Preparing, and paying for, climate change-induced disasters

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During the evening hours of Dec. 10, a flurry of tornadoes ravaged several states, claiming close to 100 lives and leaving whole communities in wreckage. According to the United States National Oceanic and

Atmospheric Administration, the storms were at least the 19th weather or climate disaster to cause more than $1 billion in damage this year, coming on the heels of droughts, wildfires, severe cold snaps, hurricanes, and other severe weather that 2021 had already wrought.

How communities prepare for and bounce back from such disasters is a focus of the Wharton Risk Management and Decision Processes Center.

"A lot of what we're thinking about is motivated by the fact that climate extremes are changing," says Carolyn Kousky, executive director of the Risk Center. "Part of it is that extreme weather events are getting more frequent and getting more intense. But they're also changing in location, duration, and timing. That's been coming up with tornadoes, with people asking whether the tornado belt of this country is shifting. That raises a whole range of challenges for preparedness and response."

Kousky spoke with Penn Today about these challenges and the Risk Center's work, particularly in light of climate change's role in fueling an increasing number of natural disasters. Here are five of her takeaways.

The who, when, and where of disaster preparedness is shifting

When a hurricane begins brewing and projections are levied about its course, homeowners and businesses along the Gulf and Atlantic coasts of the Southeastern U.S. often know what steps they need to take, be it covering windows with plywood or lining garage doors with sandbags. Similarly, people who live in Oklahoma or Kansas may well know the parts of their home most resistant to a tornado's high winds and take warnings seriously.

Building codes and flood insurance requirements may also offer some

protection and reassurance against disaster. But what happens when strong storms happen in areas where, historically, they haven't?

"Places that have been routinely dealing with climate extremes are going to be better adapted to dealing with them," says Kousky. "But as we're starting to experience events that are outside the ranges of normal, people are not going to be prepared."

Adjusting building codes to make structures more resilient to winds and water is a low-cost solution, but is one that takes time to return results.

"Infrastructure and buildings are very long-lived investments," Kousky says. "Even if we start implementing changes now, it's going to be some time before we start having an impact on risk reduction. And the risks are only escalating."

Recovery costs go well beyond the cleanup

Upon visiting the tornado-struck sites in Kentucky last week, President Biden pledged to meet 100% of the states' recovery needs. The asterisk on that statement? The federal government would pay but, thus far, just for the first 30 days of recovery.

"The costs and the impact of recovery are often much broader than people anticipate before going through it," Kousky says. "And recovery takes much longer than people assume it will."

Property destruction is what attracts news coverage and photographs. And, indeed, an influx of federal funding can begin to address the cleanup process. But disasters generally demand that people take time away from jobs and funnel their funds toward unplanned expenses, such as temporary housing and generators. Those costs are usually not covered by governmental funds.

What's more, Kousky points out, the costs of rebuilding can surge after a disaster, with demand driving up prices for building materials and labor. Add in the supply chain woes of the COVID-19 pandemic and those victims of the tornadoes and other 2020 and 2021 disasters may be faced with housing costs that far exceed what any insurance may cover.

Resources for recovery can vary widely

Recovery-aid programs vary from local to state to national scales. While support from these programs is critical, it tends to be delayed and insufficient. Its disbursement is made available following particular guidelines and declarations that may not always be transparent to disaster victims.

Households affected by smaller-scale but still damaging natural disasters—say, a hailstorm or localized flooding—might not be eligible for any governmental support and thus can rely only on their residential or business insurance, or perhaps a local charity.

"Unfortunately, what we know is that a lot of disasters are not included on most homeowners' insurance policies," Kousky says, and they catch residents by surprise after a disaster befalls them.

Larger-scale disasters, like the recent tornadoes and the extreme flooding and damage from this past summer's Hurricane Ida, for example, are more likely to trigger a major-disaster declaration by the president, which makes federal resources available.

After issuing that declaration, the president can then authorize either a local government-level recovery program, which is almost always put into effect, says Kousky, or a household-level program, which is only authorized some of the time.

Even the household-level program only meets a limited set of post-disaster needs. "Individuals can apply for cash grants," Kousky says. "The average is a few thousand dollars because they're not designed to bring you back to pre-disaster conditions; they're designed to make your residence safe enough to live in. So, for example, maybe they'll pay for a tarp for your roof but not a new roof. The aid is something, and it's important, but it does not make people whole by any stretch of the imagination."

More extensive disasters can compel Congress to activate community development block grants for disaster recovery. "That's a bunch of money," Kousky says. "State and local governments can get huge amounts of money and have enormous flexibility in what they do with these dollars."

But these dollars are incredibly slow to get to people, requiring federal processes and the creation of new local programs. "It can take around a year and a half," says Kousky. "This is not an imminent-recovery vehicle; it's more for long-term reconstruction."

Disasters' impacts are not felt equally

While some may consider natural disasters such as fires, storms, and droughts as the great equalizers, the effects of—and the recovery from—such events can expose inequities.

"One thing we've been focusing on more recently is how a lot of low- and moderate-income households are disproportionately harmed and locked out of financial resources for recovery," says Kousky. "Disaster aid is more limited than one might assume."

Not only might lower-income households have less savings to tide them over in the event of a disaster, but they're often less able to qualify for

credit and loans to support them as they get back on their feet. They may also have more limited access to resources to apply for aid for which they might be eligible. In addition, the emotional and financial strain of recovery can lead to negative physical and mental health outcomes further down the line. "There are cascading impacts to well-being," Kousky says.

Recent work by Wharton's Risk Center has focused on private sector and public sector solutions that address equity. A 2019 Risk Center Digital Dialogue, soliciting policy recommendations from experts across the country, for example, took up the topic of improving disaster recovery among low-income households. And the Center itself is starting from the basics, says Kousky, for example, how can risk communication reach all populations, regardless of socioeconomic standing?

The Risk Center is helping test new tools to boost resiliency

Knowing that innovative approaches will be needed to effectively prepare communities and individuals for disasters to come, the Risk Center has a policy incubator that is testing these innovations in real-world scenarios.

In one project, they're working with New York City on improving recovery of low-income residents to escalating flood risk.

"We're focusing in particular on extreme rainfall events, which are going up and which New York and Philadelphia saw prime examples of this summer," Kousky says.

The program is piloting a new use of what's called parametric insurance. With this product, the insurer provides a payout as soon as a pre-defined

event or metric—say, a certain rainfall amount or wind speed—is met. Supported by a grant from the National Science Foundation through the Civic Innovation Challenge, the Risk Center is working with the Mayor's Office of Climate Resiliency and the Center for NYC Neighborhoods to pilot a parametric flood insurance policy that will allow for emergency grants to be made to households in need.

"The Center for NYC Neighborhoods would immediately get money to make resources available to people who have suffered as a result of the flooding," says Kousky. "The product is designed to solve two problems: One is the unmet needs problem, because even if someone has insurance it doesn't cover a lot of things. And the other is reducing the time between when a disaster hits and when dollars are made available. If you're talking about a low-income family that's already living on the edge, they can't wait for two months for recovery grants to come. This way they could get the money not two months after the event but two days after the event. That would be a huge deal."

Provided by University of Pennsylvania

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