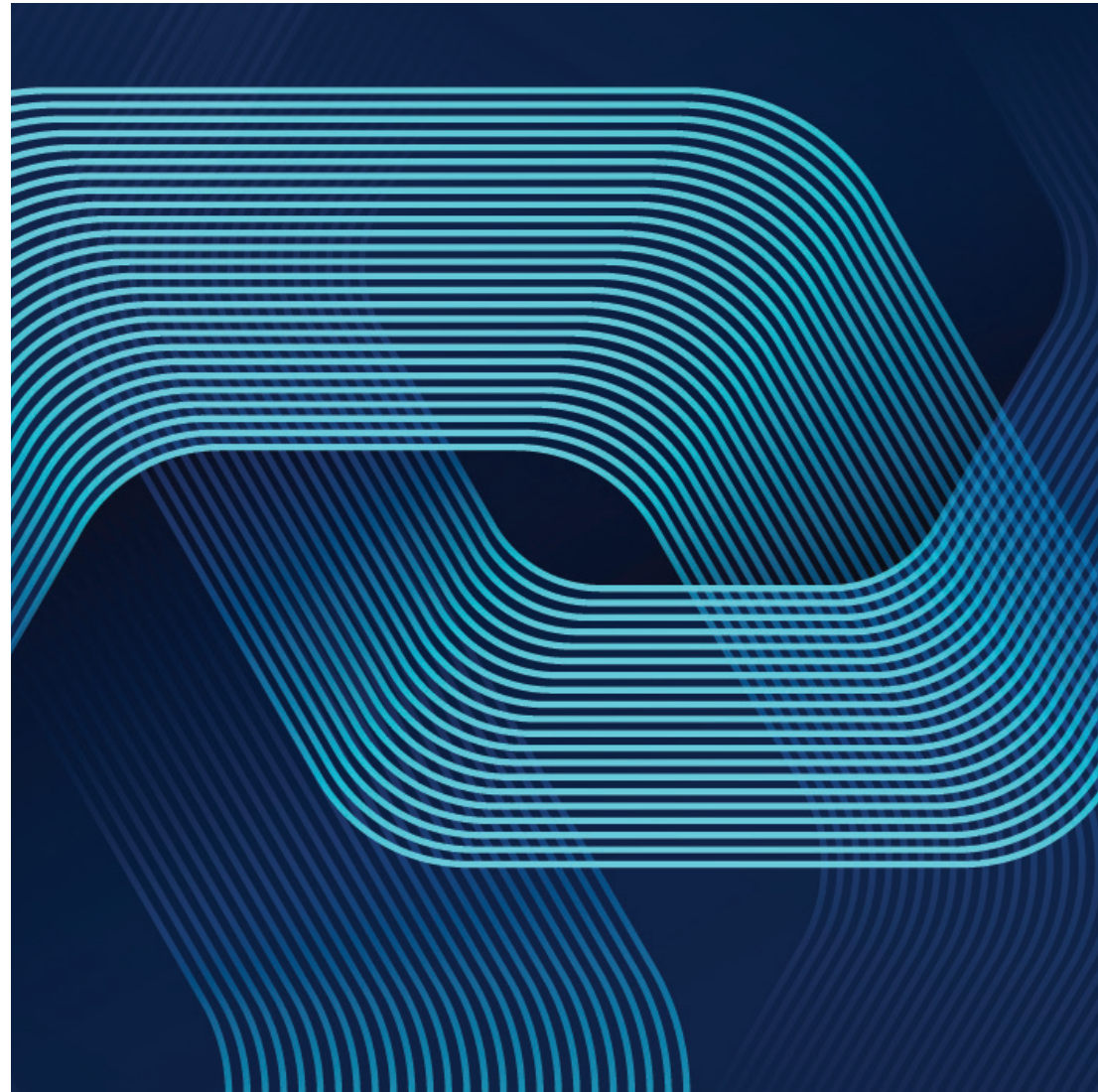# Preparing Governments for Future Shocks

Building Climate Resilience

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Syracuse University

IBM Institute for Business Value

NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

25TH ANNIVERSARY

IBM Center for **The Business of Government**

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Foreword

Government leaders increasingly agree that "rare and unexpected events" are now neither rare nor unexpected. Indeed, they are shocks—more frequent and more destabilizing. While governments were exposed to a host of mostly unforeseen challenges from the global pandemic, they have captured valuable lessons. Leaders understand where they need to concentrate their readiness efforts for "future shocks," carrying the momentum from rapid, pandemic-driven innovation into their preparation.

The IBM Center for The Business of Government and the IBM Institute for Business Value, in partnership with the National Academy of Public Administration (NAPA) and a range of other partners, launched an initiative last year to help government leaders further identify those core capabilities critical to building resilience. Collaborative action to address anticipated threats requires focus and cooperation across a broad ecosystem of partners and stakeholders. Each step forward helps build progress toward addressing major national and international priorities, including the Grand Challenges in Public Administration put forth by the Academy.

Over the past year, we convened a series of international roundtable discussions with global leaders from across the public, private, academic, and nonprofit sectors to capture lessons across multiple key domain areas:

– Emergency preparedness and response

– Cybersecurity

– Supply chain

– Sustainability

– Workforce skills

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In each of these domains, insights from the roundtables have helped to identify strategies and solutions for governments to address the challenges that lie ahead, by identifying a set of practical and specific recommendations for near-term implementation.

A recent roundtable focused on climate resilience, identifying capabilities through which government leaders and stakeholders can move forward. The session addressed the overall sustainability challenge, as well as three major topics:

– Clean energy transition

– Sustainable development (including land management)

– Water management

This latest report in our "future shocks" series, authored by Academy Fellow Chris Mihm, addresses how governments can strengthen their climate resilience. We hope this report—which summarizes the six imperatives that emerged from the expert roundtable—provides government leaders and stakeholders with a practical and actionable roadmap to address this critically important issue.

Six Imperatives For Governments to Strengthen Climate Resilience

– Strengthen capacity at the local level.

– Build cross-boundary partnerships, especially at local and regional levels, to enhance knowledge, share experiences, and strengthen resilience.

– Foster public engagement with a focus on equity.

– Manage risks of climate change and leverage opportunities from strengthening resilience.

– Invest in the green energy transition and climate resilience.

– Enhance the Federal Government's vital role in leading and supporting the nation's resilience efforts.

Introduction

The Intergovernmental Panel on Climate Change (IPCC) March 2023 report contained, once again, a dire and unequivocal warning:

"Widespread and rapid changes in the atmosphere, ocean, cryosphere, and biosphere have occurred. Human-caused climate change is already affecting many weather and climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people (high confidence). Vulnerable communities who have historically contributed the least to current climate change are disproportionately affected (high confidence)."[1]

Building resilience to climate change and other disasters can entail substantial upfront investments and difficult trade-offs to achieve long term sustainability. Still, through careful planning, broad public engagement, and with equity and environmental justice as core considerations, resilience efforts present genuine opportunities to strengthen climate resilience. This transformation will only come through a concerted effort by the public and private sectors, working with civil society organizations.

As noted by NAPA in its Grand Challenge on "Build Resilient Communities":

"(P)ublic agencies and administrators have an important role to play in building resilient communities. As this will require a crosscutting intergovernmental and intersectoral approach, public administrators can bring a diverse array of public, nonprofit, and private organizations together to develop strategies and implement programs. They can assist with mitigating and withstanding stresses, recovering, and applying lessons learned."[2]

To address this context, NAPA, the IBM Center for The Business of Government, and the IBM Institute for Business Value recently co-sponsored an expert roundtable discussion of climate resilience. Discussion focused on identifying capabilities through which government leaders and stakeholders can move forward.

Roundtable participants included a broad cross-section of experts with experience at all levels of government, the private sector, civil society, academe, and international organizations. Participants sought to identify specific and practical steps governments can take in the near term to build climate resilience. The identified steps—and specific recommendations that follow—do not constitute a consensus view or an exhaustive list of possible actions, but rather reflect a range of options offered by the experts.

Imperative 1: Strengthen capacity at the local level

The participants' overarching message was one that Katherine Barrett, Richard Greene, and Don Kettl listed as their first principle in their IBM Center for The Business of Government report, *Managing The Next Crisis: Twelve Principles For Dealing With Viral Uncertainty.* "All crises are local—but there is wide variation in how localities respond."[3] Climate change presents a global existential crisis, yet the effects are experienced differently across regions, communities, and individuals.

Local communities have vastly different capacities, needs, and risks that require differing types of resilience response. The roles and responsibilities among federal, state, local, and tribal governments for resilience need to be clearly defined to ensure coordinated capacity development and guard against gaps. One roundtable participant suggested that government needs a better way to leverage federalism as an asset, in order to develop flexible governance models for resilience that work across the levels of government.

Such an objective introduces complexity—federalism, at least in the U.S. context, allows for and even encourages stark differences in policy approaches across jurisdictions. These differences are the product of political choices that determine which issues receive priority attention and resources. Moreover, differing resilience capacities can result from decisions that reflect deep-seated equity issues.

Roundtable participants said local resilience efforts must be the foundation of any effective national response. Since the varying effects of climate change are most directly felt at local levels, such an approach can facilitate the brokering of agreements on specific actions. This raises a primary question: how can local efforts best be supported, augmented, and incentivized given the many competing priorities they face and limited resources available?

Roundtable participants suggested that local governments would benefit from additional support in identifying options to strengthen resilience. As just one example among many, local economic development incentives and zoning codes can incentivize the redesign of living areas to consider the natural environment and the risk of climate disasters more fully.[4] Local governments also can implement policies and programs designed to reduce energy consumption by creating systems and infrastructure that encourage non-wasteful solutions—including encouraging bicycling to reduces auto emissions.

Participants stressed that these are not new ideas—indeed they are being pursued with great success in many communities. In Europe and elsewhere, communities have demonstrated how climate adaptation can be integral to broader economic and local transformations, leading to revitalized and more livable urban areas. Information on how local policy and program tools can successfully be used to foster resilience needs wider capture and dissemination.

Local resilience efforts often suffer from a shortage of knowledgeable staff—and those in place may be nearing the breaking point due to overwhelming workloads. For example, one roundtable participant said that local emergency managers—whose responsibilities can span across multiple types of emergencies—are stretched way too thin. Multiple, overlapping shocks that require immediate response can overwhelm their abilities to plan and respond.

Roundtable participants identified creative efforts underway at regional, state, and local levels to build leadership and expertise on climate issues and resilience. For example, one expert pointed to the Institute for Georgia Environmental Leadership (IGEL) as an effort to build leadership capacity and working networks at the state level.[5] The IGEL provides annual leadership development programs and a collaborative network for participants to identify and implement shared environmental solutions. Over 600 environmental leaders across all sectors in Georgia have participated in the program.

Local governments recognize that their resilience efforts need to be "whole of government" initiatives, capable of cutting across local bureaucracies and enabling a collective effort in their jurisdictions. Designating Chief Resilience Officers (CROs) is one model increasingly being used to bridge organizational boundaries. Jorge Morales-Burnett and Rebecca Marx reported in their September 2022 Urban Institute paper that "The Rockefeller Foundation launched the 100 Resilient Cities (100RC) program in 2013 to transform city governments, specifically by establishing the role of chief resilience officer—a senior leader in city government working to break down silos to build a more resilient city."[6] Building on these city-level efforts, one local government roundtable participant said that some state-level CROs in the southeastern United States now meet informally to share information and experiences that can mutually build capacity.

Key actions for leaders to take

– Work closely with local governments to understand specific capacity needs and how they can be met.

– Build communities of practice to develop local expertise in resilience planning and implementation.

– Share examples of successful local practices that have wider applicability, particularly in the use of local economic development incentives and zoning codes.

Imperative 2: Build cross-boundary partnerships, especially at local and regional levels, to enhance knowledge, share experiences, and strengthen resilience

Climate disasters and their spillover effects have no respect for geographic and political boundaries. Resilience initiatives likewise often need to cross jurisdictions to provide for coordinated efforts response and to share knowledge and experience. Regional partnerships to protect and enhance the Great Lakes, the Chesapeake Bay, and the Everglades are examples of broad, multi-jurisdictional efforts.

Roundtable participants highlighted examples that illustrate the value of partnerships that bring together stakeholders across sectors to identify and address climate issues and to strengthen resilience. A local government official pointed to the Southeast Florida Regional Climate Change Compact (The Compact), a partnership between Broward, Miami-Dade, Monroe, and Palm Beach Counties in Florida, as an example of collaboration across local governments.[7]

The Compact seeks to "work collaboratively to reduce regional greenhouse gas emissions, implement adaptation strategies, and build climate resilience across the Southeast Florida region." Its efforts center on sharing tools and knowledge, increasing support and political will, and coordinating action.

Another roundtable participant observed that the Ten Across (10X) initiative represents one of the geographically broadest regional collaborations.[8] The 10X initiative covers the U.S. Interstate 10 corridor that runs across the southern United States, from Los Angeles, California to Jacksonville, Florida. According to 10X, "The U.S. Interstate 10 corridor (is) the premier observatory for the future, one which presents the challenges of the 21st century in their highest relief. Together with our growing network, we engage the conditions found within this transect to reveal our collective capacity to create a more resilient future."

Taking advantage of today's data availability and technology to foster data analysis and sharing on a greater scale can help governments to achieve the substantial transformation and innovation required for sustainability. Digital technologies can enable a new model of sustainability governance and action, where the private sector, governments, and local communities work in collaboration as partners.

Key actions for leaders to take

– Encourage regional collaboration that maps to cross-boundary climate risks.

– Use data to identify collaboration opportunities to avoid duplicative efforts and pinpoint gaps.

– Gather and share effective practice on collaborations, particularly on the models employed and use of dashboards to manage performance.

Imperative 3: Foster public engagement with a focus on equity

Resilience planning almost inevitably requires balancing competing interests and priorities, leading to results that differ across communities. Roundtable participants suggested that water-related issues (e.g., floods from too much and droughts from not enough) provide countless illustrations of how highly contentious issues can stall needed progress at key decision points. Experience has shown that the path to equitable solutions involves community-based multistakeholder forums to discuss and balance different interests.

Participants noted that evidence reflects that in general, communities that have contributed the least to the climate crisis often suffer the most from climate disasters, and that the needs and views of those communities must be at the center of resilience discussions. Historically, marginalized communities often have low levels of trust in official pronouncements, which makes engagement and communication challenging. Overcoming this low level of trust—well-founded based on histories of mistreatment and neglect—requires active listening, sensitivity, and a genuine commitment to address equity concerns.

At a minimum, participants noted that governments at all levels need to ensure that resilience initiatives do not reinforce existing inequalities. More broadly, resilience initiatives grounded in well-established public engagement strategies and human-centered design approaches offer proven paths for ensuring that voice, access, and representation are afforded to all segments of a community.

Government communication strategies need continued development in sophistication and targeting. Risk and disaster communication are well recognized disciplines. However, governments at all levels need to do more in key areas, such as incorporating insights from behavioral science on how to structure choices into communication strategies.

Communication strategies also need to address speaking to the public in a language that leads to action. For example, references to "100-year floods" may give a false sense of security rather than promote resilience efforts. Expanding the use of "compelling stories" into resilience communication—stories that make climate change personal and identifiable to the public rather than abstract and technical—also contribute to effective communication. For example, one participant suggested that "our roads flood at high tide and here is what it looks like and what the immediate effects are" was a far more compelling message than "globally, we are at 1.1C and seem certain to get to at least 1.5C."

Given the long-term and fundamental changes required to live sustainably in an era of climate change, roundtable participants underscored the need to build awareness into education systems from an early age. Participants suggested establishing multisector partnerships, including with academia, to develop more robust curricula on sustainability from K-12, community colleges, and higher education.

Key actions for leaders to take

– Center equity issues in resilience considerations.

– Use stories and behavioral science insights to create communication strategies that build public understanding and support for action on resilience.

– Create public engagement strategies that involve the public in all stages of resilience planning, decision making, and implementation.

Imperative 4: Manage risks of climate change and leverage opportunities from strengthening resilience

Given the scope and consequences from climate change, a "business as usual" path forward is clearly unacceptable. Nonetheless, responding to the consequences of climate change with clean energy, water, and resilience initiatives inevitably requires trade-offs. Concerted risk management strategies will help governments to understand and manage such trade-offs. Data-driven climate modeling using AI and other tools, such as dashboards, can drive understanding of evolving and interconnected climate risks and their multifaceted consequences.

Risk management provides decision makers and the public with clear pictures of the risks and expected consequences from climate change, as well as the opportunities from improved resilience. As just one illustration among many, roundtable participants pointed to water risk management vulnerability assessments—specifically, the importance of communicating to the public and businesses, including the insurance industry, and the expected financial impact from climate change as shown by the assessments.

Effective risk management also considers synergies and "spillover" effects—both positive and negative—of resilience initiatives. For example, promoting walkable urban areas can have major economic and social benefits that extend well beyond energy savings. On the other hand, rapidly moving to electric vehicles can further stress already overburdened electric grids. Identifying and understanding secondary effects will help governments to manage risks effectively.

Risk must be continuously monitored and reassessed as needs change and response strategies evolve. According to the March 2023 IPCC report:

"The effectiveness of adaptation, including ecosystem-based and most water-related options, will decrease with increasing warming. The feasibility and effectiveness of options increase with integrated, multi-sectoral solutions that differentiate responses based on climate risk, cut across systems and address social inequities. As adaptation options often have long implementation times, long-term planning increases their efficiency. (high confidence)"

Key actions for leaders to take

– Widely share information on the methodologies, technology, and data used in risk management.

– Fully consider the potential positive and negative spillover effects from resilience initiatives.

– Develop case studies and guidance on how specifically to use the results of risk assessments to inform planning and guide decisions.

Imperative 5: Invest in the green energy transition and climate resilience

Roundtable participants discussed financing issues in two related ways: direct funding and structuring investment incentives. As a major step forward, the 2021 federal Bipartisan Infrastructure Law (BIL) provided $550 billion through 2026 in federal funding for infrastructure, including roads, bridges, and mass transit, water infrastructure, resilience, and broadband.

Moreover, the federal government will spend about $200 billion this year on research and development (R&D). Federal R&D spending is vital to a green energy transition. One roundtable participant said that climate-related, federal R&D funding is particularly important because much of the technology needed to complete the green energy transition is not yet available. The Department of Energy's Office of Clean Energy Demonstrations was suggested as an important office in accelerating the green energy transition.[9] The Office's programs include "investments in clean hydrogen, carbon management, advanced nuclear reactors, long-duration energy storage, industrial decarbonization, demonstrations in rural areas and on current and former mine land, and more." The BIL provided $21.5 billion to support large-scale clean energy demonstration projects.

The Academy, in its Grand Challenge on "Steward Natural Resources and Address Climate Change," observed that "Public agencies at all levels of government have a role in funding clean energy R&D and spinning new technologies off to the private sector. These technologies can help reduce carbon dioxide emissions and mitigate climate change risks."[10]

The private sector can be a constructive partner in the transition to clean energy and strengthening resilience. Beyond the funding available through the BIL for projects undertaken by the private sector, roundtable participants said a key task for government involves understanding how to work with the private sector, and to "get the incentives right" for broader private sector investments.

As one participant said, trillions of private sector dollars are available for investment in the right projects. The Inflation Reduction Act (IRA) was mentioned as a major positive step in creating new investment incentives. In addition to tens of billions of dollars in direct spending, the IRA contains about two dozen tax provisions to incentivize the transition to green energy, with a special focus on equity issues.

Roundtable participants discussed the need to better budget for risk, especially climate risks. They noted the Biden administration has made important efforts in this regard that serve as a firm foundation.[11] The administration shows the budget and revenue implications of climate change across numerous categories for federal programs. For example, the FY24 budget shows illustrative projections for increased expenditures under several climate scenarios.

Key actions for leaders to take

– Reinforce mechanisms that connect specific local resilience funding needs to public and private sources.

– Work with the private sector to understand how spending, tax policies, regulations, and government contracting can be used to incentivize private sector investments.

– Budget for climate risk.

Imperative 6: Enhance the Federal Government's vital role in leading and supporting the nation's resilience efforts

As shown throughout this summary, the federal government has important and overlapping roles in leading, incentivizing, supporting, and facilitating state and local resilience initiatives. But to fulfill these roles, roundtable participants noted that the capacity of the federal agencies at the center of government to direct and coordinate efforts across the federal government, and with state and local governments, needs to be strengthened.[12]

Underscoring the need for action, the Government Accountability Office (GAO) issued its most recent bi-annual High Risk List on April 20, 2023.[13] Limiting the federal government's fiscal exposure by better managing climate change risks, first added to the list in 2013, remains on the 2023 list. GAO identified actions urgently needed in the federal government's roles as (1) insurer of property and crops, (2) provider of disaster aid, (3) owner or operator of infrastructure, (4) leader of a strategic plan to coordinate federal efforts, and (5) provider of data and technical assistance to federal, state, local, and private sector decision makers.

Climate change and resilience efforts obviously do not align neatly with governments' organizational silos. Roundtable participants noted that crosscutting problems require networked and sophisticated responses. Organizing federal service delivery along the lines of "life experiences" rather than federal program structures and administrative processes, as the Biden administration customer experience (CX) intends, was seen as a positive step.[14] Recovering from a natural disaster is one of the administration's targeted life experiences. Human-centered design strategies inform the CX life experiences projects.

Roundtable participants noted that the federal government has broad experience with successful policy development through interagency collaboration, but much less so with interagency collaboration on implementation. Yet the evolving federal role in supporting resilience efforts increasingly requires the federal government to assume central roles in both policy and implementation. The implementation efforts of the Interagency Council on Homelessness, the federal Permitting Council, and Trusted Workforce 2.0 to reform the personnel vetting process show examples of interagency implementation collaboration that can provide models for other federal efforts. In all cases, an implementation team with dedicated resources, a clear plan, and public performance dashboards can drive progress.

The federal government has a broad range of policy tools to spur resilience. For example, each year the federal government spends over $600 billion on contracts—and billions more are spent by state and local governments. Roundtable participants said that this enormous buying power presents a powerful opportunity

to change the marketplace if green energy, water and land management, and resilience are systematically embedded in procurement decisions and contracts.

The hundreds of billions of dollars in grants that the federal government sends to states and local government each year provide additional opportunities to incentivize and support resilience efforts. Grants programs that match state and local funding commitments enable use of federal funds to incentivize and leverage state and local investments. Federal agencies also need to continue to explore creating grants that fund regional initiatives across state and local boundaries. Participants suggested that funding for regional watershed protection presents reflect especially ripe opportunities.

Grants requirements can also create incentives for resilience. For example, GAO reported in 2019, is "requiring building codes and (design)

standards based on the best available information for infrastructure built or repaired with federal funds."[15] The federal government should likewise aggressively use its grants and regulatory waiver authority to encourage experimentation and flexibility among state and local governments. Waivers should come with clear performance standards and strong evaluation and reporting requirements to build knowledge and ensure accountability, and to help communities increase their resilience to climate disasters.

Roundtable participants said the federal government also should limit disincentives to resilience. Efforts to reduce the administrative burdens imposed in applying for, implementing, and reporting on grants need to be strongly encouraged.

Federal efforts to support and incentivize local initiatives must also account for vastly uneven capacity among localities. While discretionary federal grants (i.e., those where the grantee must apply and be selected to receive the funding) constitute a subset of overall grant funding, roundtable participants said that such grants can help leverage government's resources to promote sustainability. But many local governments, especially smaller ones, may lack the staff and the knowledge needed to apply for federal grants. Resource-constrained local governments must carefully weigh the trade-offs of the time and effort needed apply for a grant, the likelihood that their application will be approved, and the costs of applying.

Agile regulatory processes can drive change and foster resilience. In 2023, the Academy and the Project Management Institute presented an "agile regulatory framework" for federal agencies to use in streamlining and reforming regulatory practices.[16] The administration issued an Executive Order in April 2023 to modernize the regulatory review process.[16] Among other things, the order seeks to create a more transparent, inclusive, and publicly engaged regulatory process.

The federal government also has a central role in conducting and supporting research on climate change resilience. Roundtable participants said that the federal government is best positioned to organize a national research agenda that identifies effective practices across the public and private sector, and how they can be scaled. The U.S. Climate Resilience Toolkit and case studies provide a good example of information sharing intended to spur innovation.[17] In addition, the federal government can facilitate innovation by compiling and broadly disseminating the results of state and local projects done under federal waiver authorities.

Finally, individual federal agencies most directly involved in resilience efforts can ensure that their programs fully support local and regional resilience initiatives. For example, the U.S. Army Corps of Engineers' water infrastructure projects that address water quantity and quality are major parts of successful local resilience water efforts.

Key actions for leaders to take

− Strengthen the federal capacity to support state and local resilience efforts.

− Use waivers—with rigorous evaluation requirements—to drive change and generate innovative approaches.

− Ensure federal procurements foster resilience.

− Reduce administrative burdens throughout the grants process.

− Create multistate, regional grant programs, especially for watersheds.

Conclusion

Despite clear evidence of the damaging consequences that climate change already has on individuals and communities across the planet, nations around the world are not on track to meet internationally agreed-upon targets to limit global temperature rise and transition away from dependency on fossil fuels.

Governments at all levels need to continue to build capacity, create partnerships, share knowledge, and strengthen resilience strategies, including the transition to green energy, sustainable development, and more effective water and land management.

While the benefits are large, building resilience can be costly and difficult. As one expert noted, governments do a much better job in addressing acute problems than chronic problems. The chronic is always easy to postpone until another day, given competing immediate priorities. But the climate crisis will no longer wait for another day.

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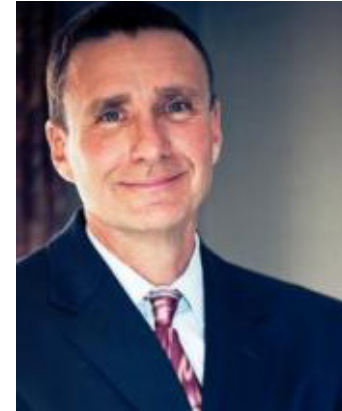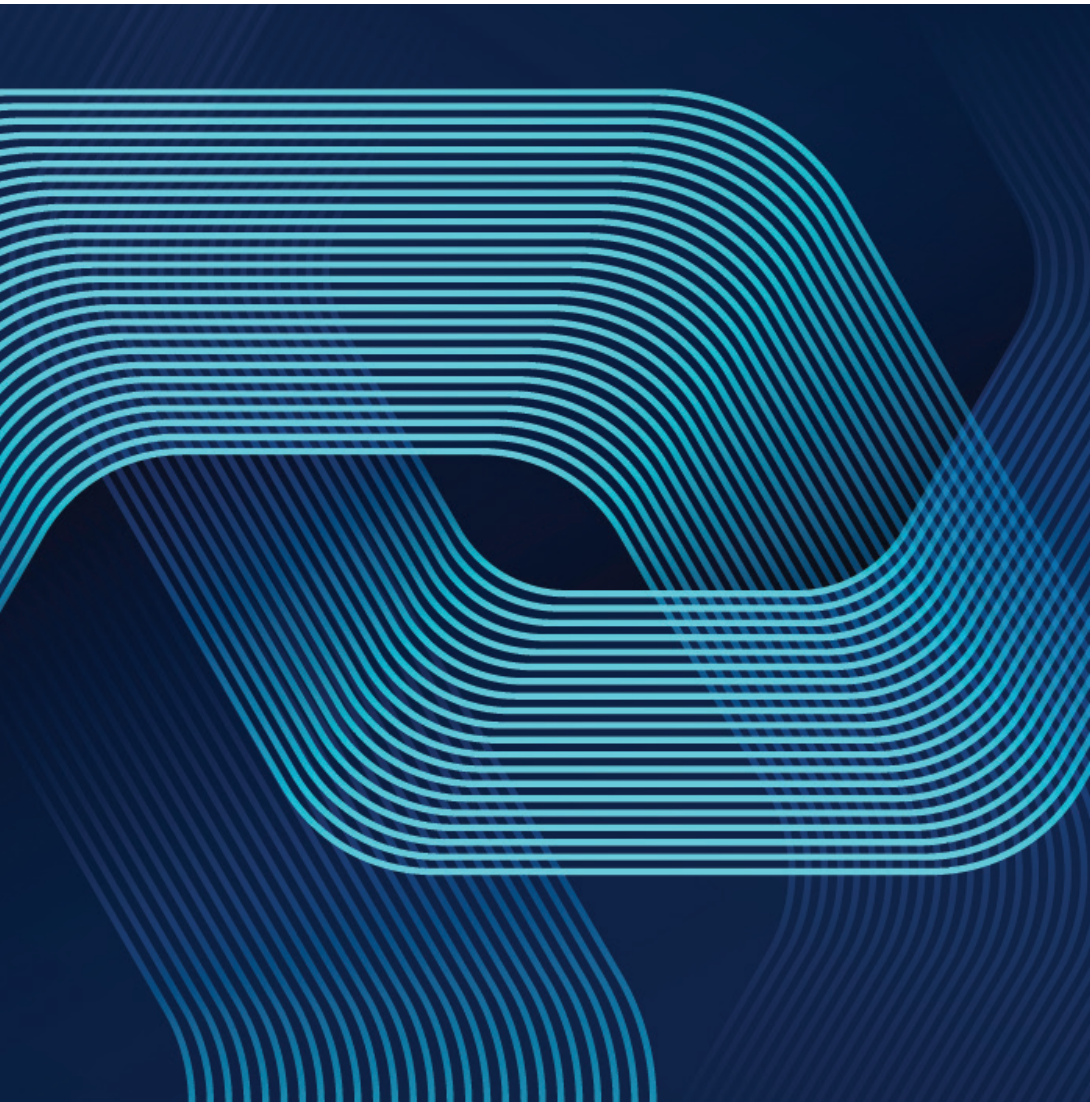
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