



# Social Cohesion

## The Secret Weapon in the Fight for Equitable Climate Resilience

By Danielle Baussan

May 2015

Center for American Progress



# Social Cohesion

The Secret Weapon in the Fight  
for Equitable Climate Resilience

---

By Danielle Baussan

May 2015

# Contents

- 1 Introduction and summary**
- 4 The vulnerability of low-income communities**
- 8 Integrating community resilience into climate resilience**
- 21 Recommendations to foster climate and social resilience**
- 23 Conclusion**
- 25 Endnotes**

# Introduction and summary

In July 1995, Chicago experienced the deadliest weather event in the city’s history: a sustained heat wave that included a heat index—a measure of the heat experienced by a typical individual—of 120 degrees Fahrenheit.<sup>1</sup> The extreme weather of that summer 20 years ago led to at least 465 heat-related deaths over a roughly two-week period.<sup>2</sup> While all Chicagoans felt the heat, they did not suffer equally. The parts of the Windy City with higher concentrations of low-income people, elderly people, and African Americans experienced some of the highest heat-related death rates.<sup>3</sup> Pinpointing the locations of these deaths revealed a map of climate vulnerability that spoke to stark racial divisions and inequality within Chicago.

Weather is often referred to as “the great equalizer,” but as Chicago’s experience shows, extreme weather such as flooding, storms, unusually cold spells, and heat waves disproportionately affect low-income communities. There are several explanations for this disparity. Low-income housing—which is typically older and of poor quality—tends to provide less protection from extreme weather.<sup>4</sup> After destructive weather events, people in low-income communities are not able to recover as quickly or completely as individuals who live in more financially secure communities.<sup>5</sup> Moreover, people who choose to leave or are forced to move from a climate-affected area become “climate displaced,” which results in disruptions to their lives and a potential burden to host communities.

Since the Chicago heat wave of 1995, the world’s changing climate has contributed to an increase in the strength and frequency of extreme weather events, with the resulting fallout more likely to be acutely felt by low-income households.<sup>6</sup> In order to curb climate change, a number of cities are testing strategies to cut carbon pollution, such as expanding public transportation, improving energy efficiency, and increasing access to renewable energy. These strategies also have the added benefit of improving public health, particularly in low-income areas where rates of asthma and other environment-related illness are high.<sup>7</sup> Climate change adaptation efforts that are currently underway to fight coastal flooding,<sup>8</sup> reduce excessive heat in urban areas, and limit drought effects<sup>9</sup>—such as planting trees, restoring natural areas, and improving water-use efficiency—can help residents of all income levels.

In addition to these measures, promoting social cohesion—in which a society’s members cooperate to achieve shared well-being—in communities is an additional and overlooked tool for strengthening climate resilience, with particularly good outcomes in low-income communities. Just as the Chicago heat wave displayed the vulnerability of low-income communities during extreme heat events, it also spotlighted the resilience of socially cohesive communities in the face of extreme weather. Researchers found that 3 of the 10 Chicago neighborhoods with the lowest rates of heat-related deaths were low-income, African American communities.<sup>10</sup> The reason that communities with similar demographics fared so differently was high levels of community interaction and organization that decreased isolation among residents. Put differently, socially cohesive communities in which people are engaged in social or civic events enjoyed increased resilience against extreme weather events.

While there is no singularly accepted definition of social cohesion, the concept has been used by social scientists and international government organizations. The Organisation for Economic Co-operation and Development uses this definition:

*A cohesive society works towards the well-being of all its members, fights exclusion and marginalisation, creates a sense of belonging, promotes trust, and offers its members the opportunity of upward social mobility.*<sup>11</sup>

Sociologist Dick Stanley, who directed research and analysis at the Department of Canadian Heritage for the Canadian government, elaborates that social cohesion includes society’s willingness and capacity to cooperate. He also noted, “Social cohesion should not be confused with social order [or] common values.”<sup>12</sup> Social cohesion is not meant to stratify communities but to increase cooperation. Additionally, societies may lack social cohesion because they do not have the communication, funding, or organizational tools needed to foster cooperative networks in a community.

These definitions can provide important policy context for efforts to develop community resilience against the extreme weather effects of climate change. Social cohesion can help serve as a resilience tool before, during, and after an extreme weather event:

- **Before an extreme weather event:** Mapping low-income, climate-vulnerable communities can target weatherization, energy-efficiency measures, and other resources to prevent the worst impacts of extreme weather. Identifying these communities can also assist government efforts to foster social cohesiveness within those areas in order to improve climate resilience during and after extreme weather.

- **During an extreme weather event:** Residents and organizations in more connected communities can assist with supplies and help prevent displacement while identifying local needs for government officials.
- **After an extreme weather event:** Cohesive communities may have a shorter duration of climate displacement. Cohesive communities participating in voluntary coastal buyback programs may receive greater compensation than individual residents.

For these benefits to be realized, however, government policies must foster community cohesion and incorporate community input in climate resilience and mitigation plans. Of course, social cohesion and other resilience strategies benefit all communities, not just low-income areas. However, since low-income neighborhoods are the most vulnerable to climate change effects, these strategies are particularly beneficial in those communities. Moreover, social cohesion is a vital tool for low-income communities because they typically experience unique housing, economic, and health disadvantages even before extreme weather strikes.

Incorporating social cohesion into climate resilience planning is a difficult task that requires improving the level of interaction and trust between low-income communities and climate resilience planners. It is crucial that resilience plans not only focus on physical infrastructure, but also consider the human element and the long-term health of vulnerable communities. Despite the complexity of the task, building social cohesion is a worthy goal.



# The vulnerability of low-income communities

Before examining how social cohesion can improve resilience in low-income communities, it is worth examining how low-income communities are affected by climate change.

---

## Housing vulnerability

Housing vulnerability is more extreme in low-income communities, where residents are more likely to live in neighborhoods with poor-quality housing and infrastructure.<sup>13</sup> Low-income households are also more likely to be affected by extreme weather: The majority of counties that experienced multiple extreme weather events over the past few years were home to a majority of middle- and lower-income households.<sup>14</sup> This double whammy of increased exposure to extreme weather and inadequate protections against flooding and hazardous temperatures requires unique attention in climate resilience planning. Developing exhaustive resilience plans is especially important considering that data indicate extreme weather events will continue to increase going forward. Specifically, in the first half of this decade alone, the United States experienced 347 extreme weather events—almost as many extreme weather events at the entire decade of the 1970s and more than the 1960s and 1980s combined.<sup>15</sup>

Housing vulnerability is a top concern for government officials. Shortly after Superstorm Sandy hit New York City, Gov. Andrew Cuomo (D-NY) correctly predicted, “This is going to be a massive housing problem.”<sup>16</sup> The governor’s words rang especially true for the city’s low-income residents. More than one-third of the individuals in the storm’s surge area lived in some form of government-assisted housing and roughly half of the city’s 40,000 public housing residents were displaced.<sup>17</sup> Those who could not afford or find habitable temporary shelter faced the challenge of living without electricity and hot water for weeks—if they were able to stay in their homes at all.

When low-income housing is lost to extreme weather, it can take years for affordable housing to return. In 2008, Hurricane Ike destroyed nearly 70 percent of the structures on Galveston Island, Texas, including more than 500 low-income housing units.<sup>18</sup> Nearly five years later, only 40 public housing units had been rebuilt.<sup>19</sup> In 2014, the city held a groundbreaking ceremony to rebuild the 569-unit building.<sup>20</sup> The project is scheduled to be completed in 2016, eight years after the hurricane.<sup>21</sup> After so many years, it is unclear whether low-income residents, displaced by Ike and a subsequent lack of affordable housing, will return.<sup>22</sup>

Low-income housing was also slow to return to New Orleans after Hurricane Katrina. Before the storm devastated New Orleans in 2005, the city had 5,146 households living in public housing.<sup>23</sup> Eight years later in 2013, the city had less than half that number of public housing units.<sup>24</sup>

Even when low-income housing is rebuilt, communities that existed prior to the weather event, once uprooted, may never return. For example, of the 3,077 families living in New Orleans' four largest public housing developments prior to Katrina, only 11 percent returned to the rebuilt complexes.<sup>25</sup> Many low-income residents moved to other areas, notably to Houston, Texas, which received an estimated 250,000 displaced residents.<sup>26</sup> Making low-income housing more climate resilient can help low-income communities prevent mass displacement and its associated difficulties.

Low-income housing is more vulnerable to extreme weather, is located in areas that are more likely to experience extreme weather, and is slow to be rebuilt. Without strengthening the resilience of low-income housing along with the associated communities, resilience planners ignore preventable damage and tragedy.

---

## Economic vulnerability

Low-income communities endure a disproportionate burden of energy costs, which is only exacerbated by extreme weather. Multifamily rental housing units, which house almost half of very-low-income renters,<sup>27</sup> contain one-third of the energy-efficiency features that other types of housing typically have.<sup>28</sup> In fiscal year 2014, low-income households spent an estimated mean of 16.3 percent of their household income on energy costs, compared with 3.5 percent for wealthier households.<sup>29</sup> Without increasing federal assistance for low-income families to efficiently heat and cool their homes and expanding and better targeting weatherization programs to protect families from extreme weather, households with the least money will continue to pay the most for heating and cooling.



Extreme weather events, such as severe storms and hurricanes, can jeopardize the economic health of low-income workers and those on public assistance. During these events, businesses close and transportation is stopped or limited, which can cause hourly workers to lose income and risk losing their jobs. Additionally, extreme weather can put people in the position of having to rely on emergency food assistance in the form of Electronic Benefit Transfers, or EBTs.<sup>30</sup> However, if an electric outage persists, which is common in the aftermath of extreme weather events, these needed benefits can be difficult to access.<sup>31</sup> Furthermore, centralized vendors issue EBTs, so a power loss experienced by one vendor can affect people throughout the entire country. For example, when an EBT vendor's computer server lost power in 2013, it affected people in 17 states.<sup>32</sup> Likewise, without reliable electricity, social services are often suspended, leaving people without access to food or unable to cash Social Security checks.<sup>33</sup> Consequently, residents in low-income communities can lose much more than power and bus connections during extreme weather—they can lose their jobs, miss critical payments, and be unable to put food on the table.

In addition to storms and floods, extreme drought also exacerbates economic difficulties for low-income communities in the form of job losses, food scarcity, and food affordability. California's three years of drought have cost the state's agricultural industry \$2.2 billion and resulted in 17,100 full- and part-time job losses in 2014 alone.<sup>34</sup> Most of these jobs are seasonal or part-time work, the type of employment that can support low-income households.<sup>35</sup> Extreme weather in agricultural areas also affects affordable food options for low-income communities. While the current California drought has not been linked to significant food price increases,<sup>36</sup> droughts in other areas of the United States have made it harder for low-income communities to afford particular food items. For instance, beef prices rose 12.1 percent in 2014 due to the effects of a multiyear drought in Texas and Oklahoma that forced cattle producers to reduce the size of herds.<sup>37</sup> Extreme weather's toll on wages, prices, and safety net programs places burdens on low-income communities that should be accounted for in climate resilience and emergency planning.

---

## Health vulnerability

Before an extreme weather event occurs, the climate change factors that presage such events already adversely affect low-income communities. A Yale University study found that fine particulate matter—or the condensation of pollutants from industry, traffic, and other man-made sources known as PM 2.5—was more prevalent in

communities of color. That same study also found that people with low educational attainment who face high poverty and unemployment are at greater health risks.<sup>38</sup> PM 2.5 has been found to diminish lung function, cause greater use of asthma medications, and cause heart problems, even with short periods of exposure.<sup>39</sup>

During summer heat waves, urban low-income areas can suffer from surface heat, known as the “urban heat island” effect, that results when asphalt retains temperatures that are up to 50 degrees to 90 degrees Fahrenheit higher than the surrounding air temperature.<sup>40</sup> At least one study has found that a higher level of surface heat relates to a higher risk of death from heat-related illnesses in low-income and high-poverty neighborhoods.<sup>41</sup>

Extreme weather events that affect electricity availability can also damage the health of low-income community members by making it difficult for people to operate air conditioners or home medical devices. Additionally, many low-income families may not be able to afford the purchase or energy costs of air-conditioning units.

As climate change increases the number and severity of extreme weather events, low-income communities will face even greater hardships. Understanding these distinct housing, economic, and health vulnerabilities enables policymakers to both better address historic inequities before disaster strikes and strengthen social cohesion and implement other effective climate resilience strategies.

# Integrating community resilience into climate resilience

Without action, no state or locality will be protected from the human and fiscal impacts of drought, floods, and other extreme weather events that are exacerbated by climate change. According to the White House Office of Management and Budget, extreme weather and wildfires alone have cost taxpayers \$300 billion during the past decade.<sup>42</sup> A changing climate and the associated increase in extreme weather events will only drive up that cost. Efforts to make buildings and infrastructure more resilient to extreme weather can avoid the penny-wise, pound-foolish approach of 2010 to 2013, a time when U.S. taxpayers spent nearly \$6 for disaster recovery for every \$1 spent to increase general community resilience.<sup>43</sup> Officials are now realizing that mitigation measures are not enough to prevent the worst impacts of climate change<sup>44</sup> and that communities also need to adapt to the extreme weather impacts that are already occurring.<sup>45</sup>

Thus, national and local adaptation plans are being developed to adjust to a new or changing environment.<sup>46</sup> These efforts also include resilience planning. The National Research Council has defined resilience as “a capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.”<sup>47</sup> Elaborating on this definition in the context of low-income communities, the Pathways to Resilience Partnership says that its “vision of climate resilience is not about ‘bouncing back.’ Instead, it is about bouncing forward to eradicate the inequities and unsustainable resource use at the heart of climate crisis.”<sup>48</sup> Transforming decades of underfunded initiatives and infrastructure in low-income areas would help increase climate resiliency. Investing in the people within these areas reinforces resiliency and improves fiscal and human health.

Adaptation measures often focus on improving the effects of climate change on so-called hard infrastructure—such as roads, buildings, or other permanent installations<sup>49</sup>—to the detriment of soft infrastructure, which includes institutions that are crucial to maintaining the health, cultural, and social standards of a community.<sup>50</sup> Socially cohesive communities are a key element of soft infrastructure.

If plans for resilient communities exclude efforts to foster social networks, they overlook the importance of social cohesion to help protect the most vulnerable communities from climate displacement, health complications, and other impacts of climate change.

---

## Before an extreme weather event

### Identifying vulnerable communities

In order to alleviate the impacts of climate disasters within low-income communities, a cohesive community must exist before disaster strikes. And in order to foster that cohesive community, it is necessary to know where the climate-vulnerable, low-income communities are located.

Social scientists, policymakers, and the federal government offer research and data to help identify such communities. Geographer Susan Cutter developed the idea of a county-specific “social vulnerability index” that examines the indicators for what she called “disaster risks.”<sup>51</sup> These risk indicators include:

- Personal wealth
- Age
- Density of the built environment
- Single-sector economic dependence
- Housing stock and tenancy
- Race

However, this list of indicators only reflects social vulnerability. The National Association for the Advancement of Colored People, or NAACP, has developed a more extensive list of indicators for climate-vulnerable, low-income communities, noting that effective and equitable resilience plans must be tailored to each community’s unique, pre-existing vulnerabilities.<sup>52</sup> These indicators include vulnerabilities that exist before a climate event, such as income, literacy, housing security, and mobility. They also include “outcome indicators” that will determine the success of climate-adaptation planning, such as infrastructure, economic development, and education. By including predicted and known climate vulnerability in these risk factors, resilience plans can develop a more complete and equitable vision of where extreme weather will hit and how low-income communities may be affected.

Identifying and fostering community cohesiveness in climate-vulnerable, low-income communities areas can help reduce the impacts of extreme weather and improve climate resilience plans.

Fortunately, government resources exist that can help create a map of socio-climate vulnerability. Unfortunately, the resources span agencies, and there is little evidence that they have been used collaboratively. For example, the U.S. Department of Health and Human Services has developed a Social Vulnerability Index to help identify and map communities that are “may need support in preparing for hazards, or recovering from disaster,” defined as anything from a tornado to the leak of a hazardous material.<sup>53</sup> This analysis includes socioeconomic status. However, this information does not include projected changes to climate or sea-level rise, which can be accessed through the National Ocean and Atmospheric Administration, or NOAA,<sup>54</sup> or the Federal Emergency Management Agency’s, or FEMA’s, Flood Map Service Center.<sup>55</sup>

The Centers for Disease Control and Prevention developed a limited but promising model to identify climate-vulnerable, low-income communities. Its Building Resilience Against Climate Effects, or BRACE, framework analyzes and compounds socioeconomic data and climate projections to improve public health resilience in a changing climate.<sup>56</sup> These data underscore the importance of social cohesiveness in communities. For example, the program found that when vacant households in a Philadelphia neighborhood increased 10 percent, the odds of extreme-heat mortality grew to 40 percent.<sup>57</sup> This kind of knowledge can help local resilience planners understand the importance of community networks during extreme weather events. The program is only available for 18 public health agencies, but if expanded, it could help provide a national map of climate and community vulnerability to extreme weather.

Mapping climate and social vulnerability also allows state and local offices to plan appropriately for evacuations, cooling centers, or other extreme weather disaster planning. A cohesive community can then help spread the word about these life-saving disaster plans. Better yet, if cohesive communities are included in disaster planning, it can inform disaster planners of unique, localized challenges. For example, it appears that emergency planners for New Orleans did not realize how many people could not evacuate in personal vehicles during Hurricane Katrina. They have since identified target groups and developed specialized evacuation plans and transit options.<sup>58</sup> Mapping economic and climate vulnerable areas and incorporating the input of those communities could help cities and states prepare for calamitous climate events.

## Fostering equity and community resilience

One cannot change what one cannot measure. Knowing the geography of income and climate vulnerability enables governments to strengthen climate resilience in both hard and soft infrastructure. Improvements to mass transportation, affordable housing, and more energy-efficient housing can help buildings and businesses withstand extreme weather. Efforts to improve the lives of people who live and work among the hard infrastructure can help the economic and climate resilience of an entire community. These efforts should include government-supported social cohesion through building relationships with local community groups. This can improve trust and communication between government entities and low-income communities, which may have experienced historical mistreatment and distrust from authorities. This improved communication can result in more effective evacuation communications or warnings about an extreme weather event. For example, there are an estimated 800 different languages spoken in New York City.<sup>59</sup> The city may not be able to translate extreme weather warnings into 800 languages. It can, however, work with cultural-based community organizations to disseminate weather warnings to non-English-speaking communities as a form of climate resilience.

Existing federal programs work to strengthen community resilience as a climate resilience strategy, but these programs lack strong leverage. For example, FEMA directly engages with communities through “PreparAthons,” local events to help individuals prepare for climate and other disasters.<sup>60</sup> For maximum impact, PreparAthons should identify obstacles to low-income communities preparing for disaster, such as financial and space limitations that make it hard for people to have the money or space to keep extra food and water supplies in their homes. FEMA should also ensure that low-income communities have easy access to the PreparAthon event through public or free transit. Finally, the program focuses on individuals, but it should also partner with low-income community organizations to develop a cohesive network for climate and disaster resilience.

In addition to FEMA’s efforts to foster individual climate resilience in low-income communities, the U.S. Environmental Protection Agency, or EPA, has developed and is updating its Environmental Justice Action Agenda, which focuses on empowering communities to improve their health and incorporating environmental justice into rulemakings and other federal actions.<sup>61</sup> Curiously, the agenda does not focus on climate resilience but on the EPA’s work to integrate the needs of low-income and climate-vulnerable communities into federal planning. This action is a positive step toward increased community resilience for low-income areas.

On a local level, New York City’s recently released “One New York” sustainability and resilience plan carefully integrates engaging civic leadership, improving poverty conditions, and strengthening the built environment into its climate resilience planning.<sup>62</sup> The plan is currently more of a framework than a detailed implementation effort, but it serves as a road map for other localities seeking a vision for climate resilience that focuses on both hard and soft infrastructure.

Nongovernment organizations have also partnered with low-income communities to improve climate resilience. Utilities in California have worked with community-based organizations for the installation of weatherization measures in low-income areas.<sup>63</sup> In Minneapolis, a utility-sponsored nonprofit worked with community organizations, the federal government, and local housing authorities to fund, install, and maintain energy-conserving retrofits. This partnership allowed the utility to identify the greatest areas of need and maximize funds to improve climate resilience.<sup>64</sup>

Fostering community cohesion in low-income, climate-vulnerable areas can create targeted strategies for climate resilience before an extreme weather event. This cohesion can also improve health and economic outcomes in low-income communities during an extreme weather event.

---

### During an extreme weather event: Filling gaps in the absence of government support

During an extreme weather event, government agencies must respond to the emergency needs of a diverse range of affected areas and communities. Low-income communities are often in particular need of assistance, given the historic inequities described above. Ideally, community leaders will work closely with governments before an extreme weather event hits to create a cohesive regional network to improve assistance and communication, with a primary focus on low-income community needs.

Community organizations may be the first responders of a climate event. Following Superstorm Sandy, many communities did not see relief workers or government officials until days after the storm.<sup>65</sup> In the absence of government officials, community groups helped fill the gaps and played a critical supporting role, including locating space to distribute supplies and assessing the needs of their communities.<sup>66</sup> While some people are fortunate to have neighbors who check on one another, many are not as lucky. Organizations that build cohesive communities can help develop personal relationships to identify those in need during a climate event.



After the deadly 1995 Chicago heat wave, Pauline Jankowitz, an elderly, mobility-challenged woman who was living alone, noted that she survived due in part to her participation with Little Brothers - Friends of the Elderly, a community-based nonprofit.<sup>67</sup> The group helps isolated senior citizens form networks, including “phone buddies.”<sup>68</sup> When Jankowitz felt ill during the heat wave, she called a phone buddy, who stayed with her on the phone until the illness passed.

While community-based organizations can improve the climate resilience of a low-income community, governments can also help to strengthen social cohesion. For example, Baltimore has held preparedness meetings in 25 of the city’s neighborhoods that are most vulnerable to heat and flooding.<sup>69</sup> At those meetings, city officials asked residents to identify what they would need during an emergency. Officials also provided placards to residents that can be placed in windows to indicate the need for help to neighbors and passers-by during an extreme weather event. Simple, cost-effective measures such as these can reduce fatalities and encourage community members to help each other. Alice Kennedy, Baltimore’s sustainability coordinator, noted, “Building community cohesion ... is going to prepare us for anything we face.”<sup>70</sup>

---

## After an extreme weather event

### Benefits and strategies to retain low-income communities

After an extreme weather event, it is important to retain and foster cohesion in climate and economically vulnerable areas in order to avoid the climate-prompted scattering of a community. This scattering, also known as climate displacement, can have acutely negative impacts for low-income communities. Evidence suggests that low-income, climate-displaced residents may have a more difficult time finding employment than low-income residents who remain in their region.<sup>71</sup> Displacement can exacerbate pre-existing housing and economic instability: One study noted that severe climate events tend to concentrate low-income communities into less desirable areas.<sup>72</sup> Without trusted community networks to help negotiate the bureaucracy of disaster recovery, low-income victims of extreme weather may also receive fewer benefits.<sup>73</sup> Social isolation following displacement may account for increased levels of mental illness and depression linked to natural disasters.<sup>74</sup> Domestic climate migration can also create civic tension as host communities integrate those who are climate displaced into schools, neighborhoods, and city services.

Climate displacement is not to be confused with evacuation. Evacuation affects people of all demographics and consists of a temporary removal of people. Climate-displaced people, particularly those without strong social networks, can find themselves living far from home—and staying there.<sup>75</sup> Climate displacement tears the social fabric of communities, depriving residents of the benefits of low-income-community cohesion. Thus, long-term displacement should be a last option for low-income communities.

Community-based organizations can help strengthen the low-income-community resilience needed to avoid displacement. For example, following Superstorm Sandy, local housing and youth empowerment organizations were able to survey needs, communicate those needs to government staff, and coordinate with other organizations.<sup>76</sup> These actions helped serve low-income areas in the community, reducing the need for climate displacement. Faith-based organizations can also help low-income communities to recover and residents to remain in their general area by offering a network of assistance. Catholic Charities of the Archdiocese of New York housed more than 1,000 homeless people and organized volunteer efforts within days of the storm.<sup>77</sup> By relying on cohesive networks and identifying needs within low-income communities, these organizations helped improve the cohesiveness and resilience of low-income residents.

There are federal programs to strengthen the cohesiveness of low-income communities after an extreme weather event. Much of FEMA's support is directed to individuals or public services and infrastructure,<sup>78</sup> but the agency also developed a whole-community approach to emergency management policies that fosters community involvement.<sup>79</sup> It has resulted in engagement with community nongovernmental leaders and state agencies to determine the unique needs of communities in emergency situations, with promising results. This interaction with local communities allows FEMA to tailor its responsiveness to minimize disruptions to low-income and other communities.

FEMA is not the only federal agency to foster post-disaster community cohesion as climate resilience. President Barack Obama created the White House Office of Faith-based and Neighborhood Partnerships<sup>80</sup> and continued the U.S. Department of Homeland Security, or DHS, Center for Faith-based and Neighborhood Partnerships,<sup>81</sup> which links the DHS with community-based groups to address disaster response. These policies could reduce risks in low-income, climate-vulnerable neighborhoods by offering localized solutions to community needs. However,

these efforts can be improved. The whole-community approach asks localities to take the first steps in interacting with the federal government. This may not be a priority in low-income communities, so for best results, FEMA should work with state agencies to identify and conduct outreach to vulnerable populations.

There are also city and state efforts to minimize climate displacement and improve climate resilience. After Superstorm Sandy, New York City began a program called Rapid Repairs. The program was meant to help people remain in their homes by hiring contractors to restore heat, electricity, and hot water to thousands of homes quickly.<sup>82</sup> It also helped avoid spending resources on temporary housing. Rapid Repairs had some success. In less than 100 days, the program restored heat, power, and hot water service to more than 11,700 buildings.<sup>83</sup> The program also prioritized low-income applicants after discovering that previous aid-based assistance programs often disproportionately rewarded higher-income households because they tended to have better documentation.<sup>84</sup> The federally funded state program New York Rising also sought to rehabilitate low-income communities after Superstorm Sandy by offering technical assistance and working with local community groups.<sup>85</sup> New York Rising engages communities to help them retain their social bonds in the event of extreme weather. The program developed an extensive planning process with volunteers and civic leaders and solicited public engagement directly within communities in at least two languages.<sup>86</sup> These programs offer some guidance for states and cities that wish to promote climate resilience by restoring low-income communities.

After an extreme weather event, it is important to restore the cohesiveness of low-income communities. This can avoid the negative aspects of climate displacement such as reduced income or lost benefits. States and localities should develop post-disaster policies targeted toward low-income communities in order to improve climate resilience plans and the lives of low-income residents.

### Assisting climate displaced communities

Climate displacement has specifically negative implications for low-income communities. Yet there may be instances in which low-income residents may have little choice but to leave. And as the number and intensity of extreme weather events increase,<sup>87</sup> low-income communities will progressively struggle with the threat of displacement.

Climate displacement has long been considered an important issue in the international climate community. The U.N. High Commissioner for Refugees reported that 36 million people were displaced by natural disasters in 2008 alone.<sup>88</sup> The U.N. Framework Convention on Climate Change predicts that the number of climate migrants will climb to 200 million by the year 2050.<sup>89</sup> Yet little has been done to predict or study the climate displacement within the United States. However, there is one instance of domestic climate migration that illustrates the policy implications of community cohesiveness and climate displacement: the massive displacement of people in the wake of Hurricane Katrina.

Hurricane Katrina spurred a hasty exodus of approximately 1.5 million people from Alabama, Mississippi, and Louisiana.<sup>90</sup> This move was likened to the entire Dust Bowl migration of the 1930s—but compressed from eight years into 14 days.<sup>91</sup> People migrated far and wide. Only 25 percent of Katrina evacuees relocated within a 10-mile radius from their previous county of residence; another 25 percent relocated more than 450 miles away; and 10 percent relocated to areas at least 830 miles away.<sup>92</sup> After Hurricane Katrina, Texas took in an estimated 250,000 evacuees; the population of Baton Rouge, Louisiana, nearly doubled; and 100,000 evacuees arrived in Atlanta—many of whom stayed in their new locations.<sup>93</sup>

Despite this widespread movement, one lower-income, Katrina-displaced community managed to retain its cohesion and turn community resilience into climate resilience. An estimated 9,000 people of Vietnamese heritage—a lower-income but highly cohesive community—were displaced in Houston, Texas, after the hurricane.<sup>94</sup> When they arrived, the Houston Vietnamese community largely absorbed the needs of those who were displaced.<sup>95</sup>

The cohesive Houston Vietnamese community was able to organize outreach, relief, and supplies. A Houston shopping mall that catered to the Vietnamese community served as a staging area and cooling center for those who were climate displaced, and a Vietnamese radio station began organizing relief efforts.<sup>96</sup> Vietnamese Catholic churches in Texas took in roughly 400 people.<sup>97</sup> This social cohesion also enabled many Vietnamese people from New Orleans to return home. Two years after the hurricane, an estimated 90 percent of New Orleans' Vietnamese population returned.<sup>98</sup> The resilience of the Vietnamese community was made possible by its pre-existing cohesiveness and improved by regional networks of similarly cohesive communities.

Social cohesion also existed in other low-income communities in New Orleans before Katrina.<sup>99</sup> Upon arrival in Houston, however, some local residents perceived the evacuees as a cause of social strain. Houston Mayor Annise Parker noted, “The lowest social strata here felt the evacuees cut in line. There was the perception of an increase in crime and a big increase in homicides among evacuees.”<sup>100</sup> One study of Houston attitudes toward evacuees showed distinct hostility and racism toward people who were displaced by Hurricane Katrina.<sup>101</sup>

Developing strong community cohesion before an extreme weather event can help improve climate resilience, even when communities are threatened by climate displacement. States and federal agencies should work with local leaders to create and support national networks of socially cohesive communities in order to improve the outcomes and costs of climate displacement. These costs can run high: Houston, which took in the highest number of Katrina evacuees,<sup>102</sup> experienced an increased need for health services.<sup>103</sup> The city received almost \$14 million in additional education funding<sup>104</sup> and \$429 million in emergency funding for low-income housing.<sup>105</sup> Directing funds into community cohesion policies can improve climate resilience and reduce the public costs of extreme weather.

Katrina evacuees may be one of the largest climate-displaced groups in modern U.S. history, but evacuations that can lead to climate displacement are not unusual. In the past five years, extreme weather has affected the following communities:

- 10,000 people in Tennessee were displaced by flooding in 2010.<sup>106</sup>
- More than 12,000 people in Minot, North Dakota, were forced to evacuate due to flooding in 2011.<sup>107</sup>
- Superstorm Sandy displaced an estimated 10,000 people to 40,000 people in New York and New Jersey alone in 2012.<sup>108</sup>
- More than 11,000 people were evacuated due to flooding in Colorado in 2013.<sup>109</sup>
- Thousands of people were forced to evacuate from wildfires in California<sup>110</sup> and Washington<sup>111</sup> in 2014.

These and other climate displacements have especially adverse effects for low-income communities, but they also affect a wide range of socioeconomic groups throughout the country. Protecting these communities by supporting social cohesion can help prevent long-term displacement and improve resilience against extreme weather for everyone and every place.

## Social cohesion maximizes post-extreme-weather buyouts and relocation

Social cohesiveness helps low-income communities return home after climate displacement. It also helps them become whole if community members choose to demolish their homes in exchange for voluntary government-sponsored buyouts. Some communities are repeatedly exposed to destructive flooding or are so vulnerable to sea-level rise that they may need to return to their natural form. Voluntary coastal buyout programs have emerged as a solution to this dilemma. The programs—also called coastal retreat measures, managed retreat, or costal buybacks—are best defined as government compensation for private property in exchange for the right to maintain the land in an undeveloped state in perpetuity.<sup>112</sup> As a result, voluntary buyout programs can improve the climate resilience of a greater coastal area by allowing natural land to absorb the brunt of flooding. Both the U.S. Department of Agriculture and FEMA enable owners of flood-prone property to participate in buyout programs.<sup>113</sup> While voluntary buyouts may not be a climate resilience policy for the affected homeowners, they ensure regional climate resilience against rising waters.

Yet voluntary buyouts can be an imperfect tool for climate resilience. If applied only to upscale coastal areas, they can direct limited funds to luxury or vacation housing and leave lower-income areas without a lifeline to escape a reoccurring flood zone. On the other hand, directing voluntary buyouts toward low-income areas can break apart communities by weakening relationships with neighbors and reducing participation in area-based civic and social activities such as recreation centers, youth or housing centers, and faith-based organizations. People who must begin a new life elsewhere without these known social supports can find themselves struggling, making communities less resilient overall. However, voluntary buyout programs can be designed to enhance community cohesiveness. For example, New York Rising offers full reimbursement of a home's fair market value.<sup>114</sup> This offer can give flood victims an opportunity to live elsewhere without great financial burden. The program also includes a community integration incentive—a 5 percent incentive payment—if program beneficiaries permanently relocate in New York City. This provision can prevent far-flung climate displacement and signals government support to retain local communities.

Community cohesiveness also benefits those seeking buyouts. Voluntary buyout programs are more effective if they are contiguous. Thus, if a group of homeowners agrees to participate in a voluntary buyout program, they may be more likely to receive federal buyout funds than a patchwork array of individuals.<sup>115</sup>

The New York Rising program incentivizes collective buyout agreements; the program offers a 10 percent enhanced buyout incentive for a maximum level of homeowner participation and a 10 percent incentive for contiguous groups that apply for buyouts.<sup>116</sup> These provisions benefit cohesive communities. For example, community cohesiveness helped the residents of Oak Beach, New York, receive buyout funds. The area was home to the Flood Victims of 1992 Committee, which was able to mobilize the community to accept buyouts after Superstorm Sandy.<sup>117</sup>

Buyout programs can fail if they do not have cohesive community support. After Hurricane Katrina, the Army Corps of Engineers proposed a voluntary buyout program for 17,000 residential properties two years after the storm. Objections from local officials and residents reduced the number of properties to 3,000. Al Naomi, a project manager for the program, noted that they still must work with local stakeholders “to get a sense of what’s implementable and what isn’t.”<sup>118</sup> If the Army Corps of Engineers had built relationships with community-based organizations focused on cohesiveness before announcing its plan, the buyout program may have had greater success.

### Relocating entire communities

As extreme weather and sea-level rise begin to threaten entire communities in Alaska, community relocation has emerged as a potential method of community and climate resilience for Alaska Native communities, many of which are low income and lack basic water and sanitation services.<sup>119</sup> Reports by the Government Accountability Office, or GAO, found that 86 percent of the 213 Alaska Native villages and towns are experiencing erosion and flooding due to rising temperatures and 15 percent, or 31 towns, are imminently threatened by climate change.<sup>120</sup> Federal and state governments have begun to consider the implications of moving entire communities, but there are considerable costs and land-use planning issues. The cost of relocating Alaska Native towns, which have populations ranging from 354 people in Newtok to 96 people in Koyukuk,<sup>121</sup> could be between \$130 million<sup>122</sup> and \$180 million for each town.<sup>123</sup> It is not simple, or historically just, to ask these communities to move themselves. Many of these areas are home to Alaska Native communities because the federal government instituted policies to consolidate Alaska Native groups in certain places along the coast.<sup>124</sup> The expense of relocation is high, particularly on a per-person basis, but it would preserve Alaska Native communities, their culture, and their resilience to a changing climate.



While the history of Alaska Native communities may be unique, eroding coastline communities are not. Tide measurements taken by NOAA show that sea levels along the Eastern Seaboard range from 10 inches to 15 inches higher today than they were 100 years ago.<sup>125</sup> These areas represent 39 percent of the U.S. population,<sup>126</sup> and coastline counties contributed 45 percent of the country's entire gross domestic product in 2011.<sup>127</sup> As extreme weather threatens communities throughout the United States, there is an increased risk of climate displacement among all economic levels. This risk further limits the climate resilience of low-income communities, which may find themselves in greater competition for affordable housing and employment. Supporting community cohesion strengthens the resilience of all communities, but it is particularly important within low-income areas and can improve the climate resilience outcomes of displacement or relocation.

# Recommendations to foster climate and social resilience

- State, local, and federal governments can address historic inequities before disaster strikes by improving the quality and availability of affordable housing, investing in urban infrastructure improvements, and expanding access to public transportation that helps people escape extreme weather events and improve access to employment.
- Policymakers cannot change what is not measured. To reduce vulnerability and increase resilience in low-income communities, the federal government should use its cross-agency data to create a social and climate vulnerability index. This data would also help climate resilience and emergency preparedness planners understand where and how to focus resources.
- Once climate and economically vulnerable communities are located, federal, state, and local governments should seek to identify and build trust with elected and civic leaders of these areas through the social and climate vulnerability index.
- States and local agencies should foster leadership within low-income communities by supporting community engagement programs. This support could be financial or simply open a line of communication to help share information about extreme weather events. These relationships can help inform low-income communities about preparedness before extreme weather occurs.
- In order to increase climate resilience, federal and state governments can expand the resources available to weatherize low-income housing to prevent the worst impacts of extreme weather.
- Government policies should attempt to reduce climate displacement and increase economic stability in low-income areas by developing policies that prioritize post-extreme-weather repairs in low-income areas and work with local communities to understand where repairs may have the greatest impact.

- The federal government should study domestic climate migration to improve disaster planning and minimize the economic and social impacts of climate displacement on low-income displaced people and their host communities. Fostering social cohesion before an extreme weather event may help reduce the risks—and costs—of mass climate migration.
- If extreme weather forces people or communities to relocate, voluntary buyout programs should include incentives to keep communities within a geographic radius in order to promote social cohesion. Community relocation programs should be designed with communities, not simply for them, and should have a goal of improving both economic and climate resilience.

Federal executive action could implement some of these recommendations. Specifically, the president's November 2014 Executive Order on Preparing the United States for the Impacts of Climate Change acknowledges low-income families' vulnerability to the effects of climate change.<sup>128</sup> The president could issue a policy directive calling on agencies to help increase climate resilience by promoting community partnerships in low-income areas. Such a directive should also ensure that agencies are conducting outreach to low-income communities about the impacts of extreme weather using communication methods, languages, and tools that are accessible to diverse racial, ethnic, and geographic communities.

Finally, the federal government should incentivize organization or city networks that can foster cohesiveness within and between low-income communities. These actions cannot supplant the need for federal action on climate change or federal funding for disaster relief. However, by creating community cohesion, these actions would strengthen community resilience.

# Conclusion

Low-income communities are particularly vulnerable to the economic, health, and housing deprivations of increasing extreme weather. Promoting social cohesion in these communities is an important but often overlooked tool in improving their climate resilience. Mapping climate and socioeconomic vulnerability can help direct resources toward outreach efforts, network building, and community-based initiatives that promote social cohesion in communities, which in turn fosters climate resilience.

Encouraging social cohesion in low-income communities can help them be better informed about climate readiness and allow them to more ably advocate for beneficial weatherization and preparedness measures before extreme weather strikes. During extreme weather events, socially cohesive communities are better able to relay needs and identify risks to the appropriate agencies or larger organizations. After extreme weather events, socially cohesive communities are better positioned to advocate for relief and return to their pre-disaster lives.

Government agencies should support community cohesion as an equitable climate resilience strategy. Agencies can do this by developing relationships with low-income communities and helping to build networks that connect these communities with existing low-income cohesive communities. Agencies should study and minimize low-income climate displacement to understand its frequency, its geography, and best practices to lessen the negative impacts on displaced people and host communities.

Finally, agencies should develop equitable post-disaster funding programs that improve outcomes for low-income communities. Through these actions, social cohesion can create climate resilience that benefits the hard infrastructure of buildings and the soft infrastructure of the people that live in them.

---

## About the author

Danielle Baussan is the Managing Director of Energy Policy at the Center for American Progress. Prior to this role, she was majority counsel on the U.S. House of Representatives Select Committee on Energy Independence and Global Warming. She also served the District of Columbia Government as a capital city fellow, a policy analyst in the Executive Office of the Mayor, and as director of government relations for the Anacostia Waterfront Corporation, a sustainable economic development organization committed to underserved areas. She is a graduate of Rutgers University and the University of Virginia School of Law.

---

## Acknowledgments

Special thanks to Cathleen Kelly, Senior Fellow with the Energy Policy team at the Center for American Progress; Miranda Peterson, Research Associate with the Energy Policy team; and Alex Fields, intern with the Energy Policy team.

---

## Endnotes

- 1 National Weather Service, *Heat: A Major Killer* (U.S. Department of Commerce, 2014).
- 2 National Oceanic and Atmospheric Administration, *Natural Disaster Survey Report: July 1995 Heat Wave* (U.S. Department of Commerce, 1995). Epidemiologists estimated the number of people who died due to the weather was higher than during a typical week for that month—739 more Chicagoans died during the weeks of July 14 and July 20. See Eric Klinenberg, *Heat Wave: A Social Autopsy of Disaster in Chicago* (Chicago: University of Chicago Press, 2002).
- 3 Klinenberg, *Heat Wave*; Eric Klinenberg, “Adaptation: How can cities be ‘climate-proofed?’,” *The New Yorker*, January 7, 2013, available at <http://www.newyorker.com/magazine/2013/01/07/adaptation-2>.
- 4 Tracey Ross, “The Three Factors That Put Lower-Income Americans At Risk From Extreme Weather,” *ThinkProgress*, August 19, 2013, available at <http://thinkprogress.org/climate/2013/08/19/2491681/low-income-extreme-weather>.
- 5 Jeffrey A. Groen and Anne E. Polivka, “Going Home after Hurricane Katrina: Determinants of Return Migration and Change in Affected Areas,” *Demography* 47 (4) (2010): 821–844.
- 6 U.S. Global Change Research Program, “National Climate Assessment” (2014), available at <http://nca2014.globalchange.gov/report>; Tracey Ross, “A Disaster in the Making” (Washington: Center for American Progress, 2013).
- 7 Environmental Protection Agency, “Reducing Urban Heat Islands: Compendium of Strategies” (2008); The White House, “Fact Sheet: 16 Communities Recognized As Climate Action Champions for Leadership on Climate Change,” Press release, December 3, 2014, available at <https://www.whitehouse.gov/the-press-office/2014/12/03/fact-sheet-16-us-communities-recognized-climate-action-champions-leaders>.
- 8 Henry Goldman, “Bloomberg Proposes \$20 Billion Flood Plan After Sandy,” *Bloomberg*, June 11, 2013, available at <http://www.bloomberg.com/news/articles/2013-06-11/bloomberg-proposes-20-billion-new-york-flood-plan-after-sandy>.
- 9 Agence France-Presse, “California unveils historic water restrictions over drought crisis,” *Philippine Daily Inquirer*, April 2, 2015, available at <http://newsinfo.inquirer.net/683001/california-unveils-historic-water-restrictions-over-drought-crisis>.
- 10 Klinenberg, “Adaptation.”
- 11 Organisation for Economic Co-operation and Development, “Perspectives on Global Development 2012: Social Cohesion in a Shifting World” (2012).
- 12 Dick Stanley, “What Do We Know about Social Cohesion: The Research Perspective of the Federal Government’s Social Cohesion Research Network,” *The Canadian Journal of Sociology* 28 (1) (2003): 5–17.
- 13 The Urban Institute, “Low-Income Working Families: Facts and Figures” (2005).
- 14 Daniel J. Weiss, Jackie Weidman, and Mackenzie Bronson, “Heavy Weather: How Climate Destruction Harms Middle- and Lower-Income Americans” (Washington: Center for American Progress, 2012).
- 15 Miranda Peterson and Alexander Fields, “Extreme Weather on the Rise,” *Center for American Progress*, April 2, 2015.
- 16 Ken Lovett, “Mayor Bloomberg and Gov. Cuomo: Housing Issues Next Step in Storm Recovery,” *New York Daily News*, November 4, 2012, available at <http://www.nydailynews.com/blogs/dailypolitics/mayor-bloomberg-gov-cuomo-housing-issues-step-storm-recovery-blog-entry-1.1692674>.
- 17 Furman Center and The Moelis Institute for Affordable Housing Policy, “Sandy’s Effects on Housing in New York City” (2013); *The Week*, “Hurricane Sandy: New York’s massive, massive housing problem,” November 5, 2012, available at <http://theweek.com/articles/470750/hurricane-sandy-new-yorks-massive-massive-housing-problem>.
- 18 Harvey Rice, “Rebuilding begins for Galveston public housing 6 years after Ike,” *Houston Chronicle*, September 10, 2014, available at <http://www.houstonchronicle.com/news/houston-texas/texas/article/Rebuilding-begins-for-Galveston-public-housing-6-5746823.php#0>.
- 19 Audrey White, “Five Years After Ike, Galveston is Still Picking Up the Pieces,” *The New York Times*, April 25, 2013, available at [http://www.nytimes.com/2013/04/26/us/galveston-tex-picking-up-the-pieces-5-years-after-hurricane-ike.html?\\_r=0](http://www.nytimes.com/2013/04/26/us/galveston-tex-picking-up-the-pieces-5-years-after-hurricane-ike.html?_r=0).
- 20 Rice, “Rebuilding begins for Galveston public housing 6 years after Ike.”
- 21 Amber Willis, “Galveston breaks ground on new public housing,” *Click2Houston*, September 10, 2014, available at <http://www.click2houston.com/news/galveston-breaks-ground-on-new-public-housing/27990816>.
- 22 Forrest Wilder, “The Castaways: Can Galveston’s black community survive the island’s comeback?” *The Texas Observer*, December 12, 2008, available at <http://www.texasobserver.org/2918-the-castaways-can-galvestons-black-community-survive-the-islands-comeback>.
- 23 Katy Reckdahl, “NOLA Public Housing’s Slow Slog Back from Hurricane Katrina,” *Next City*, August 29, 2013, available at <http://nextcity.org/daily/entry/nola-public-housings-slow-slog-back-from-hurricane-katrina>.
- 24 Ibid.
- 25 Ibid.
- 26 Thom Patterson, “Katrina evacuees shift Houston’s identity,” *CNN*, August 12, 2011, available at <http://www.cnn.com/2011/US/08/12/katrina.houston>.
- 27 Gary Pivo, “Energy Efficiency and its Relationship to Household Income in Multifamily Rental Housing” (Washington: Fannie Mae, 2012), available at [https://www.fanniemae.com/content/fact\\_sheet/energy-efficiency-rental-housing.pdf](https://www.fanniemae.com/content/fact_sheet/energy-efficiency-rental-housing.pdf).
- 28 Ibid.
- 29 Joel F. Eisenberg, “Weatherization Assistance Program Technical Memorandum Background Data and Statistics on Low-Income Energy Use and Burdens” (Oak Ridge, TN: Oak Ridge National Laboratory, 2014).
- 30 MassLegalHelp, “Disaster SNAP Benefits (D-SNAP),” available at <http://www.masslegalhelp.org/disaster-snap/-food-stamp-benefits-d-snap-> (last accessed April 2015).

- 31 Stacy Vanek Smith, "Sandy outages hit food stamps recipients," *Marketplace*, November 5, 2012, available at <http://www.marketplace.org/topics/economy/weather-economy/sandy-outages-hit-food-stamp-recipients>.
- 32 *USA Today*, "Access restored for food stamp users, Xerox says," October 12, 2013, available at <http://www.usatoday.com/story/money/2013/10/12/food-stamp-debit-cards/2972713/>. Note that the server did not go down.
- 33 Cathleen Kelly and Tracey Ross, "One Storm Shy of Despair," (Washington: Center for American Progress, 2014).
- 34 Richard Howitt and others, "Economic Analysis of the 2014 Drought for California Agriculture" (Davis, CA: University of California, Davis, 2014), available at [https://watershed.ucdavis.edu/files/biblio/DroughtReport\\_23July2014\\_0.pdf](https://watershed.ucdavis.edu/files/biblio/DroughtReport_23July2014_0.pdf).
- 35 Brian Clark Howard, "California Report Warns of Worsening Economic Impacts of Drought," *National Geographic*, July 17, 2014, available at <http://news.nationalgeographic.com/news/2014/07/140715-california-drought-economic-impacts>.
- 36 Economic Research Service, *Food Price Outlook* (U.S. Department of Agriculture, 2015).
- 37 Philip Brasher, "Food inflation less than average in 2014, USDA says," *Agri-Pulse*, January 23, 2015, available at <http://www.agri-pulse.com/Food-inflation-less-than-average-012315.asp>.
- 38 Cheryl Katz, "Unequal exposures: People in poor, non-white neighborhoods breathe more hazardous particles," *Environmental Health News*, November 1, 2012, available at <http://www.environmentalhealthnews.org/ehs/news/2012/unequal-exposures>.
- 39 American Lung Association, "State of the Air 2014: Particle Pollution," available at <http://www.stateoftheair.org/2014/health-risks/health-risks-particle.html> (last accessed May 2015).
- 40 Environmental Protection Agency, "Reducing Urban Heat Islands."
- 41 Joyce Klein Rosenthal, "Evaluating the impact of the urban heat island on public health: Spatial and social determinants of heat-related mortality in New York City," Ph.D. dissertation, Columbia University, 2010, available at <http://academiccommons.columbia.edu/catalog/ac%3A148820>.
- 42 White House Office of Management and Budget, "Fiscal Year 2016 Budget of the U.S. Government" (2015), pp. 23–24, available at <https://www.whitehouse.gov/sites/default/files/omb/budget/fy2016/assets/budget.pdf>.
- 43 Daniel J. Weiss and Jackie Weidman, "Pound Foolish" (Washington: Center for American Progress, 2013).
- 44 Bente Pretlove, "Mitigation is not enough: time for adaptation," *DNV GL*, May 30, 2014, available at <http://blogs.dnvgl.com/sustainability/2014/05/mitigation-enough-time-adaptation/>.
- 45 Alexander Saltarin, "Act on climate change issue now before it's too late: UN," *Tech Times*, April 14, 2014, available at <http://www.techtimes.com/articles/5558/20140414/act-on-climate-change-issue-now-before-its-too-late-un.htm>.
- 46 National Research Council, "Adapting to the Impacts of Climate Change" (Washington: National Academies Press, 2010).
- 47 Ibid.
- 48 Lois DeBacker and others, eds., "Pathways to Resilience" (Oakland, CA: Movement Strategy Center, 2015).
- 49 Environmental Protection Agency, "Adaptation Overview," available at <http://www.epa.gov/climatechange/impacts-adaptation/adapt-overview.html> (last accessed April 2015).
- 50 Urbano Fra.Paleo, *Risk Governance: The Articulation of Politics, Hazard and Ecology* (Netherlands: Springer, 2015).
- 51 Susan Cutter and others, "Social Vulnerability to Environmental Hazards," *Social Science Quarterly* 84 (2) (2003).
- 52 NAACP, "Equity in Building Resilience in Adaptation Planning," available at [http://action.naacp.org/page/-/Climate/Equity\\_in\\_Resilience\\_Building\\_Climate\\_Adaptation\\_Indicators\\_FINAL.pdf](http://action.naacp.org/page/-/Climate/Equity_in_Resilience_Building_Climate_Adaptation_Indicators_FINAL.pdf) (last accessed April 2015).
- 53 Centers for Disease Control and Prevention, "The Social Vulnerability Index (SVI)," available at <http://svi.cdc.gov/> (last accessed April 2015).
- 54 National Oceanic and Atmospheric Administration, "Sea Level Rise Viewer," available at <http://coast.noaa.gov/digitalcoast/tools/slr> (last accessed April 2015).
- 55 Federal Emergency Management Agency, "Welcome to FEMA's Flood Map Service Center," available at <https://msc.fema.gov/portal> (last accessed April 2015).
- 56 Gino D. Marinucci and others, "Building Resilience Against Climate Effects: A Novel Framework to Facilitate Climate Readiness in Public Health Agencies," *International Journal of Environmental Research and Public Health* 11 (6) (2014): 6,433–6,458.
- 57 Christopher K. Uejio and others, "Intra-urban societal vulnerability to extreme heat: The role of heat exposure and the built environment, socioeconomics, and neighborhood stability," *Health & Place* 17 (2) (2011): 498–507.
- 58 Federal Highway Administration, "Catastrophic Hurricane Evacuation Plan Evaluation," available at <http://www.fhwa.dot.gov/reports/hurricaneevacuation/execsumm.htm> (last accessed April 2015).
- 59 Endangered Language Alliance, "Home," available at <http://elalliance.org/> (last accessed April 2015).
- 60 Federal Emergency Management Agency, "America's PrepareAthon," available at <http://www.community.fema.gov/connect.ti/AmericasPrepareathon> (last accessed April 2015).
- 61 Environmental Protection Agency, "Draft EJ 2020 Action Agenda," available at <http://www.epa.gov/environmentaljustice/ej2020/> (last accessed May 2015).
- 62 City of New York, "#ONENYC," available at <http://www1.nyc.gov/html/onenyc/index.html#future> (last accessed April 2015).
- 63 Andrew McAllister, "Energy Costs, Conservation, and the Poor" (Oakland, CA: Race, Poverty, and the Environment).
- 64 Ibid.
- 65 Eric Williams, "Social Resilience and Superstorm Sandy: Lessons from New York City Community Organizations" (New York: Association for Neighborhood and Housing Development, 2011).



- 66 Ibid.
- 67 Klinenberg, *Heat Wave*.
- 68 WBEZ Afternoon Shift, "Heat Wave: Protecting seniors from harsh weather," available at <https://soundcloud.com/afternoonshiftwbez/heat-wave-protecting-seniors-from-harsh-weather> (last accessed April 2015).
- 69 Timothy B. Wheeler, "Get ready for disasters, Baltimore residents urged," *The Baltimore Sun*, November 13, 2014, available at <http://www.baltimoresun.com/features/green/blog/bal-get-ready-for-disaster-baltimore-residents-urged-20141111-story.html>.
- 70 Ibid.
- 71 Elizabeth Fussell, Narayan Sastry, and Mark VanLandingham, "Race, socioeconomic status, and return migration to New Orleans after Hurricane Katrina," *Population and Environment* 31 (1–3) (2010): 20–42.
- 72 Groen and Polivka, "Going Home after Hurricane Katrina."
- 73 Michel Masozera, Melissa Bailey, and Charles Kerchner, "Distribution of impacts of natural disasters across income groups: A case study of New Orleans," *Ecological Economics* 63 (2007): 299–306.
- 74 Harvard Medical School, "Katrina Victims Increasingly Depressed, Traumatized, And Suicidal As Relief Efforts Drag On," *Science Daily*, November 1, 2007, available at <http://www.sciencedaily.com/releases/2007/10/071031172821.htm>.
- 75 Reuters, "Hurricane Sandy Hit Poor Residents The Hardest, Studies Show," *The Huffington Post*, March 6, 2013, available at [http://www.huffingtonpost.com/2013/03/06/hurricane-sandy-poor\\_n\\_2815782.html](http://www.huffingtonpost.com/2013/03/06/hurricane-sandy-poor_n_2815782.html).
- 76 Williams, "Social Resilience and Superstorm Sandy."
- 77 Catholic Charities Archdiocese of Washington, "Weathering Sandy - How Catholic Charities helped the most vulnerable through Superstorm Sandy," available at <http://www.catholiccharitiesdc.org/sandy> (last accessed April 2015).
- 78 Federal Emergency Management Agency, "The Disaster Process & Disaster Aid Programs," available at <https://www.fema.gov/disaster-process-disaster-aid-programs> (last accessed April 2015).
- 79 Federal Emergency Management Agency, *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action* (U.S. Department of Homeland Security, 2011).
- 80 The White House, "Obama Announces White House Office of Faith-based and Neighborhood Partnerships," Press release, February 5, 2009, available at [https://www.whitehouse.gov/the\\_press\\_office/ObamaAnnouncesWhiteHouseOfficeofFaith-basedandNeighborhoodPartnerships/](https://www.whitehouse.gov/the_press_office/ObamaAnnouncesWhiteHouseOfficeofFaith-basedandNeighborhoodPartnerships/).
- 81 U.S. Department of Homeland Security, "DHS Center for Faith-based and Neighborhood Partnerships," available at <http://www.dhs.gov/dhs-center-faith-based-neighborhood-partnerships> (last accessed May 2015).
- 82 Russ Buettner and David W. Chen, "Hurricane Sandy Recovery Program in New York City Was Mired by Its Design," *The New York Times*, September 4, 2014, available at <http://www.nytimes.com/2014/09/05/nyregion/after-hurricane-sandy-a-rebuilding-program-is-hindered-by-its-own-construction.html>.
- 83 Ibid.
- 84 Ibid.
- 85 Governor's Office of Storm Recovery, "Home," available at <http://stormrecovery.ny.gov> (last accessed April 2015).
- 86 New York Rising, "Red Hook: NY Rising Community Reconstruction Plan" (2014).
- 87 Michael Finneran, "More Extreme Weather Events Forecast," National Aeronautics and Space Administration, January 16, 2013, available at [http://www.nasa.gov/centers/langley/science/climate\\_assessment\\_2012.html](http://www.nasa.gov/centers/langley/science/climate_assessment_2012.html).
- 88 United Nations, "Next Steps: New dynamics for displacement," available at <http://www.un.org/en/globalissues/briefingpapers/refugees/nextsteps.html> (last accessed April 2015).
- 89 International Organization for Migration, "Migration and Climate Change" (2008).
- 90 Jeffrey A. Groen and Anne E. Polivka, "Hurricane Katrina evacuees: who they are, where they are, and how they are faring" (Washington: Bureau of Labor Statistics, 2008).
- 91 Peter Grier, "The great Katrina migration," *The Christian Science Monitor*, September 12, 2005, available at <http://www.csmonitor.com/2005/0912/p01s01-ussc.html>.
- 92 Groen and Polivka, "Hurricane Katrina evacuees."
- 93 Maria Godoy, "Katrina One Year Later," NPR, August 2006, available at <http://www.npr.org/news/specials/katrina/oneyearlater/diaspora>.
- 94 Emily Chamlee-Wright, *The Cultural and Political Economy of Recovery: Social Learning in a post-disaster environment* (New York: Routledge, 2010). Evidence suggests the average household income in Vietnamese communities in New Orleans was less than \$38,000 per year. See Deep South Center for Environmental Justice, "Community Profiles," available at <http://www.dscej.org/index.php/community-outreach-initiatives-sp-584395314/community-profiles> (last accessed April 2015); Karen J. Leong and others, "Resilient History and the Rebuilding of a Community: The Vietnamese American Community in New Orleans East," *Journal of American History* 94 (2007): 770–779, available at <http://www.journalofamericanhistory.org/projects/katrina/Leong.html>.
- 95 Reeve Hamilton, "Five Years Later, Houstonians Conflicted About Katrina," *The Texas Tribune*, August 30, 2010, available at <http://www.texastribune.org/2010/08/30/five-years-houstonians-conflicted-about-katrina>.
- 96 Michael Graczyk, "Vietnamese evacuees find hope in Texas," *Plainview Herald*, September 5, 2005, available at [http://www.myplainview.com/article\\_503a3f77-589e-5291-b032-9d254296093a.html](http://www.myplainview.com/article_503a3f77-589e-5291-b032-9d254296093a.html).
- 97 Ibid.
- 98 Michael Kunzelman, "Vietnamese rebound in New Orleans," *USA Today*, October 30, 2007, available at [http://usatoday30.usatoday.com/news/nation/2007-10-30-4013234752\\_x.htm](http://usatoday30.usatoday.com/news/nation/2007-10-30-4013234752_x.htm).
- 99 Juliette Landphair, "The Forgotten People of New Orleans: Community, Vulnerability, and the Lower Ninth Ward," *Journal of American History* 94 (2007): 837–845.

- 100 Hamilton, "Five Years Later."
- 101 Voice of America, "Study Probes Racial Tension Between Hurricane Katrina Evacuees and Houston Community," November 2, 2009, available at <http://www.voanews.com/content/a-13-2009-08-31-voa41-68755987/410427.html>.
- 102 Patterson, "Katrina evacuees shift Houston's identity."
- 103 Karoline Mortensen, Rick K. Wilson, and Vivian Ho, "Physical and Mental Health Status of Hurricane Katrina Evacuees in Houston in 2005 and 2006," *Journal of Health Care for the Poor and Underserved* 20 (2009): 524–538.
- 104 Jim Bell, "HISD Receives Katrina Relief," Houston Public Media, May 9, 2006, available at [http://www.kuhf.org/site/News2?page=NewsArticle&id=16376&news\\_iv\\_ctrl=-1](http://www.kuhf.org/site/News2?page=NewsArticle&id=16376&news_iv_ctrl=-1).
- 105 Miguel Bustillo, "Houston Grumbles as Evacuees Stay Put," *Los Angeles Times*, August 21, 2006, available at <http://articles.latimes.com/2006/aug/21/nation/na-evac21>.
- 106 *The Tennessean*, "May 2010 flood: by the numbers," May 1, 2011, available at <http://archive.tennessean.com/article/20110501/NEWS/305010091/May-2010-flood-by-numbers>.
- 107 John Carey, "Storm Warnings: Extreme Weather Is a Product of Climate Change," *Scientific American*, June 28, 2011, available at <http://www.scientificamerican.com/article/extreme-weather-caused-by-climate-change/>.
- 108 James Barron, Eric Lipton, and Ray Rivera, "With \$200 Million in U.S. Housing Aid, Officials Begin Relocating the Displaced," *The New York Times*, November 5, 2012.
- 109 Andrea Rael, "Colorado Flood Damage: Property Loss Estimated at Around \$2 Billion," *The Huffington Post*, September 23, 2013, available at [http://www.huffingtonpost.com/2013/09/23/colorado-flood-damage\\_n\\_3976222.html](http://www.huffingtonpost.com/2013/09/23/colorado-flood-damage_n_3976222.html).
- 110 Dan Whitcomb, "New evacuations ordered as California wildfire doubles in size," Reuters, September 18, 2014, available at <http://www.reuters.com/article/2014/09/18/us-usa-wildfires-idUSKBN0HC21P20140918>; Marty Graham, "Wildfires menace southern California, thousands evacuated," Reuters, May 15, 2014, available at <http://www.reuters.com/article/2014/05/15/us-usa-wildfires-california-idUS-BREA4D00A20140515>.
- 111 Emily Atkin, "In Washington State, The 2014 Wildfire Season Has Been 6 Times Worse Than Normal," *ThinkProgress*, September 12, 2014, available at <http://thinkprogress.org/climate/2014/09/12/3566740/washington-wildfires-worse-than-normal>.
- 112 Shiva Polefka, "Moving Out of Harm's Way" (Washington: Center for American Progress, 2013).
- 113 U.S. Department of Agriculture, "Emergency Watershed Protection Program," available at <http://www.nrcs.usda.gov/wps/portal/nrcs/main/ct/programs/financial/ewp/> (last accessed April 2015).
- 114 Governor's Office of Storm Recovery, "NY Rising Buyout and Acquisition Programs," available at <http://storm-recovery.ny.gov/ny-rising-buyout-and-acquisition-programs> (last accessed April 2015).
- 115 Jan Ellen Spiegel, "Connecticut gets first federal buyouts for Sandy victims," *The CT Mirror*, December 23, 2013, available at <http://ctmirror.org/2013/12/23/connecticut-gets-first-federal-buyouts-sandy-victims>.
- 116 Governor's Office of Storm Recovery, "NY Rising Buyout and Acquisition Programs."
- 117 Reuters, "Staten Island homeowners offered buyouts to abandon homes hit by Sandy," *Daily News*, May 5, 2013.
- 118 Mark Schleifstein, "Corps proposes voluntary buyouts outside levees," *The Times-Picayune*, January 27, 2008, available at [http://www.nola.com/news/index.ssf/2008/01/risk\\_reduction\\_corps\\_proposes.html](http://www.nola.com/news/index.ssf/2008/01/risk_reduction_corps_proposes.html).
- 119 Rural Community Assistance Partnership, "Still Living Without the Basics in the 21st Century," available at [http://www.win-water.org/reports/RCAP\\_full\\_final.pdf](http://www.win-water.org/reports/RCAP_full_final.pdf) (last accessed April 2015).
- 120 Government Accountability Office, "Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion," GAO-09-551, Report to Congressional Requesters, June 2009.
- 121 Bureau of the Census, *American Community Survey* (U.S. Department of Commerce, based on 2010 Census), available at [http://factfinder.census.gov/faces/nav/jsf/pages/community\\_facts.xhtml?src=bkmk](http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk).
- 122 Suzanne Goldenberg, "It's happening now... The village is sinking," *The Guardian*, 2013, available at <http://www.theguardian.com/environment/interactive/2013/may/15/newtok-safer-ground-villagers-nervous>.
- 123 Alex DeMarban, "Eroding Alaska village urges Congress to address climate change," *Alaska Dispatch News*, January 16, 2014, available at <http://www.adn.com/article/20140116/eroding-alaska-village-urges-congress-address-climate-change>.
- 124 Chris Mooney, "The remote Alaskan village that needs to be relocated due to climate change," *The Washington Post*, February 24, 2015, available at <http://www.washingtonpost.com/news/energy-environment/wp/2015/02/24/the-remote-alaskan-village-that-needs-to-be-relocated-due-to-climate-change/>.
- 125 National Oceanic and Atmospheric Administration, "Mean Sea Level Trend 8518750 The Battery, New York," available at [http://tidesandcurrents.noaa.gov/sltrends/sltrends\\_station.shtml?stnid=8518750](http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8518750) (last accessed April 2015); National Oceanic and Atmospheric Administration, "Mean Sea Level Trend 8443970 Boston, Massachusetts," available at [http://tidesandcurrents.noaa.gov/sltrends/sltrends\\_station.shtml?stnid=8443970](http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8443970) (last accessed April 2015); National Oceanic and Atmospheric Administration, "Mean Sea Level Trend 8534720 Atlantic City, New Jersey," available at [http://tidesandcurrents.noaa.gov/sltrends/sltrends\\_station.shtml?stnid=8534720](http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8534720) (last accessed April 2015).
- 126 National Oceanic and Atmospheric Administration, "NOAA, U.S. Census report finds increases in coastal population growth by 2020 likely, putting more people at risk of extreme weather," March 25, 2013, available at [http://www.noaanews.noaa.gov/stories2013/20130325\\_coastalpopulation.html](http://www.noaanews.noaa.gov/stories2013/20130325_coastalpopulation.html).
- 127 National Oceanic and Atmospheric Administration, "The Coast – Our Nation's Economic Engine," available at [http://stateofthecoast.noaa.gov/coastal\\_economy/welcome.html](http://stateofthecoast.noaa.gov/coastal_economy/welcome.html) (last accessed April 2015).
- 128 Executive Order no. 13653, *Federal Register* 78 (215) (2013).

---

## Our Mission

The Center for American Progress is an independent, nonpartisan policy institute that is dedicated to improving the lives of all Americans, through bold, progressive ideas, as well as strong leadership and concerted action. Our aim is not just to change the conversation, but to change the country.

## Our Values

As progressives, we believe America should be a land of boundless opportunity, where people can climb the ladder of economic mobility. We believe we owe it to future generations to protect the planet and promote peace and shared global prosperity.

And we believe an effective government can earn the trust of the American people, champion the common good over narrow self-interest, and harness the strength of our diversity.

## Our Approach

We develop new policy ideas, challenge the media to cover the issues that truly matter, and shape the national debate. With policy teams in major issue areas, American Progress can think creatively at the cross-section of traditional boundaries to develop ideas for policymakers that lead to real change. By employing an extensive communications and outreach effort that we adapt to a rapidly changing media landscape, we move our ideas aggressively in the national policy debate.

---

Center for American Progress

