



**Testimony of
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House Energy and Commerce Committee**

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Introduction

Good morning Mr. Chairman, Representative Upton, and Members of the Subcommittee. I am David Waskow, the Climate Change Program Director at Oxfam America.

Oxfam America is an international development and humanitarian organization that works with communities and partner organizations in more than 120 countries, including the United States itself, to create lasting solutions to poverty, hunger, and injustice. Oxfam has come to see climate change as one of the greatest challenges to our efforts in the 21st century to promote development and reduce poverty. In our operations, our staff and partners are already responding to the serious impacts of climate change, from water scarcity to increasingly severe weather events.

Both in the United States and abroad, it has become essential to develop innovative and effective adaptation strategies for vulnerable communities. In our operations responding to the aftermath of Hurricane Katrina in the Gulf Coast, we witnessed this reality. While a particular weather-related event like Katrina cannot specifically be attributed to climate change, its impacts stand as a tragic warning sign of the potential consequences of global warming if we fail to build resilience to its impacts.

Building resilience in the face of climate change is both a necessity and an economic opportunity that should be seized. Innovative adaptation solutions can be an integral part of a global transition toward a clean and climate-resilient economy. From developing climate-resilient housing, restoring natural storm buffers, and buttressing sustainable transport systems in the United States, to improving water systems and agricultural

practices around the world, adaptation can provide substantial economic benefits. Already, we are seeing a need for and development of new markets for technologies and services to help communities build resilience to climate change impacts, such as water pumps and filtration devices, irrigation equipment, early warning systems to forecast storms, flood, and drought, weather-indexed micro-insurance programs, and renewable energy systems to support adaptive strategies.

Beyond promoting a wave of innovation, climate-resilient strategies can also save money. Taking preventive action now will pay for itself many times over. For example, the National Institute of Building Sciences found that reducing disaster risks saves nearly four dollars for every dollar spent on disaster preparedness. Reducing risks from climate-related disasters, ensuring that water resources are optimized, and addressing adverse health impacts from climate change are all examples of the ways in which climate adaptation can be part of a sound economic strategy.

Taking these actions is all the more urgent because of the increasingly serious impacts from climate change we are already seeing today. The most important preventive action the United States can take now is a dramatic, immediate reduction in greenhouse gas emissions. Indeed, adaptation needs will be far greater in the future if we do not take concerted action now to limit those emissions. Yet it is also increasingly clear that the consequences of climate change are already being felt today, and that those consequences are often experienced first and worst by vulnerable, poor communities. As the Stern Review has noted, even if emissions were to be eliminated today, we would still face at least two decades of increasing global temperatures.¹

Earlier this month, the International Scientific Congress on Climate Change warned that global warming is outpacing even recent scientific projections. “Recent observations confirm that, given high rates of observed emissions, the worst-case [Intergovernmental Panel on Climate Change] scenario trajectories (or even worse) are being realised. For many key parameters, the climate system is already moving beyond the patterns of natural variability within which our society and economy have developed and thrived. These parameters include global mean surface temperature, sea-level rise, ocean and ice sheet dynamics, ocean acidification, and extreme climatic events. There is a significant risk that many of the trends will accelerate, leading to an increasing risk of abrupt or irreversible climatic shifts.”

Given this sobering reality, we must invest today in both a low-carbon energy economy and a climate-resilient global economy to promote new growth and to prevent future costs. Congress can help spur new innovations that will save lives worldwide, provide jobs, and pave the way towards a clean and climate-resilient future.

¹ Nicholas Stern, “The economics of climate change: The Stern review” (Cambridge, UK: Cambridge University Press, 2007), available at www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm.

Promoting climate adaptation and climate resilience in the United States

The recent *Scientific Assessment of the Effects of Global Change on the United States*, produced by the U.S. Government's Climate Change Science Program, found that climate change is already changing conditions here at home. The number of U.S. heat waves has grown. Coastal states are grappling with sea-level rise. The proportion of heavy precipitation events has grown. Snow cover has decreased, reducing water supplies. Many of these impacts are predicted to worsen and other consequences of climate change, such as exacerbated drought and stronger storms, are expected to occur. These impacts threaten our health and well-being and the nation's infrastructure, agricultural sector, water supply, coastal zones, and the fragile ecosystems on which we depend.

Moreover, low-income and other vulnerable populations in the United States will likely be disproportionately affected by these and other climate change impacts. Many of these disparities will be seen in the health impacts experienced by vulnerable populations. According to the recent findings of the federal U.S. Climate Change Science Program's *Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems*, "[m]any of the expected health effects are likely to fall disproportionately on the poor, the elderly, the disabled, and the uninsured."

For instance, studies of heat waves find that poor housing conditions, including lack of air conditioning, are significant risk factors for heat related illness and mortality. Senior citizens are among those particularly vulnerable to the heat-related impacts of climate change, and the concentration of poverty in inner-city neighborhoods will contribute to disproportionate health impacts related to urban heat islands. Similarly, extreme weather events are also likely to have disproportionate effects on particularly vulnerable populations, including loss of life and acute trauma, while also causing indirect health impacts such as damage to housing and health facilities.

These types of effects were seen in the aftermath of Hurricane Katrina. A post-storm analysis of FEMA storm damage estimates revealed that the hurricane's impact disproportionately affected renters, the poor, the unemployed, and African American communities. Almost 46 percent of homes in damaged areas were occupied by renters compared to 31 percent in undamaged areas. Twenty-one percent of households in damaged areas had incomes below the poverty line, compared to 15.3 percent in undamaged areas. In addition, 45.8 percent of areas damaged or destroyed by Hurricane Katrina were occupied primarily by African Americans; undamaged areas had approximately 27 percent African American residents. The slow pace of recovery and rebuilding is having a similarly disproportionate impact on low-income people and communities of color.

Taking action to protect vulnerable populations in our efforts to address climate change is vital. We must act to ensure that all communities, particularly those that are most vulnerable, have the resources necessary to prepare for and adapt to the impacts of climate change and to increase their resilience before disaster strikes. Doing so is in part an economic imperative. For example, in its report *Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities*, the Multi

Hazard Mitigation Council of the National Institute of Building Sciences conducted an extensive analysis of FEMA spending on addressing hazards from severe weather and other events. The study concluded that hazard mitigation not only saves lives but money as well, *saving \$3.65 from the federal treasury for every dollar spent.*

As a first step to address the challenges posed by climate change, the federal government should establish a national climate adaptation plan, coordinate action across agencies, and integrate climate impact assessments into all agencies' decision-making and planning processes. In addition, the federal government should provide capacity-building assistance to state and local governments, including regional impact assessments, climate model information, updated flood maps, early warning systems, and planning tools. Critically, all of these climate adaptation strategies should prioritize – and directly include the participation of – particularly vulnerable populations, including low-income families, communities of color, immigrants, and tribal communities.

Ensuring better management of climate-related risks and disasters, particularly the evacuation, emergency response and recovery needs of vulnerable populations, is also an essential component of a complete adaptation strategy. When Hurricane Katrina hit the Gulf Coast, the nation quickly learned that we were ill prepared to respond to a catastrophic disaster. The flawed post-disaster emergency shelter and housing response further traumatized people who had already lost their homes to the storms and floods. The poorest and most vulnerable communities were the most negatively affected by this lack of preparation.

Some significant improvements to disaster response have already been enacted in the Post-Katrina Emergency Management Reform Act, most notably the requirement that FEMA create a National Disaster Housing Strategy. However, in order for the response to the next disaster to be more effective and equitable, further reforms are needed. Enhanced assistance for catastrophic disasters should be provided, and the provision of post-disaster shelter and temporary housing must be provided in an accessible and fair manner. Federal policy should also be targeted to ensure that communities and populations at risk are identified and that strategies are put in place to address their unique circumstances before and after disasters. Equally important, federal agencies should be required to partner with local organizations on relief, recovery and rebuilding work. To streamline and expedite assistance, organizations with existing relationships in affected communities should be supported and funded.

Hurricane Katrina also illuminated the unique circumstances faced by immigrants before and during disasters. Many immigrants in the worst-hit areas of Louisiana and Mississippi were unprepared for the hurricane due to the government's failure to issue warnings, evacuation instructions, or hazard and safety precautions in languages accessible to them. A multilingual strategy for disaster preparation and response should be employed, and the Department of Homeland Security should also develop a standing policy, reiterated in times of disaster, not to conduct immigration enforcement in association with any phase of disaster preparedness or recovery.

Building economic opportunity through climate resilience in the United States

Developing climate resilience in the United States, while a necessity, can also play a role as an economic driver. To make the most of our adaptation strategies, we should make investments in sustainable, resilient, and durable economic growth, and we should train citizens for the jobs that will be needed to adapt infrastructure, products and services to new climate realities – as part of a rising “climate-resilient green economy.”

A promising example of climate-resilient economic development has been initiated by Oxfam in the Gulf Coast, in partnership with architecture students at MIT and the Terrebonne Readiness and Assistance Coalition (TRAC). The project involves the rebuilding of coastal Louisiana communities with hurricane-resistant homes called Lift Houses. The homes are designed to withstand hurricane force winds and floods, and are well-insulated and well-ventilated to conserve energy – a good example of the synergy between projects and technologies that address adaptation to climate change while reducing greenhouse gas emissions.

Another adaptation strategy includes strategic wetlands restoration in coastal areas where wetlands serve as a critical natural buffer against rising sea levels and hurricane winds and floods. Oxfam partners in the Gulf Coast such as Bayou Interfaith Shared Community Organizing, Bayou Grace Community Services and Zion Travelers Cooperative Center are working with local residents to restore Louisiana’s wetlands and provide solutions to coastal erosion that create good local jobs and improve the climate resilience and economic revitalization of the region.

Other regions are also developing innovative approaches to building a climate-resilient economy, a number of which have been documented by the Center for Clean Air Policy as part of its Urban Leaders Adaptation Initiative. In King County, Washington, for example, the Brightwater Water Reclamation Project will help to absorb the projected increase in demand on the county wastewater infrastructure system within the next decade caused by increases in storm water runoff, an impact of climate change. Reclaimed water from the system can be used to irrigate farmland, thereby taking pressure off of drinking water sources that may be affected by decreased snowpack in the future, another climate change impact. To supply the increased demand for water in King County in spite of projected decreases in the water supply resulting from climate change, the county added water reclamation and distribution technology to the Brightwater infrastructure plans.

Local communities and municipalities are already integrating climate resilience into their economic recovery plans. However, these activities need to be further supported and bolstered by the federal government. Developing a national adaptation plan is one step towards this goal, but a long-term, integrated strategy will require that climate resilience is streamlined throughout all government agencies, programs, and priorities.

Impacts on vulnerable communities in developing countries

While the United States is facing a significant challenge in addressing the consequences of climate change, the capacity of vulnerable communities in developing countries to cope with climate-related impacts is even more limited and is being stretched further by the adverse effects of climate change impacts.

In 2007, there were 874 weather-related disasters worldwide, a 13 percent increase over 2006 and the highest number since recordkeeping began in 1974. Weather-related disasters around the world have been on the rise for decades; on average, annual weather disasters have more than doubled since the 1980s.² People living in developing countries are ill-prepared to cope and are 20 times more likely to be affected by climate-related disasters compared to those living in the industrialized world. In the 1990s alone, nearly two billion people in developing countries were affected by climate-related disasters.³

The estimates of climate change's contribution to worsening conditions are disturbing. By 2020, up to 250 million people across Africa are expected to face increasingly severe water shortages, according to the Intergovernmental Panel on Climate Change (IPCC). By mid-century, more than a billion people will face water shortages and hunger, including 600 million in Africa alone. Weather extremes, food and water scarcity, and climate-related public health threats are projected to displace between 150 million and one billion people as climate change unfolds.

Perhaps the most significant consequence of climate change will be felt as developing countries struggle to maintain food security in the face of declining agricultural productivity and the loss of crops due to shifting weather patterns and weather-related disasters. In developing countries, more than 75 percent of people depend on agriculture as the main component of their livelihoods. The very lifeline of the world's poorest countries is being frayed to the breaking point.

As a result, the economic imperative to promote climate resilience is increasingly clear. The Stern Review concluded that global warming may cost the world close to \$10 trillion by next century due to rising sea levels, famine, storms and other environmental harm. Even at current levels of global warming, the World Bank has estimated that the cost of protecting new investments in developing countries from climate impacts ranges from \$10-40 billion annually. However, this estimate does not include the costs of protecting already existing investments from climate impacts, nor does it address community-level needs for climate adaptation (such as reinforcing housing stock).

An Oxfam analysis of the costs of adapting to climate impacts in developing countries has found that the needs are at least \$50 billion annually, and potentially higher, when the protection of existing investments and community-level adaptation needs are incorporated. The 2008 Human Development Report of the United Nations Development

² Löw, Petra. October 2, 2008. Weather-related Disasters Dominate, Worldwatch Institute.

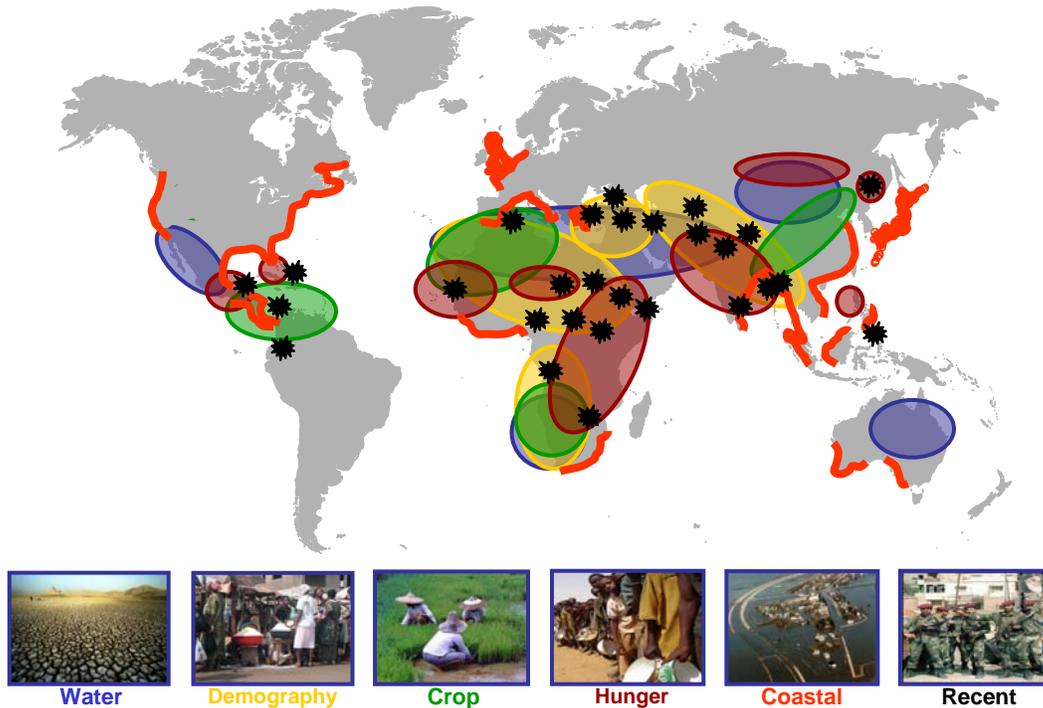
³ Jonathan Pershing (World Resources Institute): testimony to the House of Representatives Subcommittee on Energy and Air Quality, Committee on Energy and Commerce; Hearing on Climate Change, International Issues, and Engaging Developing Countries; March 27, 2007.

Program (UNDP) estimates that the adaptation needs of developing countries will total up to \$86 billion per year from 2015 onward, including the costs of integrating climate-resiliency into development activities (such as with irrigation systems and preventive health programs), strengthening infrastructure such as schools and roads, and adding to disaster preparedness and response capacity.

Yet the consequences of climate change reach significantly beyond direct impacts. Global stability and security will be undermined by increasing migration and refugee crises, by conflicts over ever-scarcer natural resources, and by economic destabilization as poverty and food insecurity grow. For instance, the increased scarcity of natural resources has contributed to conflicts in areas such as Darfur. The recent conflict there coincides with a 40% decline in precipitation in Sudan, which has been linked by scientists to global temperature change and changes in rainfall patterns tied to warming in the Indian Ocean. Such examples provide us with a glimpse at what is to come in the developing world if we do not build resilience to the consequences of climate change.

In a report from CNA, a number of retired U.S. admirals and generals refer to climate change as a “threat multiplier,” presenting significant national security challenges for the United States. Our national security interest will be well-served, and dollars well-spent, by addressing the adaptation and mitigation needs internationally. One of the recommendations of the CNA report is for the U.S. “to assist nations at risk to build the capacity and resiliency to better cope with the effects of climate change. Doing so now can help avert humanitarian disasters later.”

A Multiplier for Instability



Source: World Resources Institute

Adaptation as catalyst for new growth and resiliency

Acting today to reduce disaster risks and improve livelihoods in agriculture and other sectors is essential in avoiding even greater costs later. Improving irrigation and water retention systems will help reduce future food aid costs in times of scarcity or famine. Similarly, protecting infrastructure or putting in place natural sea buffers such as mangrove or cypress forests will help reduce future disaster assistance costs.

The financial benefits from taking preventive action have been demonstrated widely. According to an analysis by the U.S. Geological Survey and the World Bank, an investment of \$40 billion to reduce disaster risk is capable of preventing disaster losses of \$280 billion. A study conducted by the British international development agency finds that for every dollar invested in pre-disaster risk management activities in developing countries, seven dollars in post-disaster costs can be prevented. Evidence from a mangrove-planting project designed to protect coastal populations from storm surges in Viet Nam estimated economic benefits that were 52 times higher than costs. In Brazil, a flood reconstruction and prevention project designed to break the cycle of periodic flooding in 2005, resulted in a return on investment of greater than 50% by reducing residential property damages.

Bangladesh provides a particularly compelling example of the benefits of prudent planning and risk reduction. In 1970, up to 500,000 people perished in the Bhola cyclone in Bangladesh, and in 1991 another 138,000 people were killed in the Chittagong cyclone. Bangladesh then instituted a national cyclone preparedness program that includes shelters, early warning systems and community-based preparedness measures. When Cyclone Sidr struck Bangladesh in 2007, a network of some 34,000 volunteers was mobilized to effectively encourage millions of people to evacuate to a network of cyclone shelters. As a result, while 3,300 people perished, the numbers paled in comparison to previous disasters. By contrast, when Cyclone Nargis hit the Burma (Myanmar) delta region in May 2008, there was a broad failure by the government to alert residents and to provide protection. As a result, UN agencies reported that more than 100,000 perished in the cyclone.

Working with vulnerable communities in building their resilience to the consequences of climate change can also provide a means to enable these same communities to become more economically, socially and politically resilient in the broadest sense. Reliable access to essential services like sanitation and clean water can help build the capacity of communities to respond to unpredictable climate events such as floods and drought, and can also serve as a foundation for economic growth and development.

Often, building resilience means enhancing existing development approaches, such as improving agricultural techniques or water supply systems. At other times, however, the challenges will be new and different. For instance, some communities will have to adapt to rapidly melting mountain glaciers—creating excessive runoff and the potential for

unprecedented floods now while leading to scarcer water supplies in future years once the glaciers are gone. These communities could benefit from the creation of reservoirs and water impoundments to capture and store water resources that will become increasingly scarce in the future. Alternatively, these communities may have to create flood warning systems to deal with higher water flows and may have to change agricultural practices and the crops they grow to deal with water abundance in the short term and scarcity sometime in the future.

Vulnerable communities are engaging in a variety of resilience-building approaches that promote economic development and poverty and improve climate change resilience. Some examples include:

- In the Arequipa region of Peru, small farmers are installing a new system of gravity-fed irrigation to ensure that pastures are properly watered, an increasingly difficult task as water supplies decrease due to the overly rapid melting of glacial water sources. Other initiatives in the region include installing radio networks to ensure that remote communities are informed of any severe weather patterns.
- In Karnataka, India, the local government has initiated an innovative watershed development project. Small dams now catch the water from monsoon rains before the water disappears from the watershed, and the water is slowly absorbed into the ground to replenish the local aquifer and refill dry wells.
- In Ethiopia, farmers are being trained in practices such as appropriate crop spacing and crop rotation, techniques which also increase farm productivity. Farmers have also learned skills and strategies such as water harvesting and carefully selecting seeds based on their capacity to cope with climate variability. In addition, distribution of energy-saving stoves has decreased unsustainable use of firewood and the workload of the women and children who gather it.

Responding to climate change impacts that affect poor communities may also present new business opportunities and spur economic development in some of the poorest regions of the world. Recent interest in “climate-risk” insurance products by the insurance industry offers one indication that global financial institutions understand the costs and benefits of emissions reduction and building climate resilience aimed at hedging future climate risks. In Ethiopia, where 85% of the population is dependent on rain-fed agriculture, Oxfam is working with the insurance company Swiss Re and small-scale farmers to pilot a weather-indexed micro-insurance project.

Meanwhile, cutting-edge companies with major U.S. operations are beginning to develop and deploy innovative technologies and services to help communities adapt to droughts, floods, storms, and other climate-change impacts. Climate resilience solutions take many forms. For example, Pentair, a Minnesota-based company with nearly \$3.5 billion in annual revenue, manufactures technologies for the entire water cycle – from pumps to filters. The company has installed and maintained filtration systems that provide clean drinking water to rural communities in India and Honduras.

The development of new, clean energy technologies to support climate adaptation and resilience in developing countries is another arena for business opportunities. Energy poverty, or the absence of access to reliable energy services, affects approximately one-third of the world's population, with 80% of those in South Asia and Sub-Saharan Africa. Building a renewable energy future in vulnerable countries will provide the developing world with the infrastructure needed for critical adaptation strategies while also helping them grow along a low-carbon pathway. For example, General Electric's Homspring system has found a new way to harness solar energy to power water apparatuses in off-the-grid communities in Africa and Asia.

Carefully crafted policy incentives to scale up this sort of innovative technology cooperation can create green jobs for American workers, while also strengthening communities' ability to withstand climate change.

Conclusion

Mr. Chairman, we appreciate this subcommittee's leadership on climate change and the ways in which we can deal with its consequences. It is still not too late to act and to demonstrate our resolve to lead in addressing what we believe to be one of the greatest challenges of this century. Congress can pass legislation that harnesses innovative opportunities to build climate resilience, enhance economic growth, and develop and create new opportunities for companies and workers in the United States.

Thank you for the opportunity to appear before you today. I am glad to answer any questions that you may have.