

# Data-Informed Urban Planning

## 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, integration across scales and sectors, and financing. But a crucial step in developing strong plans is for cities to gain a deep understanding of their existing and future needs.

Technological and social innovations

have made this step easier for planners, who can now collect and analyze Big Data to gain better insight into interrelated urban systems. Reliable, accessible data can provide an objective source of information on which to base planning decisions and can strengthen the overall planning process.



**Global  
Platform for  
Sustainable  
Cities**



## What is GPSC?

Led by the World Bank and supported by multilateral development banks, UN organizations, think tanks and various city networks, the GPSC is a knowledge sharing platform that will provide access to cutting-edge tools and promote an integrated approach to sustainable urban planning and financing.

## Key strategies for integrating data into urban planning process

- **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's case, 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.** URA's in-house planning tools could not have been developed without a standardized method of data collection and the technical capacity to understand and analyze the data available. Government funding support for updating and standardizing data management systems, and for building capacity among technical officials, went a long way in establishing the required spatial data infrastructure.
- **Technology enables the use of data, but it must be designed with an end use in mind.** Geospatial technology, data, and analytics can be harnessed to enable more integrated urban planning. But making use of data to inform planning requires the right types of tools, which should be developed to meet specific planning needs.





## 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 80 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



*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.*



*The use of 3D modeling allows for easy visualization of proposed changes to the built environment. URA's White Room, an immersive 3D viewing space, provides a new avenue for community engagement. Source: Urban Redevelopment Authority.*

issues, such as the impact of different land use scenarios on existing uses. How, for example, would a new mixed-use, high-density development affect traffic flow on a local road? Would the existing sewage network have enough capacity for such a development? Running different scenarios using GEMMA allows land use and infrastructure planners to mutually determine appropriate land uses and density for a new development, as well as the types of infrastructure improvements that the development might require.

future developments on thermal comfort levels. By allowing planners to test the effectiveness of various intervention strategies, such as increasing greenery or adjusting building orientation and design, QUEST facilitates climate-sensitive urban planning. Planners are also harnessing technology such as 3D modeling in order to better understand changes to the built environment; this approach creates opportunities for community engagement and feedback on proposed land use changes.

Other tools being developed in collaboration with other agencies include QUEST, which will give planners a better understanding of Singapore's urban microclimate—and thus help them assess the impact of



#### Notes

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Author : Sarah Lin, Urban Analyst, Global Practice for Social, Urban, Rural and Resilience, World Bank

INTERESTED IN BEING A PARTNER?

CONTACT US

**Xueman Wang**

GPSC Program Manager

Email : [xwang5@worldbank.org](mailto:xwang5@worldbank.org)

**Adeline Choy**

GPSC Program Coordinator

Email : [adelinechoy@worldbank.org](mailto:adelinechoy@worldbank.org)

**Qiyang Xu**

GPSC Program Coordinator

Email : [qxu1@worldbank.org](mailto:qxu1@worldbank.org)