BUREAU FOR DEMOCRACY, CONFLICT, AND HUMANITARIAN ASSISTANCE (DCHA)
OFFICE OF U.S. FOREIGN DISASTER ASSISTANCE (OFDA)

USAID/OFDA Programs to Reduce Vulnerabilities to Climate and Weather-Induced Disasters

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BACKGROUND

Climate and weather-induced disasters account for the largest number of natural disasters and affect more people than any other type of natural hazards. Extreme weather and climate events often have severe socioeconomic impacts, such as loss of lives and livelihoods; food, water, and energy scarcity; and adverse impacts on human health and the environment. USAID/OFDA-supported hydrometeorological disaster risk reduction (DRR) activities are aimed at reducing vulnerability to climate and weather hazards through an integrated and multi-sectoral approach that addresses community needs while emphasizing locally sustainable and environmentally sensitive measures.

Extreme weather events only become disasters when converging with vulnerabilities. The Hyogo Framework for Action, the overall guiding framework for the International Strategy for Disaster Reduction, calls for the development and strengthening of institutions, mechanisms, and capacities to build resilience to hazards. Identifying, monitoring, understanding, and forecasting hydrometeorological hazards are critical steps for the development of strategies and policies, and implementing measures to reduce risks.

USAID/OFDA works closely with vulnerable communities, as well as with national and local governments, international and regional organizations, universities, and non-governmental organizations (NGOs) to increase resilience to climate and weather induced disasters. USAID/OFDA DRR programs emphasize an "end-to-end" approach that identifies needs in existing systems and then increases resilience to climate-induced disasters through targeted capacity building. Hydrometeorological DRR activities also have strong linkages to natural resources management, building resilience to support sustainable development.

The following information is a brief description of recent USAID/OFDA programs that aim to mitigate the impact of climate and weather-induced disasters, increasing resiliency to climate variability and change. Summaries are provided for programs grouped according to region.

Global Programs

- Radio and Internet for the Communication of Hydro-Meteorological and Climate Related Information (RANET): RANET is designed to make climate, weather, hydrological, and other related information more accessible to remote populations in order to aid day-to-day resource decisions and preparation against natural hazards. The RANET project has expanded in scope to include other relevant information, including hydrological and agricultural data and advice, as well as partnerships with development organizations concerned about HIV and AIDS, health, agricultural best practices, education, and other priorities. Developed by USAID/OFDA, the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), national meteorological and hydrological services, various donors, and NGO partners, RANET combines innovative technologies in sustainable applications and partnerships at the community level to ensure that the networks created serve the entirety of household information needs. Since 2000, RANET has expanded to 16 African countries, with ongoing pilot activities in Asia and the Pacific.

- NOAA Technical Assistance: Through an interagency agreement with USAID/OFDA, the NOAA National Weather Service provides access to weather, climate, and hydrometeorology experts, data and information. The program assists national, international, and regional entities in providing weather, climate, and hydrometeorological services; disaster response; and risk reduction programs to reduce vulnerability to extreme hydrometeorological events.

- Climate Training Workshop: USAID/OFDA supported a joint workshop with NOAA, the U.N. World Meteorological Organization (WMO), and the Vietnamese Institute of Meteorology, Hydrology, and Environment to strengthen capacity of institutions in the Indian Ocean Basin in climate monitoring, climate risk assessment, and delivery of climate services, as well as provide hands-on operational training on climate diagnostics and predictions. Participants

included meteorologists from 17 countries in eastern and southern Africa and Asia. The workshop was the first in a series of global training workshops in climate services.

- Climate Prediction and Applications for Disaster Risk Reduction in Greater Horn of Africa (GHA): The Inter-Governmental Authority on Development Climate Prediction and Application Center (ICPAC) and WMO have implemented the regional program to reduce the vulnerability climate-related disaster risks. In the ten greater Horn of Africa countries, the project has improved climate early warning systems for DRR, building national and regional capacity on climate information and services applications, and improving climate early warning dissemination in the region.

- Global Flash Flood Guidance and Early Warning System: In 2008, USAID/OFDA, in partnership with WMO, NOAA and the Hydrologic Research Center, initiated a program to help develop global infrastructure and support the development of regional implementation of technology, training, protocols, and procedures to lessen the impacts of flash floods. The program plans to provide rapid assessments of potential flash floods, improving early warning lead-time and allowing for rapid response.

- Globally Applicable Methods for Characterization of Flood Hazards: The U.N. Environment Program and the U.S Geological Survey (USGS), in coordination with the U.N. Development Program's Global Risk Identification Program and regional and national entities, are implementing the program, which aims to increase the effectiveness of flood preparedness and mitigation activities. Using globally available geographic and hydrometeorological data sets for river basins, the project will develop techniques and tools to permit characterization of local flood hazards worldwide.

- Natural Hazards Mitigation Interagency Agreement: An interagency agreement with USGS enables USAID/OFDA to quickly access experts in the fields of hydrology, biology, tsunamis, landslides, mapping, and geographic information systems to assist before, during, and after natural disasters.

Asia Region Programs

- Asia Flood Network (AFN): AFN aims to reduce flood hazard vulnerability in Asia through building regional and national capacity in climate, weather, and hydrological forecasting, encouraging information exchange in transboundary river basins and improving the dissemination of forecasts and warnings to at-risk populations. USAID/OFDA, NOAA, USGS, the Mekong River Commission, the International Centre for Integrated Mountain Development (ICIMOD), and partners in Asia are jointly implementing AFN. Current activities are focused on Cambodia, Laos, Thailand, Vietnam, and parts of China in the Mekong river basin and Afghanistan, Bangladesh, Bhutan, Burma, India, Nepal, and Pakistan, and parts of China in the Ganges-Brahmaputra–Megna river basin.

- Program for Hydrometeorological Risk Mitigation in Asian Cities: Implemented by the Asia Disaster Preparedness Center (ADPC) in Bangkok, the program promotes hydrometeorological disaster preparedness through demonstration projects in six highly vulnerable secondary urban centers in Bangladesh, Pakistan, the Philippines, Sri Lanka, Vietnam, and Indonesia.

- Capacity Building for Flash Floods Management and Sustainable Development in the Himalayas: USAID/OFDA has supported technical assessments and forums for decision-makers and technical personnel from the Hindu Kush–Himalayan region to strengthen capacities on flash flood management, promote collaboration, and develop regional approaches to flood management, flood early warning systems, and broader transboundary water issues. A regional organization based in Nepal, ICIMOD hosts the forums and trainings, which include participants from countries throughout South Asia and the Himalayan region. ICIMOD also develops guidelines for implementing partners and communities.

- Drought Preparedness in India and Pakistan: Catholic Relief Services (CRS) is implementing a three-year project to improve drought resilience among communities in Rajasthan, India, and Sindh, Pakistan. Through this program, vulnerable communities will be better able to harvest and store rainwater for increased domestic and agricultural use throughout the year, adopt water-efficient agricultural practices, utilize improved land-use techniques for agriculture and livestock, and engage with local government and other actors.

- Emergency Flood Preparedness in Bangladesh: Save the Children/US, World Vision, and lead agency CARE joined to form the Emergency Working Group of Cooperative Sponsors (EWG) to improve emergency response to floods in

Bangladesh. The EWG also works to reduce the incidence of health problems associated with a disaster, particularly water-borne diseases. With USAID/OFDA support, the EWG promotes coordination between communities and local authorities and maintains and operates mobile water purification plants, zodiac boats, and a mobile health unit.

- Community-based Flood Monitoring and Forecasting in Bangladesh: This five-year USAID/OFDA project supports a community-based approach for flood monitoring and forecasting implement by Riverside Technology Incorporated to reduce the vulnerability of communities living in flood plains and mitigate future flood damage in Bangladesh.

- Drought Preparedness in Southeast Asia: With USAID/OFDA support, CARE is implementing drought preparedness activities in Cambodia, East Timor, and Vietnam. The program promotes community-based drought preparedness planning while also developing expertise in effective low-cost and innovative drought mitigation and preparedness technologies.

- Flood Early Warning Systems in the Mekong River Basin: In January 2003, USAID/OFDA and the Mekong River Commission, an inter-governmental river basin organization based in Laos, began an innovative demonstration project to strengthen warnings to communities most at risk to floods. The five-year program developed appropriate flood information to enable the most vulnerable communities in Cambodia to effectively prepare for floods.

- Flood Proofing for Households in the Mekong Delta, Vietnam: USAID/OFDA is supporting the flood proofing of homes in the poorest flood-prone villages in the Mekong Delta. In collaboration with the Government of Vietnam's Ministry of Agriculture and Rural Development, the program is also training officials and the affected populations on the use of flood mapping to reduce loss of life, economic consequences, and disruption of livelihoods. The program is implementing river flood alert systems and a television and radio flood disaster warning system in three provinces and at the national level.

Africa Region Programs

- Zambezi River Basin Initiative: USAID/OFDA is supporting a three-year initiative implemented by the International Federation of Red Cross and Red Crescent Societies (IFRC) and a related program led by the WMO to reduce flood vulnerability in the seven countries which encompass the Zambezi river basin – Angola, Botswana, Malawi, Mozambique, Namibia, Zambia, and Zimbabwe. IFRC will help vulnerable communities adapt to climate-related threats such as flooding through conservation based farming techniques, soil conservation, water-harvesting techniques, and reforestation. IFRC will also build DRR and disaster management capacity in both riverine communities and local Red Cross branches. Complementing IFRC's efforts, the WMO, NOAA, USGS, and national meteorological and hydrological services and disaster management entities, the initiative intends to assess flood early warning capacity in riparian countries and to formulate a consensus strategy. Focusing on basin-wide cooperation and an integrated approach to flood early warning, the activity will address the technical, institutional, and capacity-building issues related to developing flood preparedness and early warning systems. The strategy and IFRC programming will help link technology to communities, encouraging the development of a framework for a sustainable, integrated flood early warning and mitigation in the Zambezi basin.

- Drought Mitigation in Swaziland: USAID/OFDA-funded drought mitigation initiatives strengthen the resilience of the most vulnerable communities in Southern Africa. In partnership with International Relief and Development (IRD), USAID/OFDA is strengthening food security through a community-based drought mitigation program in Shiselweni and Lubombo districts in Swaziland.

- Reduction of Drought Vulnerabilities in Southern Swaziland: IRD is implementing a three-year program, initiated in 2009, to reduce drought vulnerability of communities in southern Swaziland. The USAID/OFDA-funded program will build on successes and lessons learned from a previous USAID/OFDA-funded IRD program to expand low-cost and low-input conservation farming techniques. The program combines agriculture activities with livestock management and water provision interventions, including rooftop water-harvesting systems at schools, as well as the introduction of water management schemes that will enhance the sustainability of water supply activities.

- Mountain Integrated Conservation Agriculture (MICA): CARE and CRS are jointly implementing a two-year USAID/OFDA-funded project to strengthen rural mountain livelihoods in Lesotho by combining the promotion of conservation agriculture techniques with improved access to markets and improved seed varieties and fertilizers. The project aims to increase agricultural production while reducing the vulnerability of rural livelihoods to drought and soil

erosion. The NGOs also will train community farmer groups in project planning, management, and marketing to enable communities to effectively manage natural resources and surplus production.

- Lesotho Irrigation Project II (LIP II): Building on experience gained from the USAID/OFDA funded Lesotho Irrigation Project in FY08, the one-year LIP II intervention focuses on gravity fed irrigation of field crops and homestead gardens. The project is establishing new irrigation schemes to compliment other ongoing agriculture and food security projects while expanding and enhancing current LIP sites to improve community access to water for irrigation. The project, led by CRS, is implemented through a consortium of CRS, World Vision, and CARE.

- Integrated Water Management and Crop Diversification Project in Southern Zambia: Implemented by Africare, the goal of the USAID/OFDA-funded project is to build resilience to external shocks and improve food security for smallholder farmers in two drought-prone districts in Southern Zambia. The project promotes sustainable water management techniques and technologies, encourages crop diversification with both high-value vegetable crops and more drought-tolerant crops, expands seed multiplication for open-pollinated varieties, encourages the use of drip irrigation and treadle pumps, and introduces goat production.

- Community-based Disaster and Natural Resource Management: Through USAID/OFDA funding, Concern is implementing a program to increase the capacity of local government and community structures to prevent, mitigate, and respond to the impacts of disasters in the Western Province of Zambia. The program, initiated in 2009, also helps to protect rural household livelihood assets through community-based disaster management activities and improved household production.

- Strengthening Peri-Urban Risk Reduction in Zambia (SPURRZ): In FY 2009, USAID/OFDA is supporting CARE's efforts to reduce flood hazard risks among peri-urban populations living in Kanyama Settlement in Lusaka, through community-led DRR programming. Project activities include drainage construction, canal clearing, garbage removal, managing floods and epidemics, and developing DRR-sensitive municipal development plans.

- Rehabilitation through Irrigation and Production Extension (RIPE II): Building on the successful implementation activities of the USAID/OFDA-funded RIPE I program in Malawi in 2005, USAID/OFDA is supporting CRS to implement RIPE II. The program involves conducting irrigation activities to increase food production in the most vulnerable communities in Malawi.

- Drought Mitigation through Irrigation Promotion and Conservation Agriculture Extension: The USAID/OFDA-funded CARE program, initiated in 2009, extends the drought mitigation approaches developed under RIPE to three additional districts in Malawi. CARE prioritized the districts due to the terrain's suitability for small-scale irrigation approaches, the urgent need for conservation agriculture to prevent top soil loss, and the high number of localized crop failures resulting from both drought and flooding, while other areas of the country were reporting higher yields due to input increases.

- The River Value: Converting Risk to Opportunities: IRD, with USAID/OFDA funding, is working with flood-prone communities in Mozambique to develop opportunities created by the flooding. The two-year River Value program will work with local disaster risk management committees to increase production of staple post-flood crops and cash crops, increase access to clean water, and promote hygiene and sanitation.

- Flood Early Warning Systems in Mozambique: Since FY 2004, USAID/OFDA has contributed to the Mozambique Integrated Information Network for Decision-Making (MIND) project, part of USAID's Famine Early Warning Systems Network (FEWS NET). MIND has strengthened early warning systems for cyclones and flooding and helped improve disaster management and contingency planning in the Limpopo River Basin. The project includes flood risk mapping, community flood education, planning and preparedness, and establishment of RANET stations in highly vulnerable remote locations.

- Reduction of Drought and Cyclone Vulnerabilities in Southern Mozambique: In 2009, USAID/OFDA is supporting a two-year project implemented by IRD to reduce household drought and cyclone vulnerabilities in three districts of Inhambane Province. Activities increase the production of drought-resistant crops such as sorghum, cassava and legumes, increase market linkages, and promote the establishment of other income-generating activities, including apiculture and marketing of oil seeds. IRD also will work with vulnerable communities to establish cyclone early warning systems.

- Protection Against Livelihood Loss: In partnership with the U.N. World Food Program, USAID/OFDA is supporting the development of a drought insurance program to protect against livelihood loss in Ethiopia. The innovative program seeks to use financial markets as mechanisms to reduce risk and to protect Ethiopian farmers against severe livelihood loss amidst drought. The program is designed to support farmers in developing more productive coping mechanisms by providing them with resources to buffer against the liquidation of productive assets when faced with significant crop loss.

- Resistant Sorghum Multiplication and Distribution for Ethiopia: USAID/OFDA is funding CRS to work directly with the Ethiopian Agriculture Research Organization to multiply and disseminate sorghum seeds that are resistant to striga, a parasitic weed that affects sorghum and maize production in many parts of Africa, including Ethiopia. The dissemination of such seeds has increased household food security, especially for subsistence farmers in some of the most affected areas of Ethiopia. Since sorghum is highly drought-tolerant, it is being promoted in many arid maize-producing regions as an alternative crop for subsistence farmers.

Latin America and the Caribbean Region Programs

- Development of Hurricane Hazard Maps for the Caribbean: USAID/OFDA supported the Pan American Health Organization (PAHO) to develop wind hazard maps for the Caribbean basin, including all of the islands of the Caribbean and the Caribbean coastlines of South and Central America. The program will incorporate over 20 years of the region's data to improve the quality of currently available wind hazard information. Twenty new maps, released in May 2008, are enabling wind hazard experts, government authorities, and the engineering and architectural communities to incorporate wind hazard guidance into the structural design of hospitals and other relevant facilities.

- Tsunami and Coastal Hazards Early Warning System: In FY 2007, USAID/OFDA supported the Caribbean Disaster Emergency Response Agency (CDERA) in establishing a tsunami and coastal hazards warning system at regional and national levels among CDERA-participating states. The two-year program continues to provide public education and conduct awareness campaigns to help coastal communities respond to hazard warnings, reducing communities' vulnerability to tsunamis, storm surges, flash floods, and other hydrometeorological hazards. In collaboration with the Intergovernmental Oceanic Commission's Intergovernmental Coordination Group for Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions, the program promotes partnership between technical and specialized agencies, emergency managers, donors, and at-risk communities.

- Flood Early Warning System in Jamaica: In FY 2007, USAID/OFDA supported the Government of Jamaica Office of Disaster Preparedness and Emergency Management (OPDEM) in conducting a simulated test of the national flood early warning system. The preparedness exercise served as a practice tool for local disaster coordinators to assess the preparedness and capacity of local authorities and communities to respond to the threat of flooding in several areas, including Fort George and Rio Grande Valley, Portland Parish, Annotto Bay, Saint Mary Parish, and Rio Cobre basin, Saint Catherine Parish.