Natural and Technological Risks: Hydrometeorological Hazards Update

Highlights of Fiscal Year (FY) 2014 Activities | OCTOBER 2014

HYDROMETEOROLOGICAL HAZARDS SUBSECTOR OVERVIEW

Climate, weather, and water-induced disasters—such as floods, droughts, cyclones, and tsunamis—account for the largest number of natural disasters worldwide and affect more people than any other type of natural hazard. Extreme weather and climate events often have severe socioeconomic consequences, including loss of life, property, and livelihoods; scarcity of food, water, and energy; and adverse impacts on health and the environment.

In FY 2014, USAID's Office of U.S. Foreign Disaster Assistance (USAID/OFDA) provided nearly $9.5 million in support of hydrometeorological disaster risk reduction (DRR) activities. Hydrometeorological DRR assistance reduces populations' vulnerability to climate and weather hazards through an integrated and multi-sector approach that addresses community needs while emphasizing locally sustainable and environmentally sensitive measures. USAID/OFDA works closely with vulnerable communities, as well as national and local governments, international and regional organizations, universities, and non-governmental organizations (NGOs) to increase resilience to climate- and weather-induced disasters.

ENHANCING GLOBAL FLASH FLOOD GUIDANCE AND EARLY WARNING SYSTEMS

Each year, flash floods result in an average of 5,000 deaths globally. In an effort to reduce the loss of life and the economic impact of floods, USAID/OFDA—in partnership with the U.N. World Meteorological Organization (WMO), the National Oceanic and Atmospheric Administration (NOAA), the Hydrologic Research Center, and the national meteorological and hydrological services (NMHSs) of host countries—initiated a collaborative program in 2008 to assist NMHSs to monitor potential flash floods, thereby improving early warning lead time and enabling quick response. Through new technologies, forecaster trainings, and technical assistance, the program aims to provide flash flood early warning guidance in countries where no such early warning capacity exists. In FY 2014, USAID/OFDA continued supporting the initiative, with systems operational or in various stages of development in more than 50 countries in Latin America, the Caribbean, the Middle East, South Asia, Southeast Asia, Central Asia, southeastern Europe, and southern Africa.

IMPROVING EARLY WARNING IN RURAL AND REMOTE AREAS: THE CHATTY BEETLE

A staff member tests the Chatty Beetle at the Tonga Meteorological Service. *(Photo courtesy of NOAA)*

Rapid dissemination of information concerning weather and climate warnings is a challenge, particularly for countries that have substantial rural populations. While many remote communities in the Pacific region already possess means of receiving basic warnings for cyclones, tsunamis, or other hazards, these communities often are unable to operate the communications link 24 hours per day due to limited electricity, staffing, or other factors. In response, USAID/OFDA's RANET program—Radio and Internet for the Communication of Hydrometeorological and Climate Related Information—supported NOAA's National Weather Service and the Joint Office of Science Support of the University Corporation for Atmospheric Research in the development of a "Chatty Beetle." The Chatty Beetle is a hardened, paging device that can sound a local alarm and support two-way text messaging, while retaining the ability to operate anywhere in the Pacific and remain in stand-by for long periods of

time. USAID/OFDA partners have deployed the Chatty Beetle in Africa and the Pacific as part of an extended pilot program. Thus far, the device has assisted in collecting remote observations, aided with search and rescue missions, and improved communications during hazardous events. To increase the sustainability of the program, USAID/OFDA partners in FY 2014 initiated the development of locally built Chatty Beetles, utilizing 3D printers and low-cost electronics.

PRODUCING LOCALLY THROUGH MICRO-MANUFACTURING AND ASSEMBLY

Meteorological observing station manufactured using 3D printers. *(Photo courtesy of NOAA)*

The high costs of commercial meteorological observation and communications equipment and systems have limited the services and capacity of NMHSs. In addition to considerable initial costs, these systems require maintenance and repair services that local technicians often cannot provide—increasing the cost of ownership and the frequency and duration of outages. In response, USAID/OFDA's Micro-Manufacturing and Assembly (MMA) program strengthens the capacity of NMHSs through support for the production and assembly of unique components locally. The MMA program reduces costs while simplifying and expediting repairs, increasing the scale and sustainability of meteorological networks. Additionally, the program enables NMHSs to control design and deploy meteorological networks—comprising weather observation stations, stream gauges, sirens, and communications relays—that are consistent with local capabilities and needs. During the summer of 2014, the MMA program began field tests of demonstration stations, 3D-printed components, and electronic sensors. USAID/OFDA plans to expand the program in 2015, providing NMHSs with the training and equipment to construct local weather stations.

BUILDING CAPACITY THROUGH CLIMATE VARIABILITY AND PREDICTION WORKSHOPS

Scientists from 28 countries participated in the sixth international training workshop on climate variability and prediction in Istanbul, Turkey. (*Photo courtesy of Turkish State Meteorological Services)*

In response to increased demand for improved national and regional capacity, USAID/OFDA and NOAA, in partnership with WMO and NMHSs, organized a series of workshops throughout the world to establish and strengthen national preparedness for hydrometeorological events. The regional climate variability and prediction workshops aim to address the cross-border nature of climate by encouraging information exchange, including lessons learned, among meteorologists. To reduce the impact of climate fluctuations on local populations, trainings seek to increase meteorologists' capacity to produce climate information for decision-makers. In August 2014, representatives from 28 countries participated in the sixth annual workshop held in Istanbul, Turkey.

LESSONS LEARNED FOR ADAPTING DRR TO A CHANGING CLIMATE

Disaster risk reduction and climate change adaptation programs have a shared objective: creating resilient societies in the face of changing climate and environmental conditions. Through coordinating activities—sharing methodologies, exchanging lessons learned, and integrating, where appropriate, activities with common objectives—DRR and climate change practitioners can improve the efficiency, effectiveness, and sustainability of projects. In FY 2014, USAID/OFDA surveyed more than 10 years of its hydrometeorological DRR projects to identify lessons learned and inform future activities in the midst of climate change.

USAID/OFDA CONTACT
Sezin Tokar, *Senior Hydrometeorological Hazards Advisor,* stokar@usaid.gov