



PROJECT HIGHLIGHTS

Region: East Asia and Pacific
Country: Indonesia



Focus Area:
Risk Identification
Risk assessments (community-based, probabilistic modeling); risk mapping; information campaigns, public outreach, etc.

Using Participatory Mapping for Disaster Preparedness in Jakarta

OpenStreetMap brings together communities to strengthen resilience

Overview

Effective disaster risk management (DRM) requires robust data to inform decisions about investments in preparedness, mitigation and response. However, at the local level, high resolution information is rarely available. The online, open-source platform, OpenStreetMap, can help practitioners meet this need. OpenStreetMap relies on participatory mapping conducted by local communities, private and public actors who work together to collect and share detailed information about a given area. As part of the pilot project in Jakarta, Indonesia, high-resolution data has been collected to inform flood preparedness and contingency planning led by the Province of Jakarta's Disaster Management Agency (BPBD-DKI Jakarta). The data, available to the community and the general public, was used in the 2011/2012 Jakarta contingency emergency planning exercise. Going forward, the risk information can be used by decision-makers in preparedness, development and investment planning.

Challenges

Jakarta, a megacity with a population of more than 8.5 million, is frequently affected by flooding. For example, the 2007 floods affected more than a half million inhabitants, and caused more than US\$900 million worth of damages and losses. Risk information is sparse at the local level thus it is difficult to determine the city's vulnerability, raise public awareness and effectively manage risks. In addition, collecting risk data can be intensive and requires specific technical skills.

Approach

Data collection through OpenStreetMap tools encourages a community-driven approach to DRM. The OpenStreetMap pilot in Jakarta relied on community participation and stakeholder engagement to collect detailed information about local infrastructure. A unique element of the initiative is that it brought together different stakeholders from the public, private, and civil sectors. Participants included students from Jakarta universities, facilitators from villages within the Jakarta province, heads of villages, government officials, the Humanitarian OpenStreetMap Team, donors and partner organizations. The local community was trained in basic Geographic Information System (GIS) and OpenStreetMap (OSM) tools. To allow for wider use of the tools, the software and training materials were translated into Bahasa, the local language. Social media channels (Facebook, Twitter, Blogs) were used to build an online mapping community.

Results

The data collected through participatory mapping provides high-resolution baseline information for the Jakarta Province. that can be used to assess, communicate and manage risk. Moreover, this approach enhances knowledge transfer and capacity building within communities and between different stakeholders, raising collective awareness of disaster risk.



Highlights

Collection of risk data for 6,000 buildings and critical infrastructure, including schools, hospitals, places of worship, 2,668 neighborhood boundaries within the Province of Jakarta, and affected areas from past floods.

Freely available data for stakeholders who need detailed information for emergency planning, development and poverty reduction projects.

Strengthened technical capacity of the local stakeholders in GIS to sustain, use and further develop existing risk datasets.

Participatory mapping to bring together officials, practitioners, students, and citizens to actively engage in disaster preparedness and contingency planning.



Key highlights include:

- Detailed data collected for 6,000 buildings and critical infrastructure, including schools, hospitals, places of worship, and all 2,668 neighborhood boundaries within the Province of Jakarta, including the affected areas affected by past floods.
- Over 500 representatives from Jakarta’s 267 communities participated in workshops and 70 students from the University of Indonesia were trained in the use of OpenStreetMap and basic GIS skills.
- Training materials were provided in local language and risk information was disseminated on large-scale map printouts.
- The high-resolution data was used to reveal the buildings and communities most likely to be affected by a flood disaster. This analysis informed the 2011/2012 disaster management agencies’ contingency plan, which specified actions required by disaster management entities at the province and district levels, and listed available emergency response equipment and the exact locations of evacuation sites needed in case of a flood emergency.
- This high-resolution data is freely available for practitioners and the general public for understanding disaster risk, planning, development and poverty reduction projects.

Partnership

The Jakarta OpenStreetMap project is led by the Province of Jakarta’s Disaster Management Agency (BPBD-DKI Jakarta) with support from the Indonesian National Disaster Management Agency (BNPB), Australian Aid Agency (AusAID), Australia-Indonesia Facility for Disaster Reduction (AIFDR), the Humanitarian OpenStreetMap Team (HOT) and the World Bank/GFDRR. The work is part of a collaboration with the Open Data for Resilience Initiative (OpenDRI), led by the World Bank and GFDRR, which aims to reduce the impact of disasters by empowering stakeholders from the public sector and the civil society with robust risk information and analytical tools to support decision-making.

Next Steps

Given the success of the mapping exercise, BNPB is rolling out this approach in high-risk areas of Indonesia. A next step will involve training students and local government as facilitators to engage citizens in disaster preparedness and contingency planning. Indonesia’s National Mapping Agency (Badan Informasi Geospasial, BIG) is currently working with disaster management agencies and stakeholders to develop spatial data standards, data validation process and standard operating procedure for participatory mapping. The long-term aim is to increase the technical capacity of community members so that mapping data can be regularly updated through the OpenStreetMap tools - a practice which has proved sustainable in other countries.

LEARN MORE

Indonesia OpenStreetMap website: <http://openstreetmap.or.id>

GFDRR OpenDRI website: <http://www.gfdr.org/gfdr/labs>



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OpenStreetMap Workshop: OpenStreetMap informs decisions about investments in preparedness and response to natural hazards to protect communities.

“The example of the National Capital Province of Jakarta is very encouraging where using the OpenStreetMap online platform, detailed neighborhood scale mapping of administrative boundary and disaster response assets such as shelters, logistic centers and evacuation route for flood preparedness can be mapped in only one week.”

Sugeng Triutomo
Deputy Chief for Prevention and Preparedness
National Agency for Disaster Management (BNPB)
Government of Indonesia

Lessons Learned

Engaging various stakeholders, including government officials, local populations and the private sector, helps to raise disaster awareness, increase the understanding of risk, encourage cooperation and in this way strengthen the collective resilience of affected communities.

Social media, participatory mapping tools, local language materials and training programs, as well as working closely with local partners can help increase program outreach and strengthens stakeholder engagement.