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Stories of Impact

A series highlighting achievements in disaster risk management

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Mapping Local Communities to Inform Response and Recovery in Nepal

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REGION: SOUTH ASIA
FOCUS: RISK IDENTIFICATION
COUNTRY: NEPAL

RESULTS:

- The Open Cities Kathmandu project helped create base maps of the Kathmandu Valley by digitizing building footprints, mapping road networks, and collecting information on other major points of interest. The project surveyed nearly 3,000 schools and 350 health facilities in the Kathmandu Valley in two years;
- In response to the 2015 earthquakes, over 6,000 volunteers participated in adding data to OpenStreetMap (OSM), mapping over 80% of the earthquake-hit zones. The information collected was used by the Nepal military, the Red Cross, and many other organizations to provide on-the-ground assistance;
- Organizations like USAID now incorporate the data collected through OSM Kathmandu into disaster preparedness planning exercises. Additionally, the American Red Cross remains engaged through technical contributions to OSM in Kathmandu.

Kathmandu is the world's most seismically at-risk urban area. As a result, beginning in November 2012, the Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Bank launched the Open Cities Kathmandu Project. Through this project, university students, volunteers, and government officials were trained to digitally map their communities using the open-source OpenStreetMap (OSM) platform.

When two high-magnitude earthquakes with an epicenter near Kathmandu struck Nepal in April and May 2015, killing 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.

GFDRR
Global Facility for Disaster Reduction and Recovery

WORLD BANK GROUP

CONTEXT:

As in many developing nations, mapping information in Nepal has been often outdated, missing data, and sometimes only accessible on a pay-per-view basis.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. The potential for a large earthquake in Nepal spurred the Open Cities Project, a program under GFDRR's Open Data for Resilience Initiative (OpenDRI) to build seismic resilience in the Kathmandu Valley's education and health infrastructure by training civilians to map their local areas.

APPROACH:

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. Supporting these efforts remotely, student volunteers began to map and digitize information for over 130,000 buildings, including businesses, schools, and hospitals. The remote mapping was combined with extensive on-the-ground verification.

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

The project, a partnership with Nepal's government, 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).

NEXT STEPS:

The Open Cities Kathmandu project concluded in the fall of 2013. However, organizations including KLL remain on the ground to pioneer mapping efforts. Building on the success of the Open Cities Kathmandu project, efforts under OpenDRI targeting urban areas have been scaled up globally, including cities in Bangladesh, Indonesia, and the Philippines, as well as rural Malawi. Additionally, 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.

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*ALL MONETARY VALUES IN USD

"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, to solve everyday problems."

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

LESSONS LEARNED:

- **Government involvement can provide legitimacy for disaster risk management and urban planning projects.** In Kathmandu, involving the Department of Education in activities helped build their 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 to carry out surveys.
- **Technology and data projects are 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%.