

OPEN CITIES KATHMANDU PROJECT

Mapping local communities to reduce disaster risk

AT A GLANCE

Country Nepal

Risks Data and information gaps exacerbating seismic hazards

Area of Engagement Promoting open access to risk information

In earthquake-prone Nepal, the government has implemented the Open Cities Kathmandu Project which builds seismic resilience by training civilians to map local areas.

DATA AND INFORMATION GAPS HEIGHTENING RISKS

As in many developing nations, mapping information in Nepal has been often outdated, missing data, and sometimes only accessible on a pay-per-view basis. This creates societies without knowledge of village names, governments without access to their assets, and confusion as to where to provide aid in the case of a natural disaster.

In Nepal, these data and information gaps only heighten the earthquake-prone country's high seismic hazards. Kathmandu, the Nepali capital, is the world's most seismically at-risk urban area. The city's population faces the highest mortality threat from earthquakes of any urban population.

The potential for a large earthquake in Nepal spurred the government of Nepal to implement the Open Cities Project, a program supported by GFDRR's Open Data for Resilience Initiative (OpenDRI). Initiated in November 2012, the project aims to build seismic resilience in the Kathmandu Valley's education and health infrastructure by training civilians to map their local areas.

An area of Kathmandu mapped under Open Cities

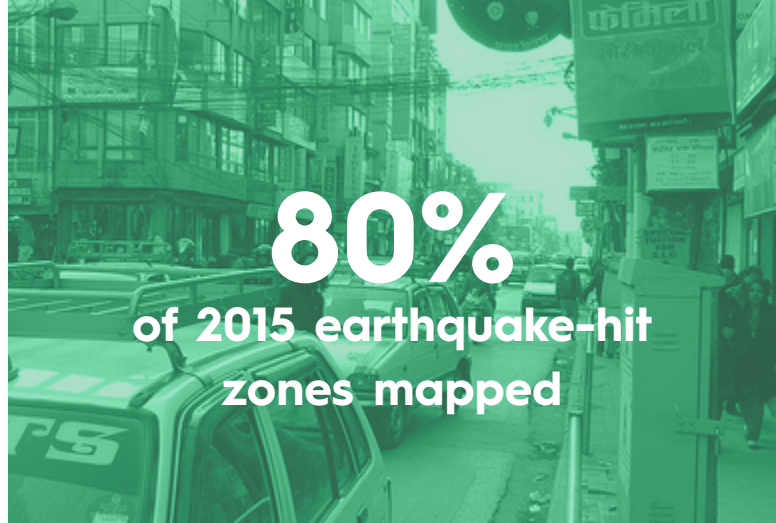


LEVERAGING VOLUNTEERS FOR MAPPING ACTIVITIES

Under the project, volunteers have used the open-source OpenStreetMap (OSM) platform to map road networks, schools, and health facilities. Over 130,000 buildings were mapped and more than 1,500 people in Kathmandu were trained in OSM over two years. The remote mapping was combined with extensive on-the-ground verification.

Mapping activities in the Kathmandu Valley were aimed at preparedness and risk reduction, with the knowledge that any data would be valuable when the next earthquake struck. When two high-magnitude earthquakes with an epicenter near Kathmandu struck Nepal in April and May 2015, causing the deaths of nearly 9,000 people and destroying over a half a million homes, information gathered from this project proved crucial and helped inform response and recovery efforts.

The data collected included building type and incorporated construction characteristics to understand vulnerability to hazards. Other helpful information covered road networks, village names, and boundaries.



The project brought together stakeholders from the Department of Education, the National Society of Earthquake Technology, donor agencies, and civil society to create usable information through community mapping techniques, applications, and tools that inform decision making. The project also helped launch a local innovation lab, the non-profit Kathmandu Living Labs (KLL).

The Open Cities Kathmandu project concluded in the fall of 2013. However, organizations including KLL remain on the ground to pioneer mapping efforts. KLL is now a permanent organization and has received additional funding from the U.S. Embassy in Nepal and ICIMOD, a local technical organization, to continue OSM trainings and mapping activities. In addition to its mapping efforts, KLL has since been involved in several data collection projects designed to reduce disaster risk in Nepal such as damage assessments, relief distribution tracking and reconstruction monitoring. Building on the success of the Open Cities Kathmandu project, efforts under OpenDRI targeting urban areas have been scaled up globally, including to cities in Bangladesh, Indonesia, and the Philippines, as well as rural Malawi.

LESSONS LEARNED

Government involvement can provide legitimacy for disaster risk management and urban planning projects.

In order for mapping and other disaster risk management efforts to succeed, it is important to cultivate support at all levels of government. In Kathmandu, involving the Department of Education in activities helped build its confidence in using the data to prioritize seismic retrofitting projects. As part of this, the mapping team had an official letter of support that allowed them to gain access to schools and health facilities.

Technology and data projects must be long-term endeavors.

For example, field verification tests were performed following the first map training, yielding only a 50% accuracy rating. However, after providing further trainings over time to surveyors, the accuracy of the structural data collected by the mappers rose to 100%.

80%

of 2015 earthquake-hit zones mapped

EARTHQUAKE-HIT ZONES MAPPED

In response to the 2015 earthquakes, over 6,000 volunteers participated in adding data to OpenStreetMap (OSM), helping map up to 80% of the earthquake-hit zones. The project helped create base maps of the Kathmandu Valley by digitizing footprints for 126,105 buildings, mapping 3,716 kilometers of road network and surveying 2,256 schools and 350 health facilities.

DATA INFORMING BOTH EMERGENCY RESPONSE AND PREPAREDNESS PLANNING

The information collected was used by the Nepal military, the Red Cross, and many other organizations to provide on-the-ground emergency assistance. Further, organizations like USAID now incorporate the data collected through OSM Kathmandu into long-term disaster preparedness planning exercises.

CATALYZING AN OPEN DATA FOR RESILIENCE MOVEMENT

The project has been credited with catalyzing an open data for resilience movement in Nepal. Drawing on its pioneering mapping efforts, Kathmandu Living Labs (KLL) has since been involved in several data collection projects designed to reduce disaster risk. UNDP, DFID, UNOPS, the Swiss government and USAID have conducted follow-up mapping activities. Meanwhile, project participants who have joined the Nepali government have also trained other government employees on OSM.

"The Open Cities Project gave us lots of opportunities to explore, innovate, and create a foundation to advance the OSM movement in Nepal. We invested a lot of time in learning, and connecting technology and data to people. Technology is useful only if we can connect it to the everyday lives of people."

-- Dr. Nama Budhathaki, Founder and Executive Director of Kathmandu Living Labs