



STATE CLIMATE POLICY AND NATURE-BASED SOLUTIONS: A MATCH THAT PROVIDES MULTIPLE BENEFITS FOR CLIMATE, WATER, AND MORE

Nature-based solutions, such as ecological forest management, meadow restoration, and water- and climate-friendly agriculture, can reduce emissions, augment water supply, and provide water quality benefits.

Background

Significant opportunities exist to combine climate policy and nature-based solutions (NBS). These opportunities have the potential to yield multiple societal and environmental benefits — including water benefits — but need focused attention to realize their potential. Ecologically-based forest restoration, wet or mountain meadow restoration, “healthy soils,” and other agricultural practices can yield these multiple benefits. The upper Colorado River Basin, with its iconic forests and an abundance of vast, high-mountain meadows and grazing lands, offers significant potential to deploy NBS at scale.

While each state presents unique considerations, meeting the climate challenge requires that all states develop climate policies with complementary energy *and* NBS strategies. This is a “both/and” issue, not an “either/or” choice. Many states already have climate policies, most of which also have complementary clean energy and/or energy efficiency policies. Fewer have complementary NBS policies linked to climate, or to climate and water together. California has advanced furthest in developing and implementing regulatory and complementary energy and NBS policies. Colorado and New Mexico also are developing programs to add nature-based solutions to their climate and complementary energy policies.

Forest restoration is receiving increased attention at the international, national and state levels, with significant dollars allocated to accelerate forest treatments in the near term. This elevated focus aims to prevent catastrophic wildfires caused by a combination of unnatural overgrowth due to past management practices, as well as increasing temperatures due to climate change. There are an estimated “billion burnable acres”^{*} of overgrown forests in the U.S. alone. Outsized catastrophic blazes release massive quantities of carbon into the atmosphere beyond what would occur naturally. In some years, forest fires now approach or surpass fossil fuel emissions as the leading source of atmospheric carbon. This recognition — in addition to the increased threats to life and property that megafires present — is driving a large-scale policy and funding shift at the international and national levels. That shift is now emerging at the state level.

To understand the ongoing development of international, national, and state climate policies incorporating nature-based solutions, Stanford researchers reviewed state-level policies that address or have clear synergies with climate, water, and NBS, with particular focus on the Colorado River Basin states. The resulting report identifies policies and practices that states can adopt to gain climate and water resilience through their climate policies and programs. The report examines opportunities to integrate nature-based solutions that provide water benefits into climate policy (e.g., ecological forest management, wetland/meadow restoration, and healthy agricultural practices), as well as barriers to integration (e.g., a lack of adequate quantification of both climate and water benefits from these practices; a lack of resources for developing that quantification or more robust climate policies; political or legal barriers to some policy options). Recommendations follow for state climate policymakers and for non-state actors who can overcome at least some of these barriers. Those recommendations include developing complementary state NBS climate strategies and funding, the development of better quantification and mapping of opportunities, support for multiple-benefit quantification, and developing a “community of practice” in the basin to overcome silos of discipline and geography.

SELECTED POINTS FOR POLICY MAKERS

Potential synergies exist between state climate policy within the Colorado River Basin and nature-based solutions (NBS) that provide multiple benefits, including enhanced water supply and improved water quality. These NBS practices include ecological forest management and restoration to reduce catastrophic fire risk; meadow restoration, including the reintroduction of beavers; and active agricultural practices.

Adding NBS to a state’s climate portfolio is important to achieve a truly effective climate policy. Most states with climate policies (and some without) have complementary clean energy and/or energy efficiency policies. All states should consider integrating NBS as a complementary policy AND intensify efforts in traditional regulatory spheres and in their complementary energy policies. This is not an “either/or” situation, but a collective emergency that requires a “both/and” mindset that harnesses every tool in the toolbox. An effective complementary NBS policy can take many forms. The work can be funded and undertaken directly by government or by water agencies, NGOs, or the private sector, separately or in collaborative partnerships. Incentives can also come through formal or informal carbon offset or “net-zero” programs, water agency investments, and other innovative public-private financial partnerships and mechanisms.

^{*}(Victoria Christiansen, Chief, U.S. Forest Service, Testimony to Senate Committee on Energy & Natural Resources, June 17, 2021),

The most promising and timely areas of focus under the NBS umbrella are forest management practices designed to capture multiple benefits. Funding for forest management is increasing substantially in the near term, creating opportunities to undertake effective projects and to grow the field of NBS for both climate and water benefits. Wildfire prevention practices are gaining support at the federal and state levels, as well as within water agencies, to capture differing multiple benefits: protecting life, limb, and property; avoiding extreme carbon emissions and air pollution; protecting energy-producing and electrical transmission facilities; and avoiding sedimentation and contamination of downstream waters, either during conflagrations or as a result of subsequent rain events. While meadows and agricultural lands also offer potential NBS benefits, near-term funding for forest management provides the most immediate opportunity to undertake projects that grow the field of NBS generally for both climate and water benefits.

Elevating multiple-benefit thinking and policymaking at every opportunity can develop awareness and provide a framework for policymakers to integrate NBS and water into their climate policies. Every opportunity should be seized to elevate awareness of NBS in all states, and to highlight the compelling need to integrate NBS and land-based restoration practices into climate policies through appropriate venues. Evaluating projects from a “dollar-per-acre-foot of water” perspective, or from a “dollar-per-unit of carbon emission reduction” viewpoint, misses the multiple benefits accrued across societal interests, including climate, water, public safety, ecosystem protection/restoration, and public health.

One specific synergy deserving of special attention is the opportunity to integrate mountain or wet meadow restoration into forest restoration planning and programs. Doing so offers the potential to realize benefits that address water and ecological concerns while creating natural firebreaks. Silos of management, practice, and expertise develop around specific landscapes. With funding directed toward forest management programs, integrating meadow restoration into these programs offers greater efficiency than parallel programs. Building meadow restoration into ecological forest restoration protects forests by creating natural firebreaks, which in turn facilitates greater climate sequestration. Benefits continue downstream, as meadows slow, purify, and retain water, saturate soils, and replicate some of the water timing benefits lost because of shrinking snowpack under climate change.

Beavers are nature’s engineers and present a mega-charismatic, nature-based solution. Beaver reintroduction, beaver dam analogs, and analogous “process-based restoration” can yield climate, water, and fire prevention/fire refuge benefits. By building dams that pool water behind them, beavers restore wetlands and meadows that sequester carbon. Beaver ponds also slow the flow of water, resulting in water supply and quality benefits. Recognition of the valuable work performed by beavers is accelerating in an era of changing policy dynamics.

States should consider streamlining the permitting process and undertaking landscape-scale assessments for restoration projects in order to speed them from vision to implementation. Promising, replicable examples of streamlined permitting for environmental restoration projects exist. Undertaking programmatic environmental reviews of large watershed areas can make individual projects more strategic and less costly. Performing this work at landscape scale is necessary to provide vision and maximize benefits.

Enhanced financing opportunities and other policy vehicles can incentivize and facilitate public/private partnerships, accelerate the implementation of NBS, and realize the climate and water benefits nature-based solutions offer. Examples of innovative financing and operating agreements exist. These agreements offer a model for leveraging the relative expertise and operational ability of government, non-profit, and private sector partners to accomplish projects together that they could not accomplish separately. Water agencies can join these projects to avoid bearing the sole cost of cleaning sediment and debris from reservoirs after large wildfires after the fact (e.g., Denver Water and Yuba Water), while also serving as good watershed stewards. Private sector finance, state agencies, local governments, tribes, and NGOs are collaborating to secure funding and expertise across traditional disciplines, allowing them to undertake projects with multiple benefits. Supporting these efforts will stretch both public and private dollars and accelerate desperately needed projects.

Creating an NBS “community of practice” across the Colorado River Basin is necessary to increase visibility, gain traction, and pool experience in planning for and implementing NBS. Over time, silos of practice develop by discipline, landscape, geography, and sector (e.g., public, private, NGO). Crossing these divides allows practitioners and interested parties to share best practices and pitfalls, learn from each other, and create a community of practice that can leverage experience and accelerate results.

Regulatory carbon offset or cap-and-trade programs (most robust in California) will not yield enormous funding for nature-based solutions outside of California due to political, legislative, and quantification limitations in California and beyond. The greatest opportunities are likely to result from increased funding directed at catastrophic wildfire prevention, and from voluntary offset or net-zero pledges by institutions, businesses, and individuals.

About the Author

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This brief is based on the report: *State Climate Policies and Nature-based Solutions: A Match that Provides Multiple Benefits for Climate, Water, and More.*