

H. Citizens' Participation and Crowdsourcing

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Crowdsourcing can make important contributions to risk assessments. The term was coined in 2006 by journalist Jeff Howe to describe the ways in which the internet and mobile phones are facilitating the outsourcing to the public of tasks traditionally reserved for experts¹.

Crowdsourcing and related approaches of citizen science and participatory mapping are gaining recognition and acceptance within disaster risk communities; but in reality, public participation in gathering scientific observation about the world is not a new phenomenon. Following the devastating Lisbon earthquake of 1755, volunteers from all over Europe reported their experiences to help researchers create an early version of a “shake map” that estimated the extent and intensity of the event². Today, the public participates in all kinds of scientific activity – from monitoring wildlife activity in their neighbourhoods to using internet platforms to classify distant galaxies. These approaches can play a valuable, if underexplored, role in national risk assessment.

Benefits of Crowdsourcing

The most obvious benefit of crowdsourcing is that it can be used to help collect large amounts of data in real time at potentially lower costs than traditional approaches. Indeed, the “power of the crowd”, when combined with modern information and communication technologies, is the ability to conduct simple tasks such as measurement or observation at scale by enlisting large numbers of participants. Though this potential is certainly significant, it is definitely not the only benefit of crowdsourcing information about risk assessment.

Another important reason to consider including crowdsourcing in risk assessment is that in addition to providing information, participants are themselves learning about risk in their area. Crowdsourcing thus becomes an avenue for risk communication through outreach and sensitization. Through involving new participants in the process, crowdsourced approaches also create opportunities to make risk assessment more inclusive. This can both improve the quality of the risk assessment through including local knowledge and raise public confidence in the results through increased understanding and ownership of the results.

¹ Howe, J. (2006). The Rise of Crowdsourcing. *Wired magazine* 14 (6). Available from www.wired.com/2006/06/crowds/

² Coen, D.R. (2012). *The Earthquake Observers: Disaster Science from Lisbon to Richter*. Chicago: University of Chicago Press.

Box 1**Open Cities Kathmandu project**

Nepal. In 2012, the Government, in partnership with the World Bank and the Global Facility for Disaster Reduction and Recovery, decided to conduct a risk assessment of health and education infrastructure in the Kathmandu Valley. The assessment was intended to help plan a major seismic retrofitting programme. Since, at the time, there was no comprehensive map of facilities or information about their condition or structural characteristics, it was necessary to develop an asset database that contained the location and basic exposure information for every school and medical post in Kathmandu.

Instead of contracting an engineering firm to develop this database, the project developed a unique partnership between the Government, the OpenStreetMap (OSM) community and several local universities and technical agencies to crowdsource this information.

The Open Cities Kathmandu project worked with local earthquake safety experts to develop a data model and training materials that would allow undergraduate students (with no background in engineering) to collect basic structural information such as the number of floors that could be used for risk assessment purposes.

Student volunteers from local universities, some of whom received course or internship credits for their participation, were trained in surveying methods and mapping using the OSM platform. Each team of volunteers was given responsibility for collecting information about schools and health facilities in a different section of the Kathmandu Valley. A small organizing team coordinated their work and ensured that the data were entered into OSM.

Over the course of eight weeks, participants produced a full asset database for over 2,500 schools and 350 health facilities in Kathmandu. The data were then made publicly available through the OSM platform. Using the skills and network of connections developed through the project, the organizing team went on to form a non-profit technology organization to pursue similar work in partnership with other development organizations working in Nepal. The group Kathmandu Living Labs provided technology and mapping support to the Government and aid agencies working in the response and recovery periods following the 2015 Nepal earthquakes.

Issues to consider when planning a crowdsourcing project

Designing an effective crowdsourcing project requires careful consideration of many factors, (a complete discussion of which is beyond the scope of this section). The first step is to decide what information participants will be asked to contribute to the risk assessment. Whether this is building characteristics to develop an asset database or mapped extents of past flood events, the request should be tailored to the level of expertise of the participants while meeting the scientific demands of the risk assessment it will inform. Once the desired information is known, options for collecting the data, whether via mobile app, website, or more analog approaches, can be assessed.

It's important to define early in the planning who "the crowd" will be. What, if any, technical background should participants have? How many participants are needed? How will they be recruited? Will they be compensated? Will the risk assessment team have time to provide active oversight and feedback? How can the project be sure to reach vulnerable or marginalized groups that typically might not be included?

Partnerships with universities, professional organizations and civil society groups can often be an effective means of identifying and enrolling contributors. These groups can also potentially support quality-control efforts for crowdsourced data. Examples such as the Open Cities Kathmandu project (box 1) demonstrate that, with proper forethought, crowdsourcing techniques can be used to provide high-quality data for national risk assessment.

Resources for further information

- Open Data for Resilience Initiative: Guide to Planning an Open Cities Mapping Project. Available from www.opencitiesproject.org/guide/
- Crowdsourced Geographic Information in Government. Available from [www.gfdrr.org/sites/gfdrr/files/publication/Crowdsourced Geographic Information Use in Government.pdf](http://www.gfdrr.org/sites/gfdrr/files/publication/Crowdsourced%20Geographic%20Information%20Use%20in%20Government.pdf)
- Open Mapping for the Sustainable Development Goals: A Practical Guide to Launching and Growing Open Mapping Initiatives at the National and Local Levels. Available from <https://static1.squarespace.com/static/55f7418ce4b0c5233375af19/t/57f2c796e6f2e11b28718f00/1475528602076/OpenMappingfortheSDGsGuide.pdf>

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