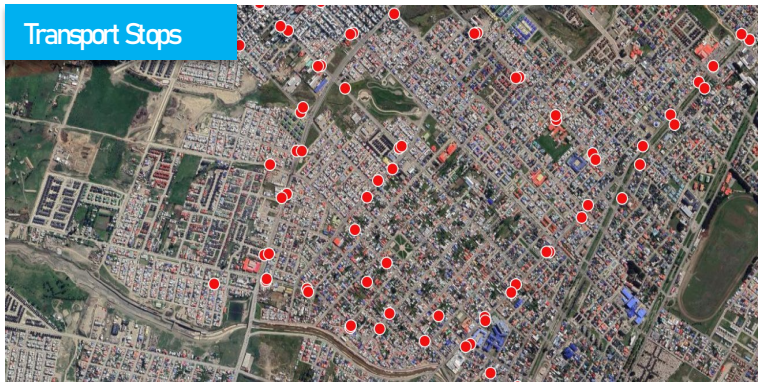
Monitoring Population Growth and Grid Level



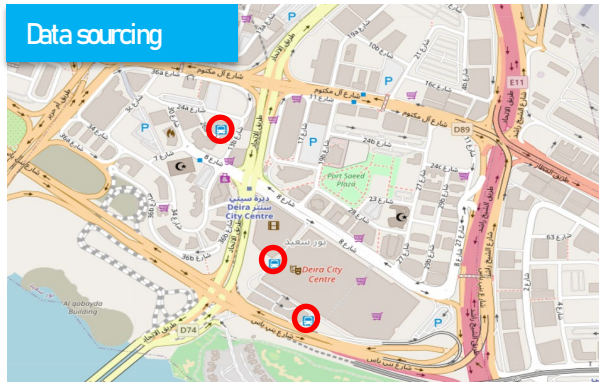
Data: Gridded data e.g. country Modelled, GHSL

Access to Public Transport

Transport Stops



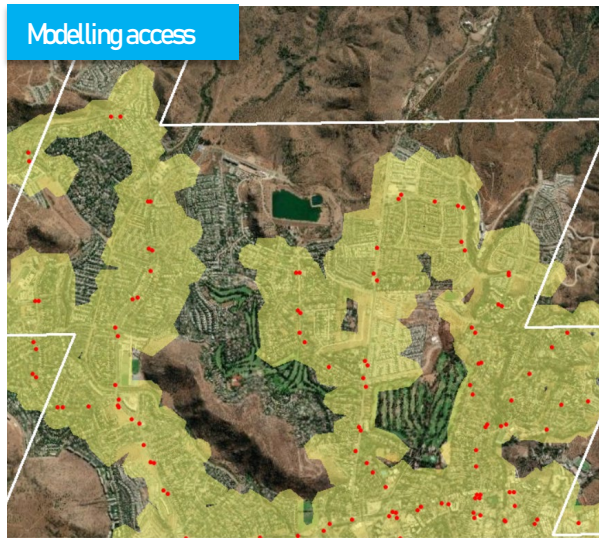
Data sourcing



Data sourcing



Modelling access



Sources:

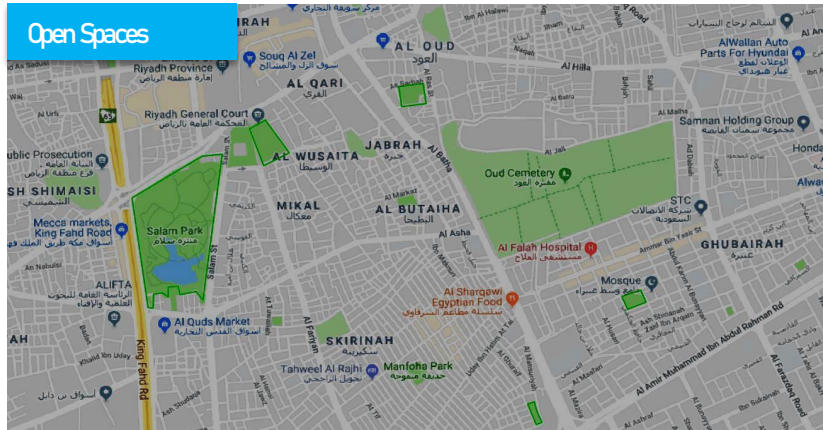
- City authorities
- Open platforms – e.g OSM, GTFS
- Participatory mapping
- Extraction from satellite imagery
- Gridded population datasets eg GHSL

Tools:

- Mapping applications e.g. ArcGis, Qgis, custom apps

Access to Public Transport

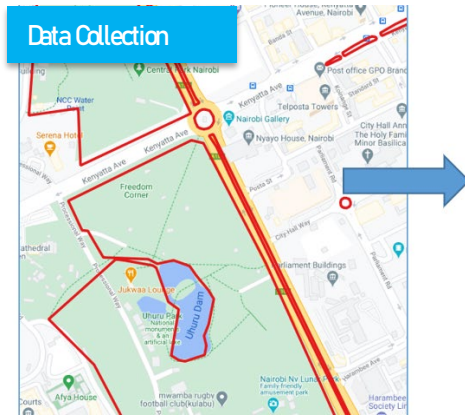
Open Spaces



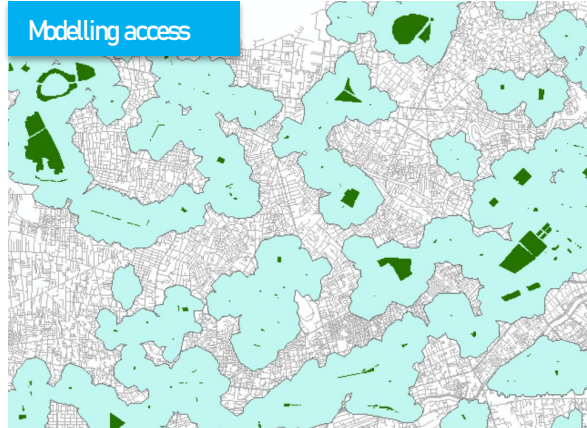
Data validation



Data Collection



Modelling access



SDG Indicator 11.7.1 also directly relies on EO for statistics computation

- Data Sources
- City level data/ land use plans
- Participatory mapping
- Imagery base maps
- Open data sources e.g. OSM
- Field assessments
- Gridded population datasets eg GHSL

Tools

- GIS Tools
- Community engagement

The collage consists of three distinct images. The top-left image shows a close-up of a hand holding a black smartphone, with the screen displaying a digital form titled 'Kilimo - Farmer Profile'. The top-right image shows three people—two women and one man—standing outdoors near a silver car. One woman, wearing a brown hijab and a colorful patterned jacket, is pointing at a tablet held by another woman in a blue cardigan. A man in a light blue shirt and glasses stands next to them, looking at the tablet. The bottom-left image is the KoBoToolbox logo, which features a blue square with a white stylized 'K' and the text 'KoBoToolbox' below it.



City Diagnosis

Mapping spatial inequalities

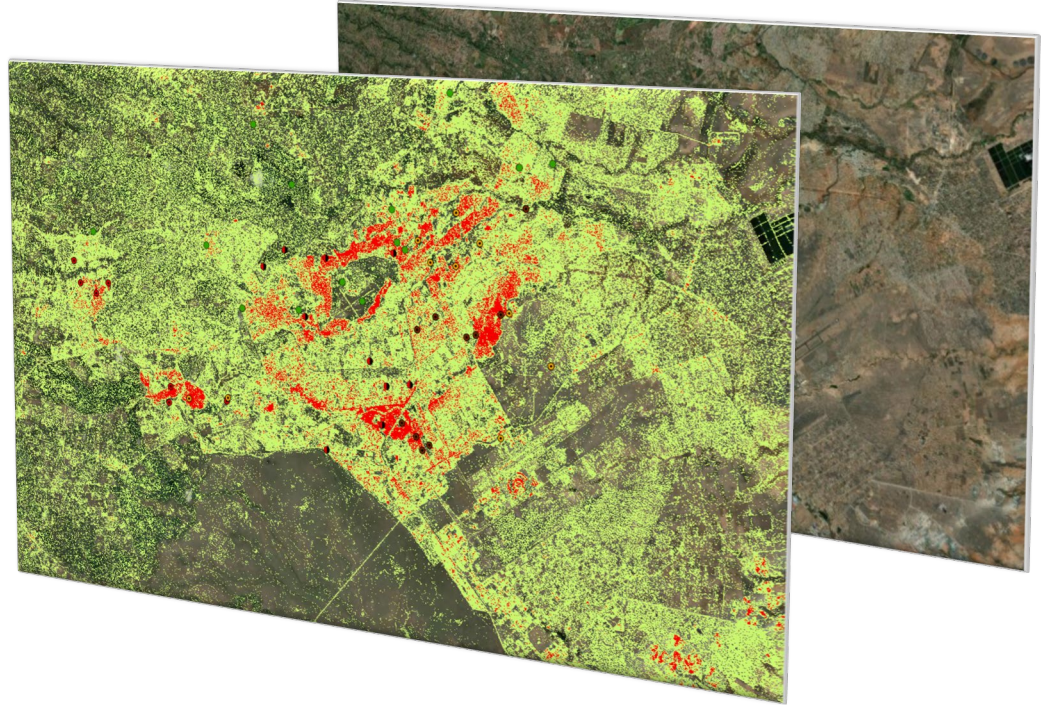
Areas within 400m walking distance access to pre-primary and primary schools

Legend:

- Mombasa_Wards
- Pre-primary and Primary schools
- Streets
- Areas within 400m walking distance to school
- Population Density
- Pop/km2
- 22981.2
- 10.3684

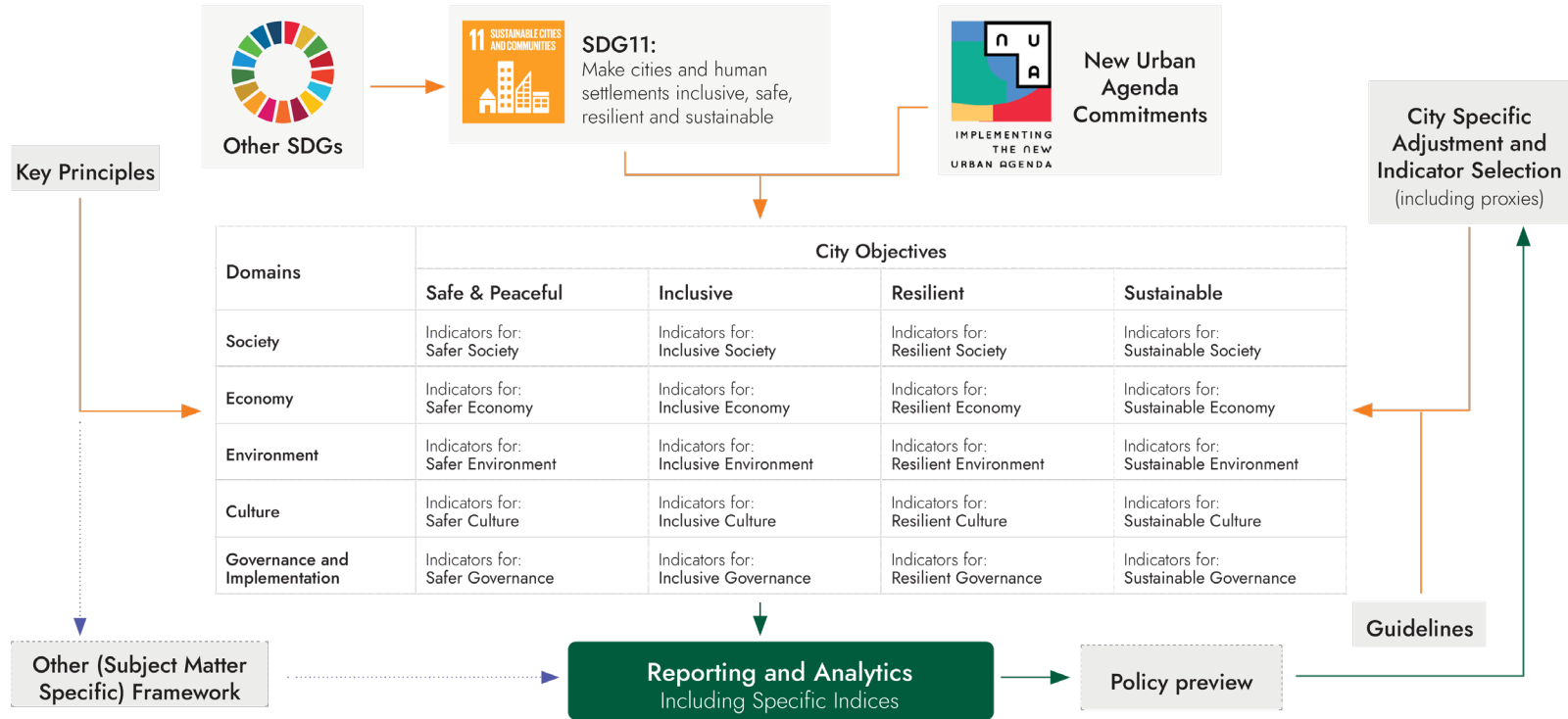
Settlement morphology delineation(Indicator 11.1.1)

- Informality manifests differently within & across cities
- Under-development model considers variations in scale, settlement structure based on morphological parameters and multi-level services access - *Data from sources such as GHG-built and GHS-pop providing key inputs to analysis of vulnerability*



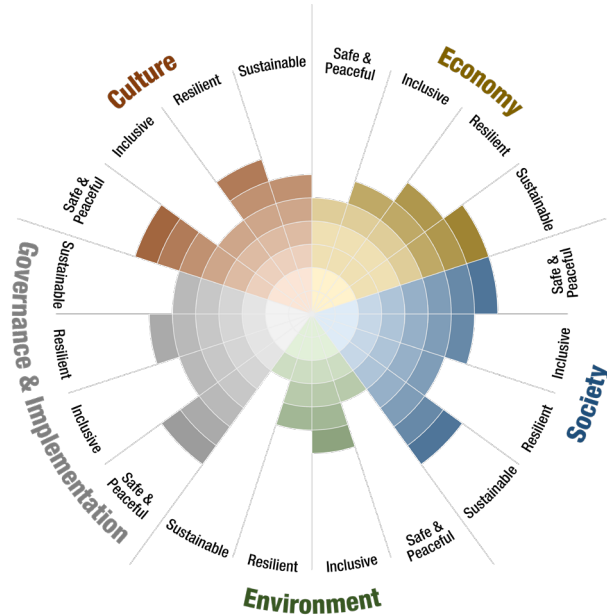
Bringing urban monitoring in a single space:

The Urban Monitoring Framework

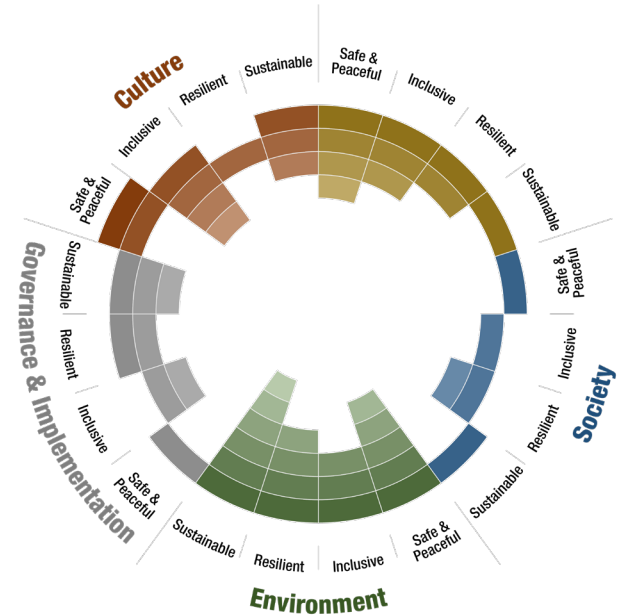


Urban Monitoring Framework

From city diagnostics to action



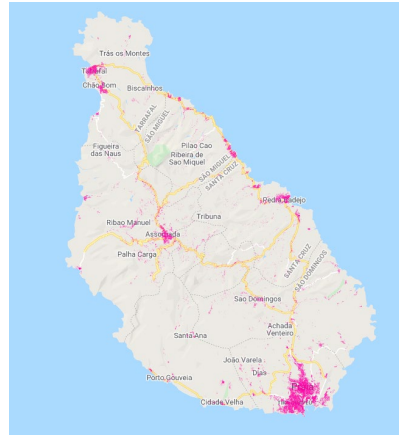
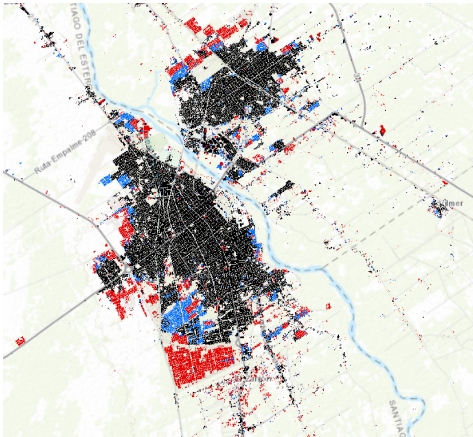
Baseline establishment



Gap + actions identification

Products such as Copernicus G-SL ensure we can continuously analyze trends at scale, and inform global policies and actions

- G-SL products enable scalable analysis and computation of spatial urbanization + trends at individual city / urban area, national and global levels
- Continuity of data production through Copernicus G-SL assures analysis of trends every two years (2022, 2024, 2026)
- Provides baseline data for many countries and cities without built up area and gridded population datasets
 - G-5 imperviousness layer is already being used as main input for national population grids
- 3D G-SL datasets present new perspectives in our understanding of urban areas at different scales eg urban densities and access to services and opportunity
- Available data already helping understanding needed actions for urban development/ planning, disaster exposure





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Thank You

