USAID/OFDA DISASTER RISK REDUCTION: EARTHQUAKES MAY 2012

OVERVIEW: EARTHQUAKE HAZARDS

Earthquakes, as well as the tsunamis, fires, and landslides that can occur in their wake, can devastate communities in a matter of seconds—destroying homes and infrastructure; disrupting water, food, and electricity supplies; and damaging local economies. According to data from the U.S. Geological Survey (USGS), earthquakes worldwide have resulted in the death of nearly 500,000 people in the past decade.

Although earthquakes cannot be predicted or prevented, proper mitigation and preparedness efforts can minimize casualties and economic impact. USAID's Office of U.S. Foreign Disaster Assistance (USAID/OFDA) supports earthquake disaster risk reduction (DRR) programs that identify needs within existing systems and increase resilience through targeted capacity building activities. USAID/OFDA DRR programs include providing technical assistance to academic and governmental agencies to conduct seismic hazards assessments and providing education to at-risk populations and community leaders on effective earthquake preparedness and response mechanisms. USAID/OFDA also supports projects in earthquake-prone areas to improve construction practices, such as in response to the Haiti earthquake in 2010.

TECHNICAL ASSISTANCE FOR EARTHQUAKE DRR

USAID/OFDA works with USGS to reduce earthquake risk through Earthquake Disaster Assistance Teams (EDAT) comprising seismologists, geologists, and tsunami and landslide experts, as appropriate. EDAT members have collaborated with scientists in countries such as Haiti, Indonesia, Malawi, China, and Turkey to better understand the local geology and its effect on earthquakes. The scientific data produced from EDAT and local counterparts' assessments are used to improve the understanding of the seismic hazard and serves as the basis for the creation, adoption, and implementation of appropriate building codes and land-use plans by local and national governments in affected countries. This ultimately reduces the adverse impacts of earthquakes.

The EDAT—composed of members of KOERI, AFAD, and USGS—visited collapsed buildings in downtown Erciş. The building on the immediate left collapsed entirely, while the next building remained standing, with the lower floor collapsed. (Photo: Kate Scharer, USGS).

EDAT Activities in Turkey

Following a magnitude 7.1 earthquake and multiple aftershocks in eastern Turkey's Van and Erciş area during October and November 2011, USAID/OFDA supported the deployment of an EDAT to provide technical assistance to the Government of Turkey's emergency response office (AFAD) and to Turkish seismologists at Bosphorus University's Kandilli Observatory (KOERI) and the Middle East Technical University's Earthquake Engineering Research Center. The EDAT collaborated with Turkish seismologists and AFAD staff to conduct damage assessments and evaluate existing systems for monitoring and assessing earthquake hazards. The EDAT concluded its effort by consolidating a list of technical recommendations for improving DRR measures throughout the country to help mitigate the impact of future earthquakes.

EDAT Activities in Haiti

The magnitude 7.0 earthquake that struck 10 miles southwest of Haiti's capital of Port-au-Prince in January 2010 was the most powerful earthquake the country had experienced in more than a century. To reduce the risk posed by future large earthquakes in Haiti, USAID/OFDA deployed an EDAT to work with counterparts from the Haitian Bureau of Mines and Energy (BME) to address immediate seismic-hazard needs. The EDAT participated with BME in geological investigations, landslide studies, seismic hazard assessment map development, and seismic network installation. In Fiscal Year 2011, the EDAT conducted follow-up work to

develop urban hazard maps to guide reconstruction efforts, collect additional hazard information, and collaborate with Haitian agencies to establish a permanent seismic monitoring network in Haiti. These efforts will provide valuable information about the seismic hazard so that communities can rebuild more safely and reduce the impacts of future earthquakes.

Worldwide Earthquake Modeling through GEM

USAID/OFDA supports the Global Earthquake Model Foundation (GEM), which is a public-private partnership that aims to establish uniform and accessible standards for calculating and communicating earthquake risk. GEM's mission is to engage a global collaborative effort in the design, development, and deployment of state-of-the-art models and tools for earthquake risk assessment. GEM provides a collaborative space for hundreds of organizations, including the World Bank, several U.N. agencies, government agencies, and independent technical experts, to create a dynamic and open model for calculating the probability of potential damage from earthquakes worldwide that facilitates the wider adoption of the model for risk mitigation. The resulting earthquake models will not only analyze earthquake hazard exposure and vulnerability, but will also allow for assessment of risk and impact on societies and local economies in the short, medium, and long term. Such decision-making tools will allow users—ranging from governments to home owners—to process earthquake risk information and explore potential solutions to reduce the impacts of earthquakes on lives and economies.

PEER participants take part in a collapsed structure urban search-and-rescue exercise in Thailand. (Photo: USAID/OFDA).

Enhancing Earthquake Response

USAID/OFDA also supports the Program for the Enhancement of Emergency Response (PEER), which promotes disaster preparedness through the development of national and regional cadres of professional emergency response instructors and assists local, regional, and national disaster management agencies to organize and conduct standardized training in medical first response, collapsed structure search and rescue, and hospital preparedness for mass casualties following a disaster. The program was designed primarily for earthquake preparedness but is widely applicable to any collapsed structure or mass casualty situation. Managed by the Asian Disaster Preparedness Center (ADPC), Phase I began in 1998 in India, Indonesia, Nepal, and the Philippines. Phase II expanded activities to Bangladesh and Pakistan and increased the scope of the program. Phase III, which increases training of local emergency responders, expanded to include Cambodia, Laos, Vietnam, and Thailand. ADPC and the Kathmandu-based National Society for Earthquake Technology are jointly implementing Phase III of PEER, scheduled to continue through March 2014.

Resources

- USGS Earthquake Hazards Program: http://earthquake.usgs.gov/
- GEM: http://www.globalquakemodel.org/
- PEER: http://www.nset.org.np/peer/
- USAID/OFDA DRR Programs: http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/publications/prep_mit/index.html
- USAID/OFDA Shelter and Settlements Sector Update: http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/sectors/files/fy2011/shelter_settlements_sector_update_03-2011.pdf

USAID/OFDA Contact

Gari Mayberry, Geoscience Advisor, (202) 712-0692 or gmayberry@usaid.gov