American Rivers
Thriving By Nature

Clean Water & Drinking Water Infrastructure Funding


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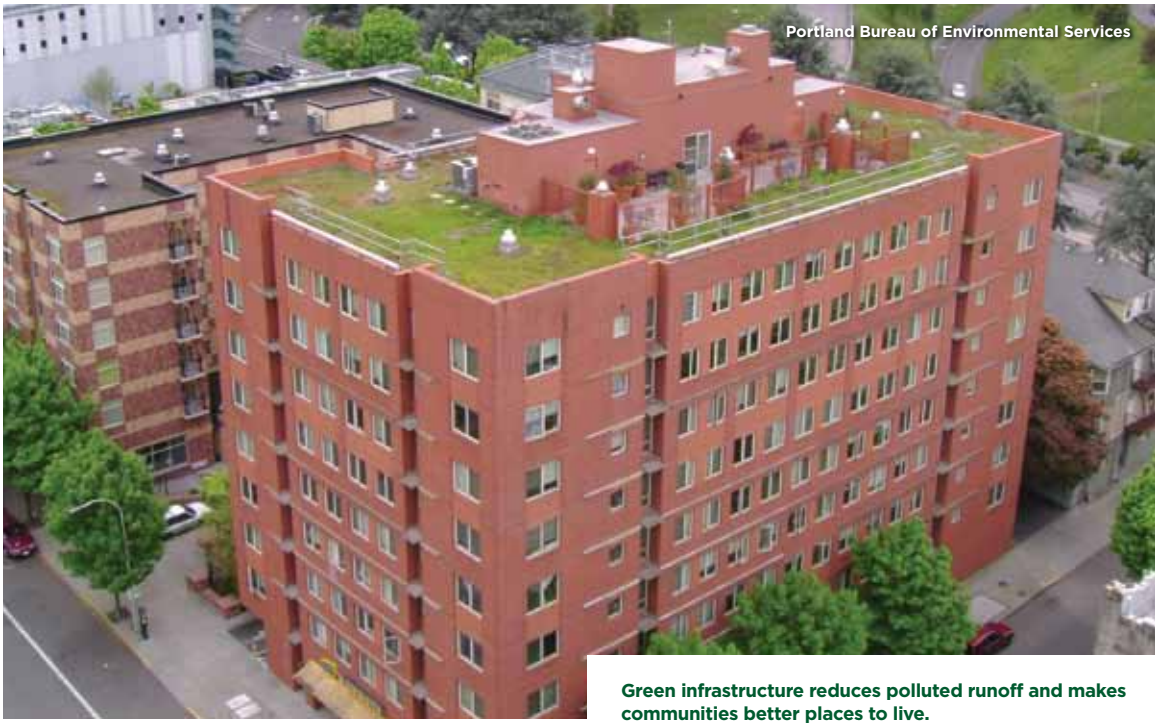
The future holds great challenges for the nation's water resources. Shifting weather patterns, more damaging floods, and rising water shortages will threaten communities, the economy, and the environment. This chapter is part of a larger report, ***Weathering Change: Policy Reforms That Save Money and Make Communities Safer***, which shows what the federal government must do to help the nation confront these looming challenges.

To see the entire report, visit www.AmericanRivers.org

Introduction:

When Congress passed the Clean Water Act (CWA) in 1972, it significantly expanded federal funding for water infrastructure. The law created a grant program for the construction of wastewater treatment plants and collection systems in order to help communities reduce sewage pollution and comply with the CWA. In 1987 the grants were phased out in favor of a loan program called the Clean Water State Revolving Fund (SRF). The funding that Congress appropriates to these programs every year is distributed to states, which provide low-interest loans to communities to undertake wastewater and stormwater infrastructure projects. In 1996, Congress created the parallel Drinking Water State Revolving Fund as part of the Safe Drinking Water Act (SDWA) to help communities expand and repair drinking water infrastructure. While these funds have greatly improved public health and the quality of the nation's waterways, they do not require consideration of climate change or adequately encourage innovative, flexible infrastructure approaches. As a result, these funds may be supporting infrastructure that is poorly adapted to shifting precipitation patterns and will leave people and ecosystems more vulnerable to a changing climate.



Green infrastructure reduces polluted runoff and makes communities better places to live.

I. Today's Policy

Federal infrastructure programs fail to adequately promote flexible and cost-effective projects that will function in a changing climate, wasting scarce resources and leaving people at risk.

Failure to consider climate change in funding decisions: Climate change presents an extraordinary risk to the nation's water infrastructure.[1] Sea level rise, heightened storm surge, and more extreme storms will damage infrastructure in low-lying coastal areas and floodplains. Reduced snowpack, shifting precipitation patterns, and declining reservoir levels will render obsolete water supply infrastructure that is designed to accommodate historical patterns of water availability. In many places, climate change will exacerbate existing vulnerabilities. Heavier downpours, for example, will have the greatest impact where stormwater systems are undersized or streets and parking lots already generate polluted runoff. At the other extreme, declining flows in the Colorado River are lowering water levels in Lake Mead, the primary water source for Las Vegas, and the city is being forced to spend billions of dollars to build a new water intake.

Given this considerable challenge, it is essential that new construction or upgrades to existing infrastructure incorporate projected climate change impacts. Unfortunately, the Clean Water and Drinking Water State Revolving Funds, two of the largest sources of federal water infrastructure funding, do not require applicants to undertake such an analysis. Projects must meet a range of state and federal requirements but none related to the climate change impacts that will play a significant role in determining the effectiveness of infrastructure systems in the future.

Federal support for costly, inflexible infrastructure: Over the course of the last century, local, state, and federal governments have spent hundreds of billions of dollars on wastewater and drinking water infrastructure. Much of that money was invested in pipes, treatment plants, and pumping stations. In recent years, however, there have been significant developments in our understanding of water infrastructure, especially the role that green infrastructure systems and water efficiency can play in controlling stormwater and ensuring a consistent water supply. These strategies have been shown to reduce costs and provide far greater benefits than traditional systems.[2] Green infrastructure is also better adapted to a more volatile and uncertain climate, as it is able to accommodate

both wetter and drier conditions.[3, 4] Wetlands, for example, buffer against both flood and drought by absorbing rainfall and releasing it gradually.

While green infrastructure and water efficiency have long been eligible for SRF funding, the majority of this funding continues to support costly, single-purpose gray infrastructure projects. As existing systems reach the end of their expected life span, there is an opportunity to integrate these innovative, climate-adapted technologies into the nation's water infrastructure. Congress took initial steps in this direction by dedicating 20 percent of the Clean Water and Drinking Water funds for green infrastructure and water efficiency in the American Recovery and Reinvestment Act (ARRA) and the FY 2010 budget. However, these set asides did not promote sustainable water management strategies as well as they could have due to an overly broad definition of "green" projects.[5] In addition, the demand for the dedicated green project funding was oversubscribed, reflecting the interest in using these innovative approaches.

II. Risks and Consequences

Failure to invest in flexible infrastructure that is adapted to changing conditions will leave people and the environment at greater risk as the climate shifts. While we don't know exactly what the climate of the future will look like, we know that the past will not be an accurate guide for what lies ahead. Investments being made today could be inundated by more frequent floods or rising sea levels in a matter of decades. The life span of infrastructure investments can reach 100 years,[6] and systems that are not adapted to projected changes may need to be upgraded or rebuilt at great cost.

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More extreme weather will make it harder to manage water.

Portland Bureau of Environmental Services

Green infrastructure provides flexibility to respond to climate change.

Few communities are able to replace these costly systems before the end of their useful life, making it vital that they be designed and sited properly in the first place. In short, much of our existing water infrastructure is likely to perform poorly in a changing climate, and this will put people, the economy, and ecosystems at risk if we do not adapt to these changes.

III. Preparing for the Future

Federal funds should be targeted to the most cost-effective and flexible infrastructure that makes communities safer and prepares them for changing conditions.

Consider climate change in project planning: The Environmental Protection Agency (EPA) should revise the SRF funding criteria to require consideration of climate change impacts in the siting and design of projects. New construction should not be located in areas that will be significantly affected by climate change. For example, a new treatment plant should not be built in vulnerable low-lying coastal areas or high velocity floodways. Similarly, major upgrades to existing facilities located in vulnerable areas should not be eligible for SRF funding. In addition, projected impacts should be considered in project design to ensure that the proposed facility will continue to provide the expected benefits even as the climate shifts.[7] Stormwater systems should accommodate existing runoff patterns as well as projected increases due to more extreme precipitation.

Incorporating projected climate scenarios in infrastructure planning will improve public safety, help ensure more effective management of water resources, and provide significant cost savings. With fewer critical assets in vulnerable areas, communities will be able to avoid damages and recover

more rapidly after extreme events. It is far cheaper to make adjustments during the planning process than to rebuild or alter water infrastructure after the fact. One study showed that incorporating adaptation into infrastructure management reduced costs 10-45 percent by 2080.[8] Requiring adaptation planning in federally funded projects can also provide a model for effective infrastructure management and help make climate impacts a central consideration in the planning process throughout the country.

Direct federal funding to innovative, climate-adapted infrastructure: Congress and the EPA should work to promote greater funding of green infrastructure and water efficiency in the State Revolving Funds. As a primary source of federal funding for water infrastructure, it is important that the SRF program encourage the most innovative and cost-effective solutions. Congress should reauthorize the Clean Water and Drinking Water SRF and maintain or increase the dedicated funds directed to green infrastructure and water efficiency within those programs. EPA should ensure that only the highest quality projects are being funded under the "green" set aside. Energy efficiency projects made up a significant portion of the green set aside under ARRA.[10] These projects, while beneficial, do not necessarily improve water quality or enhance water supply. The EPA should revise its guidance to ensure that projects funded under these set asides are achieving the core goals of the Clean Water and Drinking Water SRF. EPA should also clarify that dedicated funds should not be used for water meter replacement but rather for first-time meter installation or other water efficiency projects that will achieve real water savings.

Congress should provide additional incentives for green projects by waiving the matching funds requirement in the states that provide the greatest funding to green projects and allowing states to provide additional subsidies for the most innovative green projects. Finally, applicants for SRF funding should be required to incorporate green infrastructure and water efficiency to the maximum extent practicable before receiving funding for conventional gray infrastructure projects. These changes will push federal funding toward the most well-adapted, cost-effective solutions and provide a model that other communities can follow as they prepare for a changing climate.

IV. Benefits of Being Prepared

Planning for the future is a responsible and prudent response to an uncertain climate. Building climate-adapted infrastructure will help buffer communities from the impacts of more extreme floods and droughts and avoid costly fixes to systems that don't work due to changing conditions. Investments in green infrastructure, while an effective adaptation strategy, also provide immediate benefits regardless of climate change, as they are often more cost-effective and provide a wider range of benefits than traditional gray infrastructure. Congress and the EPA have the opportunity to lead a national shift toward a more efficient and innovative approach to building water infrastructure. Policymakers must seize this opportunity and help move the nation's water infrastructure into the 21st century. ■

FOOTNOTES

1 *Global Climate Change Impacts in the United States.* Karl, T.R., Melillo, J.M., and Peterson, T.C. (eds.). (Cambridge University Press, 2009).

2 See, for example: Stratus Consulting. *A Triple Bottom Line Assessment of Traditional and Green Infrastructure Options for Controlling CSO Events in Philadelphia's Watershed.* (Philadelphia Water Department, 2009).

3 Climate Ready Water Utilities Working Group. *Final Report to the National Drinking Water Advisory Council* (2010).

4 Hewes, W.A. and Pitts, K. *Natural Security: How Sustainable Water Strategies are Preparing Communities for a Changing Climate* (American Rivers, 2009).

5 Baer, K. and Dorfman, M. *Putting Green to Work: Economic Recovery Investments for Clean and Reliable Water* (American Rivers, 2010).

6 U.S. EPA. *Clean Water and Drinking Water Infrastructure Gap Analysis Report* (EPA 816-R-02-020, 2002).

7 Neumann, J. *Adaptation to Climate Change: Revisiting Infrastructure Norms* (Resources for the Future, 2009).

8 Larsen, P.H. et al. *Estimating future costs for Alaska public infrastructure at risk from climate change. Global Environmental Change* 18, 442–57 (2008).

9 Baer and Dorfman, 2010. *op cit.*