

Principles for Natural and Nature-Based Resilience Measures

• **Protecting and restoring natural infrastructure, such as wetlands, dunes, and riparian corridors, can enhance resilience of human communities to climate-fueled disasters and provide critical co-benefits to society.** Natural and nature-based approaches (e.g., living shorelines and constructed oyster reefs) should be prioritized for hazard mitigation because of their benefits for water and habitat quality. They should be used in combination with or as an alternative to gray infrastructure wherever feasible.

• **Investing in risk reduction now can produce large savings in the long term.** Investing in risk reduction measures well in advance of floods, hurricanes, wildfires, and other hazards provides better outcomes for communities than rebuilding post-disaster. It is estimated that for every \$1 spent on risk reduction activities, the United States saves \$6 in disaster costs, producing large savings for taxpayers and insurance policy holders over the long term.¹

• **Social equity considerations are a necessary component of any community resilience strategy.** Climate impacts are unevenly distributed across society, and frontline communities directly impacted by climate change should be engaged in resilience planning to help ensure shared benefits. Social justice and equity are important considerations in the development and implementation of durable and fair national climate policy and any related adaptation or disaster policy.

Policy Priorities for Flood and Storm Risk Reduction

(continued)

• The Living Shorelines Act of 2019 (H.R. 3115), which establishes a NOAA grant program and associated monitoring requirements for implementation of living shorelines projects around the nation.

Reform Army Corps and FEMA Benefit Cost Analyses. These benefit-cost analyses (BCAs) are often wildly inaccurate and do not provide a reliable assessment of whether a project is in the federal interest. Congress should modernize the BCA requirements to ensure that ecosystem services lost are counted as a project cost, and ecosystem services gained are counted as a benefit. Congress should also prevent the Army Corps from counting as benefits actions that are contrary to federal law and policy, such as agricultural development benefits created by draining wetlands, development benefits resulting from new or intensified use of floodplains or wetlands, or flood reduction benefits from new or intensified use of lands subject to flood easements or permanent conservation easements.

Direct the development of national guidance on how to value natural solutions. Despite the many benefits that natural systems provide, the majority of these often go unaccounted for in project or impact evaluations. There have been some federal steps in a helpful direction (such as the 2013 Principles and Requirements for Federal Investments in Water Resources by the Council on Environmental Quality).⁴ However, there is still a need for a consistent approach for valuing the benefits of natural infrastructure and to develop tools, data, and best practices to advance the integration of such approaches into hazard mitigation and water resource planning.

Significantly increase federal investments in America's water infrastructure, prioritizing natural solutions and climate-resilient infrastructure. Our water and



wastewater facilities have exceeded their intended lifespans and are breaking down, with the most severe impacts often disproportionately borne by low-income communities and communities of color. The threat of climate change is further stressing these water systems as they increasingly struggle to keep up with flooding, sea level rise, droughts, and other impacts. To help address our infrastructure backlog and adapt our water and wastewater utilities to a changing climate, Congress should increase federal investments in water infrastructure, including roughly tripling appropriations to the Clean Water State Revolving Fund (from \$1.7 billion in FY18 to \$6 billion annually) and the Drinking Water State Revolving Fund (from \$1.95 billion in 2020 to \$6 billion). This funding should require and incentivize the use of natural and green infrastructure and invest in making our water systems more climate resilient.⁵

The National Wildlife Federation supports natural climate solutions as part of a broader set of policies and programs that reduce anthropogenic greenhouse gas emissions and enhance climate adaptation for natural and human systems. The National Wildlife Federation has produced the Natural Climate Solutions Federal Policy Platform to lay out recommendations to swiftly scale up natural climate solutions, for both climate mitigation and climate resilience. Recommendations are structured around several analytical categories based on land or habitat type. The solutions offer benefits for the climate, local environments, communities, wildlife, and job creation.



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Natural Climate Solutions

A Federal Policy Platform of the National Wildlife Federation

Natural climate solutions are critical to the success of any climate change policy. These solutions can enhance the health of our soils and ecosystems, conserving forests, watersheds, grasslands, farmlands, and more—all while reducing emissions and boosting the resilience of communities across America.

Recognizing that climate change is already having significant impacts on people and wildlife, and that further changes are inevitable, climate adaptation is a necessary complement to mitigation efforts. Broadly, climate adaptation refers to strategies and actions that enhance the ability of natural and human communities to withstand or adjust to climate change and its associated impacts. Resilience, in turn, may be a desired outcome of those adaptation strategies.

For human communities, resilience refers to their ability to maintain valued socio-economic systems in the face of near-term disturbances and long-term climatic changes. For natural communities, resilience generally reflects the ability of ecological systems (e.g., forests, coastal wetlands, coral reefs) to resist, recover from, or adapt to those changes and maintain desired functions. While efforts are wide-ranging to enhance the resilience of both natural and human communities to the impacts of climate change, we focus here on natural and nature-based strategies to reduce risks to human communities from climate-related natural hazards.



Learn more: www.nwf.org/naturalsolutions



Key Principles for Flood and Storm Risk Reduction

• **Along our coastline and in floodplains, we must prevent new development and protect natural open space in hazard-prone areas.** One of the best opportunities to reduce risks to communities from flooding and hurricanes is to keep people out of harm’s way in the first place. We must also work to protect natural open spaces adjacent to vulnerable marsh habitat, to enable marsh migration with rising sea levels, and avoid conversion of marsh to open water.

• **It is time to adapt to increased risk through new forms of protection, accommodation, and retreat.** With rising coastal risks, we’ll need to shift our traditional approaches to flood control and community protection and effectively buffer communities from natural hazards. We must also plan for inevitable changes and making community lifelines (i.e., essential community and government services) more resilient to extremes in climate and weather.

• **We should restore for the future, not recreate the past.** With the realities of sea level rise, our coastlines in particular will fundamentally change despite our best interventions. Smart, strategic restoration should be future-facing, and designed to sustainably provide ecosystem services.

• **Planning is critical to successful adaptation, particularly along our dynamic coastlines and in floodplains.** Resilience and hazard mitigation planning is an iterative process that requires a long-term commitment by states and supportive federal agencies. To the extent possible, different state planning efforts (hazard mitigation plans, coastal zone management plans, etc.) should be coordinated or integrated in furtherance of a multi-sectoral, science-based, and cohesive vision for adaptation. Strong plans should also: define goals and set clear expectations; be anchored in science; account for uncertainty and residual risk; focus on impacts to people; and identify funding needs and challenges.



Policy Priorities for Flood and Storm Risk Reduction

Establish a Resilient Communities Revolving Loan Fund (RLF) and Grant Program to provide low- to zero-interest loans for communities to invest in projects and programs that improve disaster preparedness and long-term resiliency, with an emphasis on the use of natural defenses to achieve those goals. To support efforts in lower-income communities, the RLF should be administered alongside a grant program with aligned goals, or should include a mechanism to ensure access to the program for communities that otherwise would not have the resources available to participate. The National Wildlife Federation recommends an initial federal investment of \$60 billion over 5 years, where loan repayments replenish the fund for additional projects over time.²

Increase investments in pre-disaster mitigation programs. Historically, the vast majority of mitigation dollars have flowed to communities after disaster strikes, often through Federal Emergency Management Agency (FEMA) and Department of Housing and Urban Development (HUD) grant programs. While this support is critical to help communities get back on their feet, an increased investment in proactive mitigation is an efficient and cost-effective way to decrease future damages. Per provisions in the 2018 Disaster Recovery Reform Act, FEMA now has the authority to set aside an amount equivalent to 6 percent of the estimated aggregate total of other FEMA disaster grants for pre-disaster mitigation assistance. This set-aside authority as drafted is optional and at the discretion of the President. It should be made mandatory and the percentage increased, to ensure adequate

investment in resilience pre-disaster. Congress must also prioritize direct mitigation investments in historically disadvantaged and economically vulnerable communities.

Reauthorize and reform the National Flood Insurance Program (NFIP). After 13 short-term extensions, Congress must fully reauthorize and modernize the NFIP. Needed reforms include resources to increase accuracy of flood risk maps and additional mitigation investments to reduce overall risk, including through community-wide nature-based mitigation approaches. Such improvements would both decrease at-risk infrastructure and help inform future, smarter infrastructure investments.

Strengthen NFIP eligibility rules to address natural infrastructure. FEMA is responsible for establishing eligibility rules for community participation in the NFIP. FEMA should update eligibility criteria to require communities to include within their Flood Hazard Mitigation Plans an analysis of the flood risk mitigation potential of the natural infrastructure within their boundaries. Communities already participating in the program should be given a 5-year deadline to update their plans and complete this analysis.

Reestablish Federal Flood Protection Standards that apply to all federal infrastructure spending. Ensure that all federal dollars expended to support the construction of public buildings, facilities, and other infrastructure account for the future impacts of climate change and associated risks in their design and construction, and avoid investments in floodplains and coastal areas vulnerable to sea level rise.

Strengthen and expand the Coastal Barrier Resources Act. As more storms and sea level rise alter high-risk areas along our coast, it is imperative to update and modernize the Coastal Barrier Resources System (CBRS) maps to continue to maximize the benefits of this program, and to protect coastal communities and natural resources. Anticipating the migration of shoreline features inland, we must look for ways to support open spaces that can accommodate this change in a fiscally and environmentally responsible way. Strategically expanding the CBRS shoreward, in consideration of anticipated sea level rise scenarios, would make good fiscal, environmental, and public safety sense.

Significantly increase funding for competitive grant programs that fund natural infrastructure or climate-smart solutions. Such programs can encourage innovation and create a low-risk opportunity for communities to increase their comfort level with new risk reduction techniques or types of projects. Examples of grant programs that merit new or increased funding include:

- The National Coastal Resilience Fund, a competitive grant program administered by the National Fish and Wildlife Foundation in partnership with the National Oceanic and Atmospheric Administration (NOAA), to restore, increase, and strengthen natural infrastructure to protect coastal communities from storm and flood hazards.³

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Citations

1. Multihazard Mitigation Council. 2018. Natural Hazard Mitigation Saves: 2018 Interim Report. National Institute of Building Sciences: Washington, D.C. www.nibs.org/page/mitigationsaves.
2. A \$60 billion recommended investment is derived from total disaster damages from 2008-2017 (pre-2017 hurricane season), divided by a factor of 6 per the National Institute of Building Sciences mitigation spending-to-savings ratio of 6:1. See report in footnote 27. (This is similar to a proposal in the Senate Democrats’ Jobs and Infrastructure Plan for American Workers; there are a variety of other resilience revolving loan fund bills that have been introduced this Congress, though with a less pronounced emphasis on natural infrastructure, including: H.R. 1610, State Flood Mitigation Revolving Loan Fund; H.R. 3779, Resilience Revolving Loan Fund Act of 2019).
3. See H.R.4093, National Oceans and Coastal Security Improvements Act.
4. White House. 2013. Principles and Requirements for Federal Investments in Water Resources. obamawhitehouse.archives.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf.
5. Examples of legislation that achieves this include the Water Quality Protection and Job Creation Act (HR 1497), which makes much needed investments to help address our nation’s infrastructure backlog by increasing authorized funding levels for the Clean Water State Revolving Fund (CWSRF) to \$4 billion annually. The bill also includes a provision that directs 15 percent of the CWSRF to projects that incorporate natural infrastructure, which will help provide social and economic benefits to communities while also protecting water quality and fish and wildlife habitat. The bill also takes important steps to address climate impacts to these systems by assessing future vulnerabilities they face from climate change and by implementing more resilient practices and modifications to reengineer these water systems to make them more resilient.

