Open Cities Project
The World Bank, South Asia Region

Background

The World Bank’s South Asia Region (SAR) is proud to announce its new Open Cities Project. The goal of this project is to catalyze the creation, management and use of open data to produce innovative solutions for urban planning and resilience challenges across the region.

In South Asia, rural to urban migration is occurring at a rate of 6-7 percent annually, making it one of the most rapidly urbanizing regions in the world. As urban populations and city boundaries grow, so does the difficulty of providing services and managing urban growth. To build resilient and sustainable societies, policy-makers in government, leaders in the business community, and the general public must have access to robust and accurate data. This data is essential for creating smart tools and providing analytical research to inform decisions at all levels. These include studies on the transformation of urban morphologies, design of safe public and private infrastructure in the face of disaster events and tools to engage citizens in improving a city’s transport network to meet growing demand, among many other applications.

Given this context, the Open Cities Project is creating city-specific urban labs with local and international stakeholders to develop solutions for a city’s most pressing challenges. The aim is to empower cities in South Asia to move beyond the policy based decisions of the past and enter into a new era of evidence-based decisions, driven by data and analytical insights. Through these urban labs, the Open Cities Project connects governments to the best minds globally in the academic, technology and design communities to solve the toughest urban problems.

The Challenges

Governments, particularly in the developing world, have been left behind by the technological and market advances of the last 30 years, resulting in a lack of
access to data-driven decision making tools to manage urban planning and disaster risk. This is both due to a scarcity of digitized data and to an absence of technological capability and innovation within government.

Where data does exist, it is often in the form of one-time paper reports, which are deliverables of fact finding missions by hired consultants. Not only is the data behind these reports not accessible to the governments for further use, their dormant nature signals to governments that the research is complete once the report has been delivered. However, urban planning is an ongoing, dynamic process that requires stakeholders to continuously implement innovative policies for sustained growth. This static data environment has created a number of adverse outcomes:

- Urban planning and risk information is frequently communicated in maps and reports without the supporting raw data
- Common geospatial databases for managing and analyzing layers of infrastructure data, including transportation, water, sanitation, and electricity infrastructure, are non-existent
- There is a severe shortage of high quality, complete information
- Information is rarely made public, thus not available for external analysis and use
- Existing information on urban infrastructure is fragmented across many actors, making it difficult to find and use when needed
- Weak data sharing arrangements across ministries and sectors hinders collaboration, and informal information sharing incurs high transaction costs
- Governments do not have the technical capabilities to manage, interpret and analyze urban datasets

Our Solutions

The Open Cities Project creates city-specific urban labs with local and international stakeholders to develop solutions for a city’s most pressing challenges. It brings together policy-makers, business leaders, professors, students, designers, technologists, non-governmental organizations, and citizens under one umbrella. These groups work together to collect data on the urban form, conduct research projects, and create tools to enhance the ability of local governments to manage urban development. The lab environment fosters collaboration through workshops, talks, tours, and exhibitions, all featuring the outputs of the studies and applications developed by participants. Such a space is crucial to further the public discourse on urbanization and create sustainable societies over the long term.

The Open Cities Project understands that robust inventories of infrastructure, commercial, and residential assets are necessary components of urban planning and risk information systems, which help decision-makers manage future development. Therefore, the urban labs will endeavor to:

1. Consolidate fragmented planning data
2. Ensure that additional data created in the urban labs will be shared on a single open-source platform
3. Create actionable, data-driven, dynamic tools for decision-makers

Increasingly good data management and smart urban planning tools are being accepted by various stakeholders as the way forward, at low-cost. For example, New York is a leading city in consolidating data and making it available for use. The New York OpenData platform features over 1,000 data sets from City agencies, Commissions and Business Improvement Districts, and all are available to the public to create urban tools and applications. Over 66 applications have already been created from the transport data made available by the city’s Metropolitan Transportation Authority including fare calculators, schedules, transit times and directions.
**Our Process**

*Consolidate fragmented planning data*

The Open Cities Project will establish data repositories within local and national level government agencies across South Asia to consolidate and host information. This will be done using GeoNode, an open source platform that facilitates the creation, sharing, and collaborative use of geospatial data. The information will be obtained from data files that already exist within government, development partners, and other actors willing to share their data to enhance public sector effectiveness.

*Ensure that additional data created in the urban labs will be shared on a single open-source platform*

Data will also be crowdsourced through participatory methods, for example volunteer mapping parties. Once gathered, this asset data will be made available on web-based platforms such as OpenStreetMap (OSM), under open license to ensure that it is accessible to all.

OSM is a tool that enables users to create and distribute free geographic data across the world. To contribute to this ‘Wikipedia of Maps’, individuals can use: (a) any GPS enabled device; (b) their local knowledge; or (c) satellite imagery to add infrastructure content such as road and street traces, building footprints, points of interest, and any other characteristics about the built environment of their communities.

This information can be used to create visualizations of urban infrastructure and 3-D models of cities. Such models can show areas at high risk from seismic activity, portions of the city that lack basic infrastructure such as water and sanitation systems, vulnerability in transportation networks and electricity connectivity, as well as other basic services. These models can feed directly into government planning processes to better guide future development.

**Dhaka – Building Use**

![Dhaka – Building Use](image)

**Create actionable, data-driven, dynamic tools for decision-makers**

The global revolution in low-cost information and communication technologies can help address some of the developing world’s oldest challenges in urban public service delivery. Such tools have the capacity to improve municipal programs in water, sanitation, waste management, transportation, emergency response, and other areas.

An urban lab creates a space where policy-makers, business leaders, professors, students, designers, technologists, non-governmental organizations, and citizens can work together to both identify the city-
specific urban problems and design low-cost, information and communication technologies to solve them. The aim of these labs is to provide fully crafted urban planning tools by leveraging the asset data collected in each city.

These tools will also serve as a mechanism to collect additional data points on the location and movement of people and goods within the urban environment. The data can contribute to analytical work on traffic patterns, access to schools and hospitals, the movement of goods and services along specific corridors, geospatial coordinates of important economic activities, and land and property tax collection schemes, all of which would enable planners to guide future investments in infrastructure and economic development.

**Proof of Concept**

**Disaster Resilience Planning Tools**

The open data movement has influenced the creation of applications such as InaSAFE, a free software tool that produces natural hazard impact scenarios to improve planning, preparedness, and response activities. This tool was developed in partnership by the Indonesian Disaster Management Agency, the Australian Agency for International Development, the Global Facility for Disaster Reduction and Recovery, the World Bank, and OpenStreetMap.

InaSAFE is being used to support emergency contingency planning in high risk provinces and districts. The software has been utilized in a diverse range of environments: producing real-time estimation of the impact of earthquakes in Yogyakarta; community-level flood scenarios during the 2012 Jakarta flood; and contingency planning to understand the potential impacts of a tsunami in the rural community of Manokwari in West Papua.

InaSAFE and similar applications are designed to combine existing data sets onto one analytical platform. However, where appropriate spatial data does not yet exist, tools such as OSM have allowed communities and governments to quickly and easily map their infrastructure inventory. For example, MapKibera – a data gathering initiative using OSM – created the first free and open map of Kibera, the largest slum in Africa. Among its many potential uses, the data from MapKibera has already been utilized to create election maps in Nairobi, Kenya. These maps show the boundaries of each ward, marking their polling stations and other useful points of interest. This information was previously unknown to most slum residents, often hindering their ability to elect local leaders and voice their opinions.

In Haiti, given the information crisis that resulted after the 2010 earthquake, the government, development partners, and the local community led initiatives to build resilient data management systems – some of the best that have existed in the country to date. For instance, HaitiData is a pioneer web platform that facilitates open access to Haiti-related geo-spatial information, data, and knowledge sources, encouraging others to share and use the information for the development of Haiti. In addition, one of the most comprehensive maps of Haiti was created as a result of the Haiti Open Data Initiative.

**Case Study: Kathmandu, Nepal**

The Open Cities Project launched Phase I activities in Kathmandu, Nepal in October 2012 and has made significant progress in mapping the city and using this data in tools and applications. The key to the program’s success has been the development of partnerships with multiple stakeholders across the country including: a) government actors such as the Ministries of Urban Development, Education, and Health and Population; b) civil society organizations including the National Society for Earthquake Technology – Nepal; and c) academic institutions such as The Institute of Engineering (Pulchowk), South Western State College, Nepal Engineering College, and Kathmandu University. Government officials, professionals, professors, and students gather at mapping parties across Kathmandu to add data to the OSM Nepal map. All are collaborating to collect and visualize the city’s public and private assets, integrating mapping activities into planning processes, analytical work, and everyday curricula.
With the assistance of over 1,000 individuals across society, Open Cities Nepal has logged the following successes to date: 22 sensitization presentations have been made to a direct audience of more than 1,000 people; introductory OSM training has been delivered to approximately 650 people; training materials have been developed for five different user interfaces; approximately 340,000 nodes have been added to the OSM Nepal map, including roads, buildings, and other points of interest; over 700 people are members of different OSM Nepal Facebook groups, resulting in more than 200 posts; the first ever Open Data Day has been organized in Nepal, with participation from over 400 students, technology professionals, and the general public.

Applications are in development from this data including: an android app which estimates the cost of taxi journeys to prevent over charging; a cultural heritage app to showcase Kathmandu’s many treasures; and an engagement with the ministry of Education to update their schools database and create visualisations to better track school performance.

Next Steps

These figures alone show the extraordinary power of open source platforms to bring together an entire community dedicated to finding innovative solutions to pressing urban challenges. The activities undertaken in Nepal will serve as a blueprint for cities across SAR to launch their very own urban revolutions, with work in Dhaka and Colombo starting this summer. The Open Cities Project will continue to grow, launching in the following cities over the next three years: Islamabad, Karachi, Lahore, Chittagong, Sylhett, New Delhi, Mumbai, Bangalore, and Hyderabad. The Open Cities platform will facilitate the bottom-up collection of better data and the creation of better tools to analyze that data, thus leading to the development of smart, sustainable, and resilient cities across South Asia.

Contact Information

Become a part of the community creating better data and better tools for urban planning and disaster resilience. For more information on joining the Open Cities Project, please contact:

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Kathmandu Valley, November 2012

Kathmandu Valley, May 2013