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Understanding Linked Climate and Weather Hazards and the Challenges to Federal Emergency Management

The U.S. National Oceanic and Atmospheric Administration (NOAA) estimates that in 2022, the United States experienced 15 separate weather-related disasters that caused at least one billion dollars in damages—the eighth consecutive year to have 10 or more such events. The impacts of such incidents are widespread: since 2011, many U.S. counties have experienced at least one federally declared disaster following a weather-related event. Such trends present the 118th Congress with questions regarding the appropriate role of the federal government in disaster management.

Recent disasters have strained affected state, local, tribal, and territorial governments (SLTTs) and revealed the limits of federal authorities to assist with emergency management activities including:

- disaster *response* (urgent efforts to save lives and protect property and the environment);
- *recovery* (restoring essential services and facilities); and
- *mitigation (*reducing long-term risks to life, property, and the environment).

A warming climate, the increasing cost and complexity of some disasters, and the risk of linked hazards (e.g., post-wildfire flooding and debris flows like mudslides) have raised concerns regarding the generally reactive nature of federal disaster assistance authorities and how, if at all, they should adapt.

Climate and Weather Hazards

Hazardous weather and climate events include severe storms, tropical cyclones, drought, wildfires, and extreme heat or cold. These hazards—and their effects—may occur on a variety of time scales. Some strike suddenly (*rapid-onset)* and conclude quickly, like tornadoes. Others, like wildfires, develop rapidly and may last for days, weeks, or months. Still others, like drought, develop slowly (*slow-onset*) and may persist for months to years, becoming *chronic*. Similarly, some hazards may cause damage slowly without distinct temporal boundaries (e.g., erosion). *Cascading, linked, or compound hazards*—events that may overlap or occur consecutively—amplify the risk of adverse impacts to humans and natural resources. For example, drought conditions can amplify wildfire risk, and a wildfire can exacerbate subsequent flooding and debris flow risk. The federal government faces challenges in managing the risk and effects of such linked hazards.

Scientific understanding of these hazards can inform disaster assistance. Congress furnished a number of federal agencies with responsibilities for understanding these hazards, including hazard monitoring, modeling, forecasting and issuing alerts, and supporting research. Scientific advancements across those areas have improved disaster assistance, but many gaps still exist. For instance, scientists remain uncertain about how linked hazards may change in the future.

Increasing Disaster Risk

Disaster risk is often expressed as a function of the frequency, duration, and intensity of hazards (e.g., extreme rainfall) along with an individual or community's exposure (e.g., development along coastal areas) and vulnerability (e.g., low socioeconomic status or inadequate building standards). For example, disaster risk increases as more people settle near fire-prone forests or floodplains. Concurrent or cascading hazards can further intensify the effects and increase the resultant costs of disasters.

U.S. Emergency Management

The United States generally approaches emergency management from the "bottom up." Disaster response and recovery begins at the local level, with affected SLTTs directly managing incidents in their own jurisdictions. The President and other federal agencies generally provide assistance only *after* a discrete incident, following a request by a state, territorial, or tribal executive indicating that the existing resources are insufficient to address the situation.

These procedures do not easily align with slow-onset, chronic, or linked disasters that may lack a clear beginning and end. The effects of such disasters may be gradual or appear to be unrelated (e.g., homes lost to coastal erosion, or damages caused by debris flows months after initial wildfires). For this reason, the federal government may determine that federal assistance is unnecessary, resulting in less assistance for affected communities.

Coordinating Federal Agencies and Assistance

Depending on the type and severity of a disaster, federal assistance may be available through a range of agencies, including the Federal Emergency Management Agency (FEMA), the Small Business Administration, the Department of Housing and Urban Development, the U.S. Department of Agriculture (the lead agency for drought), and the U.S. Forest Service (a lead agency for wildfire). The Department of Homeland Security has pre-identified agency and nonfederal roles in disaster assistance and has documented them in guidance, including the National Response Framework and the National Disaster Recovery Framework.

FEMA's Role and the Stafford Act

Under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (hereinafter the Stafford Act; 42 U.S.C. §5121 et seq.), the President may declare an emergency or disaster after determining that federal assistance is required to avert or alleviate casualty, damages, or suffering attributed to a discrete event. A presidential Stafford Act declaration enables FEMA to provide relief to affected SLTTs, non-profits, individuals, and households, and to coordinate federal relief efforts.

To determine whether a Stafford Act declaration is warranted, FEMA evaluates costs attributed to a single incident during a specific period of time (e.g., the costs of damages caused on the day a tornado struck a county). FEMA generally supports such a declaration only if these costs appear to overwhelm the affected jurisdictions or meet certain thresholds. This process complicates the provision of FEMA assistance for slow-onset, linked, or chronic disasters. Damages accrued during slow-onset events may not be easily attributed to a discrete incident. An individual event in a series of linked hazards (e.g., a single flood as part of recurring flooding, or flooding that follows a wildfire), may not, on its own, appear to overwhelm a state or locality, or meet cost thresholds.

Mitigating Risk of Future Hazards

As with disaster response and recovery, Congress has directed multiple federal agencies to support mitigation activities against future hazards (e.g., elevating properties to reduce flood risk). Mitigation activities aim to decrease risk by reducing vulnerability and/or exposure. The impact of federal mitigation funding is illustrated by a recent study that found that for every $1 of federal mitigation spending in certain programs, society as a whole is expected to save $6 due to reduced future losses. The same study projected that every $1 spent on building code adoption saved $11 in avoided future losses.

The federal government consistently provides significantly more funding after a disaster than for pre-disaster mitigation. As the risk and costs of disasters have increased, however, the federal government has expanded support for pre-disaster mitigation. For example, Congress increased funding for pre-disaster mitigation through the Disaster Recovery Reform Act of 2018 (P.L. 115-254) and the Infrastructure Investment and Jobs Act (P.L. 117-58). Congress may consider further enhancing federal support for mitigation activities.

Key Policy Issues and Options

Clarification of Roles and Responsibilities

The 118th Congress faces questions from oversight bodies, public officials, and survivors regarding the appropriate role of the federal government in disaster management, particularly given the increasing intensity, frequency, cost, and complexity of some disasters, and exposure and vulnerability to climate and weather hazards. Congress may consider clarifying or revising authorities that determine whether and to what extent the federal government should provide assistance before, during, or after disasters.

Congress may also consider calls to cohere or consolidate disaster relief authorities that currently interact across numerous federal statutes, executive agencies, and congressional committees. Over 30 federal agencies (and a comparable number of congressional committees of jurisdiction) exercise authority over federal efforts to understand and manage hazards and disasters. SLTT officials, emergency managers, and survivors persistently express frustration with the inconsistency, complexity, and fragmentation of federal disaster assistance—particularly in the wake of severe, geographically dispersed, and overlapping incidents (e.g., concurrent western wildfires). Additionally, existing authorities arguably limit some agencies' abilities to provide federal response, recovery, and mitigation assistance for slow-onset, chronic hazards (e.g., erosion). Policy options could include consolidating authorities in fewer agencies (and/or congressional committees), aligning program policies and eligibility requirements across agencies, and revising federal authorities to address cascading, slow-onset, and/or chronic incidents.

Capacity Constraints

Officials at all levels of government have reported capacity constraints in the face of more expensive and persistent disasters. Federal and SLTT staffing shortfalls include insufficient numbers of personnel and inadequate training for specific functions. Insufficient capacity may delay response and recovery efforts or impede the use of federal funds for mitigation—increasing risk to hazard-prone areas. In particular, SLTTs representing vulnerable communities may have fewer financial resources, personnel, and experience navigating federal programs.

To address these concerns, Congress could consider various options, including increasing support for emergency management staffing, recovery, and mitigation; enhancing assistance for vulnerable communities; and simplifying the delivery of assistance. Alternatively, Congress could find that the existing capacity for disaster response is sufficent and choose not to amend existing authorities. Either action or inaction would likely come with a potential cost.

Evaluating Federal Hazard-Related Spending

Congress may consider options to manage total disaster spending, such as (1) increasing federal support for mitigation that may reduce future losses; (2) restricting or eliminating federal spending in hazard-prone properties and/or areas; (3) requiring hazard-resilient rebuilding in federally-funded projects; (4) expanding purchase requirements for hazard insurance; or (5) increasing the share of disaster assistance paid for by SLTTs. Congress may also consider additional support for hazard science and disaster assistance where there is currently limited federal involvement (e.g., assistance for effects of extreme heat).

Katie Hoover, Specialist in Natural Resources Policy
Diane P. Horn, Specialist in Flood Insurance and Emergency Management
Erica A. Lee, Analyst in Emergency Management and Disaster Recovery
Eva Lipiec, Analyst in Natural Resources Policy

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