



# We Can't Afford to Ignore Climate Risk

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BY JACKIE RATNER AND JEFF SCHLEGELMILCH

Every municipality in the United States is subject to risk from disasters, whether environmental or manmade. We are often drawn to stories of catastrophic disasters in high-population regions, such as wildfires in California or hurricanes on the Gulf Coast, and this can make it seem as though only certain areas need to be concerned about risk. In fact, disasters are possible in every state, in every season, and with a range of impacts ranging from inconvenient to devastating. (See Exhibit 1.)

As major disasters increase in frequency, the related financial risks are increasing, too. Ratings agencies, asset managers, and investors are all beginning to realize that disaster and climate risk equate to financial risk. Fortunately, this also means that financial resilience can be built through disaster resilience, and vice versa. This article introduces how the two are linked and what government finance officers can do to minimize financial risk from disasters.

The Woolsey Fire reaches the ocean along Pacific Coast Highway near Malibu, California on November 9, 2018.

ROBYN BECK/AFP VIA GETTY IMAGES

# Climate and Disaster Risk is Financial Risk

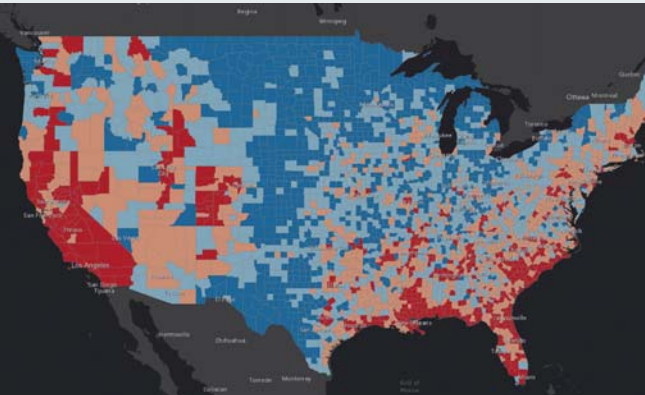
Financial risks from climate-related disasters in particular have come under increasing scrutiny in recent years, with 2019 being notable for several events: Moody's acquired a majority stake in Four Twenty Seven, a climate risk analytics startup; utility company PG&E filed for bankruptcy over potential liability for the massive wildfires that have torn through California in recent years;<sup>1</sup> and asset management behemoth BlackRock announced its withdrawal from thermal coal investments, stating, "climate risk is investment risk."<sup>2</sup>

The term "climate risk" can mean several things, depending on context. It can mean that supply or demand within certain industries such as fossil fuel may be disrupted in the coming years, making their market outlooks uncertain and therefore riskier. "Climate risk" can also refer to the assets physically at risk from climate change and related meteorological disasters, such as coastal real estate at risk from sea level rise, agricultural investments at risk from drought, or infrastructure like roads and bridges that are subject to frequent storms and floods. Part of what makes "climate risk" so risky is that the future can no longer be expected to follow trends from the past. With global changes occurring at unprecedented rates, historical data are no longer accurate guidelines for future behavior—and because the unknowns are greater, so are risk margins.

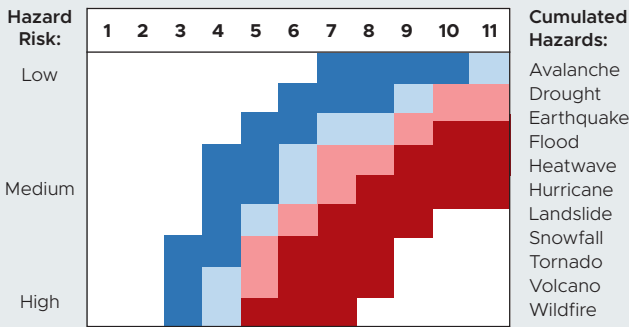
Even more relevant to long-term securities like bonds, disaster risk can erode the capacity of a tax base, undermining the ability to pay back long-term financing for large-scale development projects. Typical long-term disaster recoveries can range from seven to 10 years, more for mega-disasters, depreciating the tax base for the full maturation cycle of some bonds.

Many municipal bonds receive a stable rating based on the assumption that a large enough tax base will be able to weather large amounts of financial risk. But in the context of mega-disasters, this is demonstrably untrue. Wealth inequality increases in disaster-affected areas,<sup>3</sup> while poverty increases on average by 1 percent<sup>4</sup> as wealthier citizens move away and more borderline-poor households descend below the poverty threshold. Even for smaller extreme events, economic stimuli might be provided, but with a significant lag before consumer activity is fully restored. Additionally, issues of environmental justice exacerbate pre-existing inequalities and increase stress on tax-funded systems.<sup>5</sup> Altogether, extreme events squeeze a tax base while simultaneously deepening demand for publicly funded services.

Exhibit 1: U.S. Distribution of Natural Hazards



Number of Natural Hazards

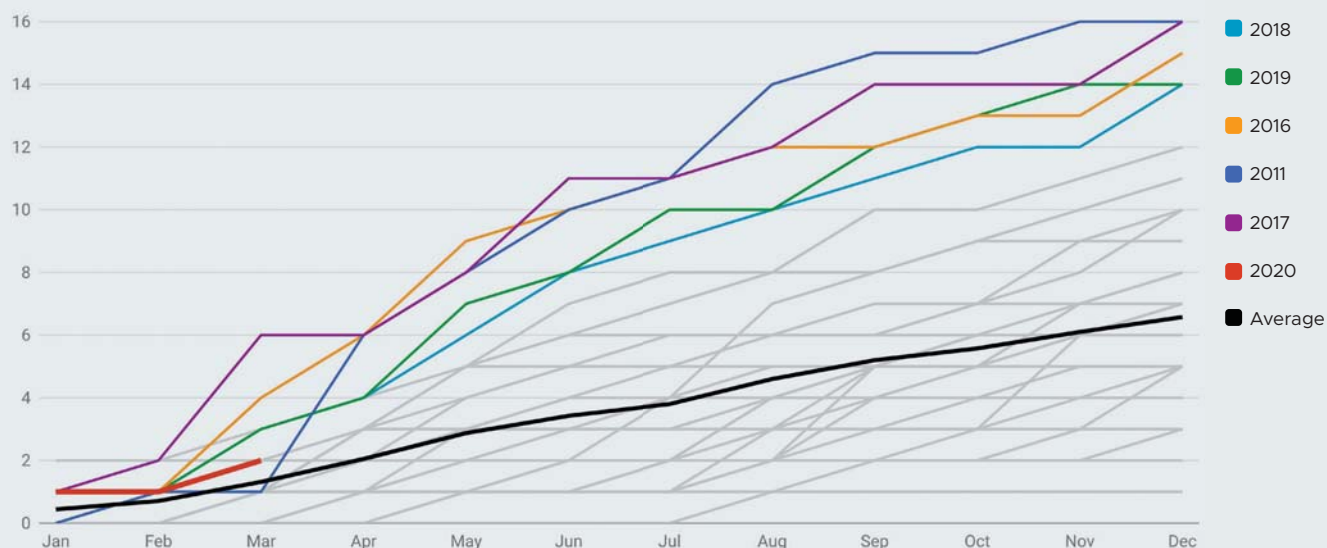


No counties in the continental USA have a natural hazard risk of zero. A county with high risk from three hazards or low risk from 10 hazards would be at the lower end of the spectrum, while the higher end of the spectrum would be a county with high risk from five to seven hazards or medium risk from 10 or 11 hazards. Source: US Natural Hazards Index, National Center for Disaster Preparedness, Columbia University.

Historically, the tax base in a disaster has been supported by federal disaster aid funneled through state programs and, ultimately, to local residents. But this may not be a viable solution to tax base stability in the long term because of the increasing costs and frequency of climate disasters.

Data from the National Centers for Environmental Information at the National Oceanic and Atmospheric Administration show that there have been more than 258 weather and climate disasters since 1980, resulting in more than \$1.75 trillion in economic losses.<sup>6</sup> In 2019 alone, 14 of these disasters had losses exceeding \$1 billion. Year after year, disaster losses set new record highs and continue stretching federal disaster safety nets to their breaking point.<sup>7</sup> (See Exhibit 2.)

**Exhibit 2: 1980 to 2019 Year-to-Date U.S. Billion-Dollar Disaster Event Frequency**



The average number of annual billion-dollar disasters since 1980 is 6.5 per year. In the last four years, the average number of billion-dollar disasters is 14.75, meaning that billion-dollar disasters have more than doubled in frequency over the last 40 years. Source: [ncdc.noaa.gov/billions](https://www.ncdc.noaa.gov/billions).

## The Safety Nets Are Tearing

Federal coffers are increasingly and repeatedly being drained by frequent mega-disasters and hundreds of smaller disasters. To keep pace with these demands, Congress is increasingly relying on emergency spending bills that bypass traditional budgeting processes.<sup>8</sup>

A recent report from the Government Accountability Office found that “Increasing reliance on federal help to address natural disasters is a key source of federal fiscal exposure, particularly as certain extreme weather events become more frequent and intense due to climate change.” Federal fiscal exposure is broad-reaching: Federal aid mechanisms spread across more than 90 programs and 20 agencies at the federal level alone and can vary based on the disaster and the supplemental legislation passed to aid disaster recovery.<sup>9</sup>

The Federal Emergency Management Agency (FEMA) and other federal organizations are seeking ways to shift more responsibility and liability to state and local governments, as well as to the private sector. This is demonstrated in a proposed but not-yet-implemented rule<sup>10</sup> that would have created a “disaster deductible” for federally declared disasters, as well as incentives for increasing states’ disaster preparedness spending

by proportionally increasing the federal share of reimbursement in a disaster.<sup>11</sup>

FEMA’s efforts to shift the financial liability to the private sector can also be seen in its engagement of the re-insurance industry and use of catastrophe bonds to shift financial risk away from taxpayers under the National Flood Insurance Program (NFIP). The NFIP provides flood insurance to millions of Americans but is chronically insolvent, and it has been extended rather than re-authorized as Congress struggles to find a solution. Many argue that it artificially depresses the cost of living in flood-prone areas. Congress has passed attempts to reform the program but never fully implemented them. As a result, insurance rates are as much as 30 percent less than they would have been through implementation of these reforms,<sup>12</sup> and the NFIP periodically requires bailouts, the most recent of which was with a write-off of \$16 billion in debt after Hurricane Harvey in 2017.<sup>13</sup>

Many additional signals from the federal government indicate that the safety nets insulating states and localities from the full financial costs of disasters are not sustainable. They may change quickly or over time but recovering from disasters using large-scale federal assistance as a safety net should no longer be a given in any long-term fiscal planning.



## Climate and Credit

Credit adjustments relating to climate and disasters are only temporarily stabilized through federal aid programs with uncertain futures. This reliance on federal aid is a cornerstone underpinning stable ratings, to the extent that both S&P and Moody's have openly warned that climate risk is putting credit at risk.<sup>14</sup>

Just as with personal finance, a lack of adequate local and state government emergency savings has reverberating impacts on the short- and long-term economic outcome after disaster. With growing populations, development, and urban sprawl, the increasing violence of climate disasters requires increasing ingenuity in financial planning approaches.

Climate hazards can only be minimized through immediate and drastic sustainability and environmental action. Adaptability and flexibility in the face of adversity is rewarded, as is advanced planning for climate related risks—even more than having plenty of resources to meet needs. For the short term, climate risks must be addressed by decreasing vulnerabilities. Ideally, both long- and short-term plans should be paired for ultimate resilience, and this is what ratings agencies are looking for in public finance disclosure.

## ESG Assessments Are Not the Whole Picture

Each of the major credit rating agencies (S&P, Moody's, Fitch) has its own rubric for assessing credit and bonds, with room for subjectivity. When applied to climate and disaster risk, familiar criteria take on new meaning. In the example of Charles County, Maryland, “very strong management” was the criterion that ultimately elevated the assessment.

“Management” is largely considered to fall within the G realm of ESG (Environmental, Social, and Governance) criteria, and according to S&P Global, 67 percent of credit adjustments hinge on Governance, usually management, while only 5 percent are related to Environmental and natural disasters. Yet, as the case of Charles County demonstrates, the boundary between the two criteria is murky.

In fact, it's erroneous to consider that climate and disaster risk falls squarely into Environmental, or to presume that Social or Governance criteria are immune to climate risk. According to FEMA, research demonstrates that significant portions of disaster risk are social in nature.

Further, the cascading effects of disasters require a more holistic perspective (see Exhibit 3).

### CASE STUDY: Charles County, Maryland

S&P recently awarded Charles County, Maryland two AAA ratings for consolidated public improvement bonds and for general obligation debts outstanding. Explaining its rationale for this upgrade, S&P cited the county's “proactive and multi-pronged approach to climate change” with both long- and short-term components. In the shorter term, the county is working to model the potential effects of sea level rise on county assets, while in the long term, the county plans to improve sustainability efforts by mitigating greenhouse gas emission and planning a gradual switch to solar energy. More generally, government officials are being trained in “climate leadership” through local university programs.



Charles County's Mattawoman Creek has been called the Eden of the Chesapeake Bay watershed, which is under increasing threat of the effects of climate change.

LINDA DAVIDSON / THE WASHINGTON POST VIA GETTY IMAGES

Source: S&P Global Ratings Direct Summary: Charles County, Maryland; October 25, 2019

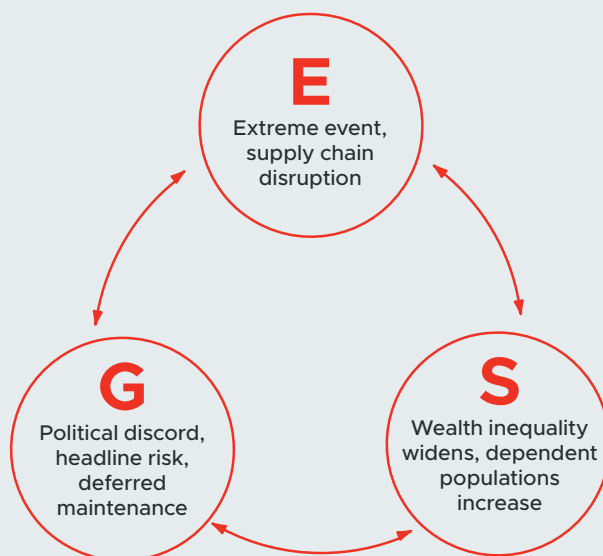


AP PHOTO/GERALD HERBERT, FILE

There have been more than 258 weather and climate disasters since 1980, resulting in more than **\$1.75 trillion** in economic losses.

Source: National Centers for Environmental Information at the National Oceanic and Atmospheric Administration

### Exhibit 3: Environmental, Social, and Governance Criteria and the Cascading Effects of Disasters



In the context of climate and disaster risk, the elements of Environmental, Social, and Governance assessment criteria are intertwined.

Floodwaters from Tropical Storm Harvey surround homes in Port Arthur, Texas in August 2017. Studies have linked Hurricane Harvey's record rainfall to climate change.





ANN HERMES/THE CHRISTIAN SCIENCE MONITOR VIA GETTY IMAGES

Investing \$1 in disaster preparedness yields returns by saving **\$6 in potential disaster recovery costs.**

“Extreme events” classed as Environmental factors suggest hazards relating to physical assets. Criteria include supply chain disruption, real estate lost to rising sea levels, service outages, and other familiar concerns. Yet, as Exhibit 3 illustrates, this is only one snippet of the ways in which “extreme events” *will likely* influence ratings. Any of the physical asset risk can exacerbate social risks such as wealth inequality or increase of dependent populations. Extreme events also have an obvious effect on Governance factors such as political discord and headline risk (public perception) as well as predictably causing deferred maintenance during disaster recovery, which can be all-consuming for four years or more. And Governance risks have a mutual push/pull effect with the Social risks stemming from disasters, rounding out the interconnected relationship between E, S, and G.

Thus, when prioritizing ESG criteria for resilience planning, it’s not entirely accurate to presume that only five percent of adjustments relate to climate and disaster risk as reported. This amount is statistically downplayed through misclassification of assessment criteria, and the actual number could be much, much higher.

Not all of these considerations are incorporated into present credit assessments, and very few are required for disclosure.<sup>15</sup> Still, best practices are rapidly changing as stakeholders across the board are requesting more accurate risk assessments for a changing world.

## Disaster Resilience Is Financial Resilience

Fortunately, vulnerabilities from risks also present opportunities for resilience, starting with planning and mitigation. Mitigation means accepting that there is a risk in our future and taking action now to try to minimize that risk. Mitigation actions can be procedural, like putting contracts in place for emergency services before they’re needed. Or, they can be structural, like reinforcing sand dunes to fight coastal erosion. The right mix of mitigation actions to address a particular portfolio of climate and disaster risk will be unique to every municipality, but the benefits are universal.

We’ve known for years that investing \$1 in disaster preparedness yields returns by saving \$6 in potential disaster recovery costs,<sup>16</sup> but financial resilience goes further than this.

In personal finance, it’s recommended that an individual save money for an emergency fund because it enables a quicker rebound from unexpected calamity (the definition of resilience is a quick and complete recovery). Of course, the same approach is ideal for governments, but data from the Pew Charitable Trusts show that state government rainy day funds across the United States are largely insufficient, and only three states could support themselves for a year after disaster.<sup>17</sup> For perspective,

The Army Corp of Engineers drills for blasting at a construction site for an auxiliary spillway to reduce flood risk at California's Folsom Dam. The \$900 million project was completed in 2017.

long-term recovery commonly takes seven years or longer. Data on the county or municipal level are less available, but given the comparative volatility of smaller jurisdictions,<sup>18</sup> it's reasonable to assume that rainy day funds are underfunded across much of the country.

With procedural mitigation and planning in place, financial management of disasters becomes much more efficient. Rainy day funds and federal disaster relief can all be earmarked and allocated with better precision, once the full risks are assessed and prioritized.

Changes to disaster assistance programs aren't likely to have equitable impacts: Under-resourced jurisdictions would struggle to maintain the high ratings they had become accustomed to. Public finance accounts with robust rainy day funds would have an easier time adjusting to new federal policies than those without. Still, there are abundant options for mitigation that don't rely solely on savings, and in the interest of true resilience, no approach should be over-reliant on any one strategy.

## Conclusions

There is no one-size-fits-all approach to resilience planning, but a few key items can help to secure top marks against climate risks:

- **Identify the short- and long-term climate and disaster risks most relevant to the area, and plan to address both.**
- **Consider traditional financial vehicles (like savings) only one of the many procedural mitigation approaches to disaster resilience.**
- **Assess tax base resilience through the lens of ESG and extreme events.**
- **Approach climate risk holistically, taking care to identify locally relevant, dependent, or cascading linkages among possible risk factors across the ESG spectrum.**
- **Begin planning away from federal aid reliance in the mid- to long-term.**

"Preparedness saves money in the long run" has always been a difficult sell when near-term matters compete with long-term resilience for attention and resources—but failure to sell this point may be one of the costliest mistakes in an uncertain future. ■

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