# Community Risk Mapping

Involving the local community is one of the best approaches for prevention and/or mitigation of disaster, and might even include activities such as geo-data collection, map generation, action-plan development and data maintenance. Mapping enables a community to recognise its own resources and capacities, important in changing the "victim and survivor" mindset in relation to hazard; the idea that one must wait passively for rescuers and relief workers to bring help. In the battle against disaster the individual must be shown how the community can act to avoid it; he must be persuaded to participate.

Since the 1990s community-based disaster-risk management (CBDRM), the approach advocated by the Asian Disaster Preparedness Center (ADPC) has been evolving, developing recognition of community resources and knowledge and correcting the defects of the top-down approach. CBDRM can also enable people to respond to an emergency situation even before outside help arrives. Sometimes CBDRM is misunderstood to be outsider activity for the benefit of a community; in fact CBDRM must be done by the community itself. A CBDRM process has sequential stages that can build up into a participatory disaster-risk management system, including community selection, rapport-building and understanding the community, risk-assessment and planning, building and training an organisation, implementation and monitoring and evaluation.

Participatory Disaster Risk Assessment aims at diagnosing the risks and how people can overcome them, and involves guided assessment of hazard, vulnerability and capacity. Guidance is effected by training in basic concepts and in the role of the community. Community members then characterise the hazards they face; their vulnerabilities and resources, check this exercise by field-work, and map it all. Finally, action plans are developed based on the findings and the map. In this way the community is able to perceive the risks facing it, own the data and understand what it has on the ground to combat hazard. An important caveat is that a community should not be the only stakeholder; local government participation in, for example, training sessions, ensures that officials are aware of the process, the data and its quality, and of any assessments and action plans.

As they map, community members put into their spatial context local resources such as landmarks, houses, roads, rivers, schools, and hospitals, and the people who control these resources are inventoried. Potential hazard and its extent is mapped, marked or coloured in. Next, members living in vulnerable areas or having few resources are identified and their medical fitness and evacuation priority determined. Everyone can provide data; for example, in flood-risk mapping, data provided by locals may include height of flood, presence of potable water, or a tall house in the neighbourhood suited for a temporary evacuation centre. Casting a professional eye over community maps one sees absence of scale, projection and arrow indicating north, and the top is usually not north-oriented. Hazard, vulnerability and resources are often represented on the same map. Colour use is determined by culture, but if people are made aware of the colour-coding scheme used by a national disaster-management agency, they will use it.

Rather than just generating another GIS application, the GIS community would better serve by comparing hazard areas on a community map with their own and going into the field with locals to check and update their maps. A community is often happy to get such input. Use of telecommunication might also help. For example, an early warning system (EWS) might include a two-way link between agency and families under threat. Some communities have received additional training in reading flood markers and rain gauges and transmitting data in real time over handheld, two-way radios with a city flood-monitoring station. The CBDRM training makes clear the need for regular checking, even 24/7 when necessary. This translates into improved hydrological data quality, prediction and scenario generation.

ADPC is pursuing CBDRM under the Program for Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia funded by USAID. In Dagupan City (Philippines) community maps have been used as input for the Disaster Information Management System, resulting in a working end-to-end flood EWS, and some communities have even held emergency exercises. Other cities developing EWS are Da Nang (Viet Nam), Kalutara (Sri Lanka), Hyderabad (Pakistan) and Dumangas (Philippines). Chittagong (Bangladesh) is to develop a flood and landslide EWS, while Landslide EWS with community inputs are on the agenda in Baguio (Philippines).

Our experience shows that these maps contain only what the community perceives as relevant to their risk. After landslides in Chittagong in June 2007 local people were urged to redraw their maps to include the landslide hazard, testimony that risk maps are living documents. All communities have used their maps to plan evacuation routes, emergency response and small-scale disaster-mitigation projects. The GIS community should watch and learn from this.