

Solving the Climate Crisis: Key Accomplishments, Additional Opportunities, and the Need for Continued Action

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Before the

Select Committee on the Climate Crisis

*United States House of Representatives
Second Session, 117th Congress*

Thank you, Chair Castor, Ranking Member Graves, and members of the committee for inviting me to testify before you today about current and future steps to combat climate change. My remarks will focus on actions the federal government could take to prepare for worsening climate impacts.

With the Infrastructure Investment and Jobs Act and the Inflation Reduction Act, Congress has made historic investments in both adaptation and mitigation. Those efforts deserve recognition. They put the nation on the path to reduce emissions by around 40 percent from 2005 levels in 2030 and include important investments in resilience. This Committee has also produced excellent recommendations for how the United States can better prepare itself moving forward. But more work remains to be done.

The United States needs to get smarter about risk reduction and resilience to prepare for worsening climate impacts in the face of rising temperatures. U.S. adaptation efforts have suffered from a lack of resources and attention. That needs to change. Climate-exacerbated extremes come at a huge financial cost. They also take lives, undermine public health, and threaten national security.

Damage from climate change is on the rise

Americans can look out their windows and know that climate change has arrived. Once considered a threat for the distant future, the impacts from rising temperatures have manifested across the country.

Bigger wildfires, heavier precipitation causing “rain bombs,” deeper droughts, greater temperature extremes, and sea-level rise have pummeled all fifty states and its territories.

In late September, Hurricane Ian struck. Its rapid intensification as it approached Florida served as a wake-up call for how climate change can dramatically worsen extreme weather events. The storm is expected to be the second costliest insured loss after Hurricane Katrina in 2005. Preliminary assessments estimate around \$100 billion in overall economic losses, with only about \$60 billion insured.

Hurricane Ian is just the latest in a string of disasters in 2022. As of October 11, 2022, according to the National Oceanic and Atmospheric Administration, fifteen separate weather and climate disasters with losses exceeding \$1 billion have battered the United States this year. In addition to Hurricane Ian, Americans have suffered:

- Hurricane Fiona in September, which plunged much of Puerto Rico into darkness;
- a derecho in July, which ripped across five states in the Midwest, turning the sky green and carrying wind gusts over 90 miles per hour;
- a storm in May that rained golf ball-sized hail across Minnesota, South Dakota, and Wisconsin;
- continuous drought in the western United States, causing water shortages; and
- wildfires in New Mexico, among others.

Billion-dollar loss events are on the rise. Every decade since 1980 has witnessed an increase in the number of billion-dollar disasters, with an annual average of approximately seven such catastrophes. In recent years, the number of events has grown significantly. 2022 marks the eighth straight year with at least ten billion-dollar weather and climate-related disasters. 2020 and 2021 broke records with twenty-two and twenty billion-dollar events respectively.

The frequency of these events matters. When disasters strike more often, communities, first responders, and households have less time to recover. According to the nonprofit Climate Central, the time between billion-dollar disasters has declined. In the 1980s, the average time between billion-dollar disasters was eighty-two days. By the 2010s, that number had dropped to twenty-six days. In 2020, the average declined to fourteen days.

More climate extremes are in America's future

The world is not on track to contain global average temperature rise to 1.5°C above preindustrial times, the aspirational goal to which virtually all nations agreed in the 2015 Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC). Although international efforts have bent the emissions curve downward, the curve has not bent sufficiently to contain warming to 1.5°C. To keep warming below this limit by 2100, the UN Intergovernmental Panel on Climate Change determined that human-caused greenhouse gas emissions should reduce 45 percent by 2030 with net-zero emissions achieved by 2050.

Just last month, nations gathered yet again for the UNFCCC Conference of the Parties—the twenty-seventh such conference. With the passage of the Infrastructure Investment and Jobs Act and the Inflation Reduction Act, the United States arrived to the negotiations with a strong commitment to reduce its contribution to greenhouse gas emissions. Even that commitment can't turn the tide.

The United Nations has calculated that the planet is on track to experience global average temperature rise between 2.1°C and 2.9°C. The United Nations Environment Programme has concluded that there is

“no credible pathway to 1.5°C in place.” Indeed, the World Meteorological Organization estimates there is a 50 percent chance that temperatures may temporarily reach 1.5°C in the next five years.

Exceeding the 1.5°C goal could lead to irreversible climate impacts, including the loss of some ecosystems. It would dramatically increase the risk of extreme weather events, with every tenth of degree of warming bringing ever-worsening impacts.

Catastrophic climate harm will not spare the United States. According to the latest draft of the congressionally-mandated Fifth National Climate Assessment, climate change threatens “the things Americans value most.”

The nation should increase preparedness for climate extremes

To jumpstart preparedness, the nation should embark on seven essential actions:

- 1. Create a national adaptation strategy.** The federal government should develop a national adaptation strategy and agenda, including an implementation plan to support it.

The United States has become an outlier among developed nations in its failure to adopt a national strategy for adaptation. Canada just issued its final draft. New Zealand issued one earlier this year. The Netherlands has had a national adaptation plan since 2007, Russia since 2019. China revised its 2013 strategy this year, establishing a goal to become a climate-resilient nation by 2035. In the absence of a national plan, individual federal agency efforts risk failing to effectively reduce the nation’s climate risk.

The national adaptation strategy should aim to increase climate risk planning among state, local, and tribal governments as well as the private sector. Core elements should include:

- **Prioritization of environmental justice considerations.** The national adaptation strategy should drive closure of the environmental justice gap. It should identify ways federal programming can alleviate the disproportionate impact climate-fueled disasters have on disadvantaged communities, people with disabilities, older people, and children.
- **Identification of a mechanism to prioritize investments.** The national adaptation strategy should identify a mechanism for the federal government to make choices on how to allocate limited resources. Without a system to prioritize investments, agencies may spread monies across many smaller projects rather than making the necessary investments in more impactful lasting endeavors. As the Government Accountability Office (GAO) has noted, significant climate risks may go unmanaged because “climate change cuts across agency missions and presents fiscal exposures larger than any one agency can manage.”
- **Promotion of cross-border, regional, and multi-hazard planning.** The national adaptation strategy should promote risk-reduction programs that involve regional protection across multiple communities and multiple hazards. Climate change honors no borders. That makes regional and cross-border planning essential. Communities should also prepare for multiple hazards like drought accompanied by extreme heat and wildfire.

- **Promotion of nature-based solutions.** The national adaptation strategy should promote efforts to restore, augment, and deploy natural infrastructure. Forests, wetlands, marshes, and floodplains help communities manage their flood risks. They also act as a sink that absorbs carbon dioxide emissions while providing natural spaces for human enjoyment. The acceleration of climate change threatens these areas. The federal government’s encouragement could help communities make investments now that will yield protection in the future.
- **Consideration of sudden climatic changes.** The national adaptation strategy should include consideration of sudden climatic changes. For example, scientists have recently warned that a sudden collapse of the Thwaites Glacier in West Antarctica could raise global sea levels by two feet.
- **Focus on reducing power outages.** The national adaptation strategy should promote planning to ensure the reliability of the electric grid. Climate-worsened extremes have increased power outages across the nation. When power fails, it causes cascading failures in other critical infrastructure—transportation, water management, communications, and health care, among others.
- **Harmonization of climate adaptation and mitigation efforts.** The national adaptation strategy should promote consideration of how adaptation and mitigation efforts may intersect. For example, investment in clean energy solutions may cause unintended consequences. Construction of an energy-efficient building may contribute to emissions-reduction efforts. However, if the building burns in a climate-worsened wildfire, more emissions will result from the new construction to replace the building. Similarly, increased deployment of solar power reduces emissions, but wildfire smoke can dramatically reduce the effectiveness of solar panels. In California, wildfire smoke cut solar power production during peak hours by 10 to 30 percent in 2020. If people turn to diesel-generated power to make up for the lost energy, emissions can increase, thus undermining mitigation efforts.
- **Adjustment of cost-benefit analysis for federally-supported projects.** The national adaptation strategy should encourage the adjustment of cost-benefit analysis of federal investments to reflect the future benefits of resilience. Existing cost-benefit analysis may not accurately account for the benefits of resilience measures that will protect against climate impacts in the future. It also may tend to favor investments based solely on economic return rather than benefits to people and thus favor richer communities. Adjustment of the analysis could result in longer-term protection for more people.

To drive implementation of the strategy, the federal government should:

- **Establish a set of climate scenarios to guide planning.** The federal government should develop climate change scenarios for use across the government and in planning with state, local, territorial, and tribal governments as well as the private sector. Use of common planning scenarios will help increase awareness and understanding of the risks and the range of possible mitigation solutions.
- **Develop replicable planning exercises.** The federal government should develop scenario-based planning exercises, including table-top exercises to help the federal

government, communities, and regions understand and plan for their climate risks. To the extent possible, these exercises should include advanced model projections that reflect downscaled impacts. During the Obama administration, the Federal Emergency Management Administration's (FEMA) exercise division developed a pilot project that offered exercises based on scenarios to several communities to assist their planning efforts. Norfolk, Virginia, credits the pilot project with contributing to its robust climate planning efforts.

- **Conduct regular national climate risk exercises.** To test the strategy as well as national preparedness, the federal government should regularly conduct national-level exercises focused on climate risks. These exercises would serve as educational tools, base-line setting mechanisms, avenues for identifying and closing gaps, and opportunities to build relationships.
- **Focus on workforce development.** The federal government should identify ways to increase understanding of climate risks and require consideration of climate risks in training, operations, and planning within agencies, including within the military and intelligence agencies. Without a well-informed workforce, the threats from climate change may go unrecognized or unappreciated.

2. **Provide technical assistance to address climate risk.** The federal government should provide reliable climate risk information in an ongoing, user-friendly format. Although the federal government generates enormous amounts of data and information concerning climate change, it still lacks adequate guidance, decision-making tools, and other resources to assist decision-makers at the scale necessary to foster widespread resilience planning. As the GAO recently noted, “federal, state, local, and private sector decision-makers may be unaware that climate information exists or may be unable to use what is available.”

In providing technical assistance regarding climate risk, the federal government should:

- **Create robust community-level and parcel-level risk mapping.** The federal government should provide—as a public good—risk information on a sustained basis. Communication of climate risk is essential for planning efforts. Although the Biden administration has renewed efforts to provide risk information, the federal government should provide up-to-date information on hazard risks, including those from climate change. Right now, that information is difficult to access. Some communities resort to hiring outside consultants for expertise. Private philanthropy has also sought to fill information gaps. The current patchwork approach risks leaving communities and households behind.
- **Designate a lead agency as the point of contact to assist communities in planning for climate risk.** The federal government should designate one agency as the coordinating agency and create a one-stop access point for obtaining federal assistance. Federal agencies have established numerous programs to assist communities in preparing for climate change. They have not, however, made it easy for communities to understand what is available and how to access it. Because no single entity coordinates federal efforts, community leaders have to contact multiple agencies and comply with multiple—sometimes conflicting—application requirements.

- **Develop a cadre of climate risk advisors.** The federal government should recruit and train climate risk advisors to provide expert climate risk advice to support state, local, territorial, and tribal governments in their planning as well as to assist private sector owners and operators of critical infrastructure to prepare for escalating threats.
3. **Promote development of climate-resilient building codes.** The federal government should work with model building code organizations to inform development of model building codes that account for future climate risk. Creation and adoption of such standards for climate-worsened hazards could lead to substantial savings for the federal government in damage averted and lives saved.

Research from the National Institute of Building Sciences has determined that every \$1 spent complying with disaster-resistant building codes can avert \$11 in damages. FEMA estimates that adding features to protect against natural disasters adds little to the cost of construction—an average of 1 to 2 percent of the total building cost. Despite the risk-reduction benefits of stronger building codes, 65 percent of cities and towns have failed to adopt modern disaster-resistant codes. Moreover, even if these jurisdictions have adopted the most recent model codes, the codes likely do not reflect the future risks from climate change.

4. **Promote better land-use choices.** The federal government should conduct an analysis to determine how it can improve local land-use decisions through incentives or withdrawal of federal investment. For example, the federal government could condition grant funding on demonstration of more ambitious efforts to reduce development in areas vulnerable to climate impacts.

One of the hardest issues facing the nation with regard to climate impacts is that some land may become uninhabitable as a result of rising temperatures. To the extent the federal government provides support for new development in at-risk areas, it may inadvertently expose people and property to greater harm.

The federal government should also end its practice of underwriting new development in at-risk areas. Congress has already acted, albeit in a limited way, to restrict federal subsidies for development in risky areas. In the 1970s and 1980s, Congress realized that federal support of development on high-risk coastal barriers did not make economic sense. The Coastal Barrier Resources Act of 1982 (CBRA) makes certain areas ineligible for federal investments and financial assistance that would encourage development in designated areas. This means that those who want to live and invest in those areas bear the full cost of development and rebuilding after a disaster.

5. **Prepare for possible changes to property insurance availability and affordability.** The federal government should increase its efforts to identify ways to ensure the continued availability and affordability of private insurance. As a result of increased wildfire activity in California and increased storm frequency in Florida, Texas, and Louisiana, homeowners have already seen dramatic rises in premium rates as well as shrinkage in private property insurance availability. If private insurers choose to exit the property insurance market, the federal government may find itself the insurer of last resort.

- 6. Improve emergency preparedness for concurrent and consecutive disasters.** The federal government should amplify efforts to assist critical infrastructure owners and operators with understanding their climate risk and what they can do to reduce that risk. With climate change, disasters may occur in several locations concurrently or close in time.

The nation should plan for and acquire the capabilities to respond to simultaneous disasters by creating greater redundancy, increasing stock-piling, and enhancing mutual aid agreements. The federal government should also conduct research on the efficacy of early warning systems and promote nationwide best practices to achieve an easy-to-understand uniform system. Modelling of failure points for interconnected infrastructure could inform climate scenarios and exercises offered by the federal government.

- 7. Improve planning for security and migration risks driven by climate change.** The federal government should increase planning for the security risks posed by climate change. Although the nation's key strategic security documents acknowledge the risks posed by climate change, robust planning for those risks has not followed. Critical components of this work include:

- **Preparing for changes in the Arctic.** The federal government should accelerate adaptation efforts in the Arctic. Among other challenges, ecotourism, damage to infrastructure from melting permafrost and sea-level rise, resource competition, and the escalation of global security tensions within the region will place far greater demands on federal resources.
- **Planning for climate-driven displacement and migration.** The federal government should develop strategies to assist both those that will be on the move and the communities that will receive them. Every year, climate-worsened events, like the flooding that resulted from extreme precipitation in Houston in 2017 or the wildfires in California that same year, displace Americans from their homes. Increased migration, both within the United States and globally, will affect homeland security. Screening for and reducing climate risk should be essential in international development work.

Thank you for the opportunity to speak with you today. I look forward to answering any questions you may have.