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CLIMATE ADAPTATION & RESILIENCE FOR FOOD & WATER SECURITY

Climate change is threatening development gains and intensifying global inequities—putting peace and important gains in human well-being at risk.
The climate crisis affects every sector and geography, yet its impacts are not felt equally. People in developing countries are more vulnerable to climate change because they often lack the resources to effectively respond and adapt. Climate change is a crisis multiplier, exacerbating existing challenges in developing countries like food and water insecurity, natural resource degradation, income inequality, malnutrition, market volatility and compounding injustices.

Key Statistics

- In low- and middle-income countries, about **2.5 billion** people's ability to make a living depends on climate-sensitive activities, like agriculture, pastoralism and fisheries.
- Food production needs to **increase by at least 60%** to adequately feed a growing global population by 2050.
- Without significant action, temperature increases are likely to reduce yields of critical crops from **5-30%** between 2030 and 2050.
- Water insecurity, exacerbated by climate change, could cost regions up to **6% of their GDP** by 2050.

Rising temperatures and severe droughts threaten incomes and yields of critical food crops, while increasing pests, diseases, food costs and malnutrition. Extreme weather and climate events can result in crop failures and loss of livestock, creating price spikes that make nutritious food inaccessible to vulnerable communities. Wetter conditions and rising temperatures can also negatively affect food safety during transport, storage and processing.

Climate change is stressing water and sanitation services and resources, too. Droughts, floods and storms can destroy water and sanitation systems, putting the economies and lives of millions at risk—and declines in water quality could result in increasing water-borne diseases that cause diarrhea, a leading cause of malnutrition and mortality in young children.

Fortunately, there are important steps and actions that can be taken to mitigate and adapt to climate impacts. Using improved technologies, policies and natural resource management practices, we can limit warming and protect critical ecosystems—while promoting poverty-reducing, environmentally friendly growth and strengthening food and water security.

WHY INVEST IN CLIMATE ADAPTATION?

Climate adaptation is integral to strengthening resilience and protecting years of investment and progress towards ending hunger, poverty and malnutrition and improving access to water and sanitation. USAID recognizes that progress abroad is increasingly relevant in meeting climate challenges here at home—and we are working with developing countries to implement a bold climate agenda on the ground. To do this, we are integrating climate change mitigation, adaptation and risk management across all planning, programming and decision-making.

Investing in resilience and climate adaptation saves lives and money—and the benefits of climate-smart solutions far exceed their costs. Early and proactive action saves lives, livelihoods and money. For instance, the U.S. government spent around $1 billion responding to droughts in the Horn of Africa from 2011-2012. Every dollar we invest in adaptation and resilience saves $3 in humanitarian assistance when crisis strikes. Adaptation provides a triple dividend in the form of avoided losses, positive economic gains through innovation, and additional social and environmental benefits.

PUTTING CLIMATE-SMART SOLUTIONS INTO ACTION

USAID has a long history of building successful partnerships with the public and private sectors, civil society and researchers to develop, pilot and scale climate-smart solutions—the Agency has helped more than 12,000 institutions better assess and proactively address climate risks. Over the last five years, USAID invested more than $650 million in programs that helped communities adapt to the effects of climate change. Over the past 10 years, USAID assisted 12 million people to use weather and climate data to cope, manage and adapt to climate impact. USAID continues to leverage this network to help communities adapt to the effects of climate change—and reduce greenhouse gas (GHG) emissions so they can escape poverty, hunger and malnutrition for good.

What we are doing to address climate change in agriculture:

- Integrating climate adaptation across Feed the Future, the U.S. government's initiative to end hunger;
- Equipping farmers and fishers with weather, fertilizer and conservation information and management practices;
- Developing and distributing seeds that are tolerant to disease, heat and drought, such as drought-resistant maize and climate-resilient rice, cowpea and cassava;
- Decreasing agriculture's footprint and deforestation through innovations that enable growing with less land and water;
- Investing in research that helps fishers, farmers and ranchers adapt to the impacts of the changing climate;
- Unlocking finance for climate-smart solutions, especially for smaller farms, businesses and entrepreneurs;
- Making food systems climate-resilient by reducing post-harvest loss and improving storage; and
- Using climate-smart approaches to increase carbon capture and reduce GHG emissions.

Drought-Tolerant Maize

Climate change has led to recurrent droughts and dry climates around the world, including countries in southern and eastern Africa.

USAID spent more than a decade investing in research with the private sector and international agricultural research centers to develop a variety of maize that was drought-tolerant and adapted to conditions on the ground. This innovation was utilized in 2016 when the El Niño drought hit southern and eastern Africa and six million farmers were able to plant this new seed. Smallholders growing drought-tolerant maize in 13 African countries generated $160 million more in 2016, which was a drought year, than if they had grown regular maize.

What we are doing to address climate change in nutrition:

- Strengthening breeding of staple crops with iron, zinc, and vitamin A and improving production of animal-source foods to counter the falling production of nutrient-dense foods and the declining nutrient content of crops;
- Expanding large-scale food fortification in partnership with the private sector and governments to deliver vitamins and minerals through everyday foods;
- Integrating nutrition expertise into threat analyses, early warning systems and crisis response to protect nutrition among the most vulnerable, including women and children;

- Investing in food safety research and technologies to reduce loss and waste of nutritious foods, maximize food production, and reduce climate impacts in partnership with U.S. universities; and
- Addressing nutrition implications of climate on fisheries and wild-sourced foods in policy.

What we are doing to address climate change in <u>water security, sanitation and hygiene (WASH)</u>:

- Integrating climate adaptation across the Water for the World initiative's work;
- Improving the management and productivity of water and other natural resources through hazard mapping;
- Increasing the resilience of WASH services to withstand frequent and increasingly devastating storms and floods through vulnerability assessments, better engineering designs and infrastructure siting;
- Engaging the media to raise public awareness of water conservation and water-use efficiency;
- Professionalizing water system operations and maintenance in drought-prone and flood-prone areas to ensure services are working when crises strike;
- Strengthening urban utilities and small rural operators to provide improved WASH services;
- Exploring ways to shift WASH services to rely on alternative, low-carbon energy sources; and
- Leveraging the private sector to increase adoption of proven techniques, the latest water-saving technologies and more efficient water infrastructure.

Sanitation in the Dominican Republic

The adverse effects of climate change are threatening sanitation services in the Dominican Republic, where only 25% of households are connected to regulated wastewater and sewage services. The remaining 75% of households rely on septic systems in various states of repair, while many others discharge their wastewater directly into streams, rivers or bays. When extreme storms occur, this untreated wastewater then floods communities.

In response, USAID supports onsite, non-sewered sanitation services designed to be resilient to climate change. USAID helped develop and roll out small-scale "constructed wetlands" in vulnerable neighborhoods to treat wastewater. With these systems, specialized plants break down pollutants and layers of gravel act as a mechanical filter.

What we are doing to further <u>strengthen climate resilience</u> in these sectors:

- Further elevating climate considerations across our entire resilience portfolio, including in areas of recurrent crises;
- Improving early warning systems to include access to data on climate hazards, helping institutions and governments proactively address risk, and take early action to reduce exposure and vulnerability to natural hazards;
- Helping governments and institutions proactively reduce, mitigate and manage climate and disaster risks;
- Building resilience among smallholder farmers by diversifying economic opportunities;
- Using the best available science, policy and research to identify climate-related risk and stresses in food and water systems to help governments implement data-driven climate adaptation plans;
- Working with NASA to provide satellite and climate information that helps governments and farmers make decisions on water resources, food security and disaster preparedness; and
- Investing in research to develop and improve agricultural insurance, microfinance and other tools that empower people to manage weather and climate risks and remain resilient.

Livestock Insurance in Kenya

For communities in Kenya, livestock is a foundation of food security. However, recurring droughts have made finding water and pasture difficult, and pastoralists are forced to move their herds to keep them alive and maintain a sustainable income. With this in mind, the government of Kenya scaled a novel livestock insurance program for pastoralists, which Feed the Future piloted. During the 2017 drought, the program paid out millions of dollars to more than 18,000 pastoralist households, enabling them to better manage through drought and speed up recovery after.