BUREAU FOR HUMANITARIAN ASSISTANCE

Geological Hazards

OVERVIEW

Geological hazards—including earthquakes, landslides, and volcanoes—threaten billions of people worldwide and can devastate communities in a matter of seconds by killing or injuring numerous individuals, destroying houses, causing food and water shortages, and disrupting livelihoods. Although geological hazards are not preventable, proper risk mitigation and preparedness efforts can minimize the effects of geological events by saving lives, promoting resilience, and reducing the adverse economic effects of disasters.

USAID/BHA Natural Hazards and Technological Risks Funding in FY 2022[1]
$70,361,323

USAID's Bureau for Humanitarian Assistance (USAID/BHA) supports geological hazard preparedness and response activities, including disaster risk reduction programming, which emphasize a comprehensive approach to reducing the effects of geological disasters. In FY 2022, USAID/BHA geological hazard-related funding supported programing in Central, East, and South Asia; East Africa; Latin America and the Caribbean; the Pacific; and West Africa.

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[1] The Natural Hazards and Technological Risk (NHTR) sector supports capacity-strengthening activities to enhance the ability of communities to manage and respond to future risks. Geological hazards is a USAID/BHA sub-sector of USAID/BHA's NHTR sector. The funding amount reflects the total USAID/BHA contribution towards the NHTR sector, including $12,704,433 for geological hazards.

Fiji MRD, USGS, and USAID staff after investigating a landslide prone area in Suva, Fiji, as part of a joint visit from the USAID-supported earthquake, landslide, and volcano disaster assistance teams. *Photo courtesy of Fiji MRD.*

Bolstering Community Disaster and Risk Management Capacities

With support from USAID/BHA, Geohazards International (GHI) works to build the capacity of communities to manage the risk and effects of disasters induced by natural hazards such as earthquakes and landslides. In FY 2022, GHI's project targeted communities highly susceptible to geological hazards and in areas where the compounding effects of these disasters could cause significant and long-lasting damage to infrastructure and livelihoods. GHI uses available research and technical expertise to develop example scenarios of earthquakes, landslides, and volcanoes to assist local community members and decision makers in understanding the critical steps needed to mitigate and prepare for disasters. In FY 2022, GHI interviewed program participants and reviewed technical information in Ecuador, Nepal, and New Zealand to assess the effectiveness of simulated geological hazard event scenarios and further develop high-impact scenarios to inform risk reduction efforts. These planning scenarios are intended to facilitate awareness and prompt action in the event of a disaster by assisting decision makers to understand how earthquakes and other hazards transpire and affect communities by breaking down broad concepts—such as earthquake risk—into impacts to communities, interests, and systems. GHI also hosted workshops in FY 2022 to gather input on challenges and barriers to multi-hazard scenario development, and to inform guidance for future development of scenarios across multiple countries.

Empowering Communities With Earthquake Risk and Mitigation Strategies

USAID/BHA partner Global Earthquake Model Foundation (GEM) is a public–private partnership that aims to establish uniform and accessible standards for assessing and communicating local earthquake risk. GEM began work in FY 2022 on its Forecasting and Communicating Earthquake Hazard and Risk (FORCE) project, which enables decision makers to better implement long-term planning and account for mitigation risks. During its first year, FORCE focused on identifying and engaging local partners from disaster-prone regions, including Bhutan, El Salvador, Nepal, and from communities living in countries across the Indian and Pacific oceans. FORCE also provides online training materials to help local emergency managers and scientists develop earthquake risk assessment and loss models. Local partners work with GEM throughout the project to generate models that meet the needs and interests of communities at risk from geologic hazards.

Leveraging Technical Expertise in Response to Geological Hazards in Fiji

USAID/BHA and the U.S. Geological Survey (USGS) support three programs working to provide technical expertise to inform international humanitarian assistance activities related to geological hazards. Since 2019, the joint USAID/BHA–USGS Landslide Disaster Assistance Team (LDAT) has deployed equipment to monitor landslide activity in at-risk areas, provided technical assistance to assist scientists identify and assess landslide hazards, and responded to landslide events. Similarly, the Earthquake Disaster Assistance Team (EDAT) has worked since 2009 to assess potential ongoing threats, locate earthquakes, and model expected effects. The longest standing joint USAID/BHA–USGS program, the Volcano Disaster Assistance Program (VDAP), has worked since 1986 to provide volcano hazard assessment training, early warning system development, and monitoring equipment installation near active volcanoes globally. During the fiscal year, all three programs worked together in response to a technical assistance request by Fiji following the eruption of the Hunga Tonga-Hunga Ha'apai Volcano in nearby Tonga in January 2022. The eruption generated significant ashfall and tsunami waves—affecting an estimated 100,000 people, or more than two-thirds of Tonga's population—and highlighted the need for further disaster preparedness efforts in the South Pacific. In August 2022, EDAT, LDAT, and VDAP sent a joint team to Fiji to discuss geological hazards with counterparts from the Fiji Department of Mineral Resources (MRD). The teams' findings supported a plan for the MRD to address earthquake, landslide, and volcano mitigation activities in the Pacific and continue strengthening preparedness efforts.

VDAP Strengthens Volcano Monitoring Capabilities Worldwide

More than 3.5 million people living near volcanoes worldwide—including in Chile, El Salvador, Indonesia, and Papua New Guinea—benefitted from VDAP interventions in FY 2022. VDAP continued assisting local actors with modifying policies and procedures to better monitor volcanoes—including forecasting eruptions, interpreting seismic activity, and producing situational reports—and activating virtual volcano responses to Tonga's Hunga Tonga-Hunga Ha'apai Volcano and to the Chiles and Cerro Negro volcanoes in Colombia and Ecuador. Additionally, VDAP led training sessions and workshops for approximately 170 people providing technical expertise in volcano related disaster risk management. Notably, VDAP's assistance to Solomon Islands in

VDAP engineer Aaron Rinehart describes solar panel attachments to MMERE staff during a station demonstration. *Photo courtesy of Rowdy LaFevers, USGS.*

FY 2022 provided essential disaster monitoring training following increased earthquake activity—including elevated steam and gas emissions emanating from the crater of Savo Volcano on Savo Island—in mid-2021. To enhance the Government of Solomon Islands' (GoSI) volcano monitoring capabilities, VDAP engineers traveled to the country from late-July to mid-August 2022 training and assisting counterparts from the GoSI Ministry of Mines, Energy, and Rural Electrification (MMERE) to install and operate volcano monitoring equipment, including power systems, seismic detection devices, station infrastructure, and video cameras. VDAP supported MMERE in the development of a new volcano monitoring station, which provides MMERE with data that can be used to forecast potential future volcanic activity so that communities can evacuate to a safer area before an eruption. Furthermore, MMERE personnel used their skills to independently install additional VDAP-donated monitoring equipment to monitor the Savo Volcano.

More information on USAID/BHA sectors can be found at **usaid.gov/humanitarian-assistance/what-we-do/humanitarian-sectors**