

An Ounce of Prevention

Preparing for the Impact of a Changing Climate on US Humanitarian and Disaster Response



A study by CNA and Oxfam America | June 2011





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Above: US Marines from the 26th Marine Expeditionary Unit and Pakistani soldiers load supplies onto a US Marine Corps CH-53E Sea Stallion helicopter in support of the flood relief effort in Pano Aqil, Pakistan, in September 2010. Sgt. Jason Bushong / US Army

Cover: A boy walks along a wall in the Tabarre area of Port-au-Prince, Haiti. The wall was constructed by an Oxfam partner organization in 2007 to protect local homes from the destructive effects of landslides and flash flooding. Abbie Trayler-Smith / Oxfam

Summary

This report examines the likely impacts of a changing climate on the US government's civilian and military humanitarian response systems. We analyze both humanitarian and security implications of climate change as well as how the US government responds to overseas climate-related emergencies. We want to understand the changes that can be made now to better prepare these systems for the long-term effects of climate change.

At the same time that fiscal pressures are putting more strain on budgets, the US is likely to face substantially increasing demands on its humanitarian response systems as a result of climate change. These factors will have major implications for global stability as well as for the capacity of humanitarian response providers.

In light of these dynamics, the US government should adopt an “ounce of prevention” approach hand in hand with reforms that increase the efficiency and effectiveness of disaster response mechanisms. Such a strategy would reduce long-term costs of humanitarian response, increase the impact of emergency relief programs, and lay a stronger foundation for stability in developing countries.

The challenge

Climate change will affect both slow-onset disasters such as droughts and rapid-onset disasters such as storms and floods. It is predicted to change patterns of rainfall, increase sea level rise, and lead to significant changes in current weather patterns. These disasters and weather shifts will have negative consequences for agricultural output, will displace populations from coastlines, will change access to water resources, and likely will increase the frequency of disease outbreaks.

As climate change leads to an increased number of disasters, economic stresses (such as loss of agricultural production and reduced access to water)

and social pressures (such as migration), which tend to exacerbate tensions and produce violence, will increase, particularly in already marginal economies. These economic and social strains will mean increased need for humanitarian assistance, often with security implications, as complex emergencies—those involving violent conflict—increase in number.

The US government and humanitarian organizations could face a staggering challenge with significant implications for international stability and national security in the coming years. Two billion people live in regions expected to become severely water-stressed. More than 600 million live in at-risk coastal areas. Disaster data already show increases in the frequency of climate-related disasters, the damage caused, and the number of people affected.

In recent years, the global humanitarian response system has not provided adequate assistance to people affected by climate-related disasters. Between 2005 and 2009 the international community provided only 69 percent of the amounts requested in UN humanitarian appeals. In 2010, the figure fell to 63 percent. There is also a bias toward food aid, with donors covering an average of 86 percent of the amount requested in food aid appeals during the past decade, compared with 44, 46, and 43 percent for emergency agricultural assistance, water and sanitation, and health, respectively. In the context of a changing climate and increasing humanitarian pressures, these gaps are likely to become even greater.

Organizing US government responses

Responding to these climate-induced challenges will require a more effective and smarter approach to disaster assistance. During the past decade, the United States has consistently been the leading donor of global humanitarian assistance. Civilian agencies and nongovernmental organizations (NGOs) are the primary providers of disaster response. The US military and other militaries become involved in humanitarian assistance, though generally less frequently and usually at times when their unique capabilities (for example, lift and logistics, security operations) are required.

The US government's process for allocating disaster aid is complex; it focuses on humanitarian need, but short-term political considerations also play a role. These considerations hamper getting the right kind of aid to the right people in the most cost-effective way. Moreover, US humanitarian response requires a much greater degree of coordination, as well as clear leadership and a planning process.

Given that climate change will mean increased pressures on and demand for resources from an already stretched humanitarian aid system, it is essential to address structural inefficiencies. These inefficiencies include the lack of mechanisms to link emergency and development assistance; legal requirements that create unnecessary red tape and add to the cost of food aid; and insufficient attention to emergency livelihood support, disaster risk reduction, and resilience.

A major factor that leads to inefficiency is the bureaucratic siloing of disaster aid and long-term development assistance. This siloing severely limits the US government's ability to deal with both immediate aid and long-term development. The skewing of US humanitarian assistance toward short-term programs and food aid—and away from emergency agricultural assistance and other livelihood support—exacerbates the failure to link relief and development.

Short-term political dynamics also undermine effectiveness. The US Office of Foreign Disaster Assistance (OFDA), which is part of the US Agency for International Development (USAID), has lead responsibility for overseas disaster response. It is widely viewed as competent, effective, efficient, and nimble. In theory, it is the US government

agency in charge of humanitarian response. In practice, we found that decisions about responses to humanitarian crises could be skewed by short-term political considerations that come from outside OFDA and disaster assistance providers.

In the future it will be essential for key decision-makers to understand how decisions based on short-term political dynamics rather than on humanitarian needs can introduce inefficiencies, add costs, and impact long-term strategic goals.

Finally, the potential for an increase in both complex emergencies as well as extreme climatic events creates the need for better-coordinated disaster planning. Among other issues, disaster response in the context of conflict may require additional effort in order to deliver the aid, and possibly require military involvement. The US military is accustomed to thinking about, planning for, and training for these types of unpredictable, high-impact events. Integrating military forces into an overall aid delivery process and anticipating the additional demands this integration will place on the military will need to be developed through cooperation among USAID, the State Department, NGOs, and military planners.

Prevention and building resilience

Building resilience and reducing vulnerabilities are key, cost-effective ways to lower future resource demands. Disaster preparedness and risk reduction are closely linked to, and often overlap with, efforts to build climate resilience and adaptation. Numerous analyses show the economic benefits of strategies focused on reducing the risks from disasters. The “return on investment” would be less need for reactive humanitarian assistance. Nevertheless, between 1999 and 2008, just 0.4 percent of total global development assistance supported disaster prevention and preparedness.

Current US government institutional and budgetary arrangements do not adequately support resilience building and disaster prevention. Moreover, when high-impact events occur, OFDA often has to shift resources from planned activities—including those focused on disaster risk reduction—to lifesaving emergency response until a supplemental funding bill arrives, interrupting programs that could decrease need in the long term.

Recommendations

Addressing the humanitarian impacts of climate change will require planning, training, and operational capabilities organized in a unified and efficient effort that includes both disaster response and prevention.

Our research suggests two major policy shifts that can help improve effectiveness and reduce costs in the evolving climate change context:

- **Organizing a coherent, whole-of-government approach to humanitarian assistance**, with clear leadership, objectives, and implementation.
- **Emphasizing strategies with a long-term perspective**, especially for disaster prevention, that can save money and decrease the need for assistance resulting from climate-related disasters.

This effort should be civilian-led, because most operations involve civilian agencies and because these agencies have the most humanitarian expertise. Additionally, effective resource use requires aid decisions based as much as possible on need rather than politics because need-based decisions will best protect our long-term economic and national security interests.

LEADERSHIP AND COHERENCE

- **Establish OFDA as the single lead federal agency** for disaster preparedness and response, in practice as well as theory. Having a single lead agency with a clear mandate will reduce balkanization of emergency response and politicization of whether to respond and what to send.
- **Hold a biennial, interagency humanitarian planning exercise**, led by OFDA, to focus on key drivers of climate-related emergencies. This planning exercise should include interagency consultation regarding the military's capacity to assist with planning for low-probability, high-impact events.

- **Enact budgetary reforms to ensure effective and efficient use of resources over the long term.** Most important, to address long-term disaster needs, establish separate budget accounts for unexpected emergencies and for ongoing expenses to enable OFDA to better respond to the long-term, multiyear challenges of complex emergencies. Food aid reforms can also enhance emergency aid effectiveness.
- **Develop a policy framework on military involvement in humanitarian response.** Establish guidelines and coordinated plans for military involvement in disaster response operations where a security threat also exists, and increase the resources available for OFDA's military liaison program to better coordinate civilian and military involvement in humanitarian response.

PREVENTION

- **Fully integrate climate resilience and disaster risk reduction** into all relevant US government agencies' disaster planning and response activities, and provide adequate funding for preventive strategies and programs. Funds for prevention and for building resilience, which will ultimately help cut the costs of disaster aid, should not be diverted to emergency response.
- **Develop mechanisms to allow USAID to rapidly scale up and provide transition and early recovery programs** that emphasize disaster risk reduction after completion of the initial disaster response.

Introduction

With support from the Rockefeller Foundation, CNA and Oxfam America examined the humanitarian assistance challenges that the US government will face as a result of climate change.¹ We looked at potential impacts on both civilian and military agencies, as well as the interagency process for delivering international humanitarian aid.

This report is a synthesis of in-depth examinations of the recent projections of the impacts of climate change on humans and the implications for disaster risk, of the impact pathways of climate-change-related migration and conflict, and of the institutional and resource issues associated with both civilian and military disaster aid. It is a companion piece to our work on the impacts of climate change on military operations,² on US civilian international disaster response operations, and on other related topics.³

Based on this analysis of the pressure for increased humanitarian resources that will result from climate change, we developed recommendations to improve US humanitarian assistance. Our research suggests three kinds of improvements: 1) organization of a coherent, whole-of-government approach to humanitarian assistance, with clear civilian leadership, objectives, and implementation; 2) emphasis on disaster prevention, so as to decrease the need for assistance; and 3) more effective use of resources.

Background

Climate change will challenge the existing US government international disaster response system in many ways. The total demand for aid may increase as disasters and humanitarian events increase in frequency and/or intensity. And the nature of the types of disasters the US responds to internationally may also change. Increased insecurity owing to social and political pressures may result in greater need for security operations in support of aid providers. All these issues suggest that the US government should take advantage of the time it has now to better prepare its international disaster response system for a more challenging future.

How is the US government organized now for executing foreign disaster assistance, and how should we adapt to a future world? Are there actions that we can take to improve efficiency of aid delivery, so that more resources will be available in the event of an increase in demand? Are there concepts and processes we should adopt now, so that cost efficiencies can be gained from a long lead time? Or should we focus on reacting to the missions as we encounter them in the future? How will climate change interrelate with political instability, and how will that in turn change the prospects for humanitarian missions in the future? Will new threats to populations and aid providers emerge in the future, and how can we prepare for those threats?

In the remainder of this paper we outline our answers to these questions. First, we briefly discuss the way disasters and humanitarian emergencies may evolve under climate change. Then we describe the challenges and opportunities that the whole of the US government faces today in how it delivers aid. Finally, we outline three major changes in the US aid delivery system that we can make now to enhance our ability to respond in a world affected by climate change.

Increased humanitarian need

In this paper we consider the consequences of climate change for both rapid-onset disasters and slow-onset disasters, as well as the way in which climate change will affect instability and complex emergencies. Using a variety of sources, we were able to establish broad trends and principles for how the causes of rapid- and slow-onset disasters will evolve in the future, as well as the pathways through which climate change may affect security and stability. Details of our research and findings are provided in the companion papers.⁴

Effects of climate change on people, communities, and states

Disasters can be characterized as either slow-onset, building up over years, such as with droughts, or rapid-onset, events that occur without warning, such as storms and floods. Both slow-onset and rapid-onset disasters can be interrelated in significant ways with security and stability, and—particularly with slow-onset disasters—can often be part of a complex emergency that involves broader social and economic disruption.

For slow-onset disasters, climate change is predicted to alter patterns of rainfall, increase sea level rise, and lead to significant changes in current weather patterns.⁵ These changes will negatively affect agricultural output, displace populations from coastlines, change access to water resources, and likely increase the frequency of associated disease outbreaks.⁶ Central and South Asia are expected to experience a decrease of up to 30 percent in crop yields.⁷ Because slow-onset disasters affect agricultural production and land availability, they have a disproportionate effect on already marginal economies. Water and food insecurity will most severely affect South Asia and Africa, which may lose substantial agricultural land.⁸ These regions already form hunger's center of gravity.

Rapid-onset disasters are likely to be affected by climate change in several ways. What we need to know in order to develop plans for future disaster response is how future disasters may change or become more unpredictable in frequency, intensity, and duration as a consequence of climate change.

In many cases, the effect of climate change is to increase the range of uncertainty. Tropical storms, particularly in the Indian and Atlantic/Caribbean oceans could increase in intensity, though not necessarily in number or landfall probability. Because storms that are higher on the Saffir-Simpson intensity scale are more likely to result in events that require international response, the demand for storm responses may significantly increase. Moreover, melting glaciers and other factors may lead to a significant rise in global sea levels, which in turn can exacerbate severe flood damage in coastal areas.⁹ Additionally,

Floodwaters threaten to engulf homes in Beni, northeast Bolivia, in February 2008. Approximately 40 people died and 30,000 were displaced by heavy rains and flooding caused by the climatic phenomenon known as La Niña.

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windstorms and extratropical storms may change in intensity and pattern.¹⁰ Fires are another type of climate-related disaster that may also change, but in complex ways that depend on local climate and availability of fuel.

Current projections are that global sea surface temperature will increase at the rate of approximately 1 degree Celsius every 30 years. For tropical cyclones this temperature increase translates into a 2–4 percent increase in wind speed over that period. These forecasts suggest that any overall increase in storm intensity owing to climate change will take place over time and will be superimposed on any other naturally occurring cycles in intensity or landfall probability as a result of changes in other driving forces.¹¹

Climate change and instability

As climate change leads to an increased number of climate-related disasters, economic stresses (such as loss of agricultural production and reduced access to water) and social pressures (such as migration), which tend to exacerbate tensions and produce violence, will increase, particularly in already marginal economies. These factors, in turn, will mean increased need for humanitarian assistance, and will have implications for global and US security.

Marginal or fragile states are likely to become less stable. South Asia and sub-Saharan Africa, the regions most likely to experience food and water insecurity as a consequence of climate change,¹² are home to a number of ongoing conflicts. Those societies that lack the resources to adapt to these changes may suffer significant decreases in overall economic output, potentially increasing the likelihood of local or regional conflict.¹³

Extreme climate events will raise the risk of population movements, as people choose or are forced to migrate elsewhere.¹⁴ Forecasts of environmentally induced migration in 2050 vary dramatically, from 25 million to 1 billion additional people moving either within their countries or across borders, on a permanent or temporary basis. The most widely cited estimate is an additional 200 million people (a figure equal to the current estimate of all international migrants).¹⁵

In 2008 alone, extreme weather events displaced 20 million people, compared with 4.6 million people uprooted by conflict and violence.¹⁶ Projected massive flows of people will have unprecedented impacts on lives and livelihoods. The longer a displacement situation lasts, the greater the risk of environmental degradation, human rights violations, conflict, and need for regional or international assistance.¹⁷

All these factors suggest that future disasters may become “complex” more frequently as states become more fragile and less able to suppress opposing non-state actors. Thus, climate-related disasters and violent conflict may increasingly overlap. This complexity will challenge US aid organizations and the State Department, as well as US military forces.

In regions where many of the states are already struggling, for example central Africa, increased stress from climate change has the potential to begin to change the ability of the entire region to respond to disasters. Whereas today struggling states can help fragile neighbors with aid or government personnel in a disaster, in the future fewer countries in the region will have the response resources available to assist. This weakening of regional support is likely to result in additional calls for resources from the international community.

Which countries will be tipped from stability into instability? How many will be affected by the economic and social stresses caused by climate change? The answers to these questions will depend on the reaction of governments, societies, and economies to the pressures put in place by climate change.

Given that climate change will mean increased humanitarian need caused by the increase in natural and human-induced disasters, what is the capacity of the current US response system to address this challenge?

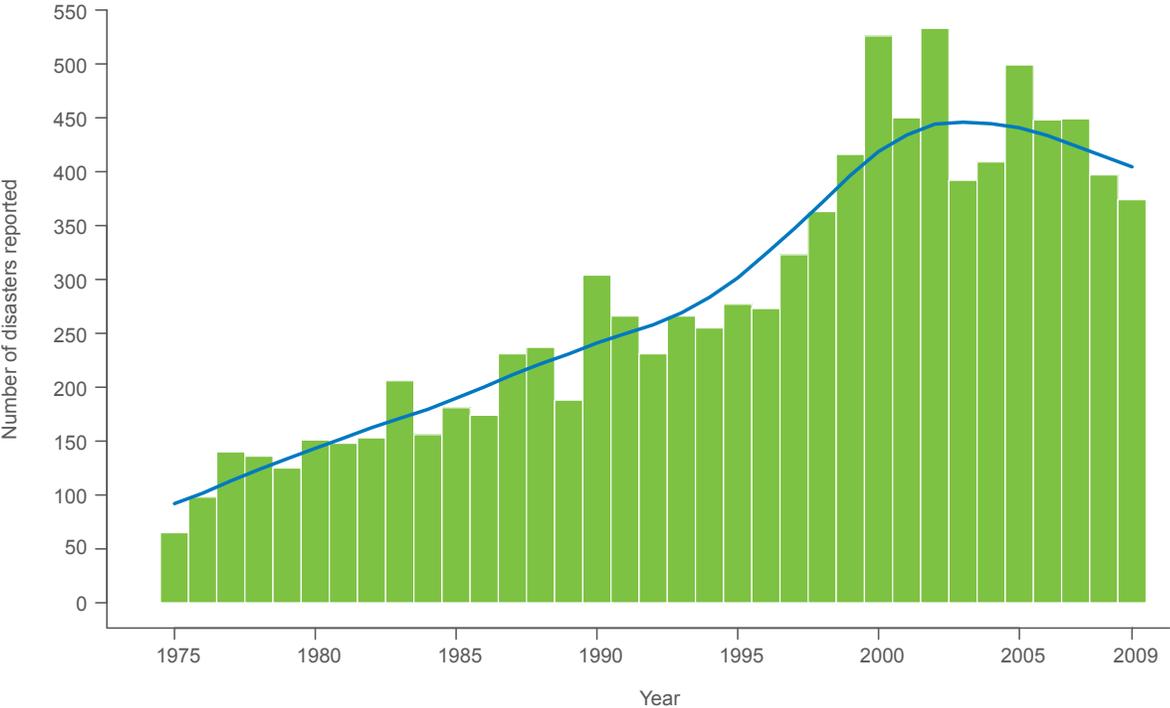
Under stress: How the current disaster response system will become increasingly pressurized

Humanitarian organizations could face a staggering challenge in the coming years as climate change impacts increase. Two billion people live in arid regions that are expected to become severely water-stressed. About 634 million people—nearly one-tenth of the world’s 2011 population—currently live in at-risk coastal areas.¹⁸ Disaster data show increases in the frequency of weather-related disasters, in the damage caused, and in the number of people affected. Current trends suggest a future in which extreme climate variability and its consequences are likely to become the norm.

Data from the Centre for Research on the Epidemiology of Disasters (CRED) show that the number of disasters has doubled over the past two decades (partly as a consequence of improved reporting) (Figure 1). During this period, many of the recorded disasters resulted from the increase in

frequency and intensity of extreme weather events and from interactions between such events and human vulnerability, which is influenced by poverty, poor governance, declining ecosystems, increased exposure because of development in at-risk areas, and a lack of disaster preparedness.

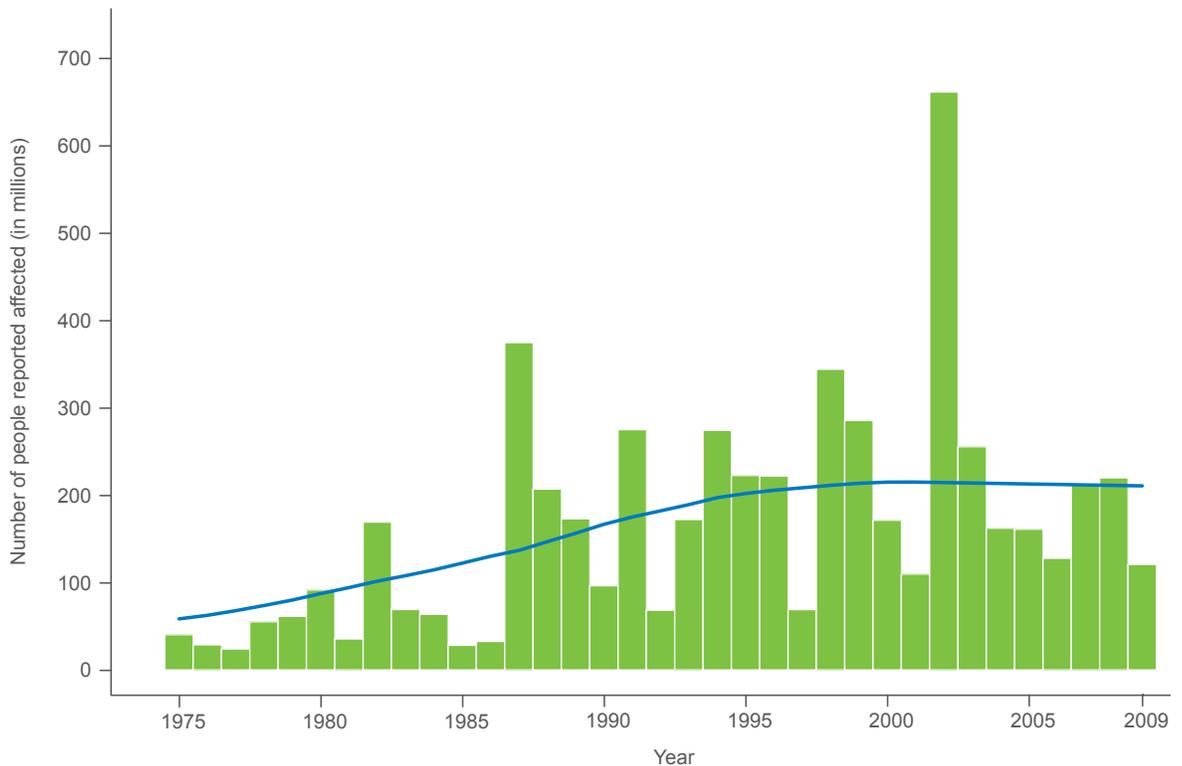
Figure 1. Natural disasters reported, 1975–2009



Solid blue line indicates the long-term trend.

Source: Emergency Events Database (EM-DAT), the OFDA/CRED International Disaster Database, <http://www.emdat.be>.

Figure 2. Number of people reported affected by natural disasters, 1975–2009



Solid blue line indicates the long-term trend.

Source: EM-DAT, the OFDA/CRED International Disaster Database, <http://www.emdat.be>.

Over the past 20 years, more than 75 percent of all disaster events were related to climate, accounting for 45 percent of disaster deaths and 80 percent of economic losses. Flood-related disasters are now four times more frequent than 20 years ago, and they damage larger areas. Losses include direct effects (such as damage to infrastructure, crops, and housing) and indirect consequences (such as loss of revenues, unemployment, and market destabilization).¹⁹

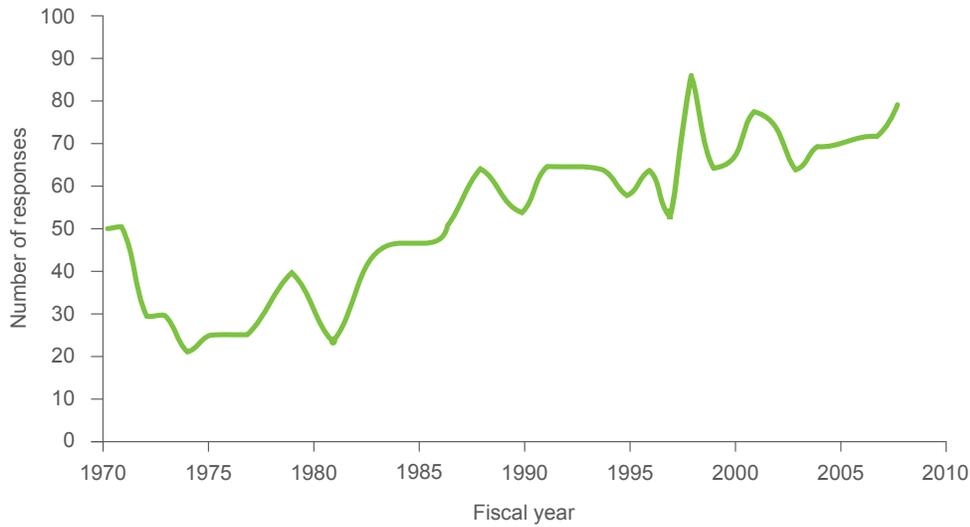
CRED data also show a rising trend in the number of people affected by disasters (Figure 2). On average, during the decade between 1998 and 2007, disasters affected 250 million people per year, with 98 percent of them affected by climate-related disasters. In 2009, the number of affected people fell to 120 million, but extreme weather continued to account for 98 percent of the people affected and 85 percent of the economic losses experienced.²⁰ Slow-onset disasters affect far larger numbers of people than do rapid-onset emergencies. Droughts, for example, have affected more than twice as many people as storms.²¹

These global trends are also reflected in the increasing challenges faced in US humanitarian responses, which have steadily increased over the past 30 years, rising by a factor of 2–4 from the 1970s to the present day as seen in data from the US OFDA (Figure 3).

In recent years, the global humanitarian response system has not provided adequate assistance to people affected by these disasters. Between 2005 and 2009 the international community provided only 69 percent of the amounts requested in UN humanitarian appeals. In 2010, the figure fell to 63 percent. The response is also biased toward food aid, with donors covering an average of 86 percent of the amount requested in food aid appeals during the past decade, compared with 44 percent, 46 percent, and 43 percent for emergency agricultural assistance, water and sanitation, and health, respectively (Figure 4).²²

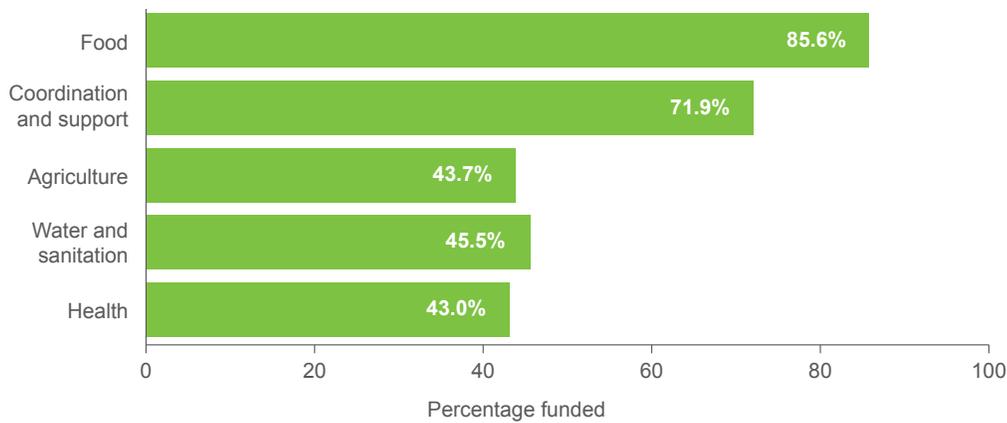
With the global disaster response system not meeting current needs, increased pressure on the system resulting from climate change will either require

Figure 3. US foreign disaster response, 1965–2009



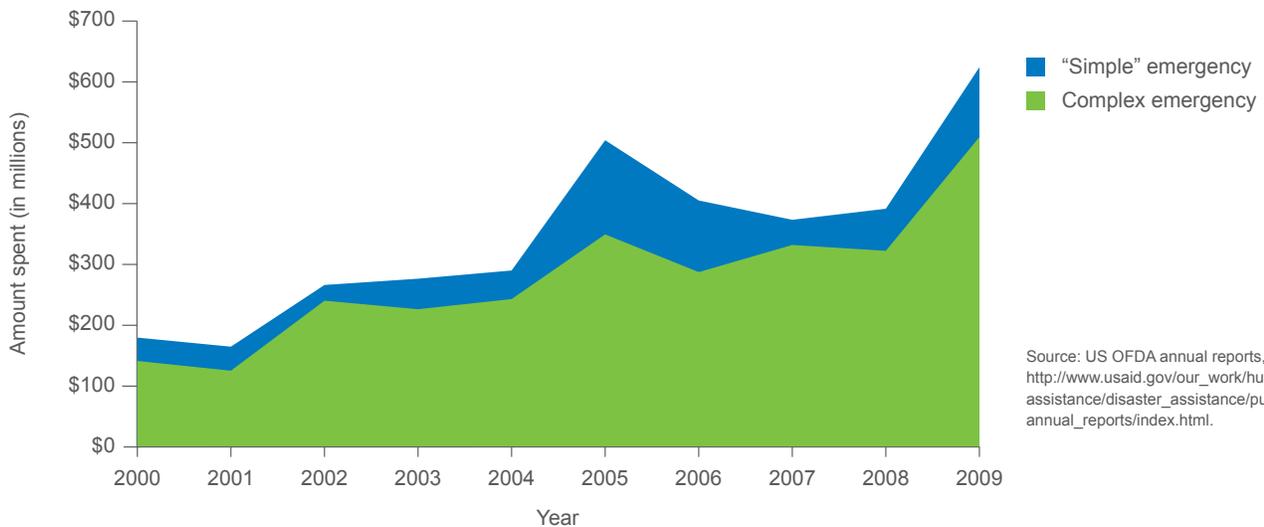
Source: CNA calculations from OFDA data.
Note: Only OFDA-declared disasters are included.

Figure 4. Percentage of UN consolidated appeals funded, 1999–2008



Source: Oxfam calculations from Global Overview Tables of the Office for the Coordination of Humanitarian Affairs (OCHA) Financial Tracking Service data; see <http://fts.unocha.org/>.
Note: Percentages represent weighted share of revised appeals over the 10-year period.

Figure 5. A decade of OFDA foreign disaster response, 2000–2009



Source: US OFDA annual reports, 2000–2009, http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/publications/annual_reports/index.html.

additional resources from donor countries or result in further unmet demand because of donor unwillingness to provide supplementary assistance.

The destabilizing effect of economic and social stresses on already fragile countries may combine with the growing need for response to add even more strain to the system. Additional climate-related disasters would make it increasingly likely that fragile or failed states would experience events requiring rapid emergency response.

Increasing levels of US foreign disaster assistance address complex emergencies, which can be exacerbated by extreme weather events, particularly slow-onset disasters. As Figure 5 shows, during fiscal years 2000–2009, complex emergencies involving violent conflict absorbed the overwhelming bulk of OFDA aid (nearly 80 percent per year). Additionally, Food for Peace (FFP) figures for 2008 show that 44 percent of emergency US food aid was channeled to conflict countries—Afghanistan, the

Democratic Republic of the Congo, Somalia, and Sudan. Conflicts are often protracted, and victims often require years of assistance.

In an environment where climate change has contributed to an increase in the number of failed states and exacerbated existing conflicts, the chance of encountering a threatening security environment during a rapid-onset disaster response may increase. Moreover, as the number of both slow- and rapid-onset disasters increases, the chance that a response will occur in a fragile or failed state will also increase. As a consequence, the cost, to either civilian or military US government agencies, for each response will also increase. Security will be needed more frequently. The affected nation will be less able to contribute its own capabilities. This double challenge—increased demand combined with increased instability—could test all organizations that provide humanitarian aid.

A bicyclist pedals through floodwaters in the aftermath of Typhoon Damrey in Hanoi, Vietnam. Authorities evacuated more than 250,000 people from the area before the storm hit in September 2005, but thousands of homes were reportedly destroyed.

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Leadership, coordination, and effectiveness

During the past decade, the United States has consistently been the leading donor of global humanitarian assistance, typically accounting for 40–50 percent of the total. Since 2001, US humanitarian assistance has averaged nearly \$2.6 billion annually, accounting for 13 percent of all US aid.

US government civilian humanitarian agencies have a number of capabilities for which they are well-regarded, and US budgets for humanitarian response are mostly flexible to meet the task at hand. But short-term political considerations also play a role in how aid is budgeted and delivered. Political considerations lead to inefficiencies in getting the right kind of aid to the right people in the most cost-effective way possible. Moreover, US humanitarian response needs a much greater level of coordination, clear leadership, and a process for planning.

Effective assistance versus politicization of aid

OFDA, which is part of USAID, has the lead responsibility for overseas disaster response. It is widely viewed as competent, effective, efficient, and nimble.²³ OFDA's rapidly deployable Disaster Assistance Response Teams (DARTs) are well-informed in humanitarian response and have very strong multisectoral technical expertise.

Civilian agencies and NGOs are the primary providers of resources in responding to slow- and rapid-onset disasters. The US military and other militaries become involved in humanitarian assistance or disaster response less frequently than civilian agencies, and tend to become involved only when their unique capabilities are required, including lift and logistics, as well as security operations.²⁴ Civilian agencies, primarily OFDA and other units within USAID, as well as humanitarian NGOs, shoulder the primary burden of responding to any increase in climate-related disasters, though strains on military capacity may also grow.

Although OFDA's mandate, according to its website, is to coordinate and facilitate "humanitarian assistance to save lives, alleviate human suffering, and reduce the social and economic impact of humanitarian emergencies worldwide," the political architecture surrounding whether or not OFDA can respond limits its ability to fulfill this mandate in certain cases. In theory, OFDA is the lead US government agency in humanitarian response. In practice, OFDA often does not take this lead because of competing mandates and the larger bureaucratic and political power structure. OFDA is subject to the authority of the US ambassador in the field and policy makers in Washington who are often far from on-the-ground realities. The US carries out need assessments as part of its emergency response, yet the actual aid decision-making process is political and frequently opaque.²⁵

In examining individual responses, we found that the decision to respond to humanitarian crises could be skewed by considerations such as US foreign policy concerns (the current relationship between the recipient and the US, the political system of the affected state, and the level of development in the affected state), and domestic influences within the US.²⁶ Such findings are in contrast to the humanitarian principles of impartiality and neutrality in delivery of emergency aid and, moreover, are not consistent with efforts to deliver aid in the most efficient way possible (defined as the greatest effect on need per dollar expended).

For example, at the time of writing, the Department of State has been attempting to deter NGOs and OFDA from providing humanitarian assistance in Somalia owing to fears of leakage to armed insurgents designated as terrorist groups by the United States. The State Department is requiring NGOs

to sign agreements that they will not aid these insurgents “with or without their knowledge,” holding up assistance despite the estimated two million people who needed it as of November 2010.²⁷

In other cases, some populations may be given preferential treatment in order to positively influence their view of the United States, whether or not they are in areas of the greatest need.

Although these policy-driven processes may allocate aid to further short-term foreign policy objectives, the short time horizon of such considerations too often gets in the way of need-based allocations that may, in fact, have a more meaningful impact on long-run national security.²⁸ In the future it will be important for key decision makers to understand how their decisions introduce inefficiencies into the system and to realize the additional cost to the system of those decisions. In this way decision makers can realistically assess the cost of their political determinations and modify them to incorporate need as a greater priority.

Planning and coordination

Responding to the humanitarian effects of climate change will require new or revised planning mechanisms. In particular, complex emergencies exacerbated by climate-related disasters will require greater coordination across agencies, including the military. As these demands increase, the need for coordinated and efficient aid delivery will also increase. Planning is needed in order to:

- Identify actions that can be taken now to reduce the requirements for resources in the future, such as building resilience.
- Identify key skills and capabilities that exist in both civilian and military departments that can be used now and in the future to address climate-related issues. Not all the effects of climate change can be anticipated today, and likewise, the capabilities needed in the future cannot always be easily predicted. Using the substantial set of capabilities that currently exist in various departments for planning and anticipating the future may provide an opportunity for “out of the box” thinking within the US government.

Complex emergencies occasionally involve some type of natural disaster, but not always. The dynamics of complex emergencies tend to call for more specialized conflict-resolution, peace-building, and cultural-sensitivity skills than required by natural disaster relief, and thus these types of emergencies will demand more strategic and coordinated thinking in their responses.

The need for integration of US or international military security forces into disaster operations will be one of the most serious challenges that the current disaster response system will face under climate change. Complex emergencies have a security component, and on occasion the US military is called on to provide security assistance in aid delivery. Integrating military forces into an overall aid delivery process and anticipating the additional demands this integration will place on the military will need to be developed through cooperation among OFDA, other units of USAID, the State Department, NGOs, and military planners.

Because civilian US government response agencies and NGOs are the main participants in US disaster responses, they will likely be the lead organizations in most future responses. In addition, these agencies have the most experience working on community-based disaster risk reduction. Humanitarian aid providers prefer to operate without security, and in most cases it is not necessary. When security is an issue the providers analyze the situation on a case-by-case basis, and, if security is needed, they generally prefer to use local security. United Nations or regional forces are also often used and have successfully provided security in many cases.

The US military is involved in only a few of the many response operations worldwide at any given time. Most of those responses tend to be associated with conflict, such as the ongoing wars in Iraq or Afghanistan. When the military becomes involved it is usually owing to US national security concerns or because the military has specialized and rapidly deployed logistics, transport, and security capabilities. In the case of security, the US military is unique in that it can conduct both defensive and offensive operations at virtually any level of violence, something that only a few other forces (for example, those of Russia, the European Union, and China) are able to do.

Climate change will increase the number of complex emergencies and will challenge the international response system. But, perhaps more importantly, climate change will increase the range of potential emergencies or disasters that we may have to respond to. Events unforeseen now may require high levels of efforts—and possibly military involvement. We term these disasters “low-probability, high-impact events,” and they have been the subject of much discussion recently in the context of the international economic system. Nassim Nicholas Taleb defines a “black swan” as a highly improbable event that is unpredictable, has enormous effects if it happens, and once it happens we believe we could have predicted it if only we had had better insight.²⁹

Unfortunately, these events tend to be hidden as much by our own ways of organizing and thinking as by our lack of insight. Climate change most likely harbors many black swans that we have not seen yet, ranging from the low-probability, high-impact events that we respond to, to underlying changes in political, social, and economic institutions. How do

we plan for and take into account these unknown or unpredictable effects of climate change on disaster response? We will need to because, as Taleb points out, of the huge consequences of black swans when they do occur.

The US military is accustomed to thinking about, planning for, and training for the first two aspects of black swan events: their unpredictable nature and high impact. War is an example of a very unpredictable and very high impact event for which the military plans and trains every day.

Given the potential long-term (20- to 30-year) timeline for climate change, a prudent approach now would be to engage in an interagency planning process using the experience and capabilities of the US military to address potential events related to climate change. OFDA's military liaison officers have proven effective in promoting humanitarian coordination and will be an important part of this interagency planning process. However, the military liaison program at present is sorely underfunded.

The dry lake bed surrounding Lam Takong Dam in Korat, Thailand, shows the effects of prolonged drought in March 2005. Villagers set up camp nearby to catch the few fish remaining in the water.

*Kindly donated by EPA,
www.epa.eu,
EPA / Sataporn Thongma*



Taking the long view and cutting costs

Given that climate change will lead to increased pressures and demand for resources on an already stretched humanitarian aid system, it is essential to address structural inefficiencies in that system. These inefficiencies include lack of institutional mechanisms to link emergency and development assistance; legal requirements that add to the cost of food aid and reduce its humanitarian benefits; and insufficient attention to emergency livelihood support, disaster risk reduction (DRR), and resilience. We address these issues in this section.

From disaster assistance to long-term development

A major factor that leads to inefficiency is the division between disaster aid and long-term development. This division masks the critical role that development plays in providing a stable, effective government and social base from which to respond to disaster within countries and within a region. The current system of bureaucratic silos (particularly at USAID) that divides disaster response and development severely limits the US government's ability to plan for dealing with both.

For example, currently a major gap exists in US foreign aid between emergency assistance and development in what is known as the early recovery, or transition, period.³⁰ No apparent coordinated or explicit division of labor addresses this problem. Neither OFDA, FFP (the USAID food aid office), nor USAID field missions, whose budgets are heavily earmarked, have the explicit mandate or resources to lead transition and early recovery activities. Some practitioners, including Oxfam, see increased emphasis on DRR and emergency agriculture aid as having considerable potential to bridge this gap.

In the 2005 earthquake in Kashmir province, Pakistan, there was a UN breakdown in getting money to partners because of bottlenecks in the aid delivery system. However, OFDA was extremely quick in responding, and some partners were operating solely using OFDA money. Nevertheless, OFDA was either not authorized or chose not to fund livelihoods development or protection—interventions that many

people in the situation could have benefited from as aid in these areas would have kept them from slipping into destitution or brought them out of a destitute spot.³¹

It is important to bridge this transition gap for two reasons:

- Immediate aid in response to a disaster should be provided with the expectation of transitioning to a long-term recovery program. Otherwise the initial aid may disrupt local economies and social structures, leading to a less successful long-term outcome.
- As was the case domestically for Hurricane Katrina, providing emergency relief is only the beginning of a longer economic, social, and infrastructure recovery program.

The skewing of US humanitarian assistance toward short-term programs and food aid, and away from emergency agricultural aid and other livelihood support exacerbates the transition issues. In dollar terms, OFDA emergency assistance to agriculture and food security averaged a bit more than \$60 million a year during 2006–2008, compared with more than \$1.5 billion annually in emergency food aid from FFP.³²

These numbers mirror the global humanitarian funding trends seen in Figure 4 (page 9). The trends are worrisome for three reasons. First, the potentially severe impacts that climate change will have on agriculture and food security suggest that a higher priority should be assigned to protecting and rebuilding livelihoods and local food production

capacity in the wake of an emergency. Approximately 70 percent of the world's poor people live in rural areas and depend on agriculture for their livelihoods, so investing in rural resilience in the face of climate change is essential.³³

Second, most emergency food aid goes to just a few conflict-affected countries year after year. This food aid does meet humanitarian need, but providing conflict-sensitive agricultural livelihoods support and investing in a more resilient social and economic structure are likely to reduce need for food aid over the long haul. Finally, the global consensus on how to address the 2007–2008 run-up in global food prices, as embodied in the United Nations Comprehensive Framework for Action, was that increased emergency assistance to agriculture in the affected countries should receive the same priority as emergency food aid.³⁴

Furthermore, US emergency food aid suffers from structural inefficiencies. The bulk of the assistance is provided in the form of US agricultural commodities. Between 1999 and 2008, such in-kind food aid accounted for almost 40 percent of US humanitarian assistance. It represents a short-term—if often necessary—response to crises, and does not build the kind of resilience and risk reduction that is needed to grapple with the humanitarian effects of climate change.

US food aid also currently operates within a problematic legal framework.³⁵ This legal framework severely limits the US government's capacity to procure food aid commodities in the recipient country or surrounding region. Food produced in the US is often more expensive and takes much longer to get to beneficiaries than local commodities. During 2004–2008, US food aid to Africa required an average of 147 days for delivery versus 35–41 days for food from the African continent.³⁶

In certain circumstances, in-kind US food aid will be appropriate, as, for example, when local markets are failing, local food prices are rising, and regional food supplies are also tight. However, in addition to decreasing efficiency of delivery and increasing overall expenses, the US commodity procurement requirement costs opportunities to support local and regional markets and producers by purchasing food closer to the destination. Increasing local agricultural production capacity not only boosts the efficiency of

immediate aid but can also build local resilience and decrease potential future demand for food aid.

Another problem is that US law requires that 75 percent of US food aid shipments travel on US-flag carriers. Although there is a provision for waiving this cargo preference requirement in emergencies, in practice FFP seldom seeks waivers. Cargo preference adds additional costs, allocates scarce public resources toward boosting the profits of a politically influential private industry, and often results in the use of ships that are neither militarily useful (the stated rationale of cargo preference is to maintain a US-flag fleet that the military can use in emergencies) nor, in fact, US owned.³⁷ We calculate that procuring shipping on the open market would permit the purchase and delivery of 15.2 percent more tons of food given a fixed budget.

Building resilience, reducing disaster costs

Building resilience and reducing vulnerabilities are key, cost-effective ways to lower future resource demands. However, in order to reorient the US humanitarian response system toward proactive risk reduction in lieu of reactive response, several institutional shifts and resource additions will be necessary. To determine exactly what those might be, we examined the capabilities of the major US government agencies involved in disaster response and preparedness initiatives in the context of increasing climate pressures.

The changing types and nature of weather events make it necessary to “act sooner and act smarter” by shifting resources from ex-post disaster response to concentrate more on reducing vulnerabilities and improving preparedness at the national and local level. For the United States and other donors, this shift means investing more resources in helping developing countries undertake such efforts. In addition to addressing resource constraints, other major challenges that need to be tackled to transition from a response-driven system to a risk-reduction system include improving coordination mechanisms, removing budgetary constraints that hamper risk-reduction approaches, and shifting the overall humanitarian aid system away from short-term approaches such as inappropriate food aid to longer-term strategies.

Numerous analyses show the economic benefits of strategies focused on reducing the risks from disasters. The “return on investment” would be less need for reactive humanitarian assistance, including by the US military:

- One study estimated that economic losses worldwide from natural disasters in the 1990s could have been reduced by \$280 billion if \$40 billion had been invested in preventive measures—a seven-to-one return.³⁸
- Some countries, such as Bangladesh and Mozambique, provide excellent examples of how well-implemented disaster preparedness measures can significantly reduce the impact of climate hazards in risk-prone areas.³⁹
- In Vietnam, the Red Cross spent \$1.1 million on planting mangroves to protect 110 kilometers of dikes and saved the government \$7.3 million in annual dike maintenance costs—in addition to protecting nearly 8,000 people living nearby.⁴⁰

- OFDA estimates that in Kinshasa, Democratic Republic of the Congo, each dollar of investment in DRR in 1998 resulted in the avoidance of economic losses of more than \$45.58 during the 1999 rainy season.⁴¹ The avoided losses added up to more than half of the average household income of the participants. Importantly, OFDA was not called to Kinshasa to respond and was able to use its finite response resources elsewhere.

A shift from disaster response to resilience, preparedness, and climate change adaptation builds on commitments already made by the United States. In the wake of the destruction and loss from the Indian Ocean tsunami of late 2004, governments of 168 countries met in Japan and adopted the Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters (HFA).⁴² This framework seeks to integrate disaster risk reduction⁴³ into development policies and planning, emergency preparedness, and response and recovery programs, as well as to strengthen institutional capabilities and mechanisms that build resilience to hazards.⁴⁴

Nyima Filly Fofana, center, in a cereal “bank” funded by Oxfam America in the village of Dasilami, Gambia. By storing up to 33 tons of grain, the cereal banks help people survive food shortages caused by drought and conflict.

Rebecca Blackwell / Oxfam America



Despite the clear benefits of disaster preparedness and risk reduction, between 1999 and 2008, just 0.4 percent of total global official development assistance consisted of support for disaster prevention and preparedness.⁴⁵ Yet investments in this area have the potential to lessen the need for disaster response over time. As a consequence, resources for activities to reduce disaster risk need to be significantly bolstered, both by increasing those resources directly and by shifting capacity from disaster response to preparedness.

Disaster preparedness and risk reduction are closely linked to, and often overlap with, efforts to build climate resilience and adaptation. However, the institutions, policies, and frameworks that move both forward are somewhat siloed. Although many national adaptation programs of action (NAPAs) and other adaptation plans integrate strategies to reduce disaster risk, global frameworks such as the United Nations Framework Convention on Climate Change (UNFCCC) and the HFA are separate and may even duplicate efforts and compete for resources. More explicitly linking the agendas and institutions involving disaster risk and climate resilience will help to strengthen both.

Addressing these overlapping agendas effectively will depend on the ability of the US government and others to engage not only with developing-country governments, but also with local communities and civil society in planning and implementation. A recent nongovernmental study found that a significant gap often exists between national-level policies and local action and that countries make more progress on addressing disaster risk when approaches are community based.⁴⁶ This study recommends increasing community participation at the local level to build community awareness of risk, improving planning and preparedness, and bridging the gap between local and national levels. Successfully implementing these recommendations will require some decentralization of authority, innovative financing strategies, social adoption of risk awareness, and many measures to increase the engagement of at-risk groups in decision making around DRR.

Community engagement can happen in many ways:

- Many NGOs use a methodology called *participatory action research* to help communities determine their risk and how to reduce their vulnerabilities in the face of natural hazards.⁴⁷
- El Salvador's national disaster risk reduction network, Mesa Permanente para Gestion de Riesgos, has been working toward "ensuring that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation."⁴⁸
- In Ethiopia, farmers in a highland region had traditionally grown wheat but began shifting to potatoes because of changing climate conditions. However, the potato varieties being used were susceptible to blight and had low yields. After identifying this vulnerability, the NGO Food for the Hungry approached the government agricultural research centers and discovered that they had developed blight-resistant, higher-yielding potatoes based on the local varieties, but did not have the resources to fund extension to highland farmers. Farmers, struggling with the blight and low yields, welcomed testing and subsequently adopted these improved varieties in their fields.⁴⁹
- Microinsurance and holistic risk management programs have emerged as another strategy to achieve increased resilience to climate-related shocks and variability for small-scale farmers.

Current US government institutional and budgetary arrangements do not adequately support resilience building and disaster prevention activities such as developing early warning systems and risk awareness. Moreover, when high-impact events occur, OFDA frequently has to shift resources from planned activities—including those focused on disaster risk reduction—to lifesaving emergency response until a supplemental funding bill arrives, interrupting programs that could decrease need in the long term.

Conclusions and recommendations

A range of scientific models and projections suggest that mean sea surface temperature will rise over the next century and that this rise will result in an increase in both rapid-onset and slow-onset disasters. As these disasters, particularly those related to agriculture and migration, place additional stresses on developing countries, more nations that are now marginally stable will be tipped into instability and poverty, and the potential for migration and conflict will increase. As a result, the US humanitarian response system could be stretched beyond its limits.

In preparing for climate change, if we recognize the challenges we face and are willing to take the necessary actions, it is still possible to put appropriate protections in place to cut long-term costs and prevent some of the worst outcomes.⁵⁰ Unfortunately, because the effects of climate change will grow over time, the motivation for change often may not exist until a crisis occurs. But the US government has a critical window of opportunity now to address long-term, systemic issues in the aid delivery system before the system comes under excessive stress from increasingly severe and frequent disasters. Given the likelihood that disaster response pressures will increase, how can the US government reduce the stress on its budget and disaster response processes?

Conclusions

To address the challenges climate change presents, the US disaster aid system will have to undergo two substantial transformations:

- A coherent, whole-of-government approach to humanitarian assistance is needed, with clear leadership, objectives, and implementation.
- Greater emphasis must be given to prevention.

Addressing the humanitarian impacts of climate change will require a planning, training, and operational capability that focuses all of the US government's

disaster response, humanitarian, and development resources in a unified and efficient effort. This effort should be led by civilians, given that most operations involve civilian agencies and that these agencies have the most expertise in humanitarian issues.

In addition, an “ounce of prevention is worth a pound of cure” strategy that emphasizes disaster risk reduction goes hand in hand with increasing the effective use of resources, because it will reduce the need for assistance over time. Effective resource use, in turn, requires decisions about aid that are based, to the maximum extent possible, on need rather than short-term political concerns. Political decisions can undermine long-term strategic priorities and divert aid from meeting the needs of displaced people or those affected by drought to other requirements such as influencing civilians in conflict countries.

Recommendations

LEADERSHIP AND COHERENCE

- Establish OFDA as the single lead federal agency for disaster preparedness and response, in practice as well as theory. A single lead agency will reduce balkanization of emergency response and politicization of whether to respond and what to send.

- Hold a biennial humanitarian planning exercise, led by OFDA.
 - » This exercise will focus on addressing key drivers of climate-related humanitarian emergencies and will engage the military's capacity to assist with planning for low-probability, high-impact events.
 - » It will also bring to bear the State Department's expertise on displaced persons and FFP's needs assessment capabilities.
- Enact budgetary reforms to ensure effective and efficient use of resources.
 - » Reduce the number of earmarks placed on aid budgets.
 - » Fully fund humanitarian assistance on an annual basis, instead of appropriating about half of what OFDA needs each year.
 - » Establish separate budget accounts for unexpected emergencies and more predictable expenses; for the latter account, allow for more cross-year flexibility in how funding is spent to enable OFDA to better respond to the long-term, multiyear challenges of complex emergencies.
- Eliminate restrictions on local and regional purchase of food aid commodities and abolish the requirement that 75 percent of food aid travel on US-flag carriers.
- Develop a policy framework on military involvement in humanitarian response.
 - » Establish guidelines and coordinated plans for military involvement in disaster response operations where a security threat also exists.
 - » Increase the resources available for OFDA's military liaison program to better coordinate civilian and military involvement in humanitarian response.
 - » Ensure that senior decision-makers are well-informed of the trade-offs they make when they choose national security over need as the criterion for disaster aid allocation. By centralizing response in OFDA, a single voice will be available to make the humanitarian efficiency argument.

PREVENTION

- Fully integrate climate resilience and disaster risk reduction into all relevant US government agencies' disaster planning and response activities, and provide adequate funding for preventive strategies and programs. Funds for prevention and for building resilience, which will ultimately help cut the costs of disaster aid, should not be diverted to emergency response.
- Develop mechanisms to allow USAID to rapidly scale up and provide transition and early recovery programs that emphasize disaster risk reduction after completion of the initial disaster response.

Farmers in northern Ethiopia enrolled in a risk management program that utilizes drought insurance study vegetation maps.

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Notes

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