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Eliminate Billion-Dollar Disasters: Equitable Science-Based U.S. Disaster Policy for a Resilient Future

Allison Reilly

A.R. Siders

Deb Niemeier

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Summary

Every year, Americans lose billions of dollars to natural hazards. Hurricanes, wildfires, floods, heat waves, and droughts affect millions of Americans and are particularly devastating for low-income communities and communities of color. The number of ‘billion-dollar disasters’—those that cause over a billion dollars in damage—is rising as a result of climate change, urbanization, high risk developments, communities in vulnerable areas, aging infrastructure, and federal policy that rewards risk-prone behavior rather than incentivizing risk reduction. [An overhaul of U.S. federal disaster policy will reverse the trend and eliminate billion-dollar disasters.](#) This goal requires action at all levels of government, coordination across agencies, and leadership from the highest levels.

The Biden-Harris Administration should implement a multi-phase plan beginning with an executive order instructing federal agencies to define federal roles in disaster response, coordinate agency efforts, and integrate social justice and climate change into decision-making. Agency-level mandates will develop and implement best practices, incentivize state and local measures, and create an evidentiary basis for funding allocations. Finally, legislative reform of disaster laws will enable flexible responses to the continuing effects of climate change. A coordinated overhaul of federal laws and policies will inspire change at state and local levels, leading to a U.S. disaster policy that is climate-ready, addresses social inequities, reduces taxpayer liability and disaster damage, and saves lives.

Challenge and Opportunity

Disaster effects continue to worsen. Climate change is exacerbating hurricanes, floods, heat waves, and wildfires. Development and population growth in at-risk areas have placed more people, infrastructure, and economic activity in harm’s way. Serious disasters are more frequent and more costly (Figure 1). In 2019 alone, the U.S. experienced fourteen different billion-dollar disasters. In a five-month period that year, flooding affected eleven states: Oklahoma, Nebraska, Missouri, Illinois, Kansas, Arkansas, Kentucky, Tennessee, Texas, Mississippi, and Louisiana.

Federal aid is designed to be a last resort in disasters: the backstop when local and state resources have been overwhelmed. Current disaster policy and practice, however, results in disincentives for local governments to engage in proactive risk reduction. The more damage a county experiences, for example, the more money the county receives from the Federal Government, providing little incentive to adopt better building codes or limit development in risk-prone areas. The National Institute of Building Sciences estimates that updating and refining building codes alone could save \$4 for every \$1 spent—as well as save 600 lives, avoid 4,000 cases of post-traumatic stress disorder (PTSD), and create 87,000 new jobs (NIBS 2019). Despite this alternative approach, U.S. disaster policy emphasizes recovery rather than prevention. Only a fraction of disaster funding—just 15%—is spent on reducing future losses.

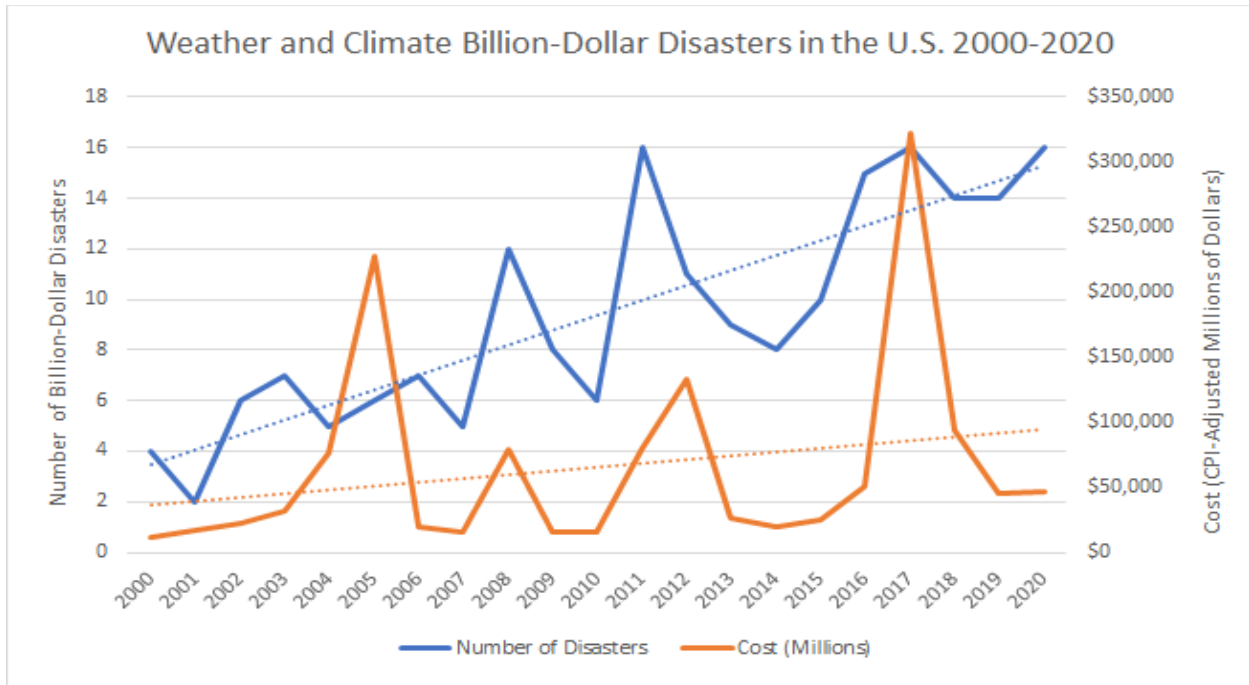


Figure 1. Billion-dollar disasters are on the rise.¹

Relief decisions use wealth and assets as measures of need, rather than people. The result is that disaster funding increases wealth inequality. There is also little evidence that the billions in disaster recovery paid by U.S. taxpayers each year has increased community resilience. According to the Government Accountability Office, nearly 45,000 new homes experienced repeat flood losses over the last decade, while less than half that number had their flood risk reduced through elevation, acquisition, or floodproofing.

The Federal Emergency Management Agency (FEMA) is a key organizer for federal response in the immediate aftermath of a disaster. In the long tail of recovery, though, other agencies—including the Department of Housing and Urban Development (HUD), Federal Transit Authority (FTA), U.S. Army Corps of Engineers (USACE), and Small Business Administration (SBA)—become involved. These agencies have significant and increasing spending authority and autonomy, but the risk reduction projects they prioritize and the reasons for their selection are often unclear or unavailable to researchers or the public. Projects are also not required to complement or support one another; each agency has its own mission, and there is little overarching coordination. At times, their actions may even work at cross-purposes.

Overhauling U.S. disaster policy will require a major effort across multiple levels and branches of government. This effort will not only limit but also potentially reverse the trend of increasing

¹ NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2020). <https://www.ncdc.noaa.gov/billions/>, DOI: 10.25921/stkw-7w73

disaster costs. Disaster policy can create incentives for risk-smart development, promote climate-proof investments in infrastructure, and protect society's most vulnerable populations.

Plan of Action

A complete overhaul of U.S. disaster policy will require many actions across government branches. The following roadmap is a starting point: an initial set of steps to establish leadership, coordination, and a structure within which numerous actors can engage in a collaborative effort to build a disaster-resilient nation.

The plan is guided by the following **principles**:

1. Equity must be at the center; disaster policy must focus on enabling communities.
2. High-level leadership is required to coordinate multiple mutually supporting actions throughout the Federal Government.
3. Aligning state and local government incentives will encourage these institutions to assume responsibility for building resilient communities.
4. Transparent, evidence-based decision-making and implementation are most effective.

Executive Branch: An executive order from the President or memorandum from the Office of Science and Technology Policy should direct agencies to address climate change and social equity in all federal actions. The order should provide a new mandate for inter-agency task forces such as the Mitigation Framework Leadership Group (MitFLG) to take, at minimum, the following actions:

- Define leadership and roles for each federal agency and establish coordination mechanisms to align actions during pre-disaster risk mitigation and long-term recovery.
- Provide a roadmap for federal agencies to create incentives for local governments to take risk reduction measures.
- Direct all agencies to review disaster expenditures and decision-making processes, make the results public, and review consistency among agencies.
- Pursue place-based pilot programs that are participatory and community-based to establish participatory processes and evaluation methods.
- Develop a long-term plan for disaster recovery that (1) addresses inequities in access to housing, infrastructure, and social services, (2) promotes quality of life, (3) and ensures a just transition process for communities as they build resilience.

Legislative Branch: Following the executive action, Congress should legislate reform both the National Flood Insurance Act of 1968 (NFIP) and the Stafford Act of 1988. Congress should adopt the guidelines made by inter-agency task forces and recommendations made by the hazard science community. Congress must deliberate on:

- Increased spending flexibility to support community resilience and functioning.

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- Raising the disaster threshold given the increasing frequency and severity of events and the need to incentivize local and state governments to prepare for and limit the damage caused by common hazards.
- Adjusting the federal cost-share to incentivize action without burdening communities.
- Creating incentives that protect vulnerable populations.

University and Government Research: New science is needed to create a more robust foundation of evidentiary knowledge. Through National Science Foundation calls and inter-agency task force member agencies commissioning National Academies Studies, funding should be allocated toward:

- Defining and developing a public insurance program that covers a wide range of disasters.
- Evaluating the adequacy of the disaster directive for achieving national goals.
- Undertaking research to inform thresholds for federal action at state and local levels.

Frequently Asked Questions

How does this proposal fit into existing disaster resilience efforts?

Existing efforts at achieving disaster resilience need coordination and high-level direction to become priorities. Existing task forces (such as MitFLG) should be leveraged and given expanded membership and mandates to promote a more widely coordinated approach to disaster reduction and response. Executive Order 13653, “Preparing the United States for the Impacts of Climate Change” should be reinstated and additional guidance should be provided to state agencies on how to assess climate risk, how to promote incentives for resilience, and how to include equity in decision-making processes.

If hazards are expected to intensify and become more frequent due to climate change, do we have ways to reduce losses from disasters?

Yes! As Gilbert White said, “floods are ‘acts of god,’ but flood losses are largely acts of man.” The same logic can be applied to nearly all hazards. Decades of scientific research and empirical data have identified simple principles that are known to reduce disaster losses. These principles are: (1) avoid building in areas known to be hazardous, (2) protect and/or insure infrastructure in hazardous areas, (3) reduce carbon emissions, (4) protect the most vulnerable. The National Institute of Building Sciences estimates that updated building codes alone could save \$4 for every \$1 spent—as well as save 600 lives, avoid 4,000 cases of post-traumatic stress disorder (PTSD), and create 87,000 new jobs.

Why are agencies other than FEMA included? Does the problem not primarily lie with FEMA?

FEMA’s role is to coordinate emergency management following disasters that are beyond the ability of states to respond. FEMA also provides grants that support disaster mitigation, mitigation, preparedness, response, and recovery. Furthermore, the majority of the rules laid out by the Stafford Act apply to FEMA activities. However, in recent decades, numerous agencies have been allocated money by Congress in disaster relief authorizations. The Department of Housing and Urban Development (HUD) is now a primary disaster response funder, through the Community Development Block Grant Disaster Recovery (CDBG-DR) program. The US Army Corps of Engineers (USACE) takes primary responsibility for levees, dredging, and beach nourishment, and their decisions have important implications for disaster risk reduction policy. A wide range of other agencies—i.e., the Small Business Administration (SBA), the Department of Agriculture (USDA), etc.—disperse disaster funds. The Department of Education, for example, disperses funds for school recovery. While FEMA plays a central role in disaster management, the coordination between all of these agencies is a major area where improvement is needed.

Why should Congress reconsider elements of the Stafford Act?

The Stafford Act is supposed to position the Federal Government as the intervener of last resort. It allows the President to declare disaster, and then it generally reimburses state and local governments—and other public organizations—a minimum of 75% of the cost of damage to public infrastructure. FEMA makes disaster recommendations to the President based upon a uniformly-applied and highly-prescribed loss threshold. The process is known to be wrought with politicization and assumes that every location experiences disasters in the same way. We know that each community has unique resources and advantages and disadvantages; a political decision about disbursement runs contrary to the Federal Government as the intervener of last resort.

To truly establish the Federal Government as the intervener of last resort, Congress must reconsider the disaster threshold by taking into account local capacity and ability to recover. Congress must also reconsider the cost-share and whether different incentive models are better equipped to induce better local hazard-reduction decisions and improve long-term resilience. Finally, Congress must formally address the role of each agency—as opposed to FEMA alone—to ensure government efficiency and that actions are not at cross-purposes.

FEMA recommended significant changes to the Public Assistance Program in 2016 that may not require congressional approval. Are those changes sufficient?

No. FEMA recommended adopting a state-wide deductible which must be met before Public Assistance is made available. While a positive step, it only addressed one of scores of disaster relief programs, albeit the largest. Furthermore, the recommendation did not include an evaluation of whether the proposed structure would incentivize local change. It does not explicitly reward individual hazard-reducing behaviors, but rather evaluates hazard reduction at a state level.

However, this proposed rule makes a step in the right direction by stating that the deductible level should be influenced by local hazard exposure and ability to recover.

Is your position anti-growth?

No. In face of the climate crisis, the only way to ensure consistent long-term growth is to put policies and incentives in place that protect people and infrastructure. In the same way that smart growth urban planning guides development based on economic and social priorities, we encourage growth that aligns with hazard risk reduction goals.

Has a federal 'push' worked to change state and local approaches in other issue areas?

Yes! The Federal Government has been effective in incentivizing new rules and regulations that are largely implemented by states. Among the examples of such changes are

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- Seatbelts. The Federal Government passed the first seatbelt law, which required lap and shoulder belts in all vehicles beginning in 1968. Throughout the 1970s and 1980s, however, the effort to require states to implement seatbelt laws had limited success. But in 1985, Secretary Dole issued a rule requiring automakers to install driver side airbags in all vehicles, unless two-thirds of the states had passed a mandatory seatbelt law. This set off intense lobbying by automakers for bill passage in state legislatures. In 1998, an Executive Order (13043) mandated that all federal employees use seatbelts. As of 2020, only one state (New Hampshire) does not require seatbelts.
- Clean Air. The 1990 Clean Air Act Amendments (CAAA) promulgated new air quality standards for acceptable levels of carbon monoxide, ground level ozone, and fine particulates. The 1991 Intermodal Surface Transportation Efficiency Act coordinated with CAAA by including directions on how cities and metropolitan areas were to demonstrate achievement of and progress toward air quality goals. These guidelines stated that transportation planning should emphasize system efficiency, and that in cities with severe air pollution, transportation projects must contribute to cleaner air. Urban areas were given flexibility to focus on local priorities and problems, with strict federal sanctions as incentives for compliance with both laws. The result has been a significant and continuing drop in criteria air pollutants.

Similarly, financial incentives for resilience (either carrots or sticks) could encourage state and local governments to use their authority to reduce risk exposure in their jurisdictions. This is the rationale behind the National Flood Insurance Program (NFIP) Community Rating System (CRS), which rewards communities who engage in resilience behaviors with lower insurance rates. The CRS could be improved by requiring local governments to take stronger actions to qualify for reduced rates and by increasing transparency about how community ratings are calculated. Additional incentives could be used to encourage state and local governments to take actions such as: adopt internationally recognized building codes, enforce building codes, zone hazardous lands for no or low-density development, charge externality fees for developers, and invest in stormwater management upgrades.

This was also the rationale behind FEMA recommendations in 2016 that would have required states to contribute a set amount towards disaster recovery (a 'disaster deductible') before Public Assistance would be made available. The amount of the deductible could be reduced if the state demonstrated that it had taken actions to reduce risk exposure. We recommend that this and similar programs be revisited and strengthened.

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About the Authors



Allison Reilly is an assistant professor at the University of Maryland, College Park in the Department of Civil and Environmental Engineering. Her research focuses on identifying governance systems that enable resilient infrastructure and strong communities. Prior to her appointment at the University of Maryland, Dr. Reilly was a research fellow at the University of Michigan and a postdoctoral researcher at Johns Hopkins University. In addition, Dr. Reilly was a research analyst for a federally-funded research and development center in support of the Department of Homeland Security. Dr. Reilly holds an M.S. and Ph.D. in Civil Engineering from Cornell University and a B.S. in Civil Engineering from Johns Hopkins University.



A.R. Siders is an assistant professor at the University of Delaware in the Disaster Research Center, Biden School of Public Policy and Administration, and department of Geography and Spatial Sciences in the College of Earth, Ocean, and Environment. She holds a JD and a Ph.D. in Environment and Resources. Siders previously served as an environmental fellow at the Harvard University Center for the Environment, a legal fellow at the Sabin Center for Climate Change Law at Columbia University, and a Presidential Management Fellow with the U.S. Navy. Her current projects focus on adaptive capacity, managed retreat, and adaptation equity. She believes adaptation is opportunity and that we should be ambitious, if not audacious, in dreaming of and planning for a better future. Originally from Duluth, MN, she misses the cold.



Deb Niemeier is the Clark Distinguished Chair and Professor in Civil and Environmental Engineering at the University of Maryland. She partners with sociologists, planners, geographers, veterinary medicine and education faculty to study such topics as formal and informal governance processes in urban landscapes and how to characterize risk associated with outcomes in the intersection of finance, housing and infrastructure and environmental hazards. She was named a Fellow of the American Association for the Advancement of Science (AAAS) for “distinguished contributions to energy and environmental science study and policy development.” She is a Guggenheim Fellow for foundational work on pro bono service in engineering and a member of the National Academy of Engineering.

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