GPSC Support to Cities:
Integrating Data & Indicators into Urban Planning Process

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Data-Driven Approach to Urban Management
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What We Talk about When We Talk about Data and Indicators

**Socioeconomic:** population distribution and density, employment, GDP per capita (PPP)

**Land:** urban infrastructure, land cover, forest, crops, soil erosion, inland water

**Risk:** floods, land motion/subsidence, landslides, seismic

Image source: Department of Civil, Environmental and Geomatic Engineering at UCL
How Does GPSC Support Evidence-Based Urban Planning?

Data is an essential part of evidence-based planning, and indicators are about the interface between policies and data, informing policymakers on how and where they should target their efforts. As such, data, sustainability indicators, and tools are the first component of the GPSC.

Collaborate
Collaborations with ESA and its consortium member GAF to provide clients with the latest spatial analytics solutions

Diagnosis
An understanding the current sustainability status of a city built upon its data

Research
Pilot bite-size and digestible research projects that disseminate the knowledge of evidence-based urban planning among non-technical staff

Share
A dedicated knowledge product section on the GPSC website enables relevant resource sharing
EO4SD – Earth Observation for Sustainable Development – An ESA initiative for large-scale exploitation of satellite data in support of international development (started 2016)

Priority thematic areas:

Coordinator of the Urban subproject, one of the leading European Consulting firms in the field of geo-information; experienced in International Development, working with Financing Institutions, National Authorities & Organisations, Private Sector
Primary and Secondary Geospatial Product and Service for 27 cities

**PRIMARY PRODUCTS**

**BASELINE LAND USE/LAND COVER DATASET**

- **Peri-Urban** Land Use/Land Cover
- **Urban** Land Use/Land Cover

**Derived Information and Special Products**

- Urban Green Areas
- Population Density
- Waste Sites
- Urban Extent
- Extent & Type of Informal Settlements
- Ecosystem Status
- Building Footprints and Types
- Transport Infrastructure Reference Mapping

**SECONDARY PRODUCTS**

**Special Information Products**

- Air Quality: \(\text{SO}_x, \text{NO}_x\), Aerosol
- Urban Heat Islands
- Landslide Inventory, Landslide Geotechnical Risk & associated Infrastructure assessment
- Flood History, Flood Risk & Associated Infrastructure Exposure
- Elevation Products, 3D Models, Building Height
- Urban Terrain/Infrastructure Motion
The **Urban Extent 2015** map includes the classes
- urban (black) and
- non-urban (white)

Can be used as basis for monitoring the expansion of urban areas over time.
The **Percentage Impervious Surface 2015** map is quantifying the degree of soil sealing/surface imperviousness.

Soil sealing maps help to understand the impact of urban expansion on the environment.
Using City Data for Diagnosis in the Four-Stage Urban Sustainability Framework Process

- **Stage 1:** Diagnosis
  - Understanding the current sustainability status of the city.

- **Stage 2:** Defining a vision and identifying priorities
  - Identifying where the city wants to go.
  - Establishing how the city will achieve and finance its vision.

- **Stage 3:** Financing an intervention plan
  - Identifying how the city tracks its progress and monitors the impact of its action plan.

- **Stage 4:** Monitoring and evaluation
  - Building a Database
  - Measuring What Matters
  - Understand Implications

**Diagnosis**

**Citizens Engagement and Stakeholder Consultation**
Background

Urban planning is a powerful tool that can be harnessed to meet an area’s economic, social, cultural, and environmental needs and to make visions for that area a reality. A host of factors contributes to the successful development and implementation of urban plans, including strong institutional coordination, rule of law, efficient systems of planning and financing. But a crucial step in developing strong plans is for cities to adopt an open, collaborative data-sharing culture.

Collaboration across agencies is key. Agencies often collect and manage their own data, and have little or no incentive to share it with others. Without a culture of collaboration and sharing between agencies, attempts to understand and analyze interrelated urban issues are unlikely to succeed.

A strong government mandate can provide a much-needed push. In Singapore, a strong government mandate was essential in pushing agencies toward an open, collaborative data-sharing culture. This culture is in line with the wider whole-of-government approach to the delivery of public services.

Robust spatial data infrastructure must be established up front. In Singapore, the Urban Redevelopment Authority (URA) is in-house planning tools could not have been

Key strategies for integrating urban planning process

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Data-Informed Urban Planning in Singapore: Harnessing Geospatial Technology

In Singapore, planners at the Urban Redevelopment Authority (URA) are part of a collaborative, whole-of-government effort to utilize Big Data and analytics in order to understand the needs and trends driving the city-state’s growth. Planners are equipped with customized analytical tools—built in house by URA—to distill data into information directly applicable to land use decisions. Among these tools is ePlanner, a one-stop platform that integrates data from multiple sources to enable easy visualization and analysis. The ePlanner tool has been shared with more than 25 other government agencies and provides a common platform for understanding and addressing land use challenges.

To see the value of such a platform, consider the example of amenities such as child-care centers. Demand for such centers is high in Singapore, but it varies from one town to the next. By overlaying statistical demographic data with information about day-care waiting lists, planners can ascertain the locational severity of current shortages and project future demand, as well as determine where new facilities should be placed. Access to these data allows the Housing and Development Board, the agency responsible for providing housing to more than 86 percent of the population, to factor child-care needs into the design of upcoming developments. These data also allow planners to assess whether interim measures, such as locating a child-care center within a vacant state-owned property, are needed to address the immediate shortfall.

More advanced tools like GEMMA (GIS-Enabled Mapping, Modelling & Analysis) allow planners in Singapore to consider more complex urban contexts.

The ePlanner tool gives multiple government agencies access to spatial data, allowing for easy visualization and analysis of land use issues. Source: Urban Redevelopment Authority.
GEOSPATIAL DATA AND INDICATORS

Data is a powerful tool for development. Geospatial technologies such as GIS and remote sensing enable sophisticated data collection and analysis of spatial relationships at varying geographical scales. Learn how geospatial data can help cities understand its formation and transformation with much greater precision, and are indispensable tools for spatial, transport, and economic planning.

More Than a Pretty Picture: Using Poverty Maps to Design Better Policies and Interventions

COUNTRY/CITY
Myanmar, Laos, Cambodia

TOPICS
Human Habitats, Urban Housing, Greenery

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Why are carefully designed, sensible policies too often not adopted or implemented? When they are, why do they often fail to generate development outcomes such as security, growth, and equality? And why do some bad policies endure? This World Development Report 2017: Governance and the Law addresses these fundamental questions, which are at the heart of development.

Policy making and policy implementation do not occur in a vacuum. Rather, they take place in complex political and social settings, in which individuals and groups with unequal power interact within changing rules as they pursue conflicting interests. The process of these interactions is what this Report calls governance, and the space in which these interactions take place, the policy arena.