

Oxfam America
Research Backgrounders

Impact of climate change on response providers and socially vulnerable communities in the US

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Commissioned by the Rockefeller Foundation



Oxfam America's Research Backgrounders

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- "Turning the Tables: Global trends in public agricultural investments," by Melinda Smale, Kelly Hauser, and Nienke Beintema, with Emily Alpert (2009).
- "Risk and Risk Transfer in Agriculture: Facilitating food security and poor farmer participation," by Leander Schneider (2010).
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- "Impact of climate change on response providers and socially vulnerable communities in the US," by John Cooper and Jasmine Waddell (2010).

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About MDC

Founded in 1967, nonprofit MDC helps North Carolina transition from a segregated, agricultural work force to an integrated, industrial work force. Headquartered in Chapel Hill, North Carolina, MDC works primarily across the American South to help organizations and communities move barriers that separate people and places from opportunity. (See www.mdcinc.org.)

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Executive summary

Disaster mitigation discourse rarely refers to the vulnerability of communities affected by disasters. The planning assumptions driving domestic emergency management are derived from an assessment and understanding of risk (i.e., the likelihood that a particular type of natural disaster may occur and the expected severity of its effects should it occur). For natural disasters, this assessment of risk is based on detailed modeling and analysis of historical data on the frequency and severity of all manner of disasters. In this report, we examine how homeland security policy could be revised to accommodate climate change impacts on socially vulnerable populations in the Mississippi Delta region and the Gulf Coast, building on the 2009 Oxfam America report, “Exposed: Social vulnerability and climate change in the US Southeast.” Through an analysis of policies and expert interviews, we concluded that federal disaster programs, plans, and policies seldom address climate change or social vulnerability. However, there are opportunities for including these principles and challenges within the programs and policies. One opportunity – staffing federal and state disaster programs with unemployed, underemployed, and hard-to-employ populations – would redefine disaster mitigation and introduce a social mitigation frame. Targeting socially vulnerable people and being proactively responsive to hazards associated with climate change will lower costs in the long term and create job opportunities for communities excluded from work.

Introduction

In its 2009 report, “Exposed: Social vulnerability and climate change in the US Southeast,” Oxfam America profiled the higher risk of suffering a disaster faced by some segments of our population, as well as the role climate change will play in exacerbating this inequality by causing more-frequent and more-severe natural disasters. The concept of social vulnerability holds that some groups suffer disproportionately due to a lack of capacity to anticipate, cope with, resist, and recover from the impacts of a hazard.¹ In addition, disaster research scholars, like Susan Cutter at the University of South Carolina Hazards and Vulnerability Research Institute, have identified a variety of factors influencing social vulnerability, including socioeconomic status, age, race, gender, ethnicity, and physical or mental disability.²

The Oxfam report followed the Intergovernmental Panel on Climate Change (IPCC) “Fourth Assessment Report of 2007,” which described indigenous people and those who are socially or economically disadvantaged as “especially vulnerable” to disasters related to climate change.³ That same year, the UN “Global Report on Disaster Reduction” found that disaster risk at the global scale is “felt most acutely by people living in poor rural areas and slums” and by other socially vulnerable segments of the population, including the elderly, minorities, disabled people, women and children.⁴ The UN report added that an individual’s or community’s degree of vulnerability depends on the effectiveness and timing of adaptation and the distribution of coping capacity. Recognizing this, Oxfam’s report called for greater federal, state, and local efforts aimed at finding equitable solutions for reducing the impacts of climate change on socially vulnerable populations.

In the US, federal disaster policies often serve as the model for state and local policies. The findings in Oxfam’s report suggest there are a range of federal programs, plans, and policies for state and local policymakers to choose from, covering all phases of disaster management, from mitigation to preparedness,

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1. P. Blaikie et al., “At Risk: Natural Hazards, People’s Vulnerability, and Disasters.” *Development in Practice* 5, no. 2 (1994): 170–180.
 2. A thorough explanation of social vulnerability by Susan Cutter, plus a series of additional perspectives, can be found on the Social Science Research Council website: <http://understandingkatrina.ssrc.org/Cutter/>.
 3. M.L. Parry, “Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007.” Intergovernmental Panel On Climate Change (2007).
 4. International Strategy for Disaster Reduction, “Global Assessment Report on Disaster Risk Reduction,” United Nations (2009).

response, and recovery. However, the report concludes that issues of climate change and social vulnerability are inadequately addressed across the board. In light of these findings, Oxfam commissioned this report to shed more light on the extent to which federal disaster programs, plans, and policies address climate change and social vulnerability. Three sets of research questions guide this exploration:

1. Do current federal disaster programs, plans, and policies take into account disasters induced by climate change in socially vulnerable communities?
2. How should the federal government work with state and local governments, as well as with the private sector and community-based organizations, to help socially vulnerable populations reduce vulnerability to disasters induced by climate change? What policies, institutions, and processes are needed to ensure the conditions, concerns, and capacities of vulnerable populations are incorporated into disaster plans and policies?
3. How should the federal government pursue disaster recovery in socially vulnerable communities impacted by disasters, such as those on the Gulf Coast and in the Mississippi Delta? What are the potential adverse consequences if the conditions, concerns, and capacities of socially vulnerable populations are not accounted for in recovery missions?

By looking into these issues, which to date are neither clearly defined nor widely understood, we will provide a more focused starting point for future advocacy work on climate change and social vulnerability. In addition, we hope this report will encourage others, particularly scholars and policymakers, to critically assess the process as well as the end result of disaster mitigation. In this report, we argue that disaster mitigation should be driven by social mitigation, social vulnerability, and job creation for unemployed, underemployed, and hard-to-employ populations, such as formerly incarcerated people and families without a high school diploma.

Methodological approach

To advance understanding of the first research question (see page 6), we conducted a content analysis of federal disaster programs, plans, and policies. In consultation with Oxfam America, a preliminary list of programs, plans, and policies that have a clear-cut focus on disaster reduction was identified. This initial consultation resulted in a list of nine federal disaster programs, plans, and policies, which are discussed later in the report (see page 9).

The preliminary list was then expanded to include complimentary federal disaster programs, plans, and policies with some role in reducing public disaster risk or managing the delivery of disaster relief, and managed by agencies outside of the Federal Emergency Management Agency, such as the US Army Corps of Engineers, US Department of Agriculture, and Small Business Administration. In addition to the more visible federal disaster programs, plans, and policies, and their associates, we also encountered a collection of complimentary programs, agencies, task forces, and working groups worth mentioning, such as the Gulf Coast Ecosystem Restoration Working Group.

Additionally, we did not exclude programs recently proposed at the federal level or currently under review, such as the Homeowners Defense Act and the National Disaster Recovery Framework Initiative, although it is important to note that any inclusion of on-going efforts currently under consideration may not be accurate or relevant in the future (see Table 1). Once the preliminary list was identified, the content analysis of programs, plans, and policies began.

Given the exploratory nature of this effort, we set out simply to consider the language of federal disaster programs, plans, and policies, stopping short of measuring the outcomes of implementation in any particular place. We employed key word searches for broad terms and phrases, such as “climate,” “climate change,” “global warming,” “sea level,” “disadvantaged,” and “socially vulnerable.” We also searched for characteristics of socially vulnerable populations, for example “disabled,” “elderly,” or “impoverished.”⁵ This allowed for cursory judgments as to whether or not programs, plans, and policies accounted for climate change and/or socially vulnerable populations. In cases where a program, plan, or policy was under construction, we searched federal agency and congressional websites to determine the current status of the program. Lastly, we sought out informed opinion pieces and academic

5. We use the term “socially vulnerable” to refer to demographics including, but not limited to, those listed. Some of the policies and programs we analyzed alternately use other terms, including “socially disadvantaged,” “economically disadvantaged,” “impoverished,” and even simply “low-income” where it would be easy to expand provisions for low-income groups to other instances of social vulnerability.

scholarship commenting on the selected program, plan, or policy, paying particular attention to thoughts about the potential – observed or theoretical – for addressing climate change and social vulnerability.

To address the second and third research questions (see page 6), a series of interviews were conducted with key informants. The purpose of the interviews was to gain supplemental insights into the limitations of federal strategies for addressing disasters induced by climate change, the impacts of those disasters on socially vulnerable populations, and ideas for how to improve the strategies. To that end, our first task was to refine the original questions to yield constructive responses.

Once the interview protocol was ready, the next task was to identify a short list of informants. The short list comprised a mixture of government officials, policy experts, and local advocates informed about the extent to which federal programs, plans, and policies address climate change and social vulnerability. A preliminary list of key informants was identified in consultation with Oxfam. Scheduling and completing the interviews was a significant challenge because of the short timeframe.

Of the 30 key informants contacted, a majority (25) responded to our requests, and 11 were willing and able to be interviewed within the time available to complete this report. Most interviews were completed by phone, with the remainder submitted in writing. All potential respondents were also asked to identify colleagues who might contribute to the understanding of the subject matter. A maximum of three attempts were made to contact each key informant. The majority of those declining participation cited unfamiliarity with the subject matter. Others were willing but unable to participate due to scheduling limitations.

Despite the compressed window of opportunity to complete interviews, this report manages to include responses from informants with a range of expertise and experiences, including at least one from an academic institution, federal agency, state office of emergency management, and advocacy community. The next section presents the results of the content analysis of federal programs, plans, and policies.

Content analysis findings

The purpose of the content analysis was to look for clear language in federal disaster programs, plans, and policies aimed at accounting for climate change and/or socially vulnerable populations. To that end, our broad scan of federal programs, plans, and policies generated a list of nine with a clear focus on disasters:

1. National Disaster Recovery Framework (NDRF)
2. Supplemental Revenue Assistance Program (SURE)
3. Hazard Mitigation Grants Program (HMGP)
4. Pre-Disaster Mitigation Grant Program (PDMP)
5. Robert T. Stafford Disaster Relief and Emergency Assistance Act of 2007 (Stafford Act)
6. National Flood Insurance Program (NFIP)
7. Coastal Zone Management Act (CZMA)
8. Water Resources Development Act (WRDA)
9. Homeowners' Defense Act (HDA)

The results of the content analysis are summarized in Table 1.

Table 1. Summary of programs with rating of potential to address climate change and vulnerability.

Federal Program (Agency/Admin Home)	Addresses Climate Change	Addresses Social Vulnerability	Rating
NDRF	Yes	Yes	Strong
SURE	Yes	Yes	Strong
HMGP	Yes	Yes	Strong
PDMP	No	Yes	Moderate
Stafford Act	No	Yes	Moderate
NFIP	No	Yes	Moderate
CZMA	Yes	No	Moderate
WRDA	Yes	No	Moderate
HDA	No	No	Weak

Rating	Criteria
Strong	Statute or policy mentions both climate change and vulnerable populations.
Moderate	Statute or policy does not address both climate change and socially vulnerable populations explicitly, but at least mentions one or the other.
Weak	Neither climate change nor social vulnerability are mentioned.

The rating system is an effective tool, but it is limited. An explanation of how programs, plans, and policies were rated, starting with the strong programs and ending with significant, but unrated plans, appears below.

1. National Disaster Recovery Framework (NDRF)

Part of the White House Long-Term Disaster Recovery Working Group (DRWG) effort, the NDRF is an attempt by the highest levels of federal government to learn from previous catastrophic disaster recovery efforts and to identify opportunities for improved interagency coordination at the federal level, as well as between the federal government and state and local governments. A draft report posted on the DRWG’s website describes the NDRF as seeking “... to align key roles and responsibilities, linking local, state, tribal, and federal governments, the private sector, and voluntary, faith-based and community organizations that play vital roles in recovery...and capture resources, capabilities, and best practices for recovering from disaster, recognizing that

significant challenges can confront all recovery efforts, from a relatively localized event to a large-scale disaster that demands substantial resources.”⁶

The NDRF represents a significant step forward in the way disaster recovery efforts will be managed, based on lessons from past disasters, like the Gulf Coast hurricanes of 2004 and 2005 and the Midwest floods of 1993 and 2008. Although the NDRF draft report, released for comments on February 10, 2010, makes multiple references to the importance of pre-disaster risk assessment, it made no specific reference to climate change, and the issue failed to arise in the summary of emerging themes the NDRF’s authors gleaned from the period of stakeholder input.⁷ However, the group has released a report addressing the needs of Gulf Coast populations recovering from hurricanes Katrina and Rita, which acknowledges that “rising sea levels are a byproduct of climate change that will exacerbate these [disaster] threats.”⁸

On the other hand, the NDRF draft identifies socially vulnerable populations as in need of extra attention and refers multiple times to “underserved” populations and communities.⁹ The NDRF notes that socially vulnerable populations have higher levels of unmet needs during disaster preparedness and recovery than other demographics. It highlights the role of non-profits, community groups, and even insurance companies in reaching out to and providing for the greater needs of the socially vulnerable. The NDRF identifies various socially vulnerable populations as explicit stakeholders in the disaster planning and recovery processes and emphasizes the need for such groups to have an input into these processes as well as to feel empowered about their role in their community’s recovery. The fact that the NDRF champions culturally competent disaster management is reason enough to rate it as having strong potential.

6. Federal Emergency Management Agency, “National Disaster Recovery Framework Initiative Overview” (February 5, 2010): www.fema.gov/recoveryframework/ (accessed Aug. 3, 2010).

7. Long-Term Disaster Recovery Working Group, “Strengthening Disaster Recovery for the Nation: Preliminary Summary of Emerging Themes” (November 13, 2009): <http://disasterrecoveryworkinggroup.gov/themes-summary.pdf> (accessed Dec. 1, 2009).

8. Long-Term Disaster Recovery Working Group, “Disaster Recovery Working Group Fact Sheet: Background on Gulf Coast Recovery and Nationwide Disaster Preparedness and Response Efforts”: <http://disasterrecoveryworkinggroup.gov/releases/gulfcoast-factsheet.pdf>.

9. Long-Term Disaster Recovery Working Group, “National Disaster Recovery Framework” (February 5, 2010): <http://disasterrecoveryworkinggroup.gov/ndrf.pdf>.

Wherein: “vulnerable communities” are defined as, “Groups that have limited or barriers to access to resources or are otherwise disenfranchised. These groups include those who are socioeconomically disadvantaged; persons who have limited English proficiency; people who are geographically isolated or educationally disenfranchised; minority groups; women and children; individuals with disabilities and others with access and functional needs; and older people.”

2. Supplemental Revenue Assistance Payments (SURE)

On June 18, 2008, the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) was enacted, creating five new disaster programs, collectively referred to as the Supplemental Agricultural Disaster Assistance Program. Among the five programs is the Supplemental Revenue Assistance Payment program, which provides benefits to offset farm revenue losses due to natural disasters (as determined by the US Secretary of Agriculture) that are not covered by insurance. For the report, a key consideration is whether or not the SURE program covers disasters induced by climate change.

According to the US Department of Agriculture (USDA) a number of hazards threaten crop production, including some linked to climate change – such as hurricanes or weather patterns sustained over a period of time, for example abnormally low or high temperatures.¹⁰ In addition, the USDA’s Global Climate Change Task Force released a report in 2008 entitled “The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity,” which found that climate change was a serious and real concern for agriculture that is not at present being adequately addressed, and that climate change will increase the frequency and severity of natural disasters.¹¹ In light of such public revelations it could be reasonably assumed that the potential for climate change to cause agricultural disasters will be recognized by the administrators of SURE.

With regard to social vulnerability, the SURE program suspends the normal prerequisite that a farmer purchase crop insurance in advance of making a SURE claim for farmers and ranchers who are deemed “socially disadvantaged” or who possess limited resources. According to SURE, a socially disadvantaged farmer or rancher is one belonging to “a group whose members have been subjected to racial, ethnic, or gender prejudice because of their identity as members of a group without regard to their individual qualities.”¹² SURE also disqualifies producers with adjusted gross incomes and/or total non-farm incomes greater than preset amounts from receiving assistance payments. According to the rating scheme of this report, the SURE program is strong in its

10. Farm Service Agency, “Disaster Assistance Programs,” US Department of Agriculture (May 20, 2010): www.fsa.usda.gov/FSA/webapp?area=home&subject=diap&topic=landing.

11. Farm Service Agency, “Disaster Assistance Programs,” US Department of Agriculture (May 20, 2010): www.fsa.usda.gov/FSA/webapp?area=home&subject=diap&topic=landing.

US Climate Change Science Program, “Synthesis and Assessment Product 4.3 (SAP 4.3): The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity in the United States,” (May 2008): www.usda.gov/oce/global_change/sap_2007_FinalReport.htm

12. US Senate, “Consolidated Farm And Rural Development Act” (March 20, 2009): <http://agriculture.senate.gov/Legislation/Compilations/ConsFarm/conact.pdf>.

consideration of climate change and social vulnerability. Nevertheless, it seems the SURE program would be even stronger on these issues if it did more to encourage mitigation of crop loss.

3. Hazard Mitigation Grant Program (HMGP)

4. Pre-Disaster Mitigation Grant Program (PDMP)

The Stafford Act (see page 12) has spawned a set of subprograms including HGMP and PDMP. The HMGP is authorized under Section 404 of the Stafford Act and administered by the Federal Disaster Management Agency (FEMA). It provides grants to states, and states provide support to communities to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.”¹³

The PDMP, also administered by FEMA, was created by the Disaster Mitigation Act of 2000, which amended aspects of the Stafford Act related to mitigation planning. Specifically, the PDMP provides funds on a competitive basis to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.

In keeping with the general guidelines of the Stafford Act, both programs leave determination of what constitutes adequate risk assessment to the discretion of state and local governments, and both programs lack distinct prescriptions or requirements for addressing climate change. However, the HMGP has awarded grants for projects that specifically addressed climate-change-induced disasters in the past.¹⁴ On the issue of social vulnerability, both programs call for consideration of “...any adverse effects on low-income or minority populations in the project area.”¹⁵

Consideration of the disproportionately high adverse effects on low-income or minority populations, coupled with evidence that HMGP grants have been made

13. Federal Emergency Management Agency, “Hazard Mitigation Grant Program (HMGP) Overview” (June 4, 2010): www.fema.gov/government/grant/hmgp/.

14. Dr. Cheryl Anderson, “State of Hawai‘i Multi-Hazard Mitigation Plan” (2007) Hazards, Climate & Environment Program, University of Hawai‘i Social Science Research Institute: www.scd.hawaii.gov/HazMitPlan/contents.pdf.

Connecticut Department of Environmental Protection, “Natural Hazard Mitigation Plan” (March 2008): www.ct.gov/dEP/cwp/view.asp?a=2720&q=325652&depNav_GID=1654.

15. Federal Emergency Management Agency, “Pre-Disaster Mitigation Grant Program Overview” (June 9, 2009): www.fema.gov/government/grant/pdm/index.shtm.

to communities focusing efforts on addressing climate change, is enough to warrant a rating of “strong” in Table 1. Nevertheless, the guidelines for both the HMGP and PDMP would be greatly enhanced by more direct language and stricter requirements regarding the consideration of climate change and social vulnerability by local hazard management. Changes in the language, however, do not appear to be on the horizon anytime soon, as the PDMP is up for reauthorization with language almost identical to the version currently in place.¹⁶

5. Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act)

The Stafford Act outlines the provision of disaster response and recovery funds from the federal government to affected state and local areas. The act created the system through which a presidential declaration of disaster may be obtained and defined what entitlements come with such a declaration, including public assistance to communities to rebuild infrastructure as well as individual assistance to citizens to rebuild and replace houses and businesses. The Act concerns itself largely with eligibility requirements for funding and gives FEMA the responsibility for coordinating and implementing relief efforts on the ground. As Table 1 indicates, Stafford says little explicitly about climate change but could be interpreted as encouraging special consideration for social vulnerability.

According to the Stafford Act, a community must thoroughly and accurately assess and prepare for its disaster risk to be considered eligible for disaster funding. The act gives ultimate responsibility and discretion to governors and then to the president to determine whether or not a community has adequately assessed its risk and preparedness for disasters. It is worth noting, however, that some states and municipalities have seen fit to take the initiative and have prominently factored climate change into their disaster risk assessment and preparedness planning.¹⁷

A recent critique of the Stafford Act came in a 2009 article in the *Journal of Homeland Security and Emergency Management* by Moss, Schellhammer, and Berman entitled, “The Stafford Act and Priorities for Reform.”¹⁸ Though the article does not mention climate-change-induced disasters specifically, it

16. US House of Representatives, “H.R. 1746: Pre Disaster Mitigation Act of 2009” (2009).

17. Kenneth C. Topping, “Offsetting Climate Change: 2007 State of California Multi-Hazard Mitigation Plan,” presentation, NAS Disaster Roundtable Workshop (April 3, 2008): <http://dels-old.nas.edu/dr/docs/dr22/Topping.pdf>.

18. David A. Berman, “The Stafford Act and Priorities for Reform.” *Journal of Homeland Security and Emergency Management*, 6, no. 9 (2009): www.nyu.edu/ccpr/pubs/Moss_03.09.09.pdf.

describes the Stafford Act as outdated and unprepared for the likely increase in disasters in the twenty-first century. It also discusses the Stafford Act's silence on the issues of technological disasters and its failure to consider the special needs of urban disaster zones versus rural, specifically the needs of small and impoverished rural communities. On the other hand, our research did find language in multiple places in the Stafford Act alluding to the importance of accounting for social vulnerability.

For example, Section 513 encourages federal program administrators to consult organizations like the National Council on Disability and the Interagency Coordinating Council on Emergency Preparedness and Individuals with Disabilities and if necessary to appoint a disability coordinator to ensure that the needs of individuals with disabilities are identified and addressed. Likewise, Section 616 requires FEMA to identify groups with limited English proficiency, disabilities, or other special needs and to and take into account such groups in planning for an emergency or major disaster, with particular emphasis on ensuring that information made available to individuals affected by a major disaster or emergency is available in formats that can be understood by people with communication barriers. Also, for accountability in post-disaster response, Section 697 requires FEMA to seek out small businesses "owned and controlled by socially and economically disadvantaged individuals."¹⁹ Recent amendments to the Stafford Act have called for increasing the accessibility of and availability of post-disaster housing for disadvantaged populations (H.R. 5441) and increasing funds available to electric utility companies serving low-income households.

6. National Flood Insurance Program (NFIP)

The NFIP is another plank in FEMA's mitigation platform, although it preceded the Stafford Act by about 20 years. Its purpose is to make federally backed flood insurance available to homeowners, renters, and business owners in communities across the US and its territories in exchange for adopting and enforcing floodplain management ordinances to reduce future flood damage. An overarching goal of the NFIP is to decrease the risk of future flood losses.²⁰ Community participation in the NFIP is voluntary, although nearly all development in coastal and flood-plain areas nationwide is affected, since

19. Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended, 42 U.S.C. 5121-5207, and Related Authorities (June 2007): www.fema.gov/pdf/about/stafford_act.pdf.

20. John Kostyack, "Reforming the National Flood Insurance Program to Confront Global Warming and Other Environmental Realities," *Trends* (August 3, 2008): http://online.nwf.org/site/DocServer/Reforming_the_NFIP_-_FINAL.pdf?docID=10582 (accessed Aug. 3, 2010).

construction in these areas cannot go forward without some form of NFIP insurance.

With regard to climate change, as early as 1989 Congress mandated that FEMA perform a two-year study to evaluate the projected impact of sea-level rise on the cost of administering the NFIP. FEMA reported back with predictions that the Louisiana Gulf Coast region will be most affected by sea-level rise through 2100 and attributed this sea-level rise to climate change.²¹ However, the NFIP still receives criticism to this day for failing to adequately incorporate climate change into its risk modeling and analysis, which leads to the assumption that the coastal areas of the nation are not adequately insured for their actual risk.²²

The NFIP guidelines do not go into detail on social vulnerability; in fact, a major criticism of the NFIP is that it does not consider the relatively greater flood-risk shouldered by socially vulnerable communities, nor does it consider the special barriers to common flood-risk mitigation tools, such as relocation or structural reinforcements, faced by socially vulnerable communities.²³

7. Coastal Zone Management Act (CZMA)

Passed in 1972 and most recently amended in 1996, CZMA encourages coastal states and tribes to develop and implement plans to preserve, protect, develop, and, where possible, restore or enhance, resources of the US coastal zone (the Atlantic, Pacific, and Arctic Oceans, as well as the Gulf of Mexico, Long Island Sound, and the Great Lakes), such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats.²⁴ Like other federal programs, participation in the CZMA by states and tribes is voluntary, and the CZMA offers the incentive of federal funding to states that develop comprehensive Coastal Zone Management Plans (CZMPs). As a result, all coastal states except Indiana and Illinois have chosen to participate to some degree.²⁵

With regard to disasters, the CZMA has the goal of “preventing or significantly reducing threats to life and destruction of property by eliminating development

21. Federal Emergency Management Agency, “Projected Impact of Relative Sea Level Rise on the National Flood Insurance Program, 1991” (1991): www.epa.gov/climatechange/effects/downloads/flood_insurance.pdf.

22. See note 17.

23. Camilo Sarmiento and Ted E. Miller, “Inequities in Flood Management Protection Outcomes,” American Agricultural Economics Association meetings (May 2006): <http://ageconsearch.umn.edu/bitstream/21042/1/sp06sa08.pdf>.

24. Environmental Protection Agency, “Coastal Zone Management Act (CZMA)” (1972): www.epa.gov/oecaagct/lzma.html.

25. “Coastal Zone Management Act,” fact sheet, American Society of Limnology and Oceanography: <http://aslo.org/policy/docs/czma.pdf>.

and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise.”²⁶ The act explicitly requires states that chose to develop comprehensive CMZPs to anticipate and plan for rises in sea level and other potentially serious adverse effects in the coastal zone resulting from “global warming.”²⁷ In addition, there are multiple programs administered by the Office of Ocean and Coastal Resource Management (OCRM) under the umbrella of the CZMA that provide funding and technical assistance to state and local government initiatives preparing for and adapting to climate change and sea-level rise. It is also worth noting that a bill is now under consideration by Congress that would amend the CZMA to authorize assistance to coastal states to develop coastal climate change adaptation plans. The Coastal State Climate Change Planning Act would establish a new grant program administered by the OCRM to support efforts by coastal states to modify their current coastal management programs to account for the impacts of global warming.²⁸

While the CZMA is by nature focused on risks exacerbated by climate change, it has no special provisions for socially vulnerable populations particularly at risk from flooding associated with sea-level rise. Interestingly, though, it does stress the need for “public access to the coasts for recreation purposes” and “assistance in the redevelopment of deteriorating urban waterfronts and ports, and sensitive preservation and restoration of historic, cultural, and esthetic coastal features,” both of which might be considered examples of ethical guidelines for disaster mitigation.²⁹

8. Water Resources Development Act (WRDA)

The WRDA of 2007 authorizes the US Army Corps of Engineers (USACE) to conduct various projects on flood and pollution control, hurricane and storm damage reduction, harbor maintenance and waterway navigation improvements, shoreline and water supply protection, and ecosystem restorations and environmental impact studies. The WRDA does not directly appropriate funds for these programs; however, it details the allocation of \$23 billion dollars worth

26. National Oceanic and Atmospheric Administration, “Coastal Zone Management Act of 1972 as amended through P.L. 104–150, The Coastal Zone Protection Act of 1996”: <http://coastalmanagement.noaa.gov/about/czma.html>.

27. National Oceanic and Atmospheric Administration, “What Is OCRM Doing to Respond to Climate Change?” (February 13, 2009): http://coastalmanagement.noaa.gov/issues/climate_activities.html.

28. US House of Representatives, “H.R. 1905: Coastal State Climate Change Planning Act”: www.govtrack.us/congress/bill.xpd?bill=h111-1905.

29. See note 23.

of federal budget authorizations to over 900 projects to be carried out by the USACE through 2012, with an additional \$38 billion available to future allocations.

Though the act provides for small projects around the country, it focuses particular attention on the Louisiana Gulf Coast through the upper reaches of the Mississippi River as well as the Florida Everglades, with most resources destined for those areas. The WRDA currently supports ongoing recovery efforts for hurricanes Katrina and Rita and attempts to incorporate lessons learned from these disasters into future disaster planning and emergency response.

Much of the WRDA pertains directly to disasters, including floods and hurricanes, with directives regarding flood control and levee construction, debris removal, and ecosystem restoration – all without reference to climate change. In fact, a 2007 congressional vote rejected a proposed amendment that would have required the USACE to include the projected impact of global climate change in any relevant study of water resource projects.³⁰ The USACE responded by creating an interagency task force on climate change. In 2009, together with the US Department of the Interior, the US Geological Survey, and the National Oceanic and Atmospheric Administration (NOAA), the USACE released a 65 page report entitled “Climate Change and Water Resources Management: A Federal Perspective.”³¹

The fact that the USACE cosponsored the 2009 report, coupled with its authority to administer the WRDA program, gives advocates of climate change reduction and adaptation reason to be hopeful. Still, current guidelines are insufficient and we found no indication that social vulnerability is on the USACE’s radar. Therefore we rated the WRDA as having moderate potential.

9. Homeowners’ Defense Act (HDA)

The HDA was originally proposed in Congress in 2007 but failed to pass and was reintroduced in 2009. If it becomes law, the HDA aims to ensure the availability and affordability of homeowner’s insurance coverage for catastrophic events. Among other things, the act would expand the federal government’s role in catastrophe insurance by establishing the National Catastrophe Risk Consortium to spread the risk of catastrophic financial loss resulting from natural disasters

30. US House of Representatives, “H.R.1495: Water Resources Development Act of 2007”: www.opencongress.org/wiki/Water_Resources_Development_Act_of_2007.

28. Levi D. Brekke et al., “Climate Change and Water Resources Management: A Federal Perspective,” U.S. Geological Survey (2009): <http://pubs.usgs.gov/circ/1331/>.

and catastrophic events.³² In short, the bill is predicated on the claim that private homeowners insurance agencies are insufficiently equipped to respond to major catastrophes, leaving the markets most in need of coverage with the least ability to find or afford it.

HDA critics frequently point out that coastal disaster premiums have gone up considerably in recent years, partly in response to predictions of increases in the frequency and severity of disasters due to climate change, but the HDA says nothing about the risk homeowners could face due to climate change.³³ In its current form, the HDA could allow private insurance companies to pass responsibility for the probable rising costs of climate change to the federal government unless the federal government begins factoring climate change into its disaster-prediction models.

Knowing that the HDA intends to make disaster insurance cheaper for all homeowners in high-risk areas leads some to conclude that low-income homeowners will benefit, but others argue that a greater portion of funds will go to those who lose the greatest amount of relative value in a disaster, that is, the wealthy. For many, a worse possible outcome is that the HDA will encourage more development in disaster-prone areas, particularly fragile coastlines and wetlands. Moreover, critics hold that the HDA will force taxpayers in states with lower disaster risks to foot the bill for their hazard-prone compatriots in other states, maintaining that “[f]or the federal government, a wiser approach would be to create incentives for people to build better, in less fragile, less catastrophe-prone areas of the country.”³⁴ These concerns have stalled the passing of the HDA for the moment and lead us to rate it as “weak” program.

Federal agencies, programs, and task forces reviewed but not rated

Below appears a less detailed review of programs and other activities we encountered while seeking a better understanding of the programs, plans, and

32. US Senate, “S. 505: Homeowners’ Defense Act of 2009”: www.govtrack.us/congress/bill.xpd?bill=s111-505.

33. Justin R. Pidot, “Coastal Disaster Insurance in the Era of Global Warming: The Case for Relying on the Private Market,” Georgetown Environmental Law & Policy Institute, Georgetown University Law Center (2007): <http://141.161.16.100/gelpi/CoastalDisasterInsuranceReport.pdf>.

34. Arin Greenwood, “Compounding Catastrophe: Why Federal Involvement in State Catastrophe Insurance Is a Bad Idea,” Competitive Enterprise Institute (December 2, 2008): http://cei.org/cei_files/fm/active/0/Arin%20Greenwood%20-%20Compounding%20Catastrophe.pdf.

policies discussed above. While the above list reviews specific programs, plans, and policies with direct impact on federal disaster, the list below covers a wider variety of organizations and current federal activities, intended to demonstrate the myriad of levers available to the federal government for addressing climate change and social vulnerability. Towards the end of this section we focus on programs targeting the Gulf Coast.

National Hurricane Program (NHP)

Established in 1985, the NHP is an offshoot of FEMA, advised by the NOAA, the USACE,³⁵ the US Department of Transportation, and the US Weather Service. The NHP conducts assessments and provides tools and technical assistance to state and local agencies in developing hurricane evacuation plans. The NHP also seeks to protect communities and residents from hurricane hazards by providing disaster preparedness training and educational media and steps in to assist with response and recovery operations. The NHP is part of a federal post-storm assessment program that aims to refine and improve hurricane response and open new avenues for better prediction and preparedness. A main aspect of NHP's work on hurricane damage mitigation involves appraising and improving building design in hurricane-prone areas. Neither climate change nor social vulnerability currently factor into any of the prominent language of the NHP.

National Oceanic and Atmospheric Administration (NOAA)

NOAA's roots date to 1807, when the nation's first scientific agency, the Survey of the Coast, was established. Today, NOAA plays a prominent role in the nation's climate monitoring and coastal restoration, in addition to conducting research that informs the efforts of planners, emergency managers, and other decision makers to protect life and property.³⁶ To that end, NOAA received \$170

35. The US Army Corps of Engineers (USACE) is probably best known for assistance to communities at risk of or affected by floods, in accordance with the Flood Control and Coastal Emergency Act (Public Law 84-99). The act gives USACE authority to construct levees, floodwalls, and other flood damage reduction projects and to repair and/or restore these structures in the event of a flood, hurricane, or some other extreme event. The act also establishes an emergency fund for coordination, planning, and training activities with local, state, and federal agencies that are designed to increase preparedness for emergency response to natural disasters. In addition to its flood control and restoration responsibilities, the Department of Homeland Security has identified multiple roles or Emergency Support Functions (ESFs) for USACE as part the National Response Framework (NRF). NRF includes a set of 15 ESFs that are used to guide federal interagency coordination in the event of a disaster (see www.fema.gov/pdf/emergency/nrf/nrf-esfall.pdf). Specifically, USACE (under the Department of Defense) is the primary coordinator for public works and engineering (ESF #3); however, it is also involved in twelve other functions, including Mass Care, Emergency Assistance, Housing, and Human Services (ESF #6); Public Health and Medical Services (ESF #8); Agriculture and Natural Resources (ESF #11); Energy (ESF# 12); and Long-Term Community Recovery (ESF #14).

36. National Oceanic and Atmospheric Administration, "About NOAA": www.noaa.gov/about-noaa.html (accessed Aug. 3, 2010).

million from Congress as part of the American Recovery and Reinvestment Act of 2009 to launch a national coastal restoration effort to “improve the quality of our water, provide recreational opportunities for the public’s use and enjoyment, and buffer our coastal communities from the impacts of storms and sea-level rise.” However, only a fraction of these funds are targeted to the Gulf Coast area and only a portion of those funds restore coastal wetlands and barrier islands. Many of our interview respondents highlighted NOAA as being a player at the forefront of designing federal programs to combat climate change and sea-level rise – both crucial aspects of disaster mitigation – but NOAA is not on the frontline of disaster response. Furthermore, searches of NOAA’s public information revealed no mention of social vulnerability but again, interview respondents commended the agency for its success in partnering with communities and seeking their input (including socially vulnerable ones) during the program design process.

Small Business Administration (SBA) Disaster Loan Program

SBA provides financial assistance for disaster recovery to individuals who rent or own homes, own their own businesses, or own small agricultural cooperatives in declared disaster areas. Loans are available for homes or businesses to rebuild or replace physical losses – such as property, inventory, and/or automobiles – after a disaster, as well as to provide capital to maintain solvency if the disaster interrupted normal business operations. Applicants in declared disaster areas may also be entitled to additional loans to fund mitigation projects that will decrease their vulnerability to future disasters, and individuals who chose to relocate to areas of lower-hazard risk after a disaster can also receive assistance.³⁷ It appears that no restrictions are placed on recipients of these grants to factor the risk of climate change into their reconstruction efforts. Other criticisms exist of the program’s relative inaccessibility for certain socially vulnerable segments of the population; for example, many elderly on fixed incomes cannot qualify for low-interest, SBA disaster loans to rebuild property.³⁸

Department of Housing and Urban Development (HUD)

Historically, HUD programs have been one of the key drivers in investment and recovery of socially vulnerable communities, especially with regard to housing-

37. Small Business Administration, “Fact Sheet About U. S. Small Business Administration (SBA) Disaster Loans”: www.sba.gov/idc/groups/public/documents/sba_homepage/serv_da_disastr_loan_factsht.pdf (accessed Aug 3, 2010).

38. Lauren S. Fernandez et al., “Frail Elderly as Disaster Victims: Emergency Management Strategies,” *Prehospital and Disaster Medicine* 2, no. 17 (2009): www.gwu.edu/~icdr/publications/67-74_fernandez.pdf.

recovery programs. For example, HUD describes its HOME program as the largest federal block grant to state and local governments designed exclusively to create affordable housing for low-income households. Combined with its Community Development Block Grant Disaster Recovery Program, which is intended to benefit low-income residents in and around communities that have experienced a natural disaster, HUD is able to invest significant resources in activities that build the capacity of communities to design solutions grounded in local contexts. In addition, HUD Disaster Recovery grants often supplement disaster programs of FEMA, SBA, and USACE. Since 2005 Congress has appropriated more than \$30 billion in HUD disaster recovery support.

Interagency Ocean Policy Task Force

Published in September 2009, the interim report of this interagency effort headed by the White House Council on Environmental Quality lists as its first priority the development of a national policy that provides for, among other things, “adaptive management to enhance our understanding of and capacity to respond to climate change.” It aims to “strengthen resiliency of coastal communities, as measured by their ability to adapt to climate change and ocean acidification. The task force has also cited the importance of comprehensive research on the linkages among ecosystem health, human health, economic opportunity, national and homeland security, social justice, and environmental change, including climate change.³⁹

Gulf Opportunity Zone Act of 2005

The Gulf Opportunity Zone Act was passed by Congress to help individuals and business in designated counties in Alabama, Mississippi, and Louisiana rebuild after hurricanes Katrina, Rita, and Wilma by providing investors and developers with tax incentives.⁴⁰ The act was largely applicable to the 2005 and 2006 tax years, but some businesses involved in reconstruction can receive tax breaks on projects to be completed by December 31, 2010.⁴¹

The so-called “Go Zone” Act has been criticized for encouraging rebuilding in high-risk areas without prudent regard for the effects of climate change being predicted by multiple robust risk models.⁴² Its work is thus considered

39. White House Council on Environmental Quality, “Interim Report of the Interagency Ocean Policy Task Force” (2009): www.whitehouse.gov/assets/documents/09_17_09_Interim_Report_of_Task_Force_FINAL2.pdf

40. “Gulf Opportunity Zone Act of 2005 - P.L. 109–135” (last modified July 31, 2009): www.irs.gov/taxexemptbond/article/0,,id=155664,00.html.

41. US House of Representatives, “H.R.4440: Gulf Opportunity Zone Act of 2005”: <http://thomas.loc.gov/cgi-bin/bdquery/z?d109:HR04440:>.

42. Ibid.

counterproductive by some climate change mitigation advocates. Those concerned with addressing socially vulnerability, however, might find comfort in knowing that it includes special provisions for retirees, families with children, and low income housing.⁴³ In any case, as the program is near the end of its scheduled completion, perhaps now is the time for a more detailed study of how well the program worked.

Gulf Coast Ecosystem Restoration Working Group

A core belief of this group is that the protection and prosperity of the Louisiana and Mississippi coastal region is critical to the economic, cultural, and environmental integrity of the nation.⁴⁴ In March 2009, the working group released a report, “Roadmap for Restoring Ecosystem Resiliency and Sustainability,” that addresses the likely consequences of climate change in the region – such as rising sea levels, more-severe hurricanes, and erosion – and places major emphasis on mitigating the effects of climate change by restoring wetlands and barrier islands in Mississippi and Louisiana. It also includes ideas for how federal and state governments can work together in pursuit of shared priorities.

Most of the Gulf Coast Ecosystem Restoration Working Group’s initiatives have a principal goal of improving ecosystem function, while also seeking to encourage flood and storm damage risk reduction. To this end the working group identified a number of congressionally authorized programs designed to help restore and protect Gulf Coast ecosystems, including:

1. The Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA), which focuses on marsh creation, restoration, protection, and enhancement, as well as barrier island restoration. To date CWPPRA has authorized 144 active restoration projects, including 82 that have been completed and 15 that are under construction. CWPPRA features federal/state interagency decision making and well-established stakeholder involvement
2. The Coastal Impact Assistance Program (CIAP), authorized in the Energy Policy Act of 2005 and administered by the Bureau of Ocean Energy Management, Regulation, and Enforcement (formerly the Minerals Management Service) under the Department of the Interior. CIAP provides grants to coastal oil and gas producing states from Outer Continental Shelf

43. Jason A. Rothman and Mark P. Altieri, “Gulf Opportunity Zone Act of 2005: Tax Breaks for Victims of Hurricanes Katrina, Rita, and Wilma,” *Journal of Accountancy* (2006): www.journalofaccountancy.com/Issues/2006/Aug/GulfOpportunityZoneActOf2005.htm (accessed Aug 3, 2010).

44. White House Council on Environmental Quality, “Gulf Coast Ecosystem Restoration”: www.whitehouse.gov/administration/eop/ceq/initiatives/gulfcoast.

- revenues for coastal restoration and infrastructure construction to mitigate activities arising from mineral exploration.
3. The Louisiana Coastal Protection and Restoration initiative, which will result in a technical report that will outline the potential tradeoffs required to implement comprehensive solutions in coastal Louisiana for hurricane and storm damage risk reduction. The report will undergo a final review by the USACE, after which it will be reviewed by the Assistant Secretary of the Army for Civil Works. Feedback has been requested from the state of Louisiana on the state's priorities regarding the tradeoffs among various restoration and protection alternatives. Further feasibility analysis is required to support project authorization.
 4. The Mississippi Coastal Improvement Program (MsCIP), created to analyze and design comprehensive improvements or modifications to existing strategies in the coastal areas of Mississippi to reduce storm damage, prevent saltwater intrusion, preserve fish and wildlife and prevent erosion among other objectives. The "Final Comprehensive Plan" and "Chief's Report" of MsCIP have been completed and transmitted to Congress by the Assistant Secretary of the Army for Civil Works.
 5. The Mississippi River Commission, charged with improving the condition of the Mississippi River, fostering navigation, promoting commerce, and preventing destructive floods.

Despite acknowledging the "innumerable" economic, historical, cultural and environmental benefits the coastal regions of Louisiana and Mississippi provide to the nation, the report says virtually nothing about social vulnerability. It is worth noting, however, that a handful of key informants interviewed for this report cited this working group as one of the most promising of all current federal efforts to address the interplay between climate change, disaster management, and social vulnerability.

Summary of content analysis of federal programs, plans, and policies

In carrying out this analysis of federal disaster programs, plans, and policies, we discovered a number that address either climate change or social vulnerability but not both, and certainly not the effect of the first on the second. Moreover, as a recent issue of the journal *Environmental Justice* asserted, federal climate change mitigation policies, as they are shaped at present, largely fail to address the

disaster needs of socially vulnerable populations.⁴⁵ However, we do believe that there are levers in many of the disaster programs, plans, and policies that, if properly wielded, could lead to reductions in the extent to which socially vulnerable groups are exposed to disasters induced or exacerbated by climate change. Proper wielding might include changing the structure of these federal programs so they mandate that local hazard plans account for climate change, social vulnerability, and their interactions. As it stands, a majority of the federal planning initiatives reviewed here leave the scope of risk assessments and planning strategies to the discretion of state and local authorities. Therefore, some states may pay attention to climate change and social vulnerability while others with lower capacity or competing political concerns may chose not to.

Of note, comments made by the Congressional Appropriations Committee in response to the 2009 Department of Homeland Security Appropriations Bill perhaps signify that changes may be forthcoming, at least with regard to climate change concerns being incorporated into federal disaster policy. The Committee first chastised FEMA over climate change concerns, saying:

“The Committee is concerned that FEMA does not have a robust climate change program in place to assess the potential impact of future disasters on its ability to prepare for, mitigate against, and respond to natural disasters; its managing of the National Flood Insurance Fund; and its efforts to help maintain accurate maps of the nation's flood plains. FEMA is directed to... assess the long-term fiscal implications of climate change as it affects the frequency and impacts of natural disasters, and to disseminate information from the study to other states to inform their climate change mitigation efforts.”

In addition to pointing out the need for FEMA to do more to address climate change, the committee commented on the need for FEMA to give special attention to certain socially vulnerable populations, specifically people with disabilities and those disadvantaged by a limited proficiency in English.⁴⁶

Based on this review of programs and current literature, there is also a lot of potential for the HUD and SBA to be leaders in incorporating social vulnerability and climate change considerations into emergency planning.

The next section of this report discusses the results of interviews with key informants familiar with the research and landscape on the extent to which climate change and social vulnerability are addressed in federal programs, plans,

45. Seth B. Shonkoff et al., “Minding the Climate Gap: Environmental Health and Equity Implications of Climate Change Mitigation Policies in California,” *Environmental Justice* 2, no. 4 (2009): www.liebertonline.com/doi/pdfplus/10.1089/env.2009.0030 (accessed August 3, 2010).

46. http://thomas.loc.gov/cgi-bin/cpquery/?&sid=cp110OFy2z&refer=&r_n=hr862.110&db_id=110&item=&sel=TOC_366507&

and policies, as well as with local advocates, government officials, and other professional practitioners knowledgeable about the potential impacts of climate-change-driven disasters on socially vulnerable populations.

Key informant interview findings

The purpose of the key informant interviews was to clarify the extent to which federal disaster programs, plans, and policies account for social vulnerability and climate change, particularly in the Gulf Region, and to identify ways in which they could be improved. The interviews were conducted one-on-one using an interview guide developed in consultation with Oxfam America. The guide included the following questions:

Questions:

1. What have you learned in your work about climate change and its effects (current and potential) on socially vulnerable populations?
2. Through a review of federal programs and policies on disaster mitigation, adaptation, preparedness, response, and recovery we learned that they rarely address climate change or the special needs of socially vulnerable populations. Would you agree with our assessment? Why or why not?
3. Has there been a philosophical shift at the federal level on the importance of addressing the effects of climate change on socially vulnerable populations? If yes, what kind of shift? When did this shift occur and why, e.g. because of the Obama administration?
4. Has such a philosophical shift taken place in the field of emergency management in particular? If yes, what kind of shift? Can you cite anecdotal evidence? When did this shift occur and why, e.g. because of Hurricane Katrina?
5. Do you know of any upcoming changes to federal disaster programs and policies that will allow them to better address climate change and its effects on socially vulnerable populations?
6. What are ways federal disaster programs and policies could be changed to better address the effects of climate change on socially vulnerable populations?
7. How can the federal government work more effectively with state and local governments, the private sector, and community based organizations to help socially vulnerable populations in the Gulf Coast reduce their risk of natural disasters made more frequent and/or more severe by climate change? How can the federal government better help them recover?

8. Are there other programs, people, or places that would serve as models of thought or practice that you can identify for our study?

A summary of the aggregate responses follows.

1. What have you learned in your work about climate change and its effects (current and potential) on socially vulnerable populations?

All key informants agreed that disasters impact socially vulnerable people more severely than other members of the general population – essentially because they are less prepared for the incident and have fewer resources with which to recover. For the Mississippi River Delta and Louisiana Gulf Coast region the major issues cited were land loss/sea-level rise and storms/hurricanes, which disproportionately effect socially vulnerable populations and will worsen with climate change. Many key informants contended that in the Louisiana region various historical factors have combined to create a situation where the poorest/most disenfranchised communities live the furthest south, at the lowest elevations, and thus in the most threatened locations. Lastly, these populations’ livelihoods are most dependent on the land and they stand to lose the most from the environmental destruction that is happening, and that climate change is exacerbating.

Nearly all key informants said that the disparities of socially vulnerable populations are very real and that the effects of climate change could be devastating on this population – more so than the general population. Evidently much research has considered socially vulnerable populations’ risk exposure to disasters, but few have studied their risk exposure to climate change and its corresponding impact on disaster severity and frequency. Key informants commonly said that communities and advocacy organizations see the danger, but somehow the policies being made are not incorporating all available knowledge.

One key informant suggested that climate change is having a tremendous impact on vulnerable populations, particularly in the coastal areas of the Gulf. In addition, as the severity of storms and sea-level rise increases, more marginal populations will lose land they have lived on for generations along with the integrity of the fragile ecosystem that many depend upon for income and subsistence.

2. Through a review of federal programs and policies on disaster mitigation, adaptation, preparedness, response and recovery we learned that they rarely address climate change or the special needs of socially vulnerable populations. Would you agree with our assessment? Why or why not?

All key informants agreed with our assessment that federal policies and programs rarely address climate change and its impact on socially vulnerable populations. A couple of key informants stated that only lip service was paid to the issue. Other informants explicitly stated that some policies address climate change (though not in an effective manner), while other policies address social vulnerability (again, not in an effective manner), very few policies consider both separately, but none seem to consider the effect of the first on the second. Another key informant stated that professionals in the field, from local coastal managers to leaders at federal agencies, are beginning to address the issue of climate change impact on socially vulnerable populations, but it has not yet been codified into plans and policies. Along the same lines, another informant stated that social science research has been considering these things in depth for a while, but that federal policy always lags as policymakers are rarely in touch with academic research. Finally, one informant stated that the Federal Emergency Management Agency (FEMA) and other agencies have recently begun using existing laws more liberally in an attempt to help underserved/socially vulnerable communities (not specifically related to climate change), in spite of congressional delays in addressing the issue explicitly.

3. Has there been a philosophical shift at the federal level on the importance of addressing the effects of climate change on socially vulnerable populations? If yes, what kind of shift? Can you cite anecdotal evidence? When did this shift occur and why, e.g. because of the Obama administration?

The majority of key informants agreed there has been a philosophical change at the federal level (in the White House particularly, corresponding with the most recent change in administrations) regarding climate change, socially vulnerable populations, and, more generally, “environmental justice.”⁴⁷

47. According to the Environmental Justice Resource Center: “Environmental justice embraces the principle that all people and communities are entitled to equal protection of environmental and public health laws and regulations. The environmental justice movement emerged in response to industry and government practices, policies, and conditions that many people judged to be unjust, unfair, and illegal. Some of these practices, policies, and conditions include (1) unequal enforcement of environmental, civil rights, and public laws, (2) differential exposure of some populations to harmful chemicals, pesticides, and other toxins in the home, school, neighborhood, and work place, (3) faulty assumptions in calculating and assessing risks, (4) discriminatory zoning and land-use practices, and (5) exclusionary policies and practices that limit some individuals and groups from participating in decision-making.”

However, several disagreed, either stating explicitly or implying that the connection between climate change and what research suggests will be its impact on the disaster risk of socially vulnerable populations is not being made. One key informant put it succinctly saying, “A lot of policies are being implemented on how to respond to events in socially vulnerable communities, but they’re never related to climate change.”

A few key informants thought that while a philosophical shift had occurred, it will take a while to trickle down through agencies and ultimately to communities. Others highlighted a change in tone at the Environmental Protection Agency (EPA), including not only new discussions of climate change and social vulnerability but also a new willingness to open the discussion to input from local communities and nonprofits. One informant said that he sees the National Oceanic and Atmospheric Administration (NOAA) as leading the charge on climate change and moreover on dealing specifically with its impact on socially vulnerable populations while yet another added, “NOAA gets it.”

Three key informants mentioned that the post-911 incorporation of FEMA into the Department of Homeland Security has had negative consequences in that it made FEMA less willing and/or able to share information and collaborate with and learn from local communities to effectively prepare for disasters. Multiple informants reported that although the White House has begun to talk about climate change, it has not pushed through any strong policies mandating that something be done about climate change. Multiple informants expressed concerns for the way politics trumped science on this issue under previous administrations.

At least one informant expressed concern at a continued lack of African American voices in this dialogue. As a whole, key informants believe that until federal programs, plans, and policies that account for climate change and social vulnerability are more sufficiently converted into actionable guidelines at state and local levels, the general public in the Delta/Gulf Coast region, particularly, will continue to be uninformed. Some predicted that even with clear guidelines a plurality of state and local officials will remain entrenched in their unwillingness to consider climate change, much less its impacts on socially vulnerable populations.

4. Has such a philosophical shift taken place in the field of emergency management in particular? If yes, what kind of shift? Can you cite anecdotal evidence? When did this shift occur and why, e.g. because of Hurricane Katrina?

There was a lack of consensus on this issue, although no one thought there had been a significant philosophical change if there has been one at all. Three key informants said that they do not think there has been a shift at the federal level, while one was willing to wait and see if there would be a change in the near future. Another suggested there is a greater focus on socially vulnerable populations, but that emergency management has not made the connection with climate change. This informant added that emergency managers tend to deal with emergency management response situations for the most part and have little to no knowledge of the issues of climate change. The informant said, "They're overwhelmed with just having to do their emergency management jobs and just want to be able to get what they need done and not have to enter into a conversation about climate change."

In contrast to the above responses, three other key informants thought a shift had occurred, albeit for the most part a superficial one. One informant said new language on climate change and social vulnerability is being used by many in FEMA but felt that this is "just words" at this point. Another said a rhetorical shift had occurred, but that the regulations and laws which define FEMA have not changed. One mentioned being unable to speak to the emergency management field in particular but having clearly seen, post Hurricane Katrina, a new heightened awareness of the disproportionate disaster vulnerability borne by socially vulnerable populations among the general public. A couple of key informants simply did not know, citing unfamiliarity with the philosophy or culture of FEMA. We were unfortunately unable to interview anyone who works at FEMA.

5. Do you know of any upcoming changes to federal disaster programs and policies that will allow them to better address climate change and its effects on socially vulnerable populations?

Again, key informants noted that the terms *climate change* and *socially vulnerable populations* are being used more frequently and becoming a priority for federal agencies (though still not being linked together), and that some new legislation has been suggested, but no one could think of anything important currently in the pipeline. Two key informants highlighted the White House's Mississippi-Louisiana Gulf Coast Ecosystem Restoration Working Group as a very positive and hopeful new initiative, although both mentioned concerns that the group's stated goal of fostering local input into

the process may still not be sufficiently met. Other similar new working groups were vaguely cited – the importance of general interagency cooperation was a clear thread across responses. One key informant mentioned “resiliency” as a new buzzword at FEMA, which he felt would encourage better preparedness planning. Another person cited NOAA’s new “climate services,” as well as the work of the Centers for Disease Control and Prevention. Multiple informants expressed frustrations with Congress’ lack of real progress.

6. What are ways federal disaster programs and policies could be changed to better address the effects of climate change on socially vulnerable populations?

There was widespread sentiment that federal policy and programs need to be better and more directly informed by existing science and academic research regarding climate change and socially vulnerable populations. One key informant believed that this is especially possible today given research currently being done with socially vulnerable populations. This research details exactly which risks they face and recommends steps to efficiently safeguard these socially vulnerable populations from suffering disproportionate disaster risk. The informant went on to say that as risks are not equally shared across groups, there are a lot of disparities the research must first attempt to explain before researchers can try to come up with working solutions to offer to policymakers and practitioners. A few other key informants also called for additional research to be conducted into the potential impacts of sea-level rise and/or the specific needs of socially vulnerable populations (and that this research then needs to inform policy and programs). Lastly, another informant argued that the federal government itself needs to do modeling for storm surges that considers climate change.

Informants also commonly brought up the notion of fostering “resiliency” as a way of dealing with climate change and socially vulnerable communities. In calling for more attention to resiliency, most seemed to be referring to the ability of a community to survive and cope with disaster impacts and rebound after those events. For example, one informant was confident that planning for resilient communities is critical to reducing the human and financial toll of disasters. He continued by saying, “All levels must make investments that build resiliency into these communities. This will benefit all, but especially vulnerable populations.” This set of responses confirms the findings of a 2010 report by the Institute for Homeland Security Solutions. In this report, they propose four strategies for engaging faith-based and community organizations (FBCOs) in emergency preparedness: provide

direct linkages to specialized educational materials and training opportunities; build organizational capacity through funding and technical assistance; facilitate coordinated planning and network-building efforts among state and local emergency management, national voluntary agencies, and local FBCOs; and develop management information systems to coordinate volunteers, donations, and goods distribution, as well as to track community assets, clients served, and expenses incurred.⁴⁸

Several key informants suggested that local governments should either mandate or at the least provide incentives for communities to plan for climate change's effect of increasing the frequency and severity of disasters and the associated impacts of these disasters on socially vulnerable populations. Two informants suggested that the federal disaster declaration process could be the mechanism with which to accomplish this. Both felt that the minimum planning requirements for local governments of the Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) should be strengthened to include climate change and socially vulnerable populations. One agreed on the need for such local planning but did not mention a mechanism by which the federal government could accomplish this. Specifically, informants recommended that planners identify where vulnerable populations are living relative to mapped hazards and then incorporate this knowledge into their planning process.

Other informants echoed this need for better planning when criticizing the current disaster system as reactive rather than proactive. They suggested that the system needs to focus more attention on "the front end of a disaster" in the form of hazard mitigation (as opposed to response and recovery). In the words of one, "Planning and investment must be targeted on the front end to diminish losses (financial and life) on the back end. A shift from response to mitigation is needed."

A few informants suggested that FEMA needs to bring locals into the process, as they have valuable knowledge FEMA lacks. One described FEMA as too paternalistic and as a top-down system which does not incorporate local voices, adding that dealing with vulnerable populations requires local knowledge and social capital to arrive at the most promising solutions. This informant stated, "Socially vulnerable populations do not have good access to the resources needed to rebuild after a disaster, but they often do have good local connections, resources, and knowledge. Unfortunately these resources are not utilized."

48. Pamela Joshi, "Faith-Based and Community Organizations' Participation in Emergency Preparedness and Response Activities," Institute for Homeland Security Solutions (2010): https://www.ihssnc.org/portals/0/IHSS_DeskStudyFinalReport.pdf.

Several key informants suggested that coastal restoration was direly needed along the Gulf of Mexico because of land subsidence and the projected effects of climate change, including sea-level rise and greater storm surges. On a related note, some said that Federal agencies need to collaborate better with local communities and be more proactive in addressing these issues of environmental degradation and destruction. The inference is that the problems facing socially vulnerable populations due to the effects of disasters magnified by climate change are too great for any one agency to address effectively and that the coordinated efforts of many agencies are needed.

A handful of issues and suggestions were mentioned by only a few individuals, but they seem insightful and worth highlighting. For example, one key informant said FEMA needs to share more of its existing extensive information concerning socially vulnerable populations with community-based organizations (CBOs) and nonprofits in the event of a disaster, specifically information about the location of socially vulnerable individuals in communities. The informant recalled that during and after Katrina, FEMA had valuable intelligence that, if shared, would have allowed CBOs to respond to people in need. They described FEMA as an obstacle because it would not share information. They conceded that FEMA may have had concerns about privacy even when personal identifiers were concealed but lamented that, "Obtaining data on socially vulnerable people from FEMA was difficult if not impossible."

Another key informant suggested that the Public Assistance Program (another program enacted within the Stafford Act) could be used to relocate critical infrastructure away from hazard zones and away from areas where sea-level rise is projected. The informant believed that the program is currently underutilized and not focused on relocating infrastructure out of harm's way, let alone away from areas projected to be inundated by sea-level rise. This information further contended that the Pre-Disaster Mitigation Grant Program and the Hazard Mitigation Grant Program should be modified to explicitly address climate change and socially vulnerable populations.

At least one key informant believed that the presidential disaster declaration process and its methods of determining who deserves federal assistance after a disaster needs to be improved. The informant's opinion is that the current declaration process is too reliant on local officials, and that local politics and prejudicial treatment based on race and socioeconomic status negatively affect the process at the expense of socially vulnerable populations. As a result, wealthier, more politically connected communities are receiving more federal assistance than socially vulnerable populations with greater needs. To

remedy this, the informant believed a more objective process should be developed, suggesting that perhaps the decision needs to be made jointly between state and federal officials, or at least that there should be an appeals process. This particular informant also thought that federal response and recovery operations are too reliant on the Red Cross, an organization considered by his peers to be very racially biased, especially in the South.

Finally, at least one informant stressed the point that CBOs need to be better and more frequently engaged in planning and response efforts. The informant recommended that FEMA contract with CBOs in advance of a disaster to provide valuable mitigation and preparation services and then coordinate disaster response with these same CBOs, as the CBOs have resources and local knowledge essential for success in these areas. Essentially, the informant believed such a shift in procedure would allow for a quicker and more robust response to a disaster.

7. How can the federal government work more effectively with state and local governments, the private sector, and community based organizations to help socially vulnerable populations in the Gulf Coast reduce their risk of natural disasters made more frequent and/or more severe by climate change? How can the federal government better help them recover?

Key informants seemed to agree that nongovernmental entities, including the private sector and nongovernmental organizations (NGOs), as well as the aforementioned CBOs, should be engaged in government efforts to plan for disasters. One said that NGOs should be involved in all phases of disaster management, from hazard mitigation to response and recovery, and that FEMA should be willing to contract for services ahead of time to lay the foundation for response and recovery. Many stressed that since local CBOs and NGOs have relationships with communities and more local knowledge, they should serve as intermediaries between public officials and socially vulnerable populations. Another named public-private partnerships as an essential element and still another insisted the federal government needs to work more with nonprofits and institutions such as faith-based organizations and minority-serving institutions, especially colleges and universities that have historically served socially vulnerable populations. According to some, there is evidence that NGOs and CBOs can be used to reduce social vulnerability to disasters, therefore to enhance this capability, federal programs should help build the capacity of these organizations.

A popular sentiment was that socially vulnerable communities in general ought to be more engaged because (1) federal policy directly impacts their lives or (2) they have important local knowledge invaluable to the federal

government. One key informant put this into perspective: “It’s one thing for locals to tell you their concerns – our land is eroding, our fishing resources are degrading – but it’s another to actually go into those communities and work as collaborators to figure out how to sustain those communities....”

Many of our key informants agreed that there needs to be more interaction between federal, state, and local disaster efforts, but there was less agreement on how to make this happen. One idea was for the federal government to lead the way by establishing official networks with local governments, the private sector, nonprofits, and CBOs and engaging these networks in the overall management of disasters, assigning roles, and formalizing partnerships. Another was for the federal government to quit providing the various forms of financial support (including flood insurance, levees, transportation infrastructure, etc.) that make it possible for the private sector to build in high-risk areas. Instead, the federal government should use such incentives to encourage communities to lead on their own or participate in collaborative efforts to reduce the risk faced by socially vulnerable populations. Still others believe federal mandates are the solution. As one informant put it, “Unless the federal government wants to keep bailing out these same populations, these same communities, every couple of years, then these issues must be addressed proactively.”

8. Are there other programs, people, or places that would serve as models of thought or practice that you can identify for our study?

In response to this question key respondents identified a number of exemplary people, programs, and places. Among them were efforts led by Elizabeth City State University (ECSU), a historically black institution located in Elisabeth City, North Carolina. At ECSU researchers associated with the Center for Green Research and Evaluation have engaged disadvantaged populations in the region to inform them about climate change and get a better understanding of the challenges they face with mitigation and adaptation. The center is also leading a call for a comprehensive, state-wide climate action plan. Other historically black institutions taking steps to address social vulnerability and its effects include Clark Atlanta University in Atlanta and Dillard University in New Orleans. The Environmental Justice Resource Center at Clark Atlanta is studying the role of equity and social vulnerability in reducing the disaster risk.

Activities like those happening at ECSU, Dillard, and Clark Atlanta were cited by key informants and described as critical for building the capacity and relationships necessary for long-term recovery. Others pointed to states and counties that have climate adaptation plans, like King County,

Washington, and organizations such as Local Governments for Sustainability (ICLEI), which is an association of over 600 local governments in the US (more than 110 internationally) committed to sustainable climate change. The ICLEI has produced a number of tools and offers training programs; however, a key word search of the organization's website and publications available online revealed very little attention beyond a link to Oxfam's report on social vulnerability and an assertion that a successful climate sustainability outreach program will promote "socially just and vibrant communities."⁴⁹

Beyond the activities of local governments, a number of states were named by informants. For example, the state of Maryland had a commission on climate change in 2007 charged with developing a climate action plan. In 2008, the commission's Scientific and Technical Working Group, which is composed largely of scientists from universities around the state, produced a comprehensive assessment of climate change impacts in the state. With regard to social vulnerability, the assessment highlighted an increased risk of heat stress likely to affect the poor, elderly, and urban populations.⁵⁰

Like Maryland, California has its own climate action group. To meet California's greenhouse gas reduction targets, Governor Arnold Schwarzenegger issued Executive Order S-3-05 June 1, 2005 directing the secretary of the California Environmental Protection Agency to coordinate with other state agency leads to assemble a Climate Action Team (CAT) made up of representatives from the agencies as well as numerous other boards and departments. The charge of CAT members is to work to coordinate efforts to implement global warming emission reduction programs and California's Climate Adaptation Strategy. In carrying out its mission, CAT has produced a series of reports, including one detailing the environmental health and equity impacts from climate change and mitigation policies in California. The first line of this report describes climate change as an issue of great importance for human rights, public health, and social equity because of its disproportionate impact on vulnerable and socially marginalized populations.

In addition to Maryland and California, other states may be working on climate action plans. It may be worthwhile to conduct a national assessment

49. "Climate Change Outreach and Communications Guide": www.icleiusa.org/action-center/engaging-your-community/outreach-and-communications-guide/Outreach%20and%20Communications%20Guide.pdf.

50. Scientific and Technical Working Group, "Comprehensive Assessment of Climate Change Impacts in Maryland," Maryland Commission on Climate Change (July 2008): www.mde.state.md.us/assets/document/Air/ClimateChange/Chapter2.pdf.

of state plans to determine the extent to which they account for social vulnerability.

Summary analysis of expert interviews

Overall, key informants reported that federal disaster programs, plans, and policies do not address the effects of climate change on socially vulnerable populations and they do not believe there are any immediate changes that might ameliorate this situation. There was, however, guarded optimism and a near unanimous perception that there has been a positive philosophical shift within the federal agencies on climate change and the importance of accounting for socially vulnerability. The strength of faith-based and community organizations was noted. In addition, many credit the administration of President Barack Obama specifically for the change in tone at federal agencies, including NOAA, FEMA, and the EPA, although there was some disagreement about FEMA. Despite this philosophical shift and change in tone, many were still frustrated that federal programs, plans, and policies had not significantly changed by now, but acknowledged that it might still be early in the process. One change that would transform the way we structure and implement disaster response would be to include vulnerability, social mitigation, and job creation from the beginning, rather than as an afterthought contingent upon funding and political will.

Implications of the research

This paper answers the questions posed by Oxfam America and the Rockefeller Foundation, and goes one step further and redefines disaster preparedness, management, and recovery to include the vulnerable populations whose livelihood is impacted most acutely. By using this and other reports and scholarly evidence of the differential impacts of climate change, the federal government can save money by targeting early response to communities least able to recover independent of government intervention.

The most fundamental question is, “What is the landscape, what is happening right now?” The content analysis identified the likely suspects for disaster and emergency policies, programs, and plans that should include special attention to vulnerable communities and climate change. Of the nine identified, only two exhibited strong potential for incorporating both elements, and none focuses on the effect of climate change on social vulnerability.

The expert interviews produced clear directives about how to cultivate and sustain interdepartmental collaboration. The expert interviews were also very clear about the responsibility and opportunity for disaster recovery missions to target socially vulnerable populations. Given the preponderance of evidence about risks and challenges, effective and creative solutions are now more possible than ever.

In this paper we map the potential for the complex domestic emergency management infrastructure to be responsive to climate change and social vulnerability. We demonstrate the availability of evidence about the differential impacts that transcends the political posturing on climate change. We also use the content analysis to suggest leverage points for adjusting current federal policies, programs, and plans to accommodate the evidence of increased and acute risks due to climate change and social vulnerability. This paper contributes evidence to show that targeting emergency management based on vulnerability saves money and lives.

Forty percent of the people on our planet—more than 2.5 billion—now live in poverty, struggling to survive on less than \$2 a day. Oxfam America is an international relief and development organization working to change that. Together with individuals and local groups in more than 90 countries, Oxfam saves lives, helps people overcome poverty, and fights for social justice. To join our efforts or learn more, go to oxfamamerica.org.



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