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Protection Prevention Preparedness Response Resilience Recovery



CLIMATE FIXES? CALLS FOR GLOBAL GOVERNANCE

Myanmar security | Climate & Planning |
People at the heart of resilience | Rising
attacks on places of worship | Risk & BCM
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John Holcroft | Ikon Images

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Cover image: Daniel Mitchell

comment

On top of the millions of deaths and protracted health consequences brought about by this pandemic, Covid-19 is a particularly cruel crisis in that it isolates



and deprives people of the comfort they would normally derive from the affirming company of other human beings. As Lyndon Bird says on p8: "We are social animals. We need to get together to share thoughts, feelings, ideas, hopes, and sometimes complaints."

Of course, technology has helped with multiple ways of communicating that were unimaginable just a few years ago. But although many of today's virtual methods of communication are widely viewed as being here to stay, in some circumstances human contact is, quite simply, irreplaceable. Virtual interaction can never fully replicate the complex subtexts and nuanced cues when meeting another person face-to-face.

Words and body language are vital, as described in Jeannie Barr's exploration of communication and vocabulary used during emergencies. The choice of language and tone can be either helpful or detrimental in a crisis (p73).

On p64 Lina Kolesnikova examines how Covid-19 has disrupted working and shopping habits, as well as the ways we access healthcare and information. She says that the very essence of what we define as 'critical' infrastructure is being transformed. This brings new risks in terms of resilience and security, including in the areas of technology we have come to rely upon during Covid-19.

Design is another undervalued but essential piece in the jigsaw of humanitarian and emergency response disciplines. David Wales notes on p76: "As the meeting point between states and communities, public service agencies would greatly benefit from making design a standard approach."

The key lies in understanding people – their culture, fears, concerns, past experiences and predispositions. Michele Wucker calls this an individual's unique risk fingerprint (p44).

All of the above should be combined with a simple shift of focus onto the people dealing with – and affected by – a crisis, says Thomas Lahntaler (p50). Because, above all, we must not forget that crisis management is about people.

Climate change: Time to prepare

Alice C Hill and **Madeline Babin** say that we have little or no experience of the ferocity of the events that climate change is likely to spawn and that this unfamiliarity risks leaving us deeply unprepared. However, communities can make investments now to improve future outcomes – but we must act now

Humans have little or no experience with the ferocity of the events that climate change will likely spawn. That unfamiliarity risks leaving us deeply unprepared. But the signs are clear. Communities can make investments now to improve future outcomes.

For over three decades, the world has been on notice that climate change will bring greater destructive forces that wreak havoc. It's time to stop waffling and, instead, act now on preparedness.

On a sweltering day in June 1988 in Washington, DC, a government scientist with the US National Aeronautics and Space Administration (NASA), Dr Jim Hansen, raised

his right hand and swore to tell the truth. A soft-spoken man, Hansen had come to the US Capitol to testify on the reality of human-caused global warming before the Senate Committee on Energy and Natural Resources.

Taking his seat at the long table facing the Senators, he told them he had concluded with 99 per cent certainty that the year's record temperatures were not the result of a natural fluctuation in the climate. Rather, the growing concentration of pollutants such as carbon dioxide and other gases in the atmosphere resulting from human activity – in other words, the 'greenhouse effect' – was to blame. Seven years earlier, in the journal *Science*,

Hansen had predicted that the burning of fossil fuels could drive global average temperatures to increase by 2.5°C. In a statement to reporters following the second of what would become several congressional testimonies, he warned: "It's time to stop waffling... the greenhouse effect is here and is affecting our climate now."

Two decades after Hansen's testimony, in the face of global inaction to address climate change, the National Academy of Sciences undertook its own study designed to aid national security experts in assessing the security threats to the United States posed by climate change. The results of the study published in 2012 warned that it was prudent to: "Expect climate surprises in the coming decades, including unexpected and potentially disruptive single events... and for them to become progressively more serious and more frequent thereafter, most likely at an accelerating rate."

All these predictions have proven true, yet the United States continues to be set back on its heels when it comes to climatic events. Failing to prepare,

however, comes at a tremendous cost. It is time to address the growing risks proactively and that means investing in preparedness to ensure a safer future.

Early 2021 gave the United States a vivid example of how much the failure to prepare could cost. In February, a severe winter storm propelled the entire state of Texas – the largest state in the continental United States – into a state of emergency. The culprit? Extreme cold.

Repeated warning signs

Texas is no stranger to bouts of freezing weather. Over 120 years ago, Texas experienced record cold as temperatures plunged to 23 degrees below zero Fahrenheit in February 1899. Some 30 years later, in 1933, frigid temperatures tied this all-time record. In 1989, blistering cold hit again forcing the Electric Reliability Council of Texas (ERCOT), the energy grid operator for over 90 per cent of the state, to resort to rolling blackouts. In the wake of that disaster, the Public Utility Commission of Texas (PUC) recommended that all utilities: "Incorporate the

It is time to stop waffling and act on preparedness
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lessons learned during December of 1989 into the design of new facilities,” and to: “Correct defective freeze protection equipment prior to the onset of cold weather.” Texans failed to take heed.

Another freeze settled over the state in 2011. That year, as temperatures plummeted amid a bitter wind, the state’s power generators once again began to fail. Natural gas wells froze while coal plants faltered. Electrical companies turned to their reserve units to compensate for the surging power needs, and once diminished, Ercot again ordered rolling blackouts. More than three million Ercot customers were left without power when over a quarter of the state’s reserve power capacity failed in the freezing weather. After the event, the Federal Energy Regulatory Commission and the North American Electric Reliability Corporation issued a report advising the state to require operators to invest in additional ‘winterising’ of

A study published in 2012 warned it was prudent to: “Expect climate surprises in the coming decades, including unexpected and potentially disruptive single events... and for them to become progressively more serious...”

the energy infrastructure. Again, the state of Texas failed to heed the warning to protect itself against future extremes.

The Texas cold streak in February 2021 brought over a week of bitter conditions with temperatures dropping to -2 degrees Fahrenheit (-19°C) in some areas. This cold spell also bore the telltale signs of climate change. The polar vortex – the ring of winds circling around the North Pole – had weakened, causing cold air to shoot out from the Arctic. Scientists have found evidence that as climate change causes temperatures to rise in the Arctic, it has the ability to alter the polar vortex, which increases the likelihood that frigid Arctic air will escape to shock other parts of the planet.

The US National Oceanic and Atmospheric Administration (NOAA) recorded that as the polar vortex spewed the coldest air since 1989 across the central United States in February 2021, more than 60 all-time daily cold minimum temperature records were broken across the country in just six days.

With cold air and freezing wind gripping the state, the electrical grid failed. Without power, nearly 4.5 million residents plunged into prolonged darkness. Across the state, people went without heat in below freezing temperatures for several days. Over 14.6 million residents were left without safe water to drink when the cold temperatures caused pipes to freeze and then burst. And for those residents with water, the chronic power outages meant that thousands lacked the electricity needed to boil it and render it safe for drinking. Nearly 200 people died in the freezing conditions, some in their beds. At least 100 of these fatalities resulted from hypothermia.

Officials lamented how most of these deaths were preventable and: “Attributable to the fact that Texas simply could not ensure that electricity would stay on during a severe winter weather event.” In the absence of electricity, oil refineries and petrochemical companies released nearly four million pounds of extra pollutants.

One facility in Texas emitted 262,522 pounds of methane over just an hour-and-a-half owing to: “Weather related system failures.” Estimates of losses from the storm ran as high as \$130 billion, making it the costliest weather event in state history.

The lesson of Texas’s experience is that the failure to prepare for known risks, much less those heightened by climate change, carries heavy costs. Communities can no longer afford to postpone preparedness.

The 2021 freeze illustrates that if essential infrastructure fails during extreme cold, those failures cause cascading damage that fractures other vital systems. Most modern systems, including communication networks, financial systems and transportation networks, are wholly dependent on electricity to function. Safeguarding these sectors requires investing heavily in preparing energy infrastructure to withstand future severe weather.

But it’s not just cold that will damage critical systems, so too will other climate-fuelled extremes, including flooding and extreme heat. In 2012, when Superstorm Sandy drove a nearly 14-foot storm surge over lower Manhattan’s 12-foot flood barriers, causing an electrical substation to explode, the city that never sleeps was plunged into darkness. When the electricity failed, the transportation, water treatment and health sectors quickly collapsed. New Yorkers later learned that city planners had not accounted for the almost foot of sea-level rise the city had experienced since 1900 when it erected its flood barriers, allowing the swell of water to overwhelm the city’s defences with ease.

Likewise, new climate-driven heat extremes also threaten to lead to widespread damage. A 2021 study published in the journal *Environmental Science & Technology* found that the combination of blackouts caused by major grid failures and extreme heat: “May be the deadliest climate-related event” imaginable. The researchers determined that the potential for critical infrastructure failures during extreme weather is increasing, with the frequency of widespread blackouts rising over 60 per cent in the past five years. When these major grid failures occur at the same time as extreme heat, between 68 and 100 per cent of the affected population enters high risk of heat stroke or heat exhaustion.

The collision of new climate extremes with existing infrastructure is a recipe for disaster. The reality of a changing climate is that future weather events will continue to pummel critical systems, bringing extremes that surpass the historical conditions for which they were designed. As extreme weather events become more frequent and more intense, catastrophic system failures become more likely. Until communities build resilience to the mounting risk, climate impacts will continue to overwhelm vital infrastructure, inflict more damage and result in more lives and livelihoods lost.

So where should communities begin their work to ensure better outcomes?

First, they should incorporate considerations of climate change in all aspects of decision-making concerning infrastructure – from design and construction to operation and maintenance. This will reduce the number of ‘surprises’.

Next, they should invest in reducing damage. That’s what New England did after its clash with a polar vortex that fuelled a spate of extreme cold in 2014. After the storm, grid operators vowed not to let another polar vortex weaken the grid. The New England grid subsequently winterised its power systems and increased fuel availability to compensate during periods of extremely low temperatures. Operators implemented new winterisation requirements, including basic measures such as increasing insulation. The grid operators also created a winter reliability programme, which works to increase fuel reserves and bolster demand response capacity during times of extreme weather. This means that should

plants experience a surge in outages during a storm, existing reserves are sufficient to preserve residents’ lights and heat.

Japan has also worked to prepare vital infrastructure systems and basic services to ensure citizens have reliable power in a future of climate-fuelled extremes. The 2011 earthquake and subsequent tsunami spurred an energy revolution in the country, with the Japanese government establishing the National Resilience Programme to increase preparedness.

For the Japanese city of Higashi Matsushima, which suffered widespread flooding and loss of life in the wake of the earthquake, this meant rebuilding its energy infrastructure utilising decentralised renewable power and microgrids. Microgrids, which are interconnected distributed energy resources grouped into single, controllable entities, have the capacity to act independently, or as part of the larger grid system.

This built-in adaptability is not only useful during grid outages, but also in facilitating the integration of renewable energy. Using microgrids to supply power means that if the main grid experiences a failure, the city’s microgrid can supply power to all its residents for several hours, preventing widespread blackouts. The system also has the alternative capacity to divert power away from residential buildings to hospitals and the community hall for multiple days in the event of a disaster. Higashi Matsushima is now known as a ‘smart disaster prevention eco town’.

Dozens of cities have followed suit, turning to the country’s National Resilience Programme to fund investment in increasing the self-sufficiency and reliability of their energy systems.

Adoption and enforcement of strong building codes can also reduce damage. A 2020 study by the National Institute of Building Sciences found that adopting modern model building codes saves \$11 for every \$1 spent to fortify against earthquake, flood and wind, with a \$4 to \$1 ratio for wildfires. Yet in the United States, nearly two-thirds of jurisdictions have failed to put modern codes in place that provide minimum protection.

Early warnings

Another area ripe for investment is that of early warnings and emergency alerts, which save lives by allowing people to act in advance of disaster. The February freeze caught Texans off guard and unprepared. In the days before the blackouts, Ercot failed to issue any warnings to residents about potential widespread outages. As a result, citizens lacked the opportunity to gather the necessary supplies, chart evacuation routes, or plan for alternative supplies of energy to ensure that their oxygen machines and space heaters could remain active. Then, during the freeze, the state of Texas was unable to deliver crucial information to its citizens. At one point, in the midst of the crisis, Governor Greg Abbott instructed his constituents to refer to Google to figure out where to go and how to get access to warming centres in the freezing conditions. An early warning system might have saved lives and averted damage.

Early and accurate alerts are vital for ensuring communities have enough time to prepare. In 2020, Nicaragua demonstrated the value of early warning in giving residents time to act before catastrophe strikes. In November of that year, two category 4 hurricanes, Eta and Iota, rammed the country within the span of two weeks.

After a hurricane struck in 2007, the country had decided to prepare for ‘the unforeseen’, increasing the budget for its National System for Disaster Prevention, Mitigation, and Assistance by \$3.5 million and bolstering national early warning capabilities. Three days before the first storms hit in 2020, Nicaragua issued alerts to initiate evacuation procedures and pre-position emergency supplies, ultimately leading to six times fewer fatalities than the 2007 disaster.

Disasters have always posed challenges for communities. In 1736, Benjamin Franklin, the great American scientist and philosopher,

warned the citizens of Philadelphia against the dangers of fire with the adage: “An ounce of prevention is worth a pound of cure.”

That advice holds true today. Nations and communities must take heed and invest in protection against worsening extremes. Surprises, as the National Academy of Sciences has warned, will keep occurring, but it’s time to plan to be surprised.

In other words, it is now time to imagine the unprecedented threats that climate change will bring – bigger storms, greater temperature extremes, larger wildfires, more extreme precipitation, melting permafrost and sea-level rise – and prepare for the unfamiliar and unforeseen. CRJ

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