

Civic Engagement in American Climate Policy: Collaborative Models

A Report from a National Conference
and Research Project by

CivicGreen

Tisch College of Civic Life Tufts
University

In cooperation with:

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&

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Background for the Report

Our report, *Civic Engagement in American Climate Policy: Collaborative Models*, presents the findings of a two-year research project focused on how climate policy can be enriched by civic engagement in communities, across landscapes, and among partners from civic and professional associations, public and private institutions. We enlisted scholars and practitioners in extended joint exploration and capped off our preliminary work at a two-day workshop in Washington, DC, in May of 2022.

In this report, we examine how civic innovation has emerged over the past several decades in multiple arenas, including sustainable cities and collaborative conservation in rural areas, environmental education and conservation corps, urban forestry and community design. We survey a wide range of practical toolkits and policy designs that enable productive and collaborative work. And we propose ways in which we might leverage such innovation now and in the coming decades so that we can address the climate crisis to strengthen democracy, rather than leaving it further vulnerable to social and ecological disruption.

Our approach centers on forms of civic engagement that are inclusive and collaborative, oriented to environmental and climate justice but also to aligning community-based work with professional expertise, network resources, and institutional governance in ways that are pragmatic yet transformative. While some of what we recommend is already on the policy agenda, other proposals chart a path that will undoubtedly take considerably more time and refinement.

We aim to be audacious in vision, yet we present strategies and policies that are eminently feasible in practice.

The Jonathan M. Tisch College of Civic Life at Tufts University has provided a home for CivicGreen (<https://sites.tufts.edu/civicgreen/>).

We owe special thanks to all those who made presentations at our conference on May 12-14, 2022, as well as to those senior associate editors and colleagues who could not make it to Washington, but who guided this project in various other ways, including multiple Zoom meetings and research summaries. Participant bios can be found in Appendix A.

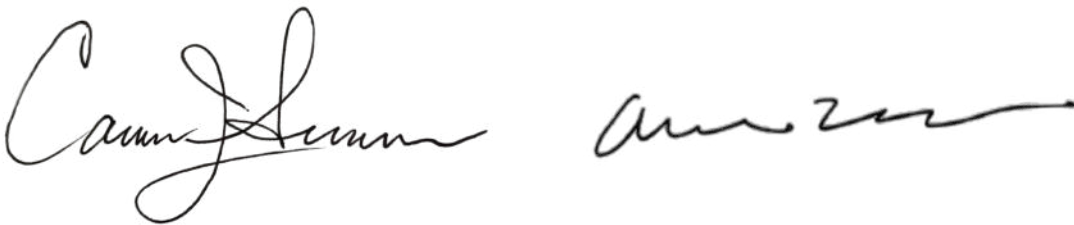
We also draw upon the many books, articles, case studies, research reports, best practice toolkits, strategic planning documents, and similar resources of our editors, conference participants, and other colleagues. A list of references can be found in Appendix B.

Carmen Sirianni guided the research and drafted this report. Ann Ward provided research assistance and web design over a two-year period, in addition to organizing many Zoom meetings, interviews, and the conference itself. Together we did our very best to convey the collective wisdom and insights of this broad group of contributors – all genuine co-authors.

Peter Levine anchored our work at Tisch College, with the support of Alan D. Solomont, Dean Emeritus, and Dayna Cunningham, the Pierre and Pamela Omidyar Dean of the Tisch College of Civic Life. Valerie Lemmie provided further guidance through the Kettering Foundation.

Joel Mills provided steady wisdom on all aspects of the project from the beginning and welcomed us to lively deliberation and delightful food at the national headquarters of the American Institute of Architects in Washington, DC.

Thanks to all!

The image shows two handwritten signatures in black ink. The signature on the left is 'Carmen Sirianni' and the signature on the right is 'Ann Ward'.

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Executive Summary

Responding effectively to the climate crisis will take many decades of concerted effort at multiple scales – global, national, and local – and through assorted tools, including market, technological, planning, and civic innovation. In this report, we focus on the kinds of civic innovation in the United States that engage everyday citizens, diverse communities, and multiple professional and institutional stakeholders in collaborative work to enhance climate resilience, environmental justice, and democratic legitimacy.

Our focus on civic and collaborative forms of engagement by no means implies that other policy toolkits or movement repertoires are less important or any less urgent. Indeed, we stress the need to align a wide array of policy tools to achieve optimal mixes and we appreciate varied blends of contention and collaboration to empower youth and communities. While many tools are needed, civic and collaborative engagement is a vital and indispensable part of the mix and will increase in significance as the disruptive impacts of climate change on communities intensify over the next several decades.

To leverage civic innovation occurring in many community and institutional settings, we draw upon “policy design for democracy” as this has emerged in scholarly studies in recent years, as well as upon collaborative governance practices at all levels of the federal system.

Policy design can provide resources, tools, and signals that enable and incentivize engagement by community groups and civic associations to mobilize their own assets and local knowledge and to work in partnership with professional and institutional stakeholders to solve public problems. Policy design can also help institutionalize forms of civic initiative and autonomy that are nonetheless accountable to public officials and network partners, capable of learning and revision, and that generate sufficient democratic legitimacy to sustain constructive work amidst the extraordinary complexity and uncertainty entailed by climate change in the coming years.

In our democratic polity, already severely stressed along many fronts including the culture and politics of climate, we cannot afford to ignore or minimize civic work that generates practical collaboration for sustained community resilience. Indeed, we are presented with extraordinary opportunity to engage our diverse citizenry in noble and effective work.

We survey 12 areas where civic innovation and policy design have direct relevance to sustainable communities, climate resilience, and environmental justice and where the lineaments of capacity building have become increasingly clear.

A. Capacity Building Trajectories

In each of the 12 overlapping areas we surveyed, civic and policy innovators have built capacities over several decades that provide solid foundations and practical pathways for further development and institutional learning. These areas include, but are not confined to:

- sustainable cities and local climate planning
- collaborative environmental justice and the CARE program
- community design and public interest design
- urban and community forestry
- collaborative community conservation and ecosystem management
- environmental education
- coastal management and sea level rise
- civilian conservation and climate corps
- citizen science
- digital and geospatial mapping tools
- climate and science communication
- civic professional practice and training

As our climate challenges have come into clearer focus, we can leverage capacity from city sustainability planning, community design, and collaborative conservation in rural areas for more ambitious strategies suitable to the broad scope and extended duration of the climate crisis. We can provide a fuller suite of innovative toolkits to empower communities and enable partnerships. We can link these to environmental education and to conservation and climate corps so that synergy abounds.

Capacity building has drawn upon a broad array of community groups as well as those civic and professional associations, schools and universities, public agencies and other institutional partners essential for effective and co-productive work with everyday citizens.

B. Available Policy Supports

Federal policy has been important to many forms of civic innovation through various grant programs, network collaboration, and toolkit development and diffusion, as well as to learning among state, local, and tribal agencies and other institutional partners.

We can and should build upon the best of these federal policies and partnerships, but in a sustained and systematic fashion that shares power more evenly and roots engagement more deeply. Policy supports should reach well beyond the early adopters to those communities with distinct challenges as rust belt cities, coal communities, environmental justice neighborhoods, and others less favored by geography, economy, or demography.

C. Concerted Leadership

While leadership for civic innovation on climate resilience typically comes from multiple sources within communities, professions, and institutions, we can and should strengthen strategic leadership and learning at the level of the White House and federal agencies. We propose several interlinked components.

1

Civic mission
and civic
strategy for
federal
agencies

First, we propose that each relevant federal agency develop a clear civic mission and strategic planning process to guide its work on civic collaboration and to align it with its other climate tools (regulatory, investment, ecological, data) to get the optimal mix for that agency and its various offices.

Drawing upon widely recognized components of civic innovation as well as selective federal agency frameworks for community-based work, we suggest the outlines of a civic mission template, coupled with a civic strategy template, to guide this process.

Strategic work within and among agencies and other partners should promote learning across networks and correct for unintended consequences, such as managing to the lowest common denominator or reinforcing participatory inequalities. Civic engagement, while vital, is not without conundrums.

The National Academy of Public Administration could be contracted to work on civic mission and civic strategy with an initial cluster of willing federal agencies and offices, whose work could then be leveraged more broadly.

2

National
Advisory
Council on Civic
Climate
Collaboration

Second, we propose that a National Advisory Council on Civic Climate Collaboration be established according to the Federal Advisory Committee Act of 1972 to lend further coherence to the work of existing advisory councils that have included civic engagement as a core component of work in each specific field.

Among such advisory councils are the National Urban and Community Forestry Advisory Council, the National Environmental Justice Advisory Council, and the National Environmental Education Advisory Council.

A multi-agency Coastal Storm and Sea Level Rise Preparedness Council, proposed by some, could include an advisory that addresses the complex challenges of public engagement where the disruption of so many types of community assets is projected.

3

Office of Civic Collaboration on Climate

Third, we propose that an Office of Civic Collaboration on Climate be located within the White House Office of Domestic Climate Policy – perhaps conjointly with the Council on Environmental Quality (CEQ) and the Office of Management and Budget (OMB) – to provide further coherence and impetus for civic approaches across the federal system and to help align these with other climate policy tools.

This new office could draw upon an emergent set of federal agency mission statements and strategic planning processes (#1), as well as a cluster of citizen advisory committees (#2). In turn, it can help guide agencies that might be outliers or laggards. Its focus is to help build civic and institutional capacity across the federal system to enable robust and effective engagement and partnerships.

An Office of Civic Collaboration on Climate would enable concerted attention to the civics of climate change, which might otherwise be lost or marginalized amid the array of other worthy policy tools and staff duties.

D. Substantial and Systemic Funding

While there are recent and existing grant programs that could further help build civic capacity, these often remain limited to exploring new approaches or mollifying the grassroots with a relatively small number of grants each year. We must invest in the short run based on such models, but we must also invest in the medium and longer run far more ambitiously.

Over the short run, we should restore, enhance, and refine worthy grant programs for local innovation, with resources dedicated specifically to civic engagement.

Short Term: Refine Existing Grant Models

These grants include the Community Action for a Renewed Environment (CARE) program and other collaborative environmental justice grants, watershed grants to local stewardship groups and to national and regional training intermediaries, coastal habitat restoration grants, sustainable urban and regional planning grants, and funding for the Environmental Education Training Program, the Civilian Climate Corps, and other programs that enhance civic engagement and collaboration for sustainable, resilient, and environmentally just communities.

An array of civic and professional intermediaries already exists in each of the fields surveyed and many are doing commendable work, if limited by funding to engage communities and partners further. Federal funding could enable them to work in more cities and communities and could enhance their capacity to align robust civic practice with the best professional expertise in city and regional climate planning, ecosystem management, community health, disaster response, and a range of other scientific and technical disciplines critical to climate resilience.

In addition, professional associations could be funded to further develop and disseminate best practices for engaging with communities, as some have already done. Professional schools, as well as relevant undergraduate majors, could likewise be funded to develop core curricula and advanced courses, certificate programs, community-based research and internships, and community-university partnerships. Again, good models exist, and federal funding could provide the needed boost to refine them and diffuse them more widely.

We cannot succeed at the community level unless we also invest in developing the civic skill sets and civic mind sets of professional partners over the next generation.

Over the medium and longer run, we should also explore more systemic funding that would provide much greater support for local groups, as well as capacity building investments among a broad range of intermediary civic and professional associations and institutional partners.

We propose that federal investments for climate projects with direct relevance to neighborhoods, cities, regions, landscapes, coastlines, and other ecosystems include a minimum investment in civic capacity building. A three percent minimum would yield \$30 billion for the civics of climate change for every \$1 trillion investment overall. This is our one blue-sky proposal.

Long Term: Dedicated Civic Investment Fund

While recent federal investments in green energy and climate resilience have been negotiated in Congress primarily through the Bipartisan Infrastructure Act and the Inflation Reduction Act, it is virtually certain that we will have to invest trillions of dollars in coming decades if we are to grapple effectively with the climate crisis in the U.S. A three-percent minimum for civic capacity would help ensure appropriate federal investments to enable our communities to become capable, empowered, responsible, and co-productive partners.

Federal investment in civic capacity is increasingly relevant as our problems have become far more complex than they were in earlier periods of American civic vitality and as our local publics and institutional stakeholders have also become far more diverse. Climate change is the wickedest of problems and requires engagement by the broadest array of everyday citizens and institutional partners acting with public purpose and collaborative skills. Models from the distant past, while instructive and inspiring, can simply not address the civic challenges of climate complexity, equity, and resilience.

Federal investment should incentivize engagement and collaboration, mobilize assets broadly within communities and among stakeholders, and generate matching funds and complementary programs from state and local governments and other institutions.

Conclusion

Our work over the past two years, and for some much longer, convinces us that we have available an array of practical models and tools for engaging local communities in collaborative work that is vital to climate resilience, environmental justice, and democratic legitimacy. We offer a concerted strategy and set of policy designs that can further build civic capacity across interlaced fields and among a broad array of professional and institutional partners essential to effective responses to a climate crisis certain to play out over decades.

Our proposals also aim to strengthen community and democracy amid threats that will be exacerbated by climate disruption if we do not weave pragmatic and robust civic problem solving into the full panoply of climate tools available.

Civic collaboration is eminently practical, indeed indispensable, and public policy can help generate renewable civic energy.

Introduction: Why Civic Engagement in American Climate Policy?

American democracy is being tested in ways that we have not witnessed in a very long time. If we can weather the current storms of the post-2020 election and its concomitant political and cultural stresses, and if we can secure meaningful reforms, we will nonetheless face our climate crisis. We must be prepared to do so democratically, including a panoply of “small d” democratic and civic initiatives that complement and enrich other political, cultural, and institutional strategies.

Climate presents a global crisis, to be sure, but one that cannot be managed without making American democracy more robust in terms of engaging everyday citizens in workable solutions that generate creativity and resilience, that enhance environmental and climate justice in communities most threatened, and that enlist diverse professional and institutional stakeholders in ways that are collaborative, effective, and broadly viewed as legitimate.*

If we can do these, we will also better position our country to lead among other advanced democratic nations to ensure fair contributions and climate justice worldwide. A country on the path to becoming more democratically robust, economically green, and climate resilient can help address the immense challenges of the global South and other especially vulnerable nations. One that cannot manage its own climate and democratic crises will certainly not.

Climate disruption threatens our democracy on many fronts and over many years. Populations suffering from repeated storms, floods, wildfires, drought, heat waves, and sea level rise face immediate shocks of loss of life, physical destruction, and economic dislocation, and possibly longer term rending of community ties and place-based identities. Retreat from the shore in some areas will impose huge burdens on home and business assets, local tax revenues and services, and public and private insurance systems. Conflicts will arise as some populations are displaced and others are unsure or skeptical about how to resettle them in a welcoming, equitable, and productive manner.

Climate crisis, in short, will generate many potential sources of social resentment and populist ire that can exacerbate political polarization. It can also engender corrosive forms of cynicism and hopelessness.

Young people are especially at risk. But they are also a potential source of immense civic creativity if we can engage them in the collaborative work needed to design sustainable cities, restore threatened ecosystems, recover from disasters, and help us all use the full suite of state-of-the-art digital, visual, and mapping tools to ground our public choices in sound democratic knowledge and profound reverence for the places we love.

* We use the term “everyday citizens” to signal civic inclusion and co-creation in a democratic republic, not to indicate legal status, and we recognize that other language might be more appropriate in specific communities.

In this report, we address some of these challenges by examining how diverse communities, civic and professional associations, youth and service corps, public agencies, and other institutional and business stakeholders have developed innovative civic capacities over the past several decades and how these might be leveraged for much greater impact through a range of policies and partnerships. We present these as realistic options suitable to a pragmatist democracy, one capable of learning through experiment and correcting along the way. These are civic innovations that can, in short, be aligned with many other tools of governance and democratic accountability.

We do not deny that certain long-term trends may have depleted some forms of social capital or altered the classic multi-tiered structure of civic associations, as some political scientists have argued. However, the wickedness of the climate problem, as well as the diversity of actors required to craft solutions appropriate to communities, regions, and ecosystems, require that we enable and invest in civic capacity at scale and through all the relevant tools of our federal system.

Nor do we deny that transformations in our political economy have reinforced a range of social inequities and ecological threats that call for spirited response by social movements, as well as vigorous regulatory and social welfare strategies. Nor, indeed, do we deny that changes in the media landscape have made fruitful civic communication more difficult.

The analytic, strategic, and policy perspectives that we sketch in this report are thus not free-standing. They depend on a wide array of other tools for reducing greenhouse gas emissions, incentivizing technical innovation, investing in green energy, and developing the business and union leadership for sustainable enterprise and finance. They depend on integrating good scientific, technical, administrative, market, and planning tools into our efforts to secure sustainable cities, equitable regions, working landscapes, and resilient ecosystems. They require that we shore up democratic norms in other institutional arenas and defend against authoritarian threats wherever they arise.

Design Policy for Civic Engagement and Collaboration

That public policy includes a variety of purposes and toolkits is well known, if much debated among scholars and advocates. From the early 1990s onwards, however, a new framing has enriched these debates. It was initially called “public policy for democracy” in the influential volume edited by political scientists Helen Ingram and Steven Rathgeb Smith, but has since developed further to include a wide array of related concepts and practices. Its core premise is that we can design policy to “empower, enlighten, and engage citizens in the process of self-government.”

In this approach, policy design could and should aim to strengthen civil society and community capacities for public problem solving, rather than routinely shift ever greater authority and initiative into the hands of bureaucrats or market actors. Policy design should signal respect, dignity, and capability to the targets of policy interventions. It should not demean, nor foster helplessness and dependency, nor should it deceive publics about relative costs, benefits, and potential tradeoffs. In policy arenas where conflict is endemic, design should include dispute resolution systems to serve as a complement to other forms of civic engagement.

Self-governing citizens, in short, do not spring fully formed from the soil of our republic, or even from responsible families and good schools, as important as these are. They are shaped and nurtured in many ways, not the least by how we design policies meant to serve the public good. Policies, in short, help form self-governing citizens, and can enable and empower them, though many policy designs – even well intentioned ones – disable, disguise, and disempower.

While political scientists have analyzed “participatory feedback effects” of policy design across major areas of U.S. social policy, there are several design features that are most relevant for democratically sustainable and resilient communities, as well as nonprofit and public administration practice associated with policy. We outline them in Table Intro. 1, with a few selective tools as examples, and then develop them further throughout this report. In practice, these design features and toolkits typically overlap or are combined and sequenced in various ways.

Table Intro.1: Core Concepts in civic policy design

Core concepts	Brief explanation, with selective tools and examples
Value local knowledge	<p>Policy should respect and utilize local knowledge to analyze ecological and health risks, help design built environments, protect and restore ecosystems, and develop resilience strategies appropriate to the communities in which people live and work.</p> <p>Examples:</p> <ul style="list-style-type: none"> • <i>volunteer monitoring</i> of the broad range of pollutants, nutrients, and other threats to rivers and watersheds • <i>door-to-door conversations</i> on urban childhood asthma or heat-island symptoms by locally trained women (<i>promotoras de salud</i>), who then convene public forums to share insights • <i>community gardening</i> that builds upon local design and diverse food cultures • <i>narratives, photos, videos, maps, and murals</i> on toxic hazards and re-envisioned community spaces
Blend local knowledge with professional expertise to enable co-production	<p>Policy should seek to meld local knowledge with the best professional expertise to get a rich mix of “street science” or “citizen science.”</p> <p>Experts and lay citizens mutually interrogate each other’s findings and perspectives in ways that can deepen both. “Civic professionals” work with lay citizens to coproduce toolkits for workable solutions that have optimal degrees of both professional and democratic legitimacy.</p> <p>Indigenous practices and ways of knowing the land, wildlife, and human habitation are vitally important for tribal land management and in partnerships that include tribes among the array of stakeholders.</p> <p>Examples:</p> <ul style="list-style-type: none"> • <i>bird counts</i> by local Audubon volunteers and students, with analysis by University Extension programs and the Cornell Ornithology Lab • <i>community health impact assessment</i> by the public health department, in collaboration with a diverse array of local community groups and nonprofits, to help develop a “healthy community” strategy for an entire neighborhood

Core concept	Brief explanation, with selective tools and examples
Mobilize community assets and social capital	<p>Asset-based community development (ABCD) stresses that all communities have strengths and assets, often unrecognized and underappreciated, which they can mobilize to solve problems.</p> <p>In addition to such assets as local institutions and land, one of the most important assets are forms of “social capital” that can embody positive norms, networks, and trust. Bonding social capital (tightly knit linkages) should be complemented by bridging social capital across diverse groups and linking social capital upward in institutions with power and resources.</p> <p>Examples:</p> <ul style="list-style-type: none"> • <i>map civic and neighborhood groups</i> such as religious congregations, sports clubs, ethnic associations, land trusts, block clubs, environmental education teams, garden associations, disability groups, senior centers, AARP chapters and livable community colitions, LGBTQ and youth groups • <i>develop ecumenical networks</i>, for example, among religious groups engaged in ecological “stewardship,” “creation care,” and other approaches appropriate to specific faith traditions • <i>build ongoing relationships</i> among bicycle associations and staff in planning and transportation agencies • <i>utilize STEW-MAP</i>, developed by the USDA Forest Service, to map the broad range of civic groups engaged in stewardship activities in a city or along a river
Enable democratic deliberation and multi-stakeholder collaboration	<p>Deliberative democratic forums engage everyday citizens and organized stakeholders in robust discourse that aims to develop workable consensus and ongoing trust for continued collaboration.</p> <p>In sustainability and climate work, such deliberation might help develop designs for the built urban environment, or regional planning that checks sprawl, generates affordable green housing, and preserves open space.</p> <p>Citywide climate action plans can also be informed by plans generated in collaboration with bicycle associations, watershed associations, land trusts, and environmental justice groups, as well as by formal “equity work groups” within the planning process to ensure representation of those often marginalized in policy and planning.</p> <p>Examples:</p> <ul style="list-style-type: none"> • <i>design charrettes</i> that engage community members and a volunteer team of architects and other professionals in intensive, multi-day design of downtown areas, or to develop a strategy for redevelopment after destructive coastal storms, wildfires, and other disasters • <i>collaborative conservation forums</i> that include periodic meetings and ongoing collaborative work among environmental and community groups, commodity producers such as ranchers and foresters, and various local, state, tribal, and federal agencies • <i>participatory geospatial mapping</i> that combines sophisticated land use mapping with visuals and stories to enable public understanding of options and civic action to preserve landscapes

There are, to be sure, other important features and tools important to robust policy design for civic democracy and collaborative problem solving, as we indicate along the way. None are universally appropriate or singularly effective. Democratic theory over the past several decades has become enormously richer in analyzing these and other civic design recipes and choices, how they work within a broader ecology of democratic innovations and institutions, and how the limits of some might be counterbalanced by the strengths of others.

Civic activists and their partners in various public and private institutions must work to combine and sequence such innovations, evaluate and refine them along the way, and align them with other policy tools to yield outcomes that are optimally effective, broadly legitimate, and democratically accountable. The latter includes oversight by elected officials, administrative staff, and courts, as with any policy.

After we analyze these issues in specific fields – the numbered sections of our report – we return in the Conclusion to several ways that federal policy can further enable inclusive, effective, and collaborative work, while helping to contain and correct for unintended consequences. We focus on developing civic mission and strategy frameworks within each relevant federal agency, coordinating these through an office for civic collaboration within the White House, as well as informing them through a citizens’ advisory committee on climate collaboration.

Funding civic capacity building at the levels that will be needed over the coming decades presents a critical challenge. A range of federal grant programs provides important templates, and we encourage building upon these ambitiously.

Yet we are skeptical that advocating for this or that grant program to help build civic capacity will be able to leverage adequate resources to address the scope and scale of our twin climate and democracy crises. We thus recommend that Congress perhaps designate a specific percentage of federal climate spending for building appropriate civic capacities in each area of public investment, thereby aligning green infrastructure investments with civic infrastructure investments to engage and empower communities to help craft sustainability and resilience strategies. A three-percent set aside would yield \$30 billion for each one trillion dollars in climate investments.

Participatory policy designs and toolkits have many strengths, but also limits. They might favor some groups over others, due to income, educational, homeownership, racial, gender, and other inequalities in resources and recognition. Without redesign of other policy tools, such as federal funding for coastal storm rebuilding, participation might lock in preferences for solutions that are unaffordable and exacerbate moral hazard.

Policy designs for collaborative civic work and coproduction can sometimes revert to lowest common denominator solutions or perhaps crowd out social movement contention and independent organizing. We think that contention and collaboration can be – and have been – fruitfully combined and sequenced in much sustainable community and climate planning work, but there will undoubtedly be many challenges over power, resources, and preferred action repertoires.

Civic Processes and Social Movements: Distinctions and Synergies

The civic design of climate policy is distinct from the social movement mobilization that characterizes today's climate movement, though it can draw upon this and deepen it in fruitful synergy. Mass youth protests are indispensable for highlighting the terrible threats we face, shaking our political leadership and institutions, and moving us to act. Over the past decade, numerous climate change and climate justice organizations have emerged as part of a decentralized movement.

However, not all civic goals can be achieved through movement mobilization, and not all youth climate activists want to be at the barricades or spend more than a few years there before they look to apply civic and professional skills to ongoing work in communities and institutions for the longer haul.

If we develop coherent civic designs for and with young people – environmental education and stewardship, civilian conservation and climate corps, youth participation in local civic ecology projects and climate justice planning, collaborative practices in professional schools – we can generate pathways for effective community and institutional work for a lifetime of engagement, which is what it will take to respond to the climate crisis effectively, resiliently, and democratically.

We need youth and other activists at the barricades and in ever greater numbers, but we also need civic activists of all ages building sustainable, resilient, and just cities and communities within and around the barricades.

Civic policy design is an appropriate way for government to invest in democratic engagement that helps to solve climate problems, coproduce public goods such as healthy neighborhoods and restored ecosystems, elicit collaboration among diverse communities and stakeholders, generate legitimacy and trust, and promote equity and respect, while holding in check the nastier forms of political and cultural polarization that might be further exacerbated by the climate crisis.

While the mobilization of climate protest movements is indispensable for progress, it is not an appropriate investment by federal agencies, or through the local and state agencies that would serve as key partners of federal policy. We will need civic partnerships of many types – including environmental justice and faith groups, schools and universities, professional and trade associations, business and labor – to respond to the disruptions that climate change will assuredly bring, even if we do manage to develop successful greenhouse gas emission reduction strategies in a timely manner.

Ecologies of social action are far more variegated than this initial and admittedly inexact distinction of *civic* and *movement*. Some partners choose to collaborate only after years of organizational and ideological conflict and stalemate, and some return to protest if achievements fall short. Some prefer one style in their youth and another as they become more embedded in careers, neighborhoods, and institutions, thus modifying the mix of their activities back and forth over time. Some mobilize raucously when they first challenge power, but then shift to “unobtrusive mobilization” when they have generated enough opportunity for change within institutions.

In short, there are blended forms, creative hybrids, and multiple mixes, as well as a mosaic of pathways that loop and coil through them. Productive synergies abound, yet unfortunate tradeoffs also lurk. Over the coming decades, we will need to cultivate synergies on a broad scale, and become alert to unwarranted tradeoffs, such as local resilience strategies that might erode the power of movements to challenge environmental injustices, or of movement rhetoric that becomes unhinged from pragmatic action and democratic norms. Yet we should not presume that civic co-creation and movement contestation are zero-sum options, nor that skillful leadership cannot develop appropriate mixes and strategic sequences.

We are currently living through a profound crisis of democracy, and climate change will almost certainly tend to exacerbate some aspects of this, perhaps in quite profound ways. Polarized responses to the coronavirus pandemic unfortunately indicate more of what might come. Our democratic institutions are already severely stressed by plutocratic economic strategies, populist resentments, and white nationalism. Public discourse has become further coarsened and debased through some talk radio, cable TV, and social media platforms. The mainstream media and free press have been subject to relentless attack.

Climate crisis will cause disruption in many communities, providing further opportunities for populist mobilization based upon resentment and scapegoating. National policies that seem to have the weight of climate science and popular support behind them at the grand scale will often not translate readily to locally acceptable and plausible solutions.

Climate strategies in communities will thus have to engage everyday citizens and digital activists, neighbors and co-workers, as well as stakeholder groups and institutions across a broad spectrum, to collaborate in ways that can help instill social trust, inspire hope, shore up democratic legitimacy, and respond credibly to claims of unfair treatment or misplaced focus.

For this we need public policy that enables robust civics.

1. Sustainable Cities and Local Climate Planning

Civic engagement has become increasingly embedded in sustainable and resilient cities from the 1980s onwards. Multiple strands of civic organizing emerged that were soon brought together in more integrative ways of thinking about the “sustainable city,” the “resilient city,” and the “just city.” Local climate planning and implementation have utilized a variety of forms of civic engagement and partnership in subsequent years. These can now be leveraged for far greater impact.

Civic associations and stewardship groups of various types have helped to drive sustainable city work. Among them are the following:

Bicycle associations

The bicycle movement revived itself in the 1990s after a long hiatus, and citywide associations shifted from protest to collaboration with local transportation officials. In virtually all the major cities with sustainability and climate planning, bicycle associations have been actively engaged in bicycle design and have worked to develop a civic ethic and training for shared streets with rights and responsibilities among all users. Racial equity in bicycle planning has also risen in importance in response to grassroots organizing.

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and subsequent federal transportation bills provided funding for transportation alternatives that further incentivized civic organizing, as well as adding new requirements for public participation. The National Association of City Transportation Officials (NACTO) formed several years later to provide more robust links and shared toolkits among its professionals and local civic groups. The major national bicycle associations, such as the League of American Bicyclists, also shifted their repertoires towards collaboration.

Watershed associations

The watershed movement emerged in the 1980s and 1990s, contributing an important ingredient to urban watershed protection and restoration strategies, as well as to collaborative conservation in rural areas (see section 5, below). Urban groups have taken names such as watershed associations and councils, “friends” and “stewards” of streams and rivers (e.g., Friends of the Los Angeles River), “adopt a stream” and “riverkeeper” groups, and still others. Some are affiliated through state and national groups, such as the Colorado Watershed Assembly and the River Network.

Federal policy has provided a variety of funding and administrative supports for watershed associations, volunteer water quality monitoring, watershed planning, and restoration. The Office of Wetlands, Oceans, and Watersheds at the U.S. Environmental Protection Agency (EPA) has developed watershed grants, training, and planning tools with civic groups and nonprofits. The National Estuary Program has 28 NEPs around the country, such as the Puget Sound Partnership in the Seattle area and the San Francisco Estuary Partnership (section 7, below).

Under EPA leadership, fifteen federal agencies and twenty-eight non-governmental organizations collaborated in the Urban Waters Federal Partnership. Their work includes partnerships with local, state, and federal agencies, businesses, nonprofits and philanthropies to clean up pollution; spur redevelopment of abandoned properties; promote new businesses; and provide parks and access for boating, swimming, fishing, and community gatherings.

In this case, the National Environmental Justice Advisory Council (NEJAC) was initially very critical, but Urban Waters director Surabhi Shah improved the program – and won a Service to America Medal from the Partnership for Public Service – by welcoming the mentorship of Vernice Miller-Travis, a long-time NEJAC member and environmental justice leader.

In response to federal policy, many states have incorporated a watershed approach into their water policy toolkits. In Colorado, the policy feedback effect was evident in the huge growth of watershed associations from six to forty within two years. Some states have institutionalized work with local watershed associations, as has the Oregon Watershed Enhancement Board, which includes an array of grants for stakeholder engagement and strategic collaboration. An increasing number of cities, such as Philadelphia, have included public participation in watershed planning into their drinking water and stormwater toolkits.

Neighborhood associations

The neighborhood movement generated several citywide policy designs for local engagement in planning during the 1970s and 1980s – some building directly upon federal Community Action and Model Cities programs. The most notable were in cities such as Portland (Oregon) and Seattle, both of which leveraged neighborhood and other forms of local engagement into sustainability planning in the 1990s. These cities, in turn, provided important lessons for the network of other cities engaged through ICLEI USA, the Urban Sustainability Directors Network, and federal agency projects in subsequent years.

Some models provided significant funding, planning toolkits, and administrative supports from local government for neighborhood engagement. Many other cities recognized neighborhood associations as groups that could contribute productively – and if not included, could delay and obstruct. “Localist administrative law” evolved in many cities to recognize rights of local voice in land use and environmental planning.

In policy designs such as the neighborhood planning incorporated into *Toward a Sustainable Seattle*, the city’s twenty-year comprehensive plan begun in 1994, local planning groups included neighborhood associations as well as local business district groups, environmental and conservation organizations, ethnic associations, senior and youth groups, and others.

Over time, the City insisted on even more diverse representation as part of its race and social justice initiative. The core design feature of neighborhood sustainability planning is that local groups should be provided resources – funding, toolkits, and technical and administrative assistance to aid in deliberation and collaboration – but with accountability to city council and public agencies for effective, inclusive, and fiscally sound planning and sustainability work. Approval of bond initiatives by the general public for the projects developed within the neighborhood planning process typically have depended on securing accountability through these multiple avenues.

In short, local groups did not just get whatever they wanted, but had to show that their choices were arrived at through fair and inclusive deliberation and met other criteria of good governance that moved the city toward sustainability.

As Rico Quirindongo, acting director of the Office of Planning and Community Development and long-time civic architect, notes, “the ethos of community engagement and environmental justice is now central to the agency’s mission,” despite some significant challenges on how to achieve greater equity and density in housing development. Twenty years ago, major development projects that engaged the African American community and culture, such as the Midtown Commons, would not have been possible, nor would the collaborative initiative of the City and the Robert Wood Johnson Foundation to create a Duwamish Valley Resilience District to advance environmental justice and community capacity building.

“the ethos of community engagement and environmental justice is now central to the agency’s mission,”

-Rico Quirindongo

Configuring civic engagement and collaborative local governance

Many other types of civic associations have been engaged in sustainable city work over the past several decades, often in partnership with each other and with public agencies. They include local land trusts, park associations, urban forestry groups, community gardening associations, food policy councils, youth and environmental education groups, new urbanist and smart growth organizations, healthy community coalitions, and environmental justice groups. Some of these we profile further below.

No single type of civic association or ideal configuration of groups, and certainly no one model of partnership or planning, captures the richness of democratic engagement or effective and just climate planning. Civic engagement for sustainable and resilient cities can be both contentious and collaborative. It traverses multiple pathways, depending on various factors, such as local political and social movement culture, fiscal resources and economic challenges, region and demography.

In Oakland, California, as Michael Méndez shows in *Climate Change from the Streets*, an especially robust climate action coalition of more than fifty organizations included leading environmental justice (EJ) groups. It integrated issues across the community and emphasized co-benefits, such as public health and green jobs. It challenged the city to go beyond its initial public information meetings and fund 14 workshops attended by over 1,500 residents.

The coalition then worked collaboratively with the city’s office of sustainability to build upon local “embodied” knowledge, neighborhood relationships, and youth engagement in interactive games, theatrical performances, and learning initiatives. It pieced together funding from a state commission and a private foundation, but public funding from the city was essential to the workshop process.

As noted by Rebecca Trout, Program Director of the All-America City Award at the National Civic League, which has tracked and recognized civic innovation since 1949 – and indeed has helped build capacity for community visioning and healthy cities across the field – “an increasing number of cities are weaving civic engagement into their climate planning and neighbourhood resilience strategies.... The lesson is for residents to co-produce.”

“an increasing number of cities are weaving civic engagement into their climate planning and neighborhood resilience strategies.... The lesson is for residents to co-produce.”

-Rebecca Trout

Cities that have some favorable combination of factors have been early adopters of sustainability and resilience planning, often linked and leveraged through organizations such as ICLEI USA and the Urban Sustainability Directors Network, but many others are moving in this direction. In addition, generalist organizations such as the National League of Cities, the American Planning Association, and the International City/County Management Association (ICMA) have been receptive to civic innovations that engage local publics. With federal support, they could provide far more extensive training to their members.

Climate planning

As in our Oakland example, cities have increasingly developed formal processes of climate planning that build upon civic action as well as cumulative professional and scientific knowledge over several decades. The latter include refined tools for understanding energy systems in building and transportation, stormwater management, green infrastructure, ecosystem services, urban and regional food systems, urban reforestation, and more.

We also have available toolkits for engaging publics in ways that elicit local knowledge and co-productive partnership. For instance, Michael Boswell, Adriennne Greve, and Tammy Seale’s handbook, *Climate Action Planning*, provides a clear, step-by-step guide that can be utilized to develop a public vision with broad legitimacy, community collaboration, socially just values, and pragmatic implementation (see Box 1.1).

They have also helped to weave these practices into the 2020 *California Adaptation Planning Guide* and *SB 1000: The Planning for Healthy Communities Act Toolkit*.

Box 1.1: Public engagement in climate action planning: selective components

The *Climate Action Planning* guide, based on much experience across California cities, provides a flexible roadmap that can be utilized in cities, large, medium, and small. A sample of activities are:

- assemble a diverse climate action team to guide the process and to establish baselines (e.g., greenhouse gas inventories and forecasts)
- develop partnerships among nonprofits, associations, universities, and all relevant public agencies
- include multiple stakeholders, such as chambers of commerce, realtors, and green building groups
- build upon existing plans, such as sustainability, resilience, watershed, land use, bicycle and pedestrian, hazard mitigation, comprehensive, and other plans
- establish a public education and outreach program and highlight co-benefits of specific policies (community health, reduced costs, enlivened streets and business districts)
- choose appropriately from a range of forms of engagement, such as community visioning, open forums and workshops, stakeholder advisory boards, focus groups, citizen academies, exhibitions and events, digital platforms, geospatial and other visualization tools, speakers' bureaus and ambassadors, and youth-led activities
- engage ordinary people and organized stakeholders in implementation and co-production
- develop an equity work group (e.g., from underrepresented ethnic, racial, and Indigenous groups and environmental justice organizations) to help craft socially and racially just approaches that foreground low-income areas, communities of color, and all those who face disproportionate risks and burdens
- ensure transparent documentation and accountability

Adapted from Michael R. Boswell, Adrienne I. Greve, and Tammy L. Seale, *Climate Action Planning: A Guide to Creating Low-Carbon, Resilient Communities*, revised edition (Washington, DC: Island Press, 2019)

General guides such as this can be complemented by many other toolkits that provide depth and versatility in specific areas, yet are quite accessible for use among activists, local publics, conservation organizations, and partnerships. As Tammy Seale of PlaceWorks argues from her experience in dozens of California cities, “it is critical that municipal staff receive training on civic engagement, public communication, and climate science.” Such skills should become part of job descriptions, and professional associations should play an energetic role in ensuring proper training.

“it is critical that municipal staff receive training on civic engagement, public communication, and climate science.”

-Tammy Seale

Many cities, to be sure, lag in responding to climate and sustainable planning challenges, get stuck in bureaucratic silos, or regress during turnover of mayors, city councils, and city managers. While there are various pathways through which coherent implementation can be kept moving, robust civic engagement is often indispensable.

Regional planning

City sustainability and climate planning, of course, needs to extend to surrounding communities. Regional planning is of foremost importance because transportation and housing choices, watershed and land conservation, economic dynamism and equity, are anchored in regional contexts. In some areas, such as the Southwest hit hard by extended drought, water access will require innovative planning among varied users and disbursed cities and suburbs operating with increasingly outdated water rights.

There now exists a range of methods for engaging publics in sustainable regional planning, as in mandatory models such as the Portland metropolitan area, as well as in voluntary models such as Envision Utah along the ten-county Wasatch front near Salt Lake City.

In the Portland case, the elected regional planning authority known as Metro began to engage citizens, environmental and civic groups, business interests, and local jurisdictions in developing alternative growth scenarios projected for the next 50 years. It developed an especially sophisticated Regional Land Information System (RLIS), which is a geographic information system (GIS) that links a wide range of public records to a land parcel base map and provides a complete set of overlays to enable planners and citizens to “design with nature,” in Ian McHarg’s famous phrase.

The tool was developed with citizens, nonprofits, and businesses, and enabled real-time experiments showing the impacts of user-defined land use policy choices. A regional citizens’ involvement coordinating committee developed a wide array of map-based planning workshops and presentations in the 1990s, now enriched with ArcView maps on the laptops, tablets, and cell phones of civic activists, nonprofits, university students and faculty partners – especially from Portland State University, which has had one of the most ambitious community-based learning systems across all university departments and professional schools for the past several decades.

In Utah, the nonprofit Envision Utah (with the governor’s support) developed values-based public dialogues with maps and photos that elicited broad commitment to affordable housing, environment, and quality of life (walkable and bikable neighborhoods, regional public transportation). Visioning workshops explored alternative growth scenarios. Envision Utah then shifted its emphasis to producing Urban Planning Tools for Quality Growth and trained several thousand local officials, housing developers, and nonprofits.

As a nonprofit, Envision Utah received capacity building support from private foundations and from the Livable Communities program at the U.S. Department of Housing and Urban Development (HUD), as well as from the Department of Transportation. As Xavier de Souza Briggs argues in *Democracy as Problem Solving*, Envision Utah first enlisted influential leaders from various sectors, then managed the broader process of building consensus, and then became a civic capacity builder and public educator.

Recommendations

Robust action for sustainable and resilient cities, as well as environmentally just ones, will require developing civic capacities much further and more evenly across many types of cities, large and small, coastal and rustbelt, arid and wet. Phoenix is not Seattle, yet it has also been leveraging civic, neighborhood, and institutional assets for sustainability planning, with Arizona State University playing a key partner role.

Sustainability actors in each city must grapple with urban regime and development dynamics peculiar to its history and economy, as well as with the institutional factors that favor rebuilding after disaster on terms favorable to developers rather than neighborhoods, especially lower income ones. This calls for independent organizing and political coalitions that contest for power and regulate growth dynamics, to be sure. But it also requires forums of broad democratic deliberation and sustained collaboration across civic, professional, institutional, and business boundaries – our focus in this report.

While developing capacities for democratic deliberation and civic partnership is the rightful charge of local actors, it can be supported by federal policy in various ways. Here we include several recommendations, as well as examples spanning several decades (see Table 1.1). Some can be revived, others improved, and new ones devised.

Table 1.1: Recommendations for federal policy to support civic engagement in city sustainability and climate action planning

Recommendation	Explanation
Federal grants to civic associations	<p>Funding should be increased substantially and aligned with mission, program, and toolkits of relevant offices – watershed associations at EPA and NOAA, bicycle and pedestrian associations at USDOT, urban and community stewardship groups at USDA Forest Service, food policy councils at USDA, livable communities and affordable green housing at HUD – as well as interagency programs.</p> <p>Priority should be placed on those civic associations that:</p> <ul style="list-style-type: none">• collaborate with other associations, nonprofits, EJ groups, local businesses, universities, and public agencies, as well as youth groups and youth climate councils• develop broad public outreach and communication initiatives that help legitimate a wide range of co-benefits as public goods• integrate their strategies into formal climate action planning and implementation

Recommendation	Explanation
Federal grants to cities for sustainability, resilience, and climate planning	<p>Such grants should strengthen public participation requirements appropriately and include funding to build civic and staff capacities for inclusive and effective engagement in climate planning and co-production.</p> <p>Emphasis should be placed on diffusing innovative models to a far wider range of cities and through more diverse pathways than those cities typically found in the forefront of innovation due to their political and social movement cultures or economic and demographic advantages.</p> <p>Especially important is to help fund civic capacity building in cities less well positioned to innovate on their own or more in need of strategies for “just transitions” that do not leave them behind and spark further resentment, such as mid-sized rust belt cities and coal communities. Building capacity at the county level will also be essential, especially for many of the smaller towns and cities.</p>
Federal grants to intermediaries for training	<p>Such grants should incentivize urban, sustainability, and planning intermediaries to include innovative and collaborative models of civic engagement into their professional and technical services, when appropriate. Generalist intermediaries often have a commitment to public engagement, but lack the resources to increase its salience.</p> <p>Among the organizations that could significantly enhance their civic training capacities through federal funding are the Urban Sustainability Directors Network (USDN), ICLEI USA, the National League of Cities, the American Planning Association, the International City/County Management Association (ICMA), and similar organizations, as well as crowdfunding intermediaries for grassroots innovation such as ioby (“in our backyards”).</p> <p>Intermediaries have utilized federal grants to build civic capacities in specific fields and could also leverage their work to much greater impact. Among these are the River Network for watershed planning and restoration, Restore America’s Estuaries and The Nature Conservancy for green infrastructure and coastal resilience, the U.S. Green Building Council for its LEED for Cities and Communities, and still other regional, state, and local intermediaries in each of these fields.</p>
Federal convening and learning	<p>Each agency or interagency partnership should regularly convene grantees through their regional offices and headquarters to generate learning among grantees, staff, and other relevant partners, as well as to educate broader publics about the opportunities for creative and collaborative work.</p> <p>Workshops and conferences can discuss effective practices, persistent obstacles, and new tools, as well as the challenges of aligning civic engagement with other tools in broader agency toolkits.</p> <p>Such meetings can celebrate their work, even with blemishes, and recommit to pragmatic learning and persistent innovation.</p> <p>Examples:</p> <ul style="list-style-type: none"> • EPA’s annual National Public Involvement Conferences • EPA’s National and Regional Watershed Forums • Training conferences for CARE grantees (see Section 2, below) and • Training conferences of the Federal Urban Waters Partnership

2. Collaborative Environmental Justice and the CARE Program

Since the 1980s, the environmental justice (EJ) movement has been vital to challenging inequities across a broad range of issues in environmental regulation, hazardous facility siting, environmental health impacts, and increasingly to addressing the disproportionate vulnerabilities of frontline communities to climate change. The structural sources of these problems are deep and persistent and will require action on many different levels over the coming decades.

The EJ movement has also been especially important in stressing the role of local community knowledge and voice in strategies for remediation, resilience, and climate justice. Often local EJ community actors get a seat at the table only through vigorous protest. In this report, we do not focus on the latter, which is better left to social movement analyses, but to ways of engaging communities in collaborative problem solving with public agencies and other civic and institutional stakeholders. These two forms of EJ action are not zero sum, but can be combined and sequenced creatively.

As one conference participant with decades of experience in the EJ movement put it, “we can sue their asses off, until they can’t stand up, but then we need to sit at the same table and work collaboratively toward solutions.”

“we can sue their asses off, until they can’t stand up, but
then we need to sit at the same table and work
collaboratively toward solutions.”

Our focus here is on the EJ collaborative problem solving approach that emerged within the National Environmental Justice Advisory Council in the early 2000s and with Community Action for a Renewed Environment (CARE), a demonstration program at EPA. Over its first six years, one hundred community partnerships had come to be funded through CARE, with community leaders celebrated by the White House Council on Environmental Quality and the EPA at an anniversary conference in 2011.

An evaluation by the National Academy of Public Administration recommended CARE as an important model for similar community-based work. In various climate and environmental justice proposals before Congress over the past two years, CARE has been slated to be revived and funded for significant growth. The Inflation Reduction Act of August 2022 includes some \$3 billion for community-driven EJ projects.

We highlight the core features of the CARE program below.

Towards a collaborative model of environmental justice

A collaborative model emerged from the dynamic interplay of local grassroots action and the administrative structure established by the Clinton administration beginning in 1994. This structure was shaped by several prominent EJ movement and academic advisers on the president's transition team, as well as by a meeting of the EPA administrator with local activists. The National Environmental Justice Advisory Council (NEJAC), which was formed according to the requirements of the 1972 Federal Advisory Committee Act (FACA) to ensure "balance," included a very diverse set of EJ movement leaders across the country, as well as representatives from universities, businesses, other types of environmental groups, and state, local, and tribal governments.

Consensus building within NEJAC did not come easily. As EJ activist Vernice Miller-Travis tells it, "one of my best partners turned out to be Sue Briggum of Waste Management, Inc., though I hated her at first. But she eventually got the whole industry to respond to our concerns."

"one of my best partners turned out to be Sue Briggum of Waste Management, Inc., though I hated her at first. But she eventually got the whole industry to respond to our concerns."

-Vernice Miller-Travis

At the grassroots level, EJ groups pressed for funding to build their capacities and to develop projects that would directly improve their communities. This led to the EJ small grants program, which many groups used to enlist other community partners. To enhance its learning from the field, a NEJAC subcommittee conducted public dialogues on brownfields and urban revitalization in five cities (Boston, Philadelphia, Detroit, Oakland, and Atlanta) in 1995. These dialogues included community and labor groups, but also other stakeholders – businesses, banks, foundations, universities, public agencies – whose collaboration would be needed to address the 400,000 or so brownfields around the country where contamination hindered community development and threatened community health, but did not merit Superfund designation.

During these public dialogues, strong support emerged for community visioning, community-based planning, youth engagement, geographical information system (GIS) toolkits, healthy community strategies, and assets-based community and youth development. These perspectives were broadly shared among Black and Latino community and movement leaders in these cities, as well as the Black Church Network on Environmental and Economic Justice.

The chair of this NEJAC subcommittee, Charles Lee, was a prominent EJ movement leader who had written a foundational 1987 study for the United Church of Christ's Commission on Racial Justice and then helped to organize the First National People of Color Environmental Leadership Summit in 1991. Later in the decade he was recruited to EPA's Office of Environmental Justice because he had deep knowledge of and commitment to the EJ movement, but also was attuned to learning from the range of other stakeholders in the field.

Other NEJAC reports on cumulative risk and multiple stressors, and on pollution prevention, highlighted some of the limits of regulatory strategies, as well as the opportunities of multi-stakeholder collaborative ones. This perspective also informed the EJ Interagency Working Group across a dozen agencies whose collaboration would be required for concerted policy action.

Further case studies helped to shape the formal development of an environmental justice collaborative model, and prominent movement leaders in NEJAC signed onto this as one important strategy within the broader EJ toolkit. The collaborative approach was never intended by these movement leaders, by NEJAC, or by EPA staff to displace regulatory and other important strategies, though some within the movement and academia remain wary of its potential for cooptation and distraction from original EJ movement goals.

CARE as partnership

The Community Action for a Renewed Environment (CARE) program was designed in 2005 as a way of leveraging much EPA experience in community-based work over several decades. It emerged most directly from the EJ collaborative problem solving design, as well as continued pressure from EJ groups in NEJAC for the agency to deliver on an urban air toxics strategy that had been projected once the Clean Air Act Amendments of 1990 had secured a robust implementation strategy. Rob Brenner, principal deputy assistant administrator of the Office of Air and Radiation and the director of its Office of Policy Analysis and Review, took the lead after meeting repeatedly with insistent EJ activists, as well as with mid-level EPA staff who had been working with communities across a broad range of issues.

In short, CARE too was an administrative response to learning emergent at the grassroots, and Brenner then brought these perspectives to other senior executives in EPA's Innovation Action Council. A policy design was crafted in the form of a distinctive "cooperative agreement" that provided funding under a specific set of conditions. The CARE policy design is based on "partnerships" in three institutional forms (see Table 2.1).

Table 2.1: Dimensions of CARE partnerships

Types of partnership	Explanation
Self-sustaining partnerships at the community level	<p>The first form is to enable “self-sustaining partnerships” at the community level that can draw upon a diverse array of groups and institutions. Partnerships would mobilize a wide range of assets in the community to help identify and prioritize risks and to develop strategies for addressing them, while generating broad legitimacy based on communication, trust, and collaboration.</p> <p>The local grantee might be an EJ or other environmental group, a community development corporation, a local public health agency, or a university, which in turn assembles a core group of partners from these and other groups in the community. Some partnerships, of course, already exist among the applicant communities, and most projects begin with at least five partners; some double or triple this number during the grant period, though others see erosion after growth.</p> <p>Small business partners have been typically drawn from nail salons, dry cleaners, auto body shops, metal platers, restaurants and others where there have been health concerns around toxics. Many of these are ethnic businesses that find it difficult to come into compliance with regulations that might force them to close, which neither they, their workers, nor their surrounding neighborhoods wish to see. Larger business partners might be electric and gas utilities, airports, transportation depots, and truck fleets. The CARE project might convene a regular business-community roundtable.</p> <p>As Marva King, who co-directed the program, noted, “One of the best things we did was to include businesses in our partnerships. So many became lasting partners.”</p> <p>State agencies were excluded as potential grantees on the recommendation of a committee of the Environmental Council of the States to eliminate conflicts of interest of states as EPA partners delivering technical assistance. Some state agencies might also provide funding.</p> <p>The grantee exercises considerable flexibility in bringing on board the “right partners,” in terms of groups that have relevant assets, commitment, legitimacy, and authority to set priorities and catalyze action. The ethos that pervades the program is “community competence,” in the sense of respecting and building upon knowledge and leadership skills at the local level, but also of developing further local competence through the EPA and its institutional partners. Robust partnerships that generate further skills, community assets, trust, and legitimacy would also be positioned to leverage further resources, such as foundation funding, for sustaining the partnership or building still others.</p>
EPA as active partner with community grantees	<p>This second type of institutional partnership entails the EPA working in various ways to enable effective community action among the grantee teams. CARE grants are cooperative agreements that entail ongoing assistance in using the full range of regulatory and non-regulatory tools and to provide annual training conferences for grantee teams.</p> <p>EPA staff developed a <i>Community Guide to EPA's Voluntary Programs</i> so that grantees had easy access to toolkits on community-based childhood asthma strategies, green building, clean school buses, smart growth, green suppliers network, diesel retrofit, brownfields remediation, design-for-environment industrial and workplace technologies, and more.</p> <p>Since CARE is fundamentally a cross-media approach to enable communities to develop integrative strategies across the four main media programs at the agency (air, water, waste, and toxics), the agency provides a regional project officer to each grantee to coordinate the search for relevant assistance across all program offices at the regional and headquarters levels.</p>

Types of partnership	Explanation
Partnership across EPA Offices	<p>The third level of partnership entails EPA staff developing the capacity for collaboration across its own bureaucratic silos. CARE staff are drawn from all main offices and devote their time to CARE as a (variable) percentage of their overall duties, while not leaving their regular jobs to join a separate community-based office. The latter was tried under another guise in the late 1990s.</p> <p>Staff who enlist to work with CARE grantees have demonstrated a high-level of enthusiasm, because they witness people on the ground utilizing their leadership and other skills for direct improvements and reinforcing a spirit of community collaboration. At one day-long retreat, several staff recounted how CARE inspired and reinvigorated them, with one noting – to general assent – that his 50/50 percent allocation of regular and CARE duties often turned into 50/80, i.e., 130 percent, since he was willing to work well above and beyond to help enable community partnerships.</p> <p>The CARE design further reinforces internal collaboration through various teams (outreach and communications, training and support, regional coordination), and some sixty regional teams. The Centers for Disease Control has also worked with EPA through a memorandum of understanding and taps its experience and networks in community health.</p> <p>The overall management and leadership team at EPA headquarters rotates co-chairs among all four main program offices, so that all develop a stake in successful community-based work and see it as a way to amplify the overall impact of their other toolkits. Under presidents Bush and Obama, the executive committee was drawn from deputy assistant administrators (DAAs), that is top career staff, working through the Innovation Action Council representing all DAAs in program and regional offices. The structural design is thus fundamentally about enhancing community competence in ways that are aligned well with other relevant tools and legitimating community action through core administrative leadership.</p>

CARE as accountable autonomy

While emphasizing leadership at the community level, the CARE model represents a form of what democratic theorist Archon Fung has called “accountable autonomy.” The partnership receiving the grant, and thus entering into a cooperative agreement, has a good deal of autonomy in determining what to focus on, but is also accountable in various ways.

First, of course, is that the Request for Proposals provides a basic template that applicants must address if they hope to be competitive for funding. The “CARE Roadmap” sketches a process of ten key steps, which can be traversed with considerable flexibility, but nonetheless adds further detail and expectations to the template. The first among these, as noted, is building a partnership from an array of suggested groups, such as local EJ and other environmental groups, community and economic development organizations, schools and universities, faith-based organizations, local chambers of commerce, and public health agencies.

The size and configuration of the partnership can vary and change over the course of sequenced projects. Local judgment determines the “right partners,” but with a high expectation of genuine voice from ordinary residents and community groups, as well as a diverse enough mix to ensure that partners can mobilize additional community assets and institutional resources to accomplish agreed upon goals. The process for identifying community concerns, cumulative and comparative risks, and then for setting priorities and an action plan is expected to be participatory and build consensus. It sometimes draws upon participatory action and community-based health research methods. But no single model for deliberative process or relationship building is specified in the roadmap.

Other mechanisms reinforce mutual accountability. Grantee teams negotiate a work plan with their regional project officer and are expected to be in regular contact to ensure timely advice and access to assistance from other regional staff. A regional CARE coordinator supports all the grantees in each of the ten EPA regions, as well as their project officers. Grantees are required to submit quarterly reports of their activities and to budget for and attend multi-day annual training workshops, in which teams from around the country share models and lessons.

Planning the workshops is a joint responsibility of community grantees and agency staff. The program thus builds in high expectations for learning among the teams and within the agency. In our observations of several national trainings, grantees present in ways that stimulate vigorous yet supportive discussion among themselves and staff, without a hint of professional/lay hierarchy.

Further leadership training and dispute resolution assistance is also provided from relevant offices at EPA and other agencies, as well as from civic groups and professional associations (WE ACT for Environmental Justice, National Civic League, National Association of City and County Health Officials). Independent evaluation by a team from the National Academy of Public Administration (NAPA) was begun early to ensure real-time feedback and provide a basis for continuous improvement.

In addition, the Level I (\$100,000 for two years) and Level II (\$300,000 for two years) grant structure enables teams to apply at a basic or more advanced level, and encourages Level I grantees to progress to the next level, if they so choose. One can imagine this multi-level sequencing extended further to one or several more levels, depending on the complexity of the challenges and the projected timeline for developing effective responses and self-sustaining partnerships. It could become a key design component of various types of community grants for climate action and environmental justice. The NAPA evaluation team argued for its relevance to other agencies, even as it also recommended ways to improve design.

Environmental justice must be a central feature of any national climate policy. Various bills working their way through Congress recognize this, as does an important report, *Resetting the Course of EPA: Recommendations from the Environmental Protection Network* (August 2020). EPN is a bipartisan network of more than 500 former EPA career employees and political appointees across the country who served under multiple Democratic and Republican administrations.

President Biden’s Justice40 executive order sets a target of 40 percent of climate and clean infrastructure investments for disadvantaged communities, with a requirement of stakeholder consultation and community involvement, as well as the development of a stakeholder engagement plan for each agency. Funding for training and capacity building is listed as a permissible investment in the interim guidance issued jointly in July 2021 by the directors of the Office of Management and Budget, the Council on Environmental Quality, and the Office of Domestic Climate Policy.

Models for civic engagement and collaborative problem solving have emerged over the past several decades that could be further leveraged in systematic fashion and aligned with other regulatory, infrastructure, green jobs, and other tools. The CARE program and other collaborative environmental justice funding at federal and state levels are worthy of renewal, emulation, and substantial expansion.

Table 2.2: Recommendations for the CARE and EJ collaborative problem solving grants

Recommendation	Explanation
Reinstate CARE and increase funding substantially for similar models	<p>While CARE was a demonstration program, its model of partnerships is worthy of considerable expansion and emulation. The National Academy of Public Administration and similar groups can be contracted to provide timely feedback and evaluation.</p> <p>The Inflation Reduction Act of August 2022 includes up to \$3 billion over four years for community-led environmental and climate justice block grants based primarily on partnerships, as well as community workshops, advisory groups, and other forms of public participation.</p>
Integrate CARE partnerships into local sustainability and climate planning	<p>Develop incentives and assistance to help make CARE and similar partnerships an integral part of city climate and resilience planning. Depending on the size and peculiar challenges of the city, one should aim to have multiple CARE partnerships engaged formally in local climate planning.</p>

3. Community Design and Public Interest Design

In response to the democratic claims of the civil rights movement in the 1960s, architects in various cities developed urban and community design centers to work as partners with local citizens, and later in the 1970s established the Association for Community Design among centers across the country. To shake up the profession, the American Institute of Architects (AIA) invited Whitney M. Young Jr., president of the Urban League, to address the 1968 AIA annual convention in Portland, Oregon, where he excoriated architects for their role in designing the vertical slums of public housing and challenged them to imagine design in the interests of inclusive and empowered communities.

Organizations in the field of design have been addressing these issues in innovative ways in the years since, though with limited funding. AIA established its Regional/Urban Design Assistance Teams (R/UDAT) in 1967, now coordinated through its Center for Communities by Design. Other approaches to community design, including ones with nomenclature such as “public interest design,” have spread across an array of related professional disciplines and in professional school training, with increasing emphasis on issues of sustainability, resilience, and climate change. Some approaches place emphasis on formally structured processes with clear timelines, but others utilize a wide array of less formal and ongoing relational processes.

However, building continues at disproportionate rates in areas vulnerable to flooding and wildfire, and large portions of the population in these areas are completely unaware of these risks. The mismatch between civic capacity, on the one hand, and the costs and risks to the built environment, on the other, are immense. This mismatch is further exacerbated by the dominance of Not-In-My-Backyard (NIMBY) participatory reflexes towards affordable housing and many other initiatives. While we can begin to leverage innovative models of community design in the coming years, the challenge of scale is daunting.

Communities by Design

The American Institute of Architects’ R/UDAT program, now part of its Center for Communities by Design, has been perhaps the most influential in diffusing participatory work into the design process and shaping the profession of architecture. In recent years, it has also addressed issues of climate and resilience.

In the Rockaways (South Queens, New York City) hard hit by Hurricane Sandy in October 2012, for instance, AIA was invited by local leaders to convene a democratic process that included stakeholder interviews, small group meetings, and focus groups, followed by a public workshop of residents to assess local community assets, articulate community identity, and develop a vision for the future. This was followed by a two-day design studio with local professionals, planners, and partner organizations, and another public meeting in June 2013 to review the team’s recommendations.

The 116-page report recommended broader use of green infrastructure and natural systems to mitigate storm damage and improve stormwater management, as well as new building codes. Photos, maps, cartoons, drawings, and other visuals were included to help the community understand better the risks, but also the models of green infrastructure, open space, bike and pedestrian paths and other transit designs available from cities around the country. Revitalizing the Beach 116 Street downtown was central to the report, as was creating festivals, art fairs, and other community-building activities.

The report also mapped the challenges of collaboration and devoted an entire chapter to creating greater coherence across a civic sector that was impressive in its activity and multi-generational depth, but too often balkanized by neighborhood and divided by economic disparities, and thus cacophonous in voice. Generating broad collaborative and participatory civic leadership with a focus on integrating strategic initiatives across local and city institutions, as well as leveraging volunteerism, was a core recommendation.

The Center for Communities by Design has developed a formal template to guide its work, though this can be applied flexibly, depending on time, resources, and other factors. The basic template is outlined in Table 3.1.

Table 3.1: Center for Communities by Design: template for funded projects

Component	Explanation
Application	The application form prompts serious reflection on goals, barriers, prior failures, local partners, and diverse stakeholders.
Letters of support	Letters can come from neighborhood groups, civic associations, and educational institutions, as well as elected officials, public agencies, businesses, and the local (or state) AIA chapter. Letters are a prerequisite for the acceptance of an application, thus incentivizing prior local engagement.
Call for a volunteer team	<p>After receiving a request, the AIA national office puts out a call for volunteers to work as a pro bono team, which then prepares research for several months in advance, including one-on-one and group interviews and oral histories. The teams are multi-disciplinary and, in addition to architects, can include planners, sociologists, economists, engineers, political scientists, and others.</p> <p>Volunteers receive no compensation other than travel expenses and are prohibited from accepting commissions for work resulting from their recommendations. Nor are they clients of those who may have initially invited them, thus helping to assure the community that they are focused on the public good.</p>
Funding	AIA provides up to \$15,000 towards the cost of the process and requires a match of \$5,000 from the community (for a service whose average estimated value is over \$180,000).
Charrette	<p>The team then visits the city or town over four intensive days of multi-stakeholder design charrettes. These are typically accompanied by two open town meetings of several hundred citizens, as well as by participation of elected city officials, planning and design staff, and private developers. The local knowledge of everyday citizens is viewed as vital to good design reflecting community values.</p> <p>The charrettes have a dual governance structure: public meetings are the responsibility of a citizens' steering committee, while design workshops and reports are the joint responsibility of this committee and the visiting team.</p>
Design book	By the fourth day, the joint group produces a book, typically 60-100 pages, for release at a news conference and further discussion at the second town meeting, with a presentation of key recommendations and drawings.
Formal channels of decision making	The recommendations then proceed through established channels in each city or town, though with strong normative force of the participatory process and further team visits, if needed, to help move the process along.

Design as Democracy

In addition to highly formalized processes, such as AIA and other charrettes, there are also less formal and more embedded, relational, and ongoing processes, such as those featured in *Design as Democracy: Techniques for Collective Creativity*, edited by engaged scholars David de la Peña, Diane Jones Allen, Randolph Hester Jr., Jeffrey Hou, Laura Lawson, and Marcia McNally. As they contend in their first sentence, “participatory design is hands-on democracy in action.”

Techniques for deepening democracy in design include creative mapping of neighborhoods, watersheds, and open space, as well as power hierarchies shaping design choices. Multiple types of storytelling and environmental biography inform community histories and visions. Gatherings include one-on-ones, focus groups, public meetings, and administrative teams, but also play spaces, music events, photo jaunts, cell phone diaries, sketch books, pop-up meetings, shopping tours, kitchen-table work sessions, and sea level rise impact visualizations to explore more deeply how people experience and value the places in their everyday lives.

Public Interest Design

Public interest design offers a related nomenclature with an overriding commitment to “engag[ing] people in the design process” and to “community engagement, public participation, and democratic decision making.” The American Institute of Architects has supported research in this area through its Latrobe Prize in 2011, with the winning research team broadening its focus to the role of inequalities in power, wealth, risk, and information in market and client relationships, as well as the need for sustainability that integrates social, economic, and environmental design (SEED).

At the historic Bancroft School in Kansas City, Missouri, for example, civic engagement and multi-stakeholder collaboration led to a redesign that included affordable housing units for more than one hundred people, community health initiatives, job training and computer literacy programs, community gardening and green space, art and music, re-use of site storm water, and LEED platinum green building standards. As Bryan Bell, co-founder of the SEED Network, noted, “engagement identifies specific local needs and forms them into one shared solution.”

“engagement identifies specific local needs and forms them
into one shared solution.”

-Bryan Bell

The SEED Network today includes practitioners across an array of design fields, including architecture, urban, industrial, landscape, and communication design. Its methodology can embrace many kinds of diverse and inclusive forms of public participation in helping to define a larger public good, including workshops, charrettes, assets-based mapping, stakeholder advisory groups, youth training in ArcGIS, women- and minority-owned business group meetings, and comprehensive plans, especially those informed by community input. The SEED evaluation tool enhances transparency, quality, and democratic accountability.

Schools of Architecture

Schools of architecture have increasingly incorporated core courses on community design or public interest design, as well as certificate programs, into their undergraduate and graduate curricula.

The School of Landscape Architecture at the University of Washington in Seattle, for instance, includes participatory, collaborative, and environmental justice principles and practices across the entire curriculum. Courses include neighborhood design, ecological urbanism, and cultural landscape, as well as design/build studios and ongoing partnerships with community groups, ethnic associations, and public agencies. The normative goals include engaged and sustainable communities, but also meaningful places, as well as developing leadership capacities for students to bring such perspectives to long careers with civic purpose. The latter is an especially important value for younger professionals and essential to long-term climate work.

Portland State University offers a graduate certificate program that includes courses in collaborative communities, citizen participation, sustainable cities, urban ecology, environmental sustainability, nonprofit organizations, and green economics.

The College of Design at North Carolina State University in Raleigh also has a public interest design certificate program with a wide interdisciplinary range of courses, including a coastal dynamics design lab, with emphasis on natural infrastructure, resiliency planning, and community design. Its Masters of Advanced Architectural Studies degree has a Public Interest Design focus area.

The initial step in helping to transform the field of architectural education in a systematic fashion in the 1990s provides a model that other professions can perhaps emulate. Five national architecture organizations – AIA, AIA Students, the Association of Collegiate Schools of Architecture, the National Council of Architectural Registration Boards, and the National Architectural Accrediting Board – provided joint leadership and funding for a research project directed by the Carnegie Foundation for the Advancement of Teaching, with additional in-kind support from the Architecture Foundation.

An advisory group, which met twice a year in Washington, DC, was comprised of deans and professors from 18 schools of architecture, including some of the most prestigious in the field, as well as architecture student representatives and a half dozen private firms. The research team met with and surveyed hundreds of students, professors, administrators, and practicing architects in developing their report, *Building Community: A New Future for Architecture Education and Practice*. The “enriched mission” it recommended for the field included connected communities, civic engagement, environmental stewardship, and sustainable design.

The Association of Collegiate Schools of Architecture later charted the growth of community design programs and centers from seventy in 2000 to over two hundred in 2014, including schools of architecture, planning, engineering, and environmental design. Other associations and capacity-building intermediaries include Campus Compact, the National Association of Schools of Art and Design, the American Institute of Graphic Arts, the American Society of Landscape Architects (ASLA), and the Landscape Architecture Foundation (LAF).

The foundation’s *New Landscape Declaration* issued in 2017 emphasizes “equity, sustainability, resiliency, and democracy” in an “age of extreme climate change.” LAF’s “superstudio,” in partnership with the Center for Resilient Cities and Landscapes at Columbia University and the Weitzman School of Design at the University of Pennsylvania, generated several hundred innovative designs.

Recommendations

Climate disruption in the coming years will warrant further efforts to design for resilience and democracy. Federal policy should aim to leverage similar initiatives so that community partners, green builders, professional associations, and professional schools can build capacities appropriately and so that each new cohort of students can utilize the best mix possible of civic and professional skills in their collaborative work for decades to come. Young people in professional programs are currently driving demand, as Diane Jones Allen made quite clear. As Joel Mills, director of AIA’s Center for Communities by Design, noted at the conference, “we now need to think through how to do this work at meaningful scale.”

“we now need to think through how to do this work at meaningful scale”
-Joel Mills

Table 3.2: Recommendations for federal policy in architecture and design

Recommendation	Explanation
Provide federal grants for intermediaries	<p>Such grants would be available to the professional associations and design centers in the field to support volunteer teams or as pass-through grants. Grants would emphasize civic engagement, sustainability, resilience, and environmental justice design projects.</p> <p>A range of existing organizations could be supported in this work, such as AIA’s Center for Communities by Design, the SEED Network, and the American Association of Landscape Architects.</p>
Fund and engage design firms	<p>Funding should be made available to small design firms that work with communities, as well as larger firms that can match funding. In addition, grants can help deepen civic engagement practices among those seeking certification through programs such as the U.S. Green Building Council’s LEED for Neighborhood Development and LEED for Cities and Communities.</p>

Recommendation	Explanation
Provide grants to associations of professional schools in design	These grants would support innovative curricula, such as course development in undergraduate and graduate programs, certificate programs, and masters degree programs, especially as in community-based learning, design studio capstones, internships, and community/university partnerships.

4. Urban and Community Forestry

Urban and community forestry has a long history in the U.S., going back to landscape architecture and urban horticulture in the mid-19th century to garden city movements in the early 20th century. Citizens became engaged through tree commissions and citizen advisory tree boards. The environmental movement in the post-WWII era brought further civic energy to urban and community forestry with the proliferation of groups focused on local planning, ecology, and stewardship.

In 1976, the Arbor Day Foundation initiated Tree City USA to further this work, and the Cooperative Forestry Assistance Act of 1978 formalized urban forestry within the USDA Forest Service. American Forests launched its own program in 1982 and began to advocate vigorously for a full-fledged national urban forestry policy. The 1990 Food Agriculture Conservation and Trade Act (Farm Bill) amended the 1978 act, expanded authorities for Urban and Community Forestry, and created the National Urban and Community Forestry Advisory Council (NUCFAC). The latter, established according to the Federal Advisory Committee Act of 1972, has brought a broad range of scientific, professional, and civic voices to the development of policy.

In addition to its enhancement of community aesthetics, property values, and protected space for gathering and recreation, the goals of urban forestry now range from maintaining and improving water quality, habitat, and biodiversity, to improving public health and capturing carbon. Urban forestry has become a key component of sustainable and climate resilient cities, and can save money on hard infrastructure costs.

The development of the field has proceeded in a robust fashion due to the synergy between the Urban and Community Forestry program at the USDA Forest Service, on the one hand, and a wide range of national and local civic groups, national, regional, and state foresters' associations, and local partnerships among nonprofits and public agencies, such as parks departments and county forest preserves.

USDA Forest Service and the Urban and Community Forestry Program

Today, the Urban and Community Forestry (UCF) Program supports the health of our nation’s forests across the whole landscape and helps to preserve the unique sense of place that forests provide in cities and towns. With its state agency and other partners, the program delivers research-based and data-driven best practices, tools, and resources to community managers. The program serves close to 8,000 communities annually that are home to more than 200 million residents in the United States.

The Research and Development branch of the USDA Forest Service, as well as its UCF program, support a broad range of urban sustainability research, as well as a technology and science delivery team. A webinar series brings experts together to discuss the latest science, practice, and policy on urban forestry and the environment. The Vibrant Cities Lab – a joint project of the USDA Forest Service, American Forests, and the National Association of Regional Councils – merges the latest research with best practices for implementing green infrastructure projects in communities.

The mission of UCF’s Urban Field Station Network is to improve the quality of life in urban and urbanizing areas by conducting and supporting short- and long-term research and science delivery about urban social-ecological systems and urban resource management. Research through the network is collaborative, partnership-based, multi-disciplinary, and interdisciplinary, and currently includes stations in the metropolitan areas of Baltimore, Chicago, Philadelphia, and New York City.

With climate change, the focus on “the right tree in the right place” grows in importance, since urban and community forestry management must address regional soil and environmental conditions, strategically planned wildlife corridors, urban orchards, recovery from disasters, pest management, air and water quality, and stormwater management. Trees on streets, as well as on private land, must be part of the overall forested mix. The complexity of the challenges requires appropriate tools for citizens, along with professional arborists and planners.

Some toolkits of the Urban Field Station Network that democratize usable information and enable stewardship are summarized in Table 4.1.

Table 4.1: Tools from the Urban Field Station Network

Tool	Description
iTree www.itreetools.org	iTree is a free software suite that helps users to assess and understand the local, tangible ecosystem services that trees provide, linking forest management activities with environmental quality and community livability.
STEW-MAP www.nrs.fs.usda.gov/STEW-MAP/	The Stewardship Mapping and Assessment Project (STEW-MAP) is a research methodology, community organizing approach, and partnership mapping tool developed by scientists at the USDA Forest Service Northern Research station that answers the question: who takes care of the local environment?

Tool	Description
Urban Tree Canopy Assessment (UTC) www.nrs.fs.usda.gov/urban/utc/	UTC is a high-resolution mapping methodology that integrates green and gray land cover data with parcel data yielding critical social, economic, and environmental information to inform sustainability and resilience policy, planning, and management.
Urban Forestry Inventory Analysis www.fia.fs.usda.gov/program-features/urban/	Urban FIA is an extension of the traditional FIA program, and inventories and monitors urban forests on both public and private land across the nation, with a special emphasis on America's largest cities, to illuminate regional or national trends in urban forest health and status.
Healthy Trees Healthy Cities www.healthytreeshealthycitiesapp.org/	Healthy Trees Healthy Cities (HTHC) is an urban tree health monitoring initiative developed by The Nature Conservancy and USDA Forest Service that seeks to protect the health of our nation's trees, forests, and communities by creating a culture of stewardship that engages people in long-term stewardship and monitoring of the trees in their local communities.

Civic and professional associations

There are multiple synergies among federal UCF programs and a broad range of civic and professional associations at the national, state, and local levels. At the national level, important groups include the National Association of State Foresters, American Forests, the Arbor Day Foundation, the Trust for Public Land, and The Nature Conservancy. There are also state, regional, and municipal associations of foresters and arborists.

Via the networks it manages, the Arbor Day Foundation acts as conduit to practitioners on the ground. The Foundation's networks include the Alliance for Community Trees, which represents more than 150 community-based groups dedicated to planting and caring for trees, as well as recognition programs such as Tree City USA that encourage communities, schools, health campuses, and arborists to plant, nurture, and celebrate trees.

In addition, the American Planning Association and the International City/County Management Association (ICMA) recognize urban forests as key to sustainability strategies, as well as civic engagement as an important component of planning and stewardship. The Corps Network and the Student Conservation Association enlist young volunteers and AmeriCorps members for urban and community forestry, likely to grow significantly with a Civilian Climate Corps (see section 8, below).

Local cases

A good number of cities are engaging young people and adults in active planting and stewardship of trees. Chicago Wilderness has been a noteworthy model for some three decades within the city, Cook County, and surrounding counties. It has also weathered civic conflicts that have produced genuine policy learning and helped to anchor the City's initial climate planning.

From 2007-2015, the MillionTreesNYC campaign raised the profile of urban forestry in the city and nationally by planting and managing one million new trees, led by the NYC Parks Department and the nonprofit New York Restoration Project under the mantle of the city’s first sustainability plan.

As Lindsay Campbell, Erika Svendsen, and their colleagues show, volunteer tree planting, monitoring, and care strengthens other forms of civic engagement. There exists a broad and diverse network of civic environmental stewardship groups in New York City that engage in tree planting and civic stewardship. The NYC Urban Field Station was founded in 2006 as a partnership between the USDA Forest Service and NYC Parks to understand and advance this network by building knowledge about cities as social-ecological systems.

Numerous other cities have also sponsored major tree planting initiatives and developed urban forestry plans across the country.

The NUCFAC *Ten-Year Urban Forestry Action Plan: 2016-2026* contains a broad range of recommendations for investment and capacity building across the field. It shows significant increases in planning, staff, ordinances, advocacy groups, public-private partnerships, and citizen advisories during the previous decade – though a decline in overall volunteer hours. California’s complete loss of federal funding through UCF resulted from a shift of funds to critical fire-fighting efforts.

Recommendations

Here we focus on civic capacity from the NUCFAC report and other contributions to our research project.

Table 4.2: Recommendations for civic capacity within urban and community forestry

Recommendation	Explanation
Increase funding substantially and integrate urban and community forestry into federal grants to cities and regions	<p>Federal grants for local and regional climate planning should include incentives for integrating urban and community forestry into comprehensive, regional, and climate plans, as well as community development, healthy community, and smart growth strategies.</p> <p>The Urban and Community Forestry Program at USDA should invest in developing civic leadership and organizational capacities and not just tree planting.</p> <p>Grant requirements and incentives should highlight civic engagement, youth empowerment, diverse leadership, environmental justice, and collaborative governance, with special attention to underserved communities and low-canopy neighborhoods to limit gentrification dynamics. Genuine power sharing should guide collaborative work.</p> <p>Grants to states should do likewise, with special emphasis on more robust use of toolkits and by engaging land-grant universities and Extension Services more vigorously.</p>

Recommendation	Explanation
Provide grants to professional schools of forestry	As the demand for urban forest managers continues to rise significantly, grants should be designed to support innovative curricula and training, with robust community engagement and partnership components.
Provide federal grants for nonprofits	Such grants should stress the development of civic and youth leadership capacities in all communities, but especially in underserved and historically marginalized ones.

5. Collaborative Community Conservation

Collaborative approaches to managing ecosystems, especially across landscapes in the Western states, emerged by the late 1980s and received considerable if varied support under three consecutive administrations (Clinton, Bush, and Obama). They have come to include all major federal land agencies in one manner or another, and support has been revived within the Biden administration after a hiatus.

Collaborative community conservation has emerged in response to a variety of factors. Central among them has been the recognition that conflict among environmentalists, on the one hand, and commodity producers such as ranchers and loggers, on the other, often produced stalemate that harmed the interests of both sides and eroded community relationships.

The forms of public participation that had been incorporated into major laws of the 1970s, such as the National Forest Management Act of 1976, tended to exacerbate conflict by polarizing organized interests. Only as environmental dispute resolution and then collaborative forums combining periodic deliberations with ongoing work and trust building began to take hold, did a new paradigm gain in prominence.

This new paradigm has built upon the further research and refinement of conservation biology and ecosystem management. Adaptive responses to complexity and uncertainty rather than command-and-control tools within bureaucratic silos and fragmented patterns of land ownership, proved increasingly appropriate. Climate change has further exacerbated threats and uncertainties and puts a further premium on collaboration.

Collaborative types

Ecosystem collaboratives vary considerably. Some are generated primarily by civic and nonprofit groups and are oriented to directly improving land management practices, restoring watersheds, and enhancing habitat. Other engage a wide array of government agencies and nongovernmental organizations, while still others focus on policy deliberations, higher-level administrative roles, and legislative changes. Transition from one type to another, or to kindred spinoffs and nested partnerships, is also relatively common.

Scale can also vary. The Crown of the Continent is an 18-million acre transboundary ecosystem at the headwaters of North America that includes Montana, two Canadian provinces (Alberta and British Columbia), seven tribes and First Nations, more than 20 government agencies, and at least 20 community-based partnerships.

The Blackfoot Challenge is but one of these partnerships within the Crown of the Continent and received an Innovations in American Government Award from the Kennedy School of Government at Harvard University. Now in its thirtieth year, the Blackfoot Challenge includes working relationships with staff from the USDA Forest Service, the Bureau of Land Management, the U.S. Fish and Wildlife Service, Montana state agencies, The Nature Conservancy and other land trusts, and some five hundred private landowners across the Blackfoot Watershed, 35 percent of which is privately owned and 65 percent publicly owned. Staff develop stewardship toolkits that cover the broadest range of practices for fire, wildlife, grazing, water conservation, soil health, invasive species, conservation easements, and more, and work directly with landowners to develop stewardship plans.

As Blackfoot partnership chair Jim Stone of Rolling Stone Ranch in Ovando, Montana, tells the history, during the early contentious days, his father counselled him above all to “please remember to invite people to the table.” Ranchers welcomed federal agency folks as part of the community, and many stayed to raise their families. “We refer to our core work as ‘neighboring up.’”

"We refer to our core work as 'neighboring up.'"

-Jim Stone

In the State of Washington, the Department of Natural Resources is implementing Shared Stewardship agreements across all 35 of its forests and provides grants for community capacity building. Collaboratives of various sorts are part of local and tribal government climate resilience plans, and the state’s strategy sees public engagement as key to a decades-long process.

California’s network of marine protected areas along its entire coast, based in a landmark law of 1999, bears all the marks of extraordinary organizational and policy collaboration after an initial lag. It has also developed community-based collaboratives, citizen science, and environmental education projects that have mobilized many volunteers.

Core features

While there is no single model, certain core design features appear in the more robust cases (see Table 5.1).

Table 5.1: Core design features of collaborative community conservation

Component	Explanation
Multi-stakeholder	Various commodity interests (farmers, ranchers, loggers), conservation groups (land trusts, watershed associations, environmental groups), public agencies (local, state, tribal, federal), community groups, and other interested citizens are represented.
Non-hierarchical deliberation	<p>Participants are equals in the deliberative process, not ranked by agency authority, organizational prestige, or size of membership. Participation is open to those who agree with the core norms of the process.</p> <p>Diversity and inclusion are valued, but strong ideological positions or uncompromising interest representation are not.</p> <p>Those not in agreement with such norms, of course, retain their rights of criticism, advocacy, and voting in the full range of other democratic venues, and may negotiate participation in the collaborative at a future date. They also have access to the courts.</p>
Consensus-based	<p>Decision making aspires to consensus rather than majority votes and hence aims to broaden the legitimacy of decisions and protect minority rights.</p> <p>Full agreement is rare, of course, and most collaborative processes establish rules for a supermajority to get as much of a workable consensus as possible. Community visioning processes may ground decision making on specific issues.</p>
Enculturate civic virtue	<p>Norms and procedures are established to nurture civil respect, careful listening, honest rather than strategic speech, trustworthy motives, and dependable follow-up behavior in implementation.</p> <p>Appeals to a common or public good, rooted in shared and beloved places, guide deliberation, while also recognizing distinct economic and institutional interests and “enlightened self-interest.”</p> <p>Storytelling may help frame how participants understand themselves as civic actors with commitments to a larger public good. Some meetings begin and end with community-building exercises. Repeated interaction enhances opportunities to enculturate virtue, elicit respect, and engage in co-production.</p> <p>“Getting on one’s soapbox,” however, does not accord with such norms, nor do attacks on the motives of other participants.</p>
Enlist social networks	<p>Participants encourage information sharing, emulation of new norms and practices, and further collaboration through existing social networks.</p> <p>The latter include friends, family, neighbors, religious congregations, social clubs, farmer groups, and other forms of social capital. Such networks can build upon already existing trust and help generate further trust for more complex relationships and projects.</p>
Incorporate Indigenous knowledge	Long utilized Indigenous practices and ways of knowing the land, wildlife, and human habitation are vitally important for tribal land management and in partnerships that include tribes among the array of stakeholders. Indigenous culture is central to resilient climate strategies and to democratic engagement.

Component	Explanation
Ennoble productive work on landscapes	<p>While the work practices of ranchers, farmers, and foresters can be ecologically destructive, collaborative solutions can build upon local knowledge and generate practices that are protective and regenerative for long-term land stewardship, product diversification, and multigenerational commitment to working lands in communities that are sustainable, resilient, and just.</p> <p>By collaborating with agency staff, as well as university ecologists and biologists, all these occupations can reinforce each other's distinct democratic professional ethos and practice.</p>
Place-based, holistic, and integrated approach	<p>Collaborative community conservation is based upon shared knowledge and research that reduces information asymmetries, includes lay and professional sources, and aims to achieve holistic ecological, economic, and social goals in an integrative fashion.</p> <p>Geographic information systems (GIS) are key tools and can be developed and utilized in ways that encourage open learning and broad participation. Public agencies are encouraged to manage across fragmented bureaucratic silos and checkerboard land ownership, with a focus on measurable performance and results rather bureaucratic rules, while also remaining faithful to federal and state laws and regulations.</p>
Adaptive management and problem solving	<p>Collaborative conservation stresses “learning by doing,” with continuous and open monitoring and through multiple iterations and revisions in the face of uncertain tools, imperfect data, and unanticipated outcomes.</p> <p>Indicators include measures of economic, ecological, and community thriving, as well as shortfalls.</p>
Simultaneous, broad-based, reciprocal accountability	<p>Being democratically accountable is not primarily about following rules, but achieving agreed upon goals among a range of actors who can hold each other to account in multiple ways. This is designed to enhance legitimacy, encourage self-enforcement, and lower resistance to implementation.</p> <p>Accountability through collaborative community conservation is designed to enrich and supplement other forms of democratic accountability – electoral, administrative, legal, public sphere and free press – not to replace them.</p> <p><small>Adapted from Edward P. Weber, <i>Bringing Society Back In: Grassroots Ecosystem Management, Accountability, and Sustainable Communities</i> (Cambridge, MA: MIT Press, 2003), and other sources.</small></p>

Persistent challenges

Collaborative designs for conservation across complex landscapes have demonstrated significant results in many settings. They have been tested in some of the more culturally and politically polarized sections of the country.

For instance, when armed anti-government militants seized the Malheur National Wildlife Refuge in Harney County, Oregon, in 2016, local citizens and officials could draw upon years of partnership work that engaged rural stakeholders and federal agency staff constructively in problem solving. Working through multiple collaborative projects across the county yielded significant payoffs in democratic and administrative legitimacy that decisively limited the appeal of the militants.

However, several types of challenges persist and should be addressed through federal policy. First, funding for collaborative projects tends to be irregular and insufficient. Private foundations have often been key, but their programs shift with new leadership or after the core model has been tested. State and federal agencies often display similar inconsistencies, and budget cutbacks often target process components. Such funding shortfalls erode the capacity of partnership staff in nonprofits who coordinate and facilitate sustained leadership development and relational work horizontally and vertically, thus limiting the further formation of bridging and linking social capital. They also impair outreach and education to broader publics beyond the engaged stakeholders.

Second, some collaboratives tend to manage to the lowest common denominator, settling for relatively easy and voluntary improvements. They do not benefit as much from the political capital and regulatory authority one might see in traditional environmental programs, or from the social movement mobilization that might have helped make these possible.

Across landscapes that are enormously complex in terms of ecological and climate dynamics, as well as land ownership patterns and regulatory authorities, federal policy should embrace, fund, and administratively support a wide range of collaboratives. But it should also enable genuine learning among types of collaboratives and across pathways of development from one type and level to another.

Recommendations

In Table 5.2, we offer several general proposals that emphasize civic capacity, although there are a broad range of other tools and investments that are warranted.

Table 5.2: Recommendations for federal policy on collaborative community conservation

Recommendation	Explanation
Develop strategic framework for multiple mixes and pathways	<p>Each federal agency should develop a strategic framework that reviews types of collaboratives, relative strengths and drawbacks of each type, proper alignment with other agency tools, and dynamic pathways that can be promoted through funding, administrative support, and new participatory geospatial mapping and other toolkits.</p> <p>A diverse portfolio of types of projects and partnerships can permit systematic comparison and learning within and across agencies, as well as limit the tendency to manage to the lowest common denominator.</p>
Provide training grants to conservation and other associations	<p>Such grants should aim to develop capacity for civic engagement and partnership across the entire field in ways that align well with professional practices.</p> <p>Training intermediaries could include national land trust and watershed organizations, professional associations of foresters and floodplain managers, professional schools and Extension programs, and deliberative democracy and community development organizations – or appropriate partnerships among these.</p> <p>The Western Collaborative Conservation Network, founded in 2020, is well positioned to develop robust intermediary roles.</p>

Recommendation	Explanation
Increase funding substantially	<p>All federal land management agencies – the USDA Forest Service, the Bureau of Land Management, the National Park Service, and the U.S. Fish and Wildlife Service – should enhance funding and administrative support for collaborative conservation.</p> <p>Funding should be provided for multiple and complementary components: core agency and nonprofit staff capable of training and facilitation, AmeriCorps and Civilian Climate Corps teams and internships, Cooperative Extension science communications staff, environmental education partners to help bridge professional projects and youth engagement.</p> <p>The America the Beautiful initiative of the Biden administration, with funding from the Infrastructure Investment and Jobs Act of November 2021, provides a framework that builds upon much of the collaborative conservation work of the previous decades. It emphasizes the stewardship work of everyday citizens and communities – watershed associations, fishermen, farmers, ranchers, foresters, firefighters, youth, Tribes and Indigenous Peoples, nonprofits, and all levels of government.</p> <p>Its interagency working group (IWG) is drawn from the leadership of the departments of Interior and Agriculture, NOAA at Commerce, and the White House Council on Environmental Quality, with links to many other departments and agencies. Many climate, conservation, business, sporting and other user groups had input into the policy design.</p> <p>The IWG’s Collaborative Conservation and Engagement Committee “focuses on building a robust public process of consultation and engagement and helping coordinate a government-wide approach.” All partners should work to ensure that funding for robust engagement and civic capacity gets appropriate emphasis.</p>

6. Environmental Education

On April 22, 1970, thousands of schools around the country held teach-ins and other events to commemorate the first Earth Day. School teach-ins were accompanied by similar events, some lasting multiple days, at more than one thousand colleges and universities, as well as at parks, libraries, churches, synagogues, government buildings, and community and youth centers.

The National Environmental Policy Act had been signed into law at the beginning of the year and the U.S. Environmental Protection Agency (EPA) would be up and running by year’s end. The first environmental education act became law in October, but in 1981 Congress eliminated the federal office of environmental education (then in the Department of Education). However, a new law was on the books again by 1990, along with a new Office of Environmental Education within EPA. The National Environmental Education Advisory Council was established to help guide policy.

Capacity building in the environmental education (EE) field had been ongoing in the prior decades but was given a significant boost going forward. The field has become increasingly robust through a variety of institutional channels and is poised for the kind of growth and further refinement that could contribute enormously in the coming years to broad public understanding, active youth and adult civic engagement, and relevant careers for young democratic professionals and green collar workers.

As Judy Braus, executive director of the North American Association for Environmental Education, noted, “the role of environmental education is to help create future problem solvers... to provide tools, voice, and choice, not to dictate actions.”

“the role of environmental education is to help create future problem solvers... to provide tools, voice, and choice, not to dictate actions”

-Judy Braus

Key organizational channels for building EE capacity

The field of environmental education has grown through a variety of channels that reflect how environmental knowledge, skills, and dispositions have become increasingly critical to problem solving in communities and public agencies. Sound science and civic education for action could reinforce each other, even when there are bumps in the road in developing broadly acceptable principles of excellence in the field.

While not an exhaustive typology with neatly delineated boundaries, the following Table 6.1 includes major types of organizations that have been critical to developing capacity in the EE field.

Table 6.1: Organizational channels for EE capacity building

Organization type	Explanation
State environmental education association	<p>State associations have been critical to advancing professional standards and training within schools and more broadly. In some states, teachers within science and social studies are well networked and take the lead at the district and state levels. In many states, however, the coalition includes leadership and support from a very broad range of organizations that have been engaged in EE for decades, such as those discussed below.</p> <p>States have moved increasingly, if unevenly, towards the adoption of environmental literacy plans (ELPs). Most stress four key goals: academic achievement, social emotional learning, civic engagement, and workforce development.</p>
Museums, zoos, aquariums, nature centers	<p>A broad range of institutions with missions to educate the public and offer enjoyment for families and children have incorporated environmental and climate education. Their professional and volunteer staff offer programs and exhibits that present sound science in accessible formats. They also support activities of local schools, youth groups, and other organizations.</p>

Organization Type	Explanation
National environmental membership organization	<p>Organizations with dues paying members, state chapters, local nature centers. Two of the most prominent are:</p> <ul style="list-style-type: none"> • National Wildlife Federation (NWF), founded in 1936, with state affiliates and several million members, began its extensive EE with Ranger Rick magazine in the 1960s. NWF now includes a wide array of magazines, books, videos, games, and support for learning and engagement across many types of ecological venues and grade levels, including Eco-Schools and Campus Ecology. As Collin O'Mara, president and CEO of NWF, concluded his talk for TEDx Nashville on June 10, 2019, young people are key partners in “collaborative conservation” (see section 5, above). • National Audubon Society has nearly 500 chapters nationwide and works on a broad range of issues that impact bird populations, its original mission when established in 1905. Audubon chapters are active in coastal stewardship and climate adaptation, in addition to many other issues. They play key partnership roles in many citizen science projects. Audubon has a network of bird sanctuaries, nature centers, and nature camps around the country, and produces magazines, videos, interactive games, and puzzles.
State wildlife and natural resource agency → independent national nonprofit	<p>Several agencies have developed important curricula and teacher training and many remain partners even as the projects have become independent national nonprofits. Among the most important are:</p> <ul style="list-style-type: none"> • Project Learning Tree (PLT) emerged from the Western Regional Environmental Education Council and the American Forest Institute (now the American Forest Foundation) in the 1970s and subsequently grew into a national organization. In 2006, it had a network of 3,000 active volunteers and state coordinators who had trained some 500,000 teachers over three decades. It is now a project of the Sustainable Forestry Initiative. Sponsors and partners include state government agencies, state forestry associations, universities, state environmental education associations, and other non-profit entities. Project Learning Tree also sponsors Green Schools to engage K-12 students in a range of water, energy, waste, recycling, and other initiatives. • Project WILD (Wildlife in Learning Design) was initiated in 1983 as a project of the Western Regional Environmental Education Council (renamed the Council for Environmental Education in 1996), composed of representatives of state education agencies and natural resource agencies in thirteen western states, and the Western Association of Fish and Wildlife Agencies. Project WILD developed programs in every state and by 2006 claimed to have reached the one million mark for number of teachers trained. It is now a project of the Association of Fish and Wildlife Agencies. Project WILD's network of state coordinators is housed primarily in state agencies with jurisdiction over fish and wildlife, and these coordinators train volunteer facilitators, who provide professional development workshops to teachers. • Project WET (Water Education for Teachers) was initially established in 1984 by the North Dakota State Water Commission and then moved to Montana State University with funding from the Bureau of Reclamation, part of the U.S. Department of the Interior. These sponsors enabled Project WET to pilot several state projects and then develop a national network of state coordinators, many of them housed in state universities and Extension Services, and half housed in state environmental protection and natural resource agencies, even as the project became an independent operating foundation in 2005. At present, there are approximately 65 U.S. “host institutions,” with designated Project WET Coordinators, and 1,700 facilitators to train educators to teach about all aspects of water. Project WET publishes student activity booklets, children's story books, educator guides, maps and posters that address a variety of critical water topics through hands-on, science-based activities. Some are tailored to specific states and watersheds.

Organization Type	Explanation
Youth organization	<p>Several national youth associations have developed EE programs, often with an emphasis on community engagement and active stewardship. Among these are:</p> <ul style="list-style-type: none"> • Seattle's Metrocenter YMCA developed Earth Service Corps (YESC) in 1989, which then became the hub of a national initiative that included 111 Ys in 30 states around the country, with regional hubs in Boston, New York, Nashville, Minneapolis, Los Angeles, and Seattle. YESC worked primarily through after-school service-learning programs among middle and high school students that combine hands-on environmental education, ecological restoration, environmental justice, and leadership development. YESC programs have also partnered with local parks and recreation departments. With ten AmeriCorps volunteers and funding from the W. K. Kellogg Foundation during the 1990s, YESC was able to expand considerably; with more limited funding, it has contracted to the western Washington area, where its work remains robust. • National 4-H has an EE curriculum, <i>Exploring Your Environment</i>, for students in grades 6-8, as well as other curricula on fishing, forestry, bicycling, gardening, entomology, and soil erosion and control. Founded in 1902 and then formalized as part of the USDA Cooperative Extension System in 1914, 4-H has increasingly included diverse communities from urban areas and in the 1990s came to stress youth as active citizens. A Ford Foundation grant (1999-2002) funded National 4-H's Innovation Center for Community and Youth Development to focus on youth leadership, which was followed by a systematic series of 1,640 local, state, and national conversations to further ground its democratic mission of "empowering youth as equal partners" and "equal citizens" for the 4-H centennial.
North American Association for Environmental Education (NAAEE)	<p>NAAEE, originally a group of community college educators founded in 1971, became tri-national and changed its name in 1983.</p> <p>NAAEE has served as the professional association of the field, with members from all areas of EE work, including teaching, research, philanthropy, natural resource management, corporations, and youth development.</p> <p>Its core role in several iterations of EPA's Environmental Education Training Program, funded typically for five years, has enhanced its leadership and reach as it has become a network of networks. Its online platform eePRO anchors its professional development and other resources.</p> <p>Through its network of practitioners and scholars, NAAEE has developed a series of <i>Guidelines for Excellence</i> that cover a range of critical EE topics, including K-12, early childhood, non-formal programming, instruction materials, and professional development. These guidelines have brought a high level of professional legitimacy to the field and have helped to insulate it from partisan attack.</p> <p>NAAEE's <i>Community Engagement: Guidelines for Excellence</i> includes a broad range of pedagogically sound principles and practices for engaged EE that is community-centered, collaborative, and inclusive, and that fosters healthy, resilient, and just communities.</p> <p>Because NAAEE has systematically learned from and embedded itself into the broader fields of sustainable cities, collaborative conservation, and environmental justice over the past thirty years, its language and framing are well aligned with the wide array of civic models in other sections of this report, thus signaling pathways for lifelong co-productive work in communities, professions, and institutions.</p> <p>The core frame of the community engagement guidelines: co-design and co-create.</p>

Capacity building in the EE field has been bolstered significantly by other organizations. The National Environmental Education Foundation (NEEF) was established by the 1990 law as a 501(c)(3) nonprofit to complement the work of EPA. It raises money from various corporate and foundation sources, as well as from government grants and a federal appropriation.

NEEF provides grants to organizations across the field to build capacity and increase diversity for lifelong environmental education, as well as to conduct public and corporate sustainability and community service campaigns. It has supported programs to increase climate literacy for nearly 400 broadcast meteorologists in over 130 stations across the U.S. It leverages public and private partnerships, including other federal agencies, to engage young people in education, stewardship, and resilience work.

The foundation has also played a critical role in framing employee engagement, including frontline workers, as key to sustainability strategies in business – a critical task that certainly warrants much support. NEEF's grant capacity, however, has remained relatively modest.

The National Environmental Education Advisory Council (NEEAC) has provided keen guidance through difficult times, including repeated attempts to cut budgets or eliminate programs altogether. Established by the 1990 EE law, in accordance with the Federal Advisory Committee Act (FACA) of 1972 that enables balanced representation of various interests and perspectives, NEEAC includes 11 members: two each from primary/secondary education, colleges/universities, nonprofits engaged in EE, state departments of education/natural resources, and business/industry, as well as one from senior citizens.

NEEAC's purpose is to advise EPA on its grant and training programs, as well as to assess the state of EE in the nation and the challenges it faces in view of current and anticipated environmental problems. It also makes recommendations about how to build capacity across the EE field, including nonprofit organizations and educational institutions.

Urban environmental education

One area of distinct growth over the past decade has been urban environmental education, which aligns well with many innovations in this report. Urban EE focuses on place as a site for community forestry, green infrastructure, street design, river restoration, and community gardens, with special emphasis on the role of youth as assets and active participants. Many community and youth development organizations are engaged at this level, though often below the radar screen.

Environmental justice has become increasingly central, as some city programs as well as nonprofits engage youth to help design for equity in bike path placement or restore rivers that run through African American and Latino neighborhoods with long histories of disproportionate pollution and environmental racism.

Partnerships are the preferred form for urban EE, sometimes on a very ambitious scale. The Bronx River Alliance, for instance, works with 75 schools and colleges to engage students in hands-on learning and restoration of the river corridor, including its greenspace and recreation areas. Its core partnership is with the New York City Department of Parks and Recreation, but it also counts some one hundred community-based organizations, regional nonprofits, businesses, and other government agencies as partners in education, restoration, art, and recreation, with an eye toward developing careers in ecological restoration and parkland management.

The Great Lakes Stewardship Initiative (GLSI) has utilized an approach it calls “place-based stewardship education,” including school-community partnerships, multiple learning experiences of meaningful duration, and generating real benefits for the community and environment. Developing youth voice in projects, as well as democratic participation in a larger public discourse that engages multiple constituencies beyond schools, are central principles. GLSI has received funding from the Great Lakes Fishery Trust, the EPA, and other partners. The Detroit Institute of Technology provides one model within GLSI (see Box 6.1).

Box 6.1: GLSI at the Detroit Institute of Technology

During the 2015-2016 school year at the Detroit Institute of Technology, which is part of the Southeast Michigan Stewardship Coalition – one of nine GLSI regional hubs – the entire ninth-grade class of this public high school incorporated nearby Rouge Park into its curriculum of social studies, English language arts, and science. Each was explicitly aligned with the latest standards for content and process in its respective discipline.

The students, mentored by twelve “youth ambassadors” from more advanced grades, worked on park maintenance and restoration – at 1,200 acres, it is 40% larger than Central Park in NYC. This work was part of a neighborhood revitalization project funded by the Skillman Foundation. Along the storied River Rouge where a famous wildcat strike in 1941 forced Henry Ford to recognize the United Auto Workers, the park has become the site for science learning, urban forestry, the history of industrial pollution, and early Native settlement, as well as soil and water quality monitoring.

Students utilized photography, mapping, nature drawing, and spoken word poetry to further enrich their perspective. Teachers also drew upon partnerships they had nurtured with nonprofits that focused on sustainable energy use and natural resources. They were also provided with their own professional development opportunities in collaborative settings, along with administrators, community partners, and pre-service teachers from Eastern Michigan University.

Youth ambassadors made presentations to public forums that included other students and adults of the broader GLSI partnership, in collaboration with Michigan State University Extension and the Sea Grant program of the University of Michigan and the National Oceanic and Atmospheric Administration (NOAA).

Students were challenged to think deeply about what it means to be an “environmental citizen” and were provided the opportunity to work in teams and as part of a larger network to experience what this might mean practically in their lives; project assessment revealed significant impacts on their knowledge and aspirations. A technical project lead on electric batteries at General Motors served on the partnership advisory council. Ford was there too!

Adapted from Rebecca Nielsen, Chad Segrist, Ethan Lowenstein, and Lisa Marchkini-Polk,
The Cody Youth Ambassadors: Voices for Change and Hope in the Cody Rouge Community,
Detroit, Michigan (June 2016)

Recommendations

Environmental education has proven relevant in a wide range of formal and informal settings. It has developed through multiple civic associations, educational institutions, organizational partnerships, and policy levers. It has also combined science-based knowledge with experiential learning and civic engagement.

However, there are huge inconsistencies and much miseducation across states, largely due to lobbying of school boards, textbook publishers, and state legislatures by oil corporations and libertarian think tanks.

With increasing threats of climate change to communities and ecosystems, as well as persistent problems of environmental injustice, EE is poised to make critical contributions to resilience and democracy in the coming decades. As Bora Simmons, founding director of the National Project for Excellence in Environmental Education at NAAEE, argues, “environmental education can build hope and help address climate anxiety and climate grief” to enable sustained youth engagement for the coming decades.

“environmental education can build hope and help address
climate anxiety and climate grief”

-Bora Simmons

Reports of major associations, agencies, and advisory committees map some capacity building challenges. Here we focus on just a few, summarized in Table 6.2.

Table 6.2: Recommendations for federal policy on environmental education

Recommendation	Explanation
Develop an EE mission and strategy for each relevant federal agency	<p>Each relevant federal agency should develop an explicit EE mission and strategy. While various agencies have programs and some have an office of education, one model that might be emulated is that of the National Oceanic and Atmospheric Administration (NOAA).</p> <p>The NOAA <i>Education Strategic Plan 2021-2040</i> emerged from specific authorizations by Congress beginning in 2007, which required the agency to develop a 20-year, agency-wide education plan and to update it every five years. The current plan builds upon the 2010-2030 plan and the 2015-2035 plan. The NOAA administrator is required to develop, support, promote, and coordinate educational activities at all levels of the agency to enhance public awareness and stewardship among the general public and coastal stakeholders. An Education Council meets monthly to coordinate across the agency.</p> <p>NOAA’s education strategic plan explicitly links EE to each area of its work, including coastal zone management, fishery conservation, marine sanctuaries, Sea Grant colleges, public land management, weather research forecasting, tsunami warning, and more. It sees its mission as embedding such education in specific places and through networks of field educators and citizen scientists across a wide range of institutions, as well as providing tools and data visualizations that are usable by the public. As the strategic plan notes, the agency’s complex task of supporting “robust economies, resilient communities, and healthy ecosystems ... would not be possible without an engaged public.”</p>

Recommendation	Explanation
Increase funding substantially	<p>Funding for environmental education should be expanded substantially. The National Environmental Education Act of 1990 authorized funding to help build the field in critical ways, including through a wide range of networks and partnerships. But this modest funding was never utilized fully (nor adjusted for inflation) and remains highly inadequate for developing EE capacities to complement the wide range of civic engagement and stewardship activities for ecological and community resilience in the decades ahead. The Act should be reauthorized with these concerns foremost.</p> <p>Funding should be provided through the Office of Environmental Education at EPA and include its coordinating roles across other relevant federal agencies that develop EE strategic plans, as in the NOAA case above.</p> <p>Further support should also be provided through the National Environmental Education Foundation and through further capacity building of Sea Grant and Land Grant university Extension programs. The University of California Climate Stewards courses and Cooperative Extension staff provide an especially important model.</p>

7. Coastal Resilience and Sea Level Rise

Sea level rise and coastal storms are among the greatest challenges of climate change. They pose serious threats to population settlement, home and business assets, public finances, and local relationships and cultures. While a variety of policy tools can enable coastal resilience, public participation is essential if citizens and stakeholders are to become partners in local and regional planning rather than delaying and impeding. The longer we delay developing responses that are equitable and effective, and that are perceived as having substantial legitimacy among relevant publics, the worse the crises will become and the more will democratic governance be imperiled.

Sea level rise is projected at 10-12 inches by 2050 and 3 feet by 2100, with some estimates several times this. Hotspots are already quite evident, such as Miami and New Orleans, with a “slow tsunami” building more broadly over the course of this century, and likely for many years beyond, even with effective greenhouse gas reductions. One EPA estimate finds that the cumulative discounted damages to coastal property in the contiguous U.S. will amount to \$3.6 trillion through 2100 unless there is timely implementation of adaptation measures. Southeastern and Gulf states from Virginia to Texas are especially vulnerable. Among the many challenges and sources of potential conflict are those outlined in Table 7.1.

Table 7.1: Coastal challenges due to sea level rise

Challenge	Explanation
Home assets	Vulnerable are primary and secondary residences, especially significant for those whose primary home (owner-occupied or rental) is at risk. Home equity, which serves to support retirement income or college tuition for children, can erode either slowly or suddenly. The boundaries of public and private lands will shift as beach shorelines move inward.

Challenge	Explanation
Community relationships	Those who retreat from the shore are at risk of losing neighborhood ties, school friends, fellow congregants, and other forms of social capital. Moral economies and cultural identities are disrupted with loss of places rich with family and community memories, as well as honorable standing.
Public Infrastructure	At risk are coastal ecosystems, such as wetlands, beaches, dunes, marshlands, mangrove forests, coastal national parks and protected areas. Also at risk are military bases, water and sewer systems, power plants, waste treatment plants and storage facilities. A wide range of transportation assets are threatened, including airports, harbors, ports, tunnels, roads, and rail lines.
Business assets	Farmland will be degraded by saltwater intrusion. Coastal tourism, as well as commercial and recreational fishing, are at risk. Buildings will be lost or damaged, employees scattered, and business networks disrupted.
Public finances	Loss of taxable property will reduce local budgets and impact public services. Anticipating such losses can reinforce denial or delay. At national and state levels, resentment will continue to grow over publicly insuring those facing losses, especially granting subsidies to those making repeated claims and perceived to have made free and informed choices about living near the shore. Taxpayer groups can form coalitions with environmental groups concerned with the moral hazard of insurance rates that subsidize further coastal development and hinder ecological resilience and restoration.
Relocation	Receiving communities will vary in willingness and capacity to integrate climate refugees into neighborhoods, schools, and jobs, with tensions especially around racial minorities and lower income populations. Receiving capacity is thus uncertain. Relocation threatens further gentrification of higher elevation areas on the coast.
Public health	Threats of waterborne diseases, contaminated soil, chemical spills, respiratory illness, stress and mental health, will grow.
Conflict triggers	<p>Revisions of flood insurance risk maps (FIRMs) can trigger significant protest and resistance, as happened with the Stop FEMA Now campaign after Hurricane Sandy. Tipping points can signal dramatic declines in property values as mortgaged properties go underwater literally and figuratively. The temporal and spatial dimensions of mapping risk are subject to significant contention and conflict, and persisting uncertainties can impede collective action, as well as household adjustment. Public decisions that lower asset values can be litigated as property “takings.”</p> <p><small>Adapted from Jeffrey Peterson, <i>A New Coast: Strategies for Responding to Devastating Storms and Rising Seas</i> (Washington, DC: Island Press, 2019), and other sources.</small></p>

Coastal associations for democratic resilience

Civic associations have organized for several decades to respond to estuary pollution, wetland loss, and other coastal issues, and to mobilize local citizens and students in water quality monitoring and habitat restoration. Climate change, sea level rise, and coastal resilience have become ever more central to how they conceive their work. While many are engaged in creative work, even the most well developed organizations and partnerships typically fall far short of having the resources needed to support robust and sustained civic action.

For instance, the Puget Sound Partnership (PSP) – initially established as part of the National Estuary Program (NEP) under the 1987 revisions to the Clean Water Act – was reconfigured in 2007 to ensure closer integration with the Department of Ecology of Washington State. In the ensuing years, PSP has maintained the NEP requisite structure of a multi-stakeholder leadership council, an ecosystem coordinating board, and a science panel. It has also added local integrating organizations (LIOs) that engage nonprofits, tribes, educational organizations, watershed groups, local city staff, and ordinary members of the public in crafting and implementing its action agenda in the ten distinct geographic areas of the sound.

This decentralized design within a highly strategic, science-based, and accountable governance structure, has much to recommend it. Yet the chronic shortfall in funding for public outreach and education, LIO capacity building, and for other partner organizations such as the Sea Grant program, the Washington Environmental Council, The Nature Conservancy, and tribal governments significantly constrains civic action and co-production.

Many of the other 28 partnerships within the National Estuary Program face similar challenges.

Over the past decade, the threat of sea level rise in the San Francisco Bay area has accelerated the formation of local groups and forums to address adaptation and resilience, while also aligning these with regional initiatives. This has placed a premium on developing leadership capacities that can balance decentralizing and centralizing logics, since local communities resist solutions in which they do not have a voice, yet effective responses require coordination across the region. As Mark Lubell of the University of California Davis has shown, developing the art of polycentric and collaborative governance is key.

The Waterfront Alliance was formed in 2007 and grew to include dozens of organizations in the wake of the devastation of Hurricane Sandy in 2012 along the New York and New Jersey coast. It has cohered Rise to Resilience, a broad coalition of leading environmental organizations and environmental justice groups, and works to develop multi-stakeholder strategies for a resilient working harbor and its surrounding neighborhoods. This includes vibrant maritime businesses that generate jobs, green infrastructure that secures public open space and in-water recreation, and environmental education and cultural programming.

Comprehensive, community-centered planning and the use of architectural Waterfront Edge Design Guidelines – WEDG® – inform collaboration with public agencies, as well as training among agency staff and civic associations. WEDG is increasingly being adopted nationally both in the public and private sectors. Municipalities are finding ways to codify WEDG in planning ordinances and RFPs, and private developers increasingly see the risk reduction value in going through the verification process.

In New York City, several community boards – the most local form of government – have adopted resolutions encouraging land use applicants to adopt WEDG in waterfront projects. An online professional course to become a WEDG-certified professional is available for anyone from engineers to environmental activists to urban planners. As Karen Imas, Vice President of Programs, explains, “WEDG guidelines are like LEED for green building, but with a focus on resiliency, ecology, and public access.”

"WEDG guidelines are like LEED for green building, but with a focus on resiliency, ecology, and public access."

-Karen Imas

To be sure, a region as large as the New York and New Jersey coast has room for diverse civic strategies. The Rockaways utilized AIA's Communities by Design to conduct its charrette process, as noted in section 3 above. In the Oakwood Beach neighborhood of Staten Island, a well-designed state buyout program helped to shape how local homeowners organized democratically to enable a dignified retreat from the shore with broad public and patriotic purpose, including commitment to returning developed wetlands back to their ecological functions. Retreat was not defeat, as Liz Koslov of UCLA shows, but grassroots democracy rich with collective meaning and civic agency.

Critical to building civic capacity in Virginia tidewater communities has been Wetlands Watch, formed in 1999. It provides resources for local citizens, homeowners, and professionals across a broad array of planning and other venues. But as executive director Skip Stiles points out, it was a Sea Grant project that engaged architecture and engineering students to generate the relevant flood maps with hundreds of community volunteers and helped move Virginia Beach and other cities forward. As Stiles notes, "Sea Grant institutions are among the most trusted in the field."

"Sea Grant institutions are among the most trusted in the field."

-Skip Stiles

Since 1995, Restore America's Estuaries has served as the voice of many of the largest associations working on estuaries, and has also served as conduit for funding local habitat restoration and coastal resilience grants provided by the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA).

Many coastal organizations, however, do not find a home here, and the broader challenges of civic engagement and collaborative governance in coastal regions will require much greater capacity building in the years ahead. These efforts must accommodate rich cultural discussions, as well as interest-based and distributional questions.

As Jeffrey Peterson cautions, however, while we need inventive forms of engagement that enhance a sense of control and fairness, we must be wary of public participation that tends to lock in misguided, unaffordable, and inequitable solutions. In this category are expectations raised by decades of previous disaster response funding that government can "build seawalls for everyone or buy every home at risk."

Public deliberation must thus confront hard choices, and cost-benefit decision tools should not value property over people or coastal ecosystems. Engaging a broad range of stakeholders in civil society and not just coastal homeowners will likely produce better decisions and better implementation.

Recommendations

The general policy challenges here are enormously complex and will likely play out over decades of robust experiment as well as frustrating failure. We will require strategic investment by the federal government in civic capacity building aligned with a broad array of other policy tools, including comprehensive, watershed, hazard mitigation, green infrastructure, transportation, and other plans. Dispute system design, building upon decades of alternative dispute resolution, will also need to be closely aligned to civic design.

Federal investment must be complemented by other public investments at local, state, tribal, and regional levels. Private philanthropy will also have to play a role in funding innovations and nurturing the networks capable of learning within and across regions.

As Jeffrey Payne, director of NOAA's Office of Coastal Management, puts it, "NOAA can provide technical and decisional resources, but decisions are made locally. ... We must meet people where they are and earn their trust... We must invest in capacity ...and build partnerships with vulnerable communities."

"We must meet people where they are and earn their trust"

-Jeff Payne

Table 7.2: Recommendations for public engagement in coastal resilience

Recommendation	Explanation
Provide greater funding for participatory forums and toolkits	<p>Federal grants to coastal communities for civic engagement in planning, stewardship, and resilience should be increased substantially, along with appropriate toolkits. These include geospatial mapping and story tools, scenario planning, public workshops, science communication, and environmental education.</p> <p>Funding should also be increased for the Sea Grant College Program at NOAA, the NOAA state-federal partnerships in coastal management focused on building resilient coastal communities and ecosystems, and for coastal habitat restoration and its associated community physical protective value through relevant federal agencies and civic intermediaries.</p> <p>Funding for regional planning and coastal resilience should place a high priority on environmental justice in communities that rebuild, relocate, and resettle.</p>
Establish a federal interagency preparedness council and citizen advisory	<p>The important proposal for a Coastal Storm and Sea Level Rise Preparedness Council, to be led by the Federal Emergency Management Agency (FEMA), the National Oceanic and Atmospheric Administration (NOAA), and the Army Corps of Engineers, should be accompanied by a citizens' advisory council based upon Federal Advisory Committee Act (FACA) requirements – as in Peterson's proposed policy design.</p>

Recommendation	Explanation
Foster a culture of preparedness at FEMA	<p>While the FEMA workforce is overstretched and often overwhelmed by its responsibilities in a time of rising disasters, it nonetheless needs to invest in building a culture of preparedness in communities. This work requires time and training for collaboration with the broadest array of civic groups, as well as organized stakeholders.</p> <p>FEMA's development of a "whole community" approach over the past decade aligns with U.S. and international scholarship on the role of social capital in disaster response. This research places much stress on community engagement in its diverse, complex, and inclusive forms. It recognizes community needs and assets, in addition to aligning the work of actors in all sectors. Building trust and partnerships is essential to this approach. FEMA's sponsorship of the Resilient Nation Partnership Network should be further supported.</p> <p>Professional associations and professional schools in disaster preparedness and response should incorporate collaborative civic and communication skills into training, and should be provided federal grants to help them do so.</p>

8. Civilian Climate and Conservation Corps

The Civilian Conservation Corps (CCC), launched in 1933 as part of the New Deal, provided work relief during the Depression, as well as conservation jobs to nearly three million, though enrollees were overwhelmingly men and camps were racially segregated. Proposals for a Civilian Climate Corps – a "new CCC" – would build upon this legacy but with racial and gender equity.

Widely characterized as "tree soldiers" and "soil soldiers," the original CCC members planted some two billion trees, slowed soil erosion on forty million acres of farmland, and developed eight hundred state parks. They built hundreds of thousands of dams and tens of thousands of bridges. They stretched miles of telephone lines across mountain passes. Some practices, such as draining swamps and using poisons to control rodents, met with criticism by conservation organizations for ecological reasons, which elicited some public concern. But overall, CCC workers were widely credited by the public for their visible contributions to conservation and country.

With the WWII mobilization of troops, as well as labor shortages at home, the CCC was terminated in 1942, without direct resonance in postwar federal programs for several more decades. Nonetheless, thousands from the CCC joined the postwar wilderness movement, which began to win big victories in the 1950s and enabled the passage of the Wilderness Act in 1964, initially setting aside some nine million acres of USDA Forest Service land. This legislation contained provisions for designating further wilderness areas across other major federal land agencies through a well-defined, decade-long process that, as participatory policy feedback, encouraged continued civic engagement locally, regionally, and nationally.

Groups such as the Sierra Club, the National Wildlife Federation, the Wilderness Society, and Audubon saw membership grow enormously. Conservation corps also began to emerge at the state and city levels, with some federal support in the 1970s. By the mid-1980s, they came together to form the National Association of Service and Conservation Corps – now the Corps Network – thus positioning conservation work for expansion, especially when AmeriCorps was created in 1993.

Today, proposals for a Civilian Climate Corps have a robust institutional foundation upon which to build, though funding was not included in the Inflation Reduction Act passed in August 2022, as had been slated in earlier bills before Congress.

AmeriCorps

The policy design of AmeriCorps, especially its main State and National program, is suited to sustained growth for a new CCC because of several features. First, as Melissa Bass shows in *The Politics and Civics of National Service: Lessons from the Civilian Conservation Corps, VISTA, and AmeriCorps*, the program is designed to accommodate the much greater complexity in the organizational field of nonprofits than existed in previous eras of national service innovation, as well as to allay public skepticism about federal government management of large programs. These design features were in line with President Bill Clinton's (1993-2001) mantra of "reinventing government" and buttressed resilience in the face of subsequent attempts to roll back or eliminate the program.

Thus, national service innovation could be progressively aligned with and embedded in other forms of civic innovation, especially as the dominant AmeriCorps themes of "getting things done" and "strengthening communities" lent themselves to co-productive and collaborative work.

Second, the administrative structure of AmeriCorps has built upon state service commissions, appointed by governors, in a form of cooperative federalism that can address a wide array of education, job training, conservation, and other projects. States thus exercise significant control. Elected officials of both parties can claim political credit, and nonprofits and various other partners have incentive to advocate and protect federal funding. Nonprofits typically have other sources of funding as well, and resources mobilized to solve problems have generally shown a strong return on investment. The federal government's role is thus seen as "catalytic," within a public-nonprofit partnership framework.

Third, the AmeriCorps design has lent itself to partnerships with federal conservation and land management agencies, as well as their state and local counterparts. Here, the National Civilian Community Corps (AmeriCorps NCCC), which is organized as teams of young people who live in camps and travel to assist communities for intensive multi-week projects such as flood relief and disaster resilience, is also essential, though it has thus far remained much smaller than AmeriCorps State and National.

FEMA Corps, whose importance will increase as emergency management and disaster response become ever more critical and as a “whole community” approach within the agency is further implemented, is run as a partnership with AmeriCorps NCCC. The Public Land Corps, also authorized in 1993, operates through the USDA Forest Service, NOAA, and several agencies within the Department of Interior.

As Mary Ellen Sprenkel, president and CEO of the Corps Network, notes of the development of the main federal proposals for a Civilian Climate Corps, “in my 25 years of work in this field, never have I seen such cooperation among the key federal agencies.”

"In my 25 years of work in this field, never have I seen such cooperation among the key federal agencies."

-Mary Ellen Sprenkel

The Corps Network

The Corps Network, founded in 1985, now includes 145 Corps nationwide, with organizations in all 50 states, the District of Columbia, and U.S. territories. With 20,000 participants annually, the Corps recruit young adults, generally ages 16-30, and veterans up to age 35, who work as crews. The Corps Network has received funding for capacity building from the Kellogg, Kresge, JPB, and other foundations, in addition to funding from AmeriCorps; its member organizations also receive funding from other federal programs, state agencies, and a host of other sources.

For instance, the GulfCorps has been funded by a RESTORE Act grant administered by NOAA and The Nature Conservancy to help restore coastal areas in the five states – Florida, Alabama, Mississippi, Louisiana, and Texas – bordering the Gulf of Mexico and battered by repeated storms. The National Fish and Wildlife Foundation provides additional funding to several projects in Mississippi administered by the state’s department of environment.

In addition to using AmeriCorps for hands-on restoration, wildfire, and disaster work, various federal land management agencies provide intensive training, fellowships, internships, and formal credentials. According to Merlene Mazyck, program manager for the USDA Forest Service Volunteers and Service Program, the Forest Service oversees a range of programs that engage some 100,000 volunteers annually, as well as student interns and resource assistants across its 175 national forests and grasslands. “These service programs expand the capacity of the Forest Service to meet its goals of Diversity, Equity, Inclusion, and Accessibility internally ... and to address injustice and social vulnerability in communities.”

"These service programs expand the capacity of the Forest Service to meet its goals of Diversity, Equity, Inclusion, and Accessibility internally ... and to address injustice and social vulnerability in communities.."

-Merlene Mazyck

Local and state Corps have varied structures that range from public or quasi-public agencies to nonprofits. The California Conservation Corps, which enrolls approximately 3,000 each year (ages 18-25 years), is the oldest state Corps in the U.S. and was established as a department within the state’s natural resource agency by Governor Jerry Brown in 1976. It contains nearly twenty local Corps, including ones in the major cities of San Francisco, Sacramento, and Los Angeles, as well as Corps in the Eastern Sierra, the Mojave and Colorado deserts, and a Caesar Chavez Corps affiliated with the Farmworkers Institute for Education and Leadership Development.

The Student Conservation Association and YouthBuild are national initiatives affiliated with the Corps Network. The former was founded in 1957 to help build the next generation of conservation leaders and life-long citizen stewards. It enlists high school students in summer ecosystem restoration and resilience projects on public lands, with flexible entry and exit points, as well as older students in longer projects and specialized internships.

YouthBuild, founded in 1978, has an extensive network of 233 programs in nearly all states. It has focused primarily on youth leadership and job training for construction trades among out-of-school and out-of-work young adults, which positions it to contribute significantly to affordable home construction, energy retrofits, green building, and environmental justice at the community level.

At the local level, Corps have developed innovative partnerships. A few examples are briefly profiled in Table 8.1.

Table 8.1: Innovative local Corps

Corps name	Description
Green City Force, NYC	<p>A partnership with the New York City Housing Authority (NYCHA), AmeriCorps, and the Corps Network, as well as other nonprofits, city agencies, unions, and employers, this independent 501 (c)(3) roots its work in a vision of a sustainable and resilient “green city” based on social, economic, and environmental justice.</p> <p>Green City Force engages young people ages 18-24 who live in public housing to develop collaborative leadership and career skills as they retrofit buildings to be energy and water efficient, develop urban farms, implement recycling and composting, and steward a range of other healthy community and green infrastructure projects.</p> <p>Resident councils, elected according to guidance from the U.S. Department of Housing and Urban Development (HUD), can also partner with local youth Corps and their outdoor Eco Hubs, further enriching this civic model.</p> <p>The young adults in the program, who serve full-time for 6-10 months with AmeriCorps stipends and benefits, must have a high school diploma or GED/equivalency to help prepare them for college or careers in the green economy.</p>

Corps name	Description
PowerCorpsPHL	<p>As an AmeriCorps partnership with Philadelphia city agencies, especially the Water Department and Parks and Recreation, PowerCorpsPHL recruits underemployed young people 18-30 years old with a high school diploma or GED. In addition, it offers part-time and other avenues of recruitment and training for returning or court-involved young people.</p> <p>Full-time Corps members may serve up to 24 months, during which they work on a range of green water systems, solar installation and sales, urban farming and forestry, youth development, and trades such as masonry, with a union pathway to employment.</p> <p>All programs are employer aligned and co-designed, including with private engineering firms, and often include training in Geographic Information Systems (GIS).</p> <p>Corps members also receive academic supports for post-secondary education, as well as training through industry academies.</p>

A Civilian Climate Corps

To create a robust Civilian Climate Corps – a “new CCC,” as proponents call it – the opportunities for building upon AmeriCorps, the Corps Network, and partner agencies are quite plentiful. Existing AmeriCorps work in conservation and habitat preservation, renewable energy and energy efficiency, climate resilience and disaster services, urban parks and greenspaces, and other areas. Organizational capacity at various levels of the federal system is substantial.

The Corps Network has put forth a set of recommendations to guide further development, and various bills in Congress had specified programmatic features. Unfortunately, the Inflation Reduction Act of August 2022 did not include funding for a new CCC.

Drawing upon various recommendations, but without getting into details or differences among the proposals, we suggest focus upon the following policy design features, outlined in Table 8.2.

Table 8.2: Recommendations for building a Civilian Climate Corps

Recommendation	Explanation
Align Corps with a broad range of civic innovations	<p>The Civilian Climate Corps should enable the development of civic skills and identities among members themselves, aligned as much as possible with local associations, environmental justice groups, land trusts, multi-stakeholder partnerships, and public agencies.</p> <p>Every field covered in this report should ask how CCC members and teams could contribute to and/or benefit from further collaboration. Civic skills are not limited to specific job skills, as important as these are to developing a climate-ready workforce, but should open pathways to lifelong leadership development in neighborhoods, professions, businesses, unions, nonprofits, and other institutions.</p> <p>As the robust and finely-tuned 2022-2026 <i>AmeriCorps Strategic Plan</i> puts it, we seek to “empower an entire ecosystem” of organizations seeking to better communities across the nation.</p>

Recommendation	Explanation
Fund the new CCC at substantial levels	<p>President Biden established a Civilian Climate Corps on January 27, 2021, and funding was included in various bills before Congress. The Build Back Better Act designated \$30 billion for the CCC. This would have included \$15 billion for AmeriCorps, \$5 billion for the Department of Labor, and \$10 billion for federal land management agencies at USDA and the Department of Interior. While Senate support for Build Back Better proved insufficient during the summer of 2022, various other versions of the CCC have been proposed.</p> <p>The target of \$30 billion would have enabled the stepwise expansion of the CCC over five years to 300,000 enrollees, who would receive \$15/hour and an educational grant of \$11,000 upon completion of the program.</p> <p>This is a worthy goal representing a realistic assessment of previous capacity building across the field, including the Corps Network and its member organizations, foundations and nonprofits, partnerships with public agencies across the federal system, and a selective but expandable set of business and union partners. The tight labor market of the post-pandemic period, however, perhaps made recruitment goals less credible in the short run.</p> <p>In addition, we should vigorously explore how other federal agencies – Housing and Urban Development, Energy, Transportation, NOAA, and others – might effectively utilize CCC members.</p>

9. Citizen Science

Over the past several decades, citizen science has established itself as a fully-fledged field with appropriate links to professional scientific norms and practices, directly contributing to the latter as well as enhancing scientific literacy to guide public discourse and civic action.

The practice of citizen science – also called civic science or community science – engages lay citizens, often in collaboration with scientists on the staff of civic associations, nonprofits, schools, and universities. It can contribute enormously to shared knowledge and consensus building at a time when publics are vulnerable to genuine misunderstandings as well as outright attacks on the legitimacy of the scientific enterprise.

Laypeople such as farmers and winegrowers have contributed to our scientific understanding for centuries, as have amateur naturalists. The National Audubon Society has enlisted volunteers in bird counts for more than a century in the U.S., often in collaboration with institutes such as the Cornell Ornithology Lab, resulting in eBird, an online network with local, regional, national, and global biodiversity partners. Projects such as these employ a wide array of Internet portals, platforms, and social media to inspire engagement and report results.

The Izaak Walton League of America began an ambitious initiative of volunteer water quality monitoring in the late 1960s, which became part of a larger movement with bi-annual national meetings by the late 1980s. As volunteer and professional monitors increasingly came to collaborate, they merged their conferences.

Public policy has supported important parts of such work. For instance, the strong public participation requirements in the 1972 Clean Water Act encouraged volunteer monitoring. Then, building upon section 320 of the 1987 Amendments to the Clean Water Act's National Estuary Program, EPA funded the Ocean Conservancy to work with hundreds of watershed groups, in collaboration with technical and scientific experts in federal and state agencies, as well as universities and Extension programs. Citizen monitoring groups were enlisted from the 28 NEPs around the country.

The resulting 396-page *Volunteer Estuary Monitoring* manual covers all manner of project planning, organizing volunteers, managing safety, and testing the broadest spectrum of nutrients, oxygen, toxins, alkalinity, temperature, salinity, turbidity, bacteria, submerged aquatic vegetation, and other living organisms – each has a chapter.

For two decades during the 1990s and 2000s, the *Volunteer Monitor*, with modest EPA funding for an independent part-time editor, shared best practices across a broad network of local and state groups, schools and universities, and all levels of government, sparking further emulation and innovation.

Under the Open Government initiatives of the Obama administration and its Office of Science and Technology Policy, increased emphasis was placed on citizen science and crowdsourcing, especially in the context of student learning and collaborative governance objectives. Federal land agencies, the National Science Foundation, and other agencies were increasingly enlisted in these efforts.

Tools and templates

There is no single form for public participation in citizen science projects. Some are limited to specific contractual agreements of scientists to provide communities with data they request, and still others increase the public's role in contributing data, but within a research design determined by scientists.

However, in collaborative or fully co-created projects, scientists and lay citizens work more closely together in design, data collection, analysis, and dissemination. This is more likely in collaborative conservation and adaptive management initiatives, or in other forms of urban, environmental justice, and healthy community projects where diverse civic voices and ongoing stewardship are essential.

To be sure, in some areas of research, citizen science does not address adequately issues of power and inequality nor the opportunities for social movements to contest these. Often this is less about citizen science as such than about diminished funding and support for regulatory science, or funding that is skewed by corporate sponsors of research projects.

Citizen science partners thus often face choices about how to best align and configure multiple approaches within a larger ecology of civic, movement, university, regulatory, and other institutional actors. No single approach can do everything and none is without tradeoffs.

As Christopher Lepczyk and his colleagues show in their *Handbook of Citizen Science in Ecology and Conservation*, there now exist many tools and templates for robust work. These include project planning, design, funding, and team building. They include ways of identifying, motivating, and retaining various types of stakeholders, from amateur naturalists to local communities to educators, as well as to enlist relevant institutions, such as museums, schools, parks, botanical gardens, and Cooperative Extension. The latter is well positioned with its various Master Naturalist and Master Gardener programs.

Some associations and institutions provide regular channels to recruit and train volunteers over multiple projects, across entire states, and within larger landscapes. Chicago Wilderness, for instance, has been engaged for several decades in citizen science and restoration through scores of its affiliate organizations in the broader Chicago and multi-state area.

The National Phenology Network, established in 2007 by the U.S. Geological Survey to monitor plant and animal life-cycle stages within a season, elicits individual contributions through its online Nature's Notebook, but also engages a variety of partner groups through its local phenology programs. In addition to communicating through Nature's Notebook, local programs provide face-to-face training and mutual support, and often link their civic leaders through broader communities of practice. Groups such as these have their own user-friendly toolkits honed through best practice across many sites.

Handbooks such as Lepczyk's provide step-by-step guidance that draws upon best practices over several decades, address ethical and legal issues, and lower institutional barriers, while increasing chances of success and future collaboration. One can find careful guidance through the initial stages of project planning to training of participants in data collection and management, quality control and quality assurance – and indeed much further to analyzing data, developing visualization tools, incorporating continual feedback from volunteers in the field, communicating with broader publics, utilizing data in collaborative conservation or formal policy settings, evaluating projects and providing mid-course corrections.

Handbooks and toolkits for citizen science have continued to be refined and templates further aligned with specific agency missions. This enables public agencies to justify further support, configure grants more strategically, and align citizen science projects with a broader range of collaborative initiatives for sustainable, resilient, and environmentally just communities.

There is no lack of useful toolkits. Indeed, better ones are being designed continuously, often with mobile technologies. The challenge is to build the civic and institutional capacity to enable their effective use and to make them more available to marginalized communities.

The Citizen Science Association, the Association of Science-Technology Centers, and SciStarter (among others) serve to catalyze learning across fields, projects, and institutions.

As Chris Lepczyk posed the question, “how can we democratize science to engage communities ... and remove unchecked ivory tower power?”

"How can we democratize science to engage communities
... and remove unchecked ivory tower power?"
-Chris Lepczyk

Recommendations

Citizen science has emerged over the years as part of the participatory ethos that has accompanied environmental and conservation movements in the post-WWII era, as well as from research scientists and science teachers to directly engage students and communities. Federal policy has also been important, including agencies with regulatory and ecological missions, as well as the National Science Foundation and the Office of Science and Technology Policy.

In the face of ecological and climate crises, as well as cultural and political divisions on the role of science in U.S. society, citizen science can and should play an increasingly important role in federal policy. We offer one major recommendation (see Table 9.1)

Table 9.1: Recommendation for federal policy on citizen science

Recommendation	Explanation
Provide competitive federal grants	<p>With guidance from the White House Office of Science and Technology Policy, as well as the National Science Foundation, federal agencies should increase funding and administrative support for civic science projects through universities, Extension services, and nonprofit intermediaries in conservation, youth development, community health, and other areas.</p> <p>Emphasis should be placed on collaborative projects that engage ordinary citizens and students as genuine partners of professional scientists, correct for power imbalances in marginalized communities, engage diverse stakeholders, and communicate results to broad publics.</p>

10. Digital and Geospatial Mapping Tools

In recent years, many new toolkits have been developed to enable everyday citizens, engaged students, and a broad range of land trusts, parks conservancies, and watershed associations to utilize complex data to understand the spatial distribution of assets and threats to ecosystems, biodiversity, and communities – and to take strategic action. Such data have become widely accessible and are no longer the exclusive purview of specialized agencies, available only to those with professional expertise or bureaucratic authority.

As Breece Robertson shows in her eminently usable guide, *Protecting the Places We Love: Conservation Strategies for Entrusted Lands and Parks*, "geospatial tools are becoming increasingly democratized through the move from desktop to web- and cloud-based computing."

"Geospatial tools are becoming increasingly democratized through the move from desktop to web- and cloud-based computing."

-Breece Robertson

Such maps do more than visually display threats to the places we love; they can reveal patterns of inequity that may affect some communities more than others. Geographic Information System (GIS) maps can help mobilize efforts to protect and conserve, to distribute the amenities of urban parks and forests so that the co-benefits of health and recreation are accessible to diverse communities.

As Lindsay Campbell and her colleagues at the USDA Forest Service show, "maps can help civic stewardship groups to activate greenspace to function as social infrastructure," thus establishing a positive feedback loop for developing further friendship and community ties and building social capital.

"Maps can help civic stewardship groups to activate greenspace to function as social infrastructure"

-Lindsay Campbell

Maps can enable local and regional public agencies and their civic partners to develop strategic plans for sustainability and resilience based on socioeconomic, ecological, and urban connectivity across natural and built environments – streams, bike paths, wildlife corridors, hiking trails. They can include economic benefits and ecosystem services.

As Sacoby Wilson shows, "participatory GIS can enable environmental justice and other communities to visualize stormwater risks and help build disaster resilience through green infrastructure."

"Participatory GIS can enable environmental justice and other communities to visualize stormwater risks and help build disaster resilience through green infrastructure"

-Sacoby Wilson

Digital mapping tools, as well as print outs, can inform community discussions and workshops, as well as formal stakeholder meetings. They can be used to survey community preferences, and educate and engage students to become co-creators and stewards. In some cases, maps can enable effective fundraising by nonprofits to buy and preserve land from further development. The mapping of civic actors themselves, as well as financial donors and institutional partners, provides indispensable knowledge of how to further build capacity.

Maps can, in short, enhance the capacity of ordinary citizens and civic associations to see, think, feel, deliberate, and act in complex ways. For the place-based work of sustainable, resilient, healthy, and just communities, geospatial mapping enables civic action that is ecologically rich, culturally meaningful, environmentally just, and institutionally collaborative.

Many mapping tools are available. The suite of ArcGIS® tools provided through Esri.com, founded in 1969 as the Environmental Systems Research Institute, integrates various capacities, such as interactive maps, community surveys, multimedia civic storytelling, and planning scenarios. Tutorials enable beginners to become increasingly competent, and students in K-12 have free access to ArcGIS Online and ArcGIS StoryMaps.

The Greenprint Resource Hub on the Conservation Gateway website provides resources and best practices developed in collaboration with The Nature Conservancy, The Conservation Fund, and The Trust for Public Land. The Land Trust Alliance has a library of best practices and examples.

CommunityViz provides a flexible tool for planners and citizens to develop 3D visualizations and scenarios for land use planning at local and regional scales, as well as for natural hazard assessment, habitat fragmentation, water quality management and other uses. Many other platforms focus on specific kinds of research and policy challenges of a public agency or institution, and some offer open access tools, such as QGIS.

We briefly outline several mapping tools in Table 10.1.

Table 10.1: Digital and geospatial mapping tools: a sample

Tool	Explanation
ArcGIS StoryMaps doc.arcgis.com/en/arcgis-storymaps/gallery/	<p>A cloud-based app that permits users to combine interactive maps, videos, photos, and text into engaging narratives and immersive experiences.</p> <p>The viewer can read the story first, then watch a video or listen to a recording, then pan, swipe, or zoom in an interactive map – or do so in whatever order best serves the purpose. The components can be configured in any number of ways. They are also easily shared and searchable on the web and with mobile devices.</p> <p>StoryMaps narratives can be linked from an organization’s website or online newsletter. Links can be included in a sustainability plan, park plan, watershed plan, or comprehensive plan. They can be incorporated into journalistic articles and course syllabi.</p>

Tool	Explanation
<p>STEW-MAP</p> <p>www.nrs.fs.usda.gov/STEW-MAP/</p>	<p>The Stewardship Mapping and Assessment Project (STEW-MAP) is a research methodology, community organizing approach, and partnership mapping tool developed by scientists at the USDA Forest Service Northern Research Station that answers the question: who takes care of the local environment?</p> <p>STEW-MAP databases and interactive maps allow land managers, community organizations, non-profits, and the public to see where dozens or hundreds of environmental stewardship groups are working in a particular landscape. They provide data on organizational mission and goals, geographic turf, and network relationships. Groups cover the spectrum from formal organizations to informal networks.</p> <p>This tool can be applied to strengthen civic capacity and identify types of stewardship or particular neighborhoods that may lack sufficient attention. It can promote engagement with on-the-ground projects and help build more effective partnerships among stakeholders.</p> <p>STEW-MAP data provide a rich complement to biophysical and geographic information on green infrastructure. It was first used in the successful MillionTreesNYC campaign (with paired data from an urban tree canopy assessment), and it has since spread to other cities in the U.S. and abroad. The Los Angeles River STEW MAP project has a watershed focus. It is also used in and around national forests.</p>
<p>Digital Coast</p> <p>coast.noaa.gov/digitalcoast/</p>	<p>Digital Coast is an “enabling platform” developed initially in 2007 to meet the needs of coastal communities and their institutional partners to help ensure human safety, as well as economic and ecosystem resilience. The Digital Coast Act of 2020 serves as the basis for strategic development and refinement of data and decision support tools and training.</p> <p>Developed by NOAA’s Office for Coastal Management, in collaboration with a core group of eight national membership organizations, Digital Coast aims to develop and share usable data in accessible formats, scenario planning and other toolkits, in-person and online training (Digital Coast Academy, Digital Coast Fellowships), and compelling visualization and stories that can inform public deliberation and problem solving.</p> <p>Data focuses primarily on elevation, land use, land cover, and economics.</p> <p>Substantial data needs, according to the most recent Digital Coast strategic plan, remain for flood modeling, ecosystem services, risk communication, stewardship strategies, public health, and environmental justice on much of the 95,000 miles of U.S. shoreline faced with coastal growth and vulnerability of high-valued ecosystems.</p> <p>Core partners who contribute to tool development, as well as leverage further resources for technical assistance and capacity building, include:</p> <ul style="list-style-type: none"> • American Planning Association • Association of State Floodplain Managers • Coastal States Organization • National Association of Counties • National Estuarine Research Reserve Association • National States Geographic Information Council • The Nature Conservancy • Urban Land Institute <p>In addition, hundreds of other institutions across the federal system, academia, nonprofits, and private technology developers have contributed to Digital Coast.</p>

Tool	Explanation
<p>EPA EJScreen</p> <p>www.epa.gov/ejscreen</p>	<p>EJ screening tools have been developed by the EPA, various states, and in conjunction with a wide array of partners in academia, as well as national, state, and local advocacy groups. They seek to capture disproportionate and cumulative impacts.</p> <p>The two outlined here offer replicable models for other states, and some are innovating still further, such as Maryland, Washington, Illinois, and Michigan.</p> <p>Public participation has been a key factor in developing and refining the tools, which can be utilized in regulatory decisions, but also as part of complex, multifaceted, and collaborative strategies.</p> <p>EPA's EJ Screen is an environmental justice mapping and screening tool that provides a nationally consistent dataset combining environmental and demographic indicators.</p> <p>Environmental indicators include such things as air toxics, traffic proximity and volume, lead paint, hazardous waste proximity, and wastewater discharge. Demographic indicators include such things as percent people of color, low income, unemployment rate, linguistic isolation, and less than a high school education.</p> <p>EJScreen can inform local decisions, but does not mandate use at the state or community level. It has admitted limitations and is meant to be supplemented by local knowledge and community-generated priorities, as well as to inform resource investment to promote environmental health and sustainability.</p>
<p>CalEnviroScreen</p> <p>oehha.ca.gov/calenviroscreen</p>	<p>CalEnviroScreen has been developed by the California Environmental Protection Agency for use across the state.</p> <p>As a state tool, it can include indicators such as pesticide exposure that are quite relevant to California's agricultural areas, but may not be in EPA's national comparative indicators.</p> <p>In addition, CalEnviroScreen has been developed and updated in conjunction with state legislative statutes on climate and environmental justice, thus enabling incorporation into the work of planning and regulatory agencies, as well as the required 25 percent of the state's Greenhouse Gas Reduction Fund for investment in disadvantaged communities.</p>

Recommendations

Federal agencies have invested considerably in developing digital and geospatial mapping tools and have developed partnerships with many academic institutions, nonprofits, and private development organizations. Envision Tomorrow, for instance, is an open-access scenario planning package based on Fregonese Associates' work in Portland Metro and Envision Utah (section 1, above) and was funded by a Sustainable Communities Regional Planning grant from the U.S. Department of Housing and Urban Development (HUD), in partnership with the University of Utah's Metropolitan Research Center.

Policy should encourage further investment and collaboration, with continual refinement in dialogue with local communities, youth, and other user groups. Agencies should provide durable funding for the updating of datasets so that they are current and accessible through modern web applications for a wide audience.

The main challenge is to build the capacity of communities, youth, and other groups to use these tools to support robust co-productive work on ecosystem protection and restoration, environmental justice, and climate resilience, and to enrich public deliberation on local policy opportunities, barriers, and tradeoffs.

Table 10.2: Recommendation for federal policy on digital and geospatial mapping tools

Recommendation	Explanation
Provide federal support for capacity building	<p>Federal grants should develop ambitious supports for intermediary organizations, as well as university departments, professional schools, and Extension programs, to help develop capacities in local environmental justice organizations, land trusts, watershed associations, and similar groups. GIS Corps, which already exist in some networks, should be further supported and complemented by AmeriCorps and Civilian Climate Corps programs.</p> <p>Federal, state, and local funding, as well as private foundations, should explore how high schools might develop ambitious training in the use of digital and spatial mapping tools to expand such civic skill sets far more broadly. You should not have to have a bachelor’s or master’s degree to help your community map and visualize a more ecologically resilient landscape and a more environmentally just infrastructure.</p> <p>Federal grants for sustainable and resilient city projects should encourage citywide and statewide consortia among relevant universities, intermediaries, school systems, and public agencies so that such toolkits become available, visible, and complementary across all relevant areas of work. Similar incentives should be included for regional projects. Federal grants should also help convene networks of practitioners across fields and levels of government to share lessons and motivate further use and refinement.</p> <p>We should also explore how federal agencies might help provide some core infrastructure, such as software licenses and server hosting.</p>

11. Climate and Science Communication

Civic engagement for sustainable, resilient, and just communities requires robust forms of science and climate communication that are sensitive to context, culture, power, and relationship. More information on climate threats at the grand scale, while indispensable for public education and policy formation, is inadequate for forging common ground in communities and across landscapes, and for developing collaborative strategies that are appropriate and viewed as legitimate.

To be sure, environmental communication takes a variety of forms. Most common perhaps are those that provide insight and inspiration into the wonders of the natural environment, as well as the threats posed to ecosystems and human health by various corporate, consumer, and institutional activities. Professional science communicators translate scientific studies into the vernacular, report genuine scientific disagreement to enhance public understanding of policy options, and cover disasters to highlight accountability and focus public attention on remedial or preventive action.

Science and climate communication in the public sphere takes many other forms, from everyday discourse to social media, from the framing of problems and solutions by advocacy groups to testimony by scientists before Congress and in the courts. The practice of “toxic tourism” can help local groups publicize specific sites and deep patterns of environmental injustice. Hollywood film, science fiction writing, interactive games, and other forms of theater, art, photography, comedy, and popular culture have also been essential. Many of these forms have helped to shift public opinion, as has coverage of major social movement protests and victories, such as that of the Dakota Access Pipeline. To be sure, well-funded campaigns of climate contrarians compete fiercely to narrow and distort public discourse.

In recent years, the field of climate and science communication has grown significantly in size and sophistication, according to various measures. These include scholarly articles and books across disciplines, dedicated journals, professional school training, fellowships, research centers and consulting firms. The institutional reach of practitioners and the diversity of modes of communication, have also increased. Organizations such as COMPASS and the Yale Program on Climate Communication, in addition to many newer groups, have been vital to communication leadership and training among scientists.

Science communication, in short, has become a profession, at once dedicated to good science and objective research yet indispensable to a robust public sphere conducive to public judgment and civic action. Democracy and resilience in the age of climate change fundamentally rest upon the work of practitioners in climate and science communication.

Relational and contextual models

As the field has grown, the limits of many standard forms of climate communication have become increasingly evident. The information deficit model that seeks to elicit opinion change and public will at the grand scale through more data and evidence has important but selective impact at that scale, but much less in local communities, complex ecosystems, and regional landscapes and economies where identity, culture, and livelihood are intertwined.

A robust communication ecology on climate and sustainability must include a richer mix that builds upon love of place, care for neighbors, stewardship of nature, and hope in resilient futures. It must bridge institutional boundaries – civic groups, nonprofits, local governments, public agencies, schools and universities, businesses and utilities. Such communication can enlighten and inspire, sequence realistic fear with feasible hope, and generate personal and collective efficacy in collaborative options for civic action. The latter, in turn, can gain further traction through richer forms of communication.

The potential for civic groups to creatively engage with and respond to climate issues when those issues are framed in terms that resonate is demonstrated by the activities of some religious organizations. As Cybelle Shattuck has shown in *Faith, Hope, and Sustainability: The Greening of US Faith Communities*, faith communities are central to the development of civic skills generally, and are of distinct importance in forms of climate communication that are embedded in deeply held religious beliefs and traditions.

Not only do civic activists cultivate shared discourses of “creation care” and “stewardship” that help generate initiative and hope, but they also utilize rich networks of communication among “sustainability champions” and the broader array of congregational leaders and everyday congregants, as well as larger organizations such as dioceses and ecumenical networks.

In a society with deep cultural and political divisions that likewise mobilizes faith for climate denial or “end times” narratives, the voices of the many religious organizations engaged in faith-based climate initiatives provide an indispensable component for democratic communication of hope and justice.

While effective climate communication has many components that operate through fruitful tensions and sequences, recent approaches place greater emphasis on the features outlined in Table 11.1.

Table 11.1: Enhancing civic action through science and climate communication

Feature	Explanation
Relational	<p>Science communicators often perform key roles in connecting community groups and public agencies with scientists in universities and conservation associations. Building regular channels and trusting relationships through deep listening can enhance the quality of communication and enable updating and accountability for ongoing projects.</p> <p>Relationship building is important in local and regional work, but also for work with Congress and state legislatures, national and state agencies.</p> <p>While science communicators must craft their own distinct relational practices consistent with professional norms, they can find many handles in relational community organizing, collaborative governance, feminist, Indigenous, and other approaches.</p>
Emotions	<p>Science and climate communication practitioners need to recognize and manage a wide range of emotions prompted by threats to family, community, health, ecosystem, and livelihood. Denying them in the name of dispassionate professionalism or policy detachment does not serve to anchor civic strategies in lived experience, nor can it sustain professionals themselves.</p>
Context	<p>Science communication can enable understanding of complex issues as these are embedded in local history, culture, and ecology, as they impact diverse publics and stakeholders, and as they elicit productive contributions rooted in local knowledge, skills, and other community assets.</p> <p>Science communicators must meet people where they are and address why they care, whether rooted in family and community, faith traditions of creation care and stewardship, movement understandings of justice, or some combination of these. The cultural mix will likely be different across a rural landscape and an urban streetscape.</p> <p>Ethnic media are key in many communities.</p>
Conflict and collaboration	<p>Climate communication practitioners often work amidst conflict and are sometimes blamed for it. They need institutional supports to shield them from personal hostility and career retribution, even as they work to engage more collaborative processes and reach out to marginalized communities and the missing middle. They can and should aim to find common ground across political divisions.</p>

Feature	Explanation
Problem solving and co-production	<p>Science communication should engage ongoing initiatives of public deliberation and problem solving and not just crisis events and analytic reports. The role of everyday citizens in co-production is important to communicate locally, as well as part of a larger narrative of democratic engagement and civic responsibility.</p> <p>Everyday citizens are not just framed as victims deserving of concern and redress, but as dignified and skillful actors who can shape hopeful futures.</p>
Drama and stories	<p>Operating in a field where “climate change as social drama” structures public thinking, climate communicators can uncover and narrate stories of engaged local actors solving problems, acting with deep commitment and integrity, and working across various occupations and professions.</p> <p>Stories provide important space to dramatize civic virtue and institutional trust and to bridge at least some of the cultural polarization on climate change.</p>
Fear and hope	<p>Fear is an essential emotion that invariably infuses climate communication, especially as practitioners report on and analyze disasters and related forms of human suffering, community disruption, and species loss.</p> <p>However, communication frames should not let fear and loss crowd out hope and efficacy, especially of communities and partnerships taking hopeful civic action with pragmatic steps that can potentially lead to recovery and resilience. Practitioners should continue to track resilience strategies over the medium- and long-term and should cover civic and institutional responses.</p> <p><small>Adapted from Maxwell Boykoff, <i>Creative (Climate) Communications: Productive Pathways for Science, Policy and Society</i> (Cambridge University Press, 2019), Faith Kearns, <i>Getting to the Heart of Science Communication: A Guide to Effective Engagement</i> (Island Press, 2021), and other sources.</small></p>

Recommendations

A wide array of forms of climate and science communication are worthy of increased investment to improve accurate public knowledge and to enhance reasoned public deliberation. Our focus here is on those forms that can enrich and complement civic problem solving and collaboration appropriate to community context and that can help motivate hopeful and sustained action.

Table 11.2: Recommendations for investing in climate and science communication

Recommendation	Explanation
Provide substantial funding for Cooperative Extension	Because Cooperative Extension has a well-developed infrastructure linking universities to communities, public agencies, and other stakeholders, and because its agents and professors increasingly play important roles in science and climate communication, public funding should be increased substantially to further build capacities and to increase career rewards and protections.
Provide grants to associations of schools of journalism and communication	Public and private funding should be increased to enable a broad range of training for science and climate communication.

Recommendation	Explanation
Ph.D. programs in science should focus increased attention on practitioner training for science and climate communication	<p>To enhance the transition to productive careers and public leadership of the many doctoral students in science who will not end up in tenure-track positions, universities should institutionally support more consistent and robust practitioner training options and fellowships.</p> <p>Such training can be funded by the National Science Foundation, private foundations, and public agency fellowships, and can enlist organizations such as the American Association for the Advancement of Science, the Metcalf Institute for Marine and Environmental Reporting, COMPASS, and other groups to develop leadership.</p>

12. Civic Professionals: Associations and Professional Schools

In all the fields of civic engagement reviewed so far, professionals with civic skills, practices, and values are key actors. Scholars have utilized terms such as “democratic professional” and “civic professional” to analyze lay/expert collaboration in many kinds of settings. As we develop increasingly robust ways to engage ordinary citizens and diverse communities in climate resilience, we need to cultivate the civic skill sets and institutional capacities of democratic professionals in far more ambitious and sustained ways.

This is not an optional add-on, but an essential complement to engaged community work.

Strategies to further transform professional training and practice are key to building civic capacity in ways that align expert knowledge and professional legitimacy with the deliberative and relational work of engaged citizens. Absent such alignment, professionals can generate top-down solutions insensitive to context and power, and citizens can chase remedies that are narrowly self-serving and ineffective.

Misalignment can result in resistance to implementation, distrust and scapegoating of professionals, and further social resentment among groups based on race, income, geography, and vulnerability to climate risk. As local partnerships among communities and professionals deliver real value, broader publics can better resist simplistic narratives of blame.

Scholarly studies have shown that ordinary people in mid-twentieth century America became wary of increasing claims of professionals – doctors, planners, scientists, architects, social workers – to prescribe what is best for clients and communities. Citizens challenged remedies based upon technical or clinical expertise removed from their everyday lives and devoid of values they held dear. They resented being treated as passive clients rather than dignified citizens with assets and choices.

They especially resisted professional dominance infused with racial and gender hierarchy. Yet calls for de-professionalization also had limits amid increasing complexities of ecological and institutional systems.

As Albert Dzur has shown in *Democratic Professionalism: Citizen Participation and the Reconstruction of Professional Ethics, Identity, and Practice*, a third pathway to collaboration has also emerged that aims to tap what is best in professional practice and democratic engagement to enhance each in a more potent blend.

That blend varies considerably across the fields of knowledge and practice relevant to sustainability and climate resilience. Yet several features are recurrent, if never exactly in the same form. Familiar already from the sections above, these features are summarized in Table 12.1.

Table 12.1: Components of democratic professionalism

Feature	Explanation
Share relevant expertise	<p>Professionals share their expertise by translating it into more accessible language and providing usable tools for visualization.</p> <p>Example:</p> <p>The Trust for Public Land collaborates with Esri, the software firm, to develop geospatial mapping and story tools to enhance conservation and wildlife strategies. These tools can be utilized by land trusts and other civic associations, by local park and planning agencies, and to enrich public workshops and other forums open to broad publics.</p>
Incorporate local knowledge	<p>Professionals listen carefully to grassroots skepticism and protest, open themselves to multiple “ways of knowing,” and meld what is best in professional and local knowledge.</p> <p>Example:</p> <p>Environmental justice protest in the Williamsburg section of Brooklyn opens doors to youth engagement, community-based health research, and collaboration with city, state, and federal institutions, as well as the Mailman School of Public Health at Columbia University.</p>
Facilitate Deliberation	<p>Professionals help facilitate public forums and workshops in ways that elucidate problems, highlight co-benefits, evaluate costs and potential trade-offs, and clarify alternative pathways and planning scenarios.</p> <p>Example:</p> <p>Local and regional planners in Oregon and Utah facilitate workshops on land use, using GIS toolkits to inform public preferences.</p>
Transform institutional logics and practices	<p>Professionals work to incorporate civic practices into the routine operations of the organizations in which they work, be they public, nonprofit, university, or business. In key areas of governance that impact communities and ecosystems, professionals ask where they can and should co-produce expertise, share tasks, and distribute authority. Not all professionals need to practice as civic professionals, to be sure. But key offices and field staff should have a core level of such skills, as well as robust networks within and outside their agencies and sufficient support upwards in the organization.</p> <p>Example:</p> <p>The Federal Emergency Management Agency (FEMA) begins to develop a “whole community” approach to “fundamentally change how we go about disaster preparedness, response, recovery, and mitigation.” Engaging faith- and community-based organizations, nonprofit networks, private sector organizations, volunteers and survivors is a key part of this rethinking.</p>

Feature	Explanation
Train democratic professionals	<p>Professional schools, as well as undergraduate majors, include courses, textbooks, internships, certificate programs, community-based research, and university-community partnerships that enhance the civic skill sets of younger professionals. They, in turn, help drive institutional change for decades to come.</p> <p>Professional associations develop standards of practice that include clear guidance and examples of civic professional practice, especially for sustainability, climate resilience, environmental justice, and inclusive participation.</p> <p>Examples:</p> <p>The American Planning Association convenes a task force on sustainability and publishes <i>Sustaining Places: Best Practices for Comprehensive Plans</i> (2015), which includes participation and equity among its core values.</p> <p>The American Institute of Architects partners with four other professional associations and the Carnegie Foundation for the Advancement of Teaching to incorporate engaged communities, environmental stewardship, and sustainable design as essential to the “enriched mission” of the field</p>

Public investment in sustainability and climate resilience should aim to develop far more robust capacities for democratic professional training and practice to complement investments in other forms of civic engagement and community capacity building. Innovative projects funded by private foundations could help develop templates and networks in each relevant field, but only federal investments could build capacities with the scope, scale, and sustainability required.

Among the relevant professions are the following, some of which have subfields of training and practice, interdisciplinary partnerships, and multiple professional and educational associations and accrediting bodies:

- architects, landscape architects
- urban and regional planners
- coastal, floodplain, and stormwater managers
- wildfire professionals
- community and public health professionals
- science and climate communicators
- environmental educators
- youth development professionals
- urban, community, state, and national foresters
- software design professionals
- real estate agents and developers
- transportation officials
- civil engineers

Recommendations

Federal funding should be available to help develop civic mission and practice in all relevant professions, thereby aligning general professional standards and practices with civic professional values and practices. We summarize recommendations in Table 12.2.

Table 12.2: Recommendations for transforming professional training and practice

Recommendation	Explanation
Provide federal grants to professional associations	<p>Grants should be provided through relevant federal agencies for the professional associations operating in each field to address sustainable communities, environmental justice, and climate resilience. Tiered grants might include:</p> <p>Level 1: to develop or refine a core civic mission for professionals working in specific fields, as well as a strategic planning process for transforming practice in relevant institutional settings</p> <p>Level 2: to enable the development and diffusion of best practices and toolkits, local and regional partnerships, and communication with broader publics to enhance democratic and professional legitimacy</p>
Provide federal grants to professional schools and their associations	<p>These should fund curricular innovation so that all students learn core principles and practices of democratic professional engagement relevant to their fields and so that some can get in-depth training that will allow them to cultivate civic leadership skills over the course of their careers.</p> <p>Such grants might cover:</p> <p>Core course: for all professional and pre-professional students in each discipline</p> <p>Advanced curricula: a mix of courses, specialized tracks, geospatial and other tools</p> <p>Community-based learning and internships</p> <p>Professional school consortia: collaborative projects within and across disciplines</p> <p>Conferences: to regularly share lessons, develop strategies, refine models</p> <p>Lifelong learning opportunities: summer institutes, webinars, continuing education credit</p>

Conclusion: Mission, Strategy, Governance, and Investment in Federal Policy Design

In previous sections of this report, we discuss specific ways in which climate policy can build upon civic innovations that have emerged across various fields in recent decades. In this concluding section, we pull together components of this analysis and add several others to lend strategic coherence to the larger enterprise of enhancing civic engagement and collaboration for the decades of work that it will take to build sustainable and resilient communities in the face of the climate crisis.

Certainly, we need to green our energy systems and reduce greenhouse gas emissions dramatically in the shorter run to mitigate the worst effects of climate change. Various policies on the table or currently being implemented – public investment and tax incentives for renewable energy, disinvestment from fossil fuel finance, stopping destructive pipelines – are critical to getting a handle on the climate crisis before it progresses too far.

We should also recognize, as leading business school professors such as Rebecca Henderson at Harvard University and Andrew Hoffman at the University of Michigan argue, that we will need to transform business enterprise to embed sustainability deep within its organizational cultures, metrics, finance, and leadership. This, to be sure, will also take decades. As with civic capacity and collaborative governance, however, we can build on some of what we are already doing and leverage this for much greater impact. The sooner the better.

Our focus in this conclusion is specifically how concerted efforts at the federal level can support productive civic engagement and collaborative action. We first discuss two key components, developing robust civic mission statements and civic strategy frameworks for each relevant federal agency. We then discuss how an office of civic collaboration within the White House, as well as a citizen advisory council, could lend further coherence to their work, while building upon other citizen advisory committees that we have encountered along the way.

Finally, we consider perhaps the toughest question of funding. By this point, it should be evident that billions of dollars of public investment will be required to build civic capacity at the levels needed. Such investments could and should be leveraged through matching requirements, foundation funding, institutional partnerships, support from state and local governments, and crowdfunding.

Federal investment in civic capacity building could, of course, be included in specific bills for climate funding to cities, states, transportation agencies, energy utilities, public housing authorities, land management agencies, and the like. Some relevant grant programs have been discussed in earlier sections of this report, and we should certainly build upon the best of them. If there is a default setting for such federal investment in civic capacity building, this may very well be it.

We also suggest considering a blue-sky proposal that could secure significant funding for the overall enterprise, namely, designating a minimum percentage – say 3 percent – of all relevant federal climate investments to develop civic capacity and collaborative engagement. This could signal clear national purpose and commitment, as well as avoid some of the obscure negotiations that typically occur in passing these other bills on separate tracks, often resulting in participatory programs being left unspecified, lost in the shuffle, and absent from the public conversation.

Designating a minimum percentage could be done in such a way that Congress and the Office of Management and Budget would still retain oversight of funding and performance among various civic capacity building and public participation programs. The purpose and legitimacy of such funding would be signaled loud and clear to the public and would incentivize engagement in a way that other participatory policy designs often do not.

Civic Mission: The Why and the Who

Every relevant federal agency should develop a civic mission statement to inform those areas of its climate work most suitable to engagement by everyday citizens and communities, and to align its civic mission with its overall agency mission. Mission statements clarify the purpose internally to staff in various offices, signal an overarching goal that can guide innovation, and provide a touchstone for accountability.

A civic mission statement can also signal purpose to the broader democratic public about WHY ordinary citizens, community organizations, and civic associations, along with other stakeholders and institutions – the WHO – should work in partnership and share in decision making. Requiring civic mission statements in all relevant federal agencies can educate and enable, two critical functions of policy design for democracy.

Ambitious messaging around the civic missions of federal agencies can help reframe how the public sees the work of government. This is of vital importance amidst the twin crises of climate and democracy, when public servants can and will so readily be targeted for blame for any unsettling solutions put on the table.

Mission statements are often very succinct, but can combine a core message with further elaboration. They are never “a finished thing,” as Paul Light argues in *Sustaining Innovation*, but “something to be worked on over time, to struggle with as the world changes.” While the civic mission for an agency’s climate and sustainability work will vary among agencies, some core themes are likely to recur, and indeed help provide an overall framing for the broad public, as well as for the diverse publics that form around specific issue areas and agency programs.

Recurrent themes for a civic mission template, familiar from earlier sections, would likely include variations on the following, outlined in Table Concl.1.

Table Concl.1: Civic mission template for federal agencies

Civic theme	To elaborate
Diverse and inclusive participation	Participation should be inclusive of diverse sectors of the community, as well as a broad range of stakeholders, with special attention to frontline communities and vulnerable populations.
Local knowledge	Local knowledge is important for problem solving, innovation, and community empowerment, and should be combined with professional knowledge, wherever feasible. Indigenous knowledge is central to work in tribal areas.
Community assets	Community assets (skills, relationships, buildings, open space, culture, local institutions) can be mobilized to help generate workable solutions.
Coproduction	Public goods, such as sustainable ecosystems, healthy neighborhoods, and resilient coasts, should be coproduced, rather than considered the primary domain of a single agency or profession.

Civic theme	To elaborate
Partnership	Partnerships are an essential method for mobilizing knowledge and other assets, building trust, and transforming institutional systems that produce climate risks and reproduce environmental injustices.
Civic culture	While the agency recognizes the need to address deeply rooted historical injustices and indignities, it values the rich civic traditions in American culture and in the cultures of all racial, ethnic, and tribal groups, as well as across gender and other identities. While our history has been imperfect, our civic culture provides a sturdy foundation that we must further build together.
Democratic authority	<p>Federal agencies utilize authority designated by Congress and the President as part of a complex constitutional system of governance. Their authority includes capacity building among state, local, and tribal agencies, as well as public-private partnerships; grant-making to community organizations, civic associations, universities, and other organizations; individual and business incentives; research, education, networking, and information tools; regulation and performance management.</p> <p>Each of these has important democratic rationales – executing laws, enlightening citizens, enabling communities, enriching federalism, ennobling markets, ensuring results – and need to be well aligned.</p>

Strategic Framework: The Where, When and How

Each relevant federal agency should also develop a strategic planning process and framework document for its sustainability and climate programs that provide an array of civic practices, toolkits, partners, and funding, as well as participatory requirements and guidance as set out by statute and regulation.

This civic strategy framework should be incorporated into larger strategic planning documents for each agency, but should also be available as a stand-alone document to highlight what is distinctive about civic engagement that supports public problem solving, community empowerment, and the coproduction of public goods in specific institutional fields. Every citizen, as well as every relevant civic and professional association and institutional partner, should be able to easily locate the range of co-productive roles they might together play.

Thus, the strategic framework would clarify the role of civic engagement for affordable green housing and community development (Housing and Urban Development), resilient urban and national forests (USDA Forest Service), healthy and just communities (Health and Human Services), and the greening of urban and regional transportation (Department of Transportation). The proposed federal interagency coastal preparedness council (section 7, above) would do likewise to enable civic collaboration and learning across the entire field of centralized and decentralized actors in each coastal region.

As with an agency's civic mission, strategic planning for co-productive civic engagement is an ongoing process that should engage staff across the agency and its regional offices, as well as in state and local agencies, communities, stakeholders, and networks of nongovernmental practitioners in critical reflection and improvement.

Strategic frameworks should address various forms of oversight and evaluation within government, as well as independent evaluation, as in the case of the National Academy of Public Administration evaluation of the CARE program during its initial years. Some agencies, such as EPA, have already developed framework documents on community engagement that can serve as the basis for ongoing work on climate resilience and environmental justice, especially when in dialogue with prominent advisory groups and nonprofit intermediaries.

Recurrent topics for a civic template on strategic planning, also familiar from earlier sections, would likely include variations on the following, outlined in Table Concl.2.

Table Concl.2: Civic strategy template for federal agencies

Civic practices	To elaborate
Relational and deliberative models	<p>Which models for developing trust, building partnerships, enabling coproduction, and ensuring democratic deliberation are most relevant in specific policy areas and at various scales of the agency’s work, and which tend to be less useful or even counterproductive?</p> <p>What criteria guide the agency’s choices?</p>
Toolkits and training	<p>Which civic toolkits (deliberative process, citizen science, geospatial mapping, environmental education) are available within the agency, as well as within academia and training intermediaries? Where do gaps exist and how might they be filled?</p> <p>How does the agency support and continuously improve staff training so that the federal workforce has a deep bench of career professionals capable of working collaboratively with communities and catalyzing such work across extensive networks and partnerships at every level of the federal system?</p> <p>Does the agency regularly include civic toolkits in its online and on-site training academies (e.g. Watershed Academy, Digital Coast Academy), with an appropriate balance of presenters from public and nonprofit sectors? Do the academies offer rich civic stories and case studies? Do they have ambitious enough outreach?</p>
Partners and stakeholders	<p>How might partners be chosen for ongoing work to ensure inclusiveness, relevant assets, and broad legitimacy?</p> <p>Where and how do tendencies towards marginalization or tokenism typically manifest themselves and how might they be held in check?</p> <p>How can the agency best engage stakeholders with very diverse and sometimes divergent interests and institutional logics? How does it utilize dispute system design as a complement to civic engagement?</p>
Professionals	<p>How might the agency best support the ethos and practices of democratic professionalism among its staff and partners, as well as among relevant professional schools and professional associations?</p> <p>How does the agency contribute to convening and catalyzing innovative projects to build civic professional leadership and institutional capacities in the fields in which it works?</p>

Civic practices	To elaborate
Funding	<p>What types of grants are available within the agency and how might different levels and types of funding be combined and sequenced to promote sustainable and effective partnerships, as well as sustained leadership development?</p> <p>What other types of funding are available, including matching grants from foundations as well as state and local agencies? How might crowdfunding become an important part of the mix? Community benefit agreements? Climate banks?</p> <p>How might funding for civilian climate and conservation corps be best utilized to enhance the agency's civic mission and strategy?</p>
Pathways, sequences, and configurations	<p>What are the pathways of civic capacity building typically found in a specific field and how can agency funding and administrative support guide development toward sequences that incorporate learning, promote environmental justice, and configure participatory forms appropriately?</p> <p>How can the agency support long-term relationship building and not just short-term deliverables?</p> <p>How does the agency address the potential downside of some forms of participation, such as managing to the lowest common denominator in collaborative conservation, reinforcing misplaced expectations in coastal resilience, or favoring NIMBY reflexes in neighborhood planning?</p>
Tool alignment	<p>What is the full range of agency tools – regulatory, public investment, service delivery, market incentive, risk analysis, data, technology – available for sustainable communities, climate resilience, and environmental justice, and how might they be best aligned with civic tools?</p> <p>How are agency staff tasked with improving alignment to get the best possible mix?</p>
Measuring results	<p>How do the agency and its partners best measure performance in terms of ecological and health impacts, community resilience and social networks, inclusive and deliberative process, and environmentally just outcomes?</p> <p>How can evaluation be incorporated into ongoing learning among the full range of relevant actors?</p> <p>How can reciprocal and relational approaches to nonprofit governance and management check tendencies toward narrow service provision?</p>
Convening and networking	<p>How does the agency use local, regional, and national workshops and conferences, as well as innovation awards, to enable shared learning and diffusion across institutional fields, networks of cities, and communities of practice?</p> <p>How can network learning be sustained horizontally through peer-to-peer processes?</p>
Public communication	<p>How can the agency help communicate civic practices broadly beyond the most involved local citizens and stakeholders, as well as to the broad American public?</p> <p>How can such communication help strengthen American civic culture and democratic values?</p> <p>What kinds of democratic stories can we tell? Stories of democratic climate hope?</p> <p>Can everyday citizens and civic professionals, agency staff and partners from all sectors, craft public narratives that are increasingly well-aligned to enable co-creation of climate solutions?</p>

One pathway to testing and enriching civic mission and strategy templates would be for several agencies to contract with the National Academy of Public Administration and similar organizations, in cooperation with a national foundation and university policy program, to develop some prototypes and exemplars.

Perhaps start with the EPA, NOAA, and the USDA Forest Service. These would draw upon a thorough review of community engagement initiatives and staff networks. This project would build upon previous agency programs, grants, and toolkits, as well as map various gaps and potential sources of better alignment with the full suite of agency tools. Reports could then be reviewed by relevant advisory committees, White House offices, and congressional committees, and then disseminated across other agencies.

More ambitiously, a White House Conference on Civic Engagement and Collaboration in Climate Policy could review, promote, and celebrate democratic designs across all relevant fields and levels of government, while working to refine civic mission and strategy frameworks for federal agencies. Such a conference would provide perhaps the most visible opportunity for White House leadership in addressing the climate crisis as the shared work of engaged citizens and communities.

National Advisory Council on Civic Climate Collaboration

Federal agency work on civic missions and strategic frameworks should be complemented and informed by citizen advisory committees. As Susan Moffitt shows in her comparative study, *Making Policy Public: Participatory Bureaucracy in American Democracy*, citizen advisory committees are especially relevant when there are uncertain and/or interdependent task implementation among public agencies and increasing reliance upon third parties for co-production. They facilitate multidirectional flows of knowledge and policy learning among networks of actors, and can fruitfully combine bureaucratic initiative and public accountability among the full range of implementers, as well as foster learning among broader publics.

In 2010, more than 66,000 public members served on 1,044 advisory committees, which in turn held thousands of open public meetings. “In the right conditions, public participation yields not just better policy outcomes but better bureaucracy. Public participation is not necessarily bureaucracy’s opposite but instead can be its complement,” Moffitt concludes.

As discussed in previous sections, several advisory committees have played important roles, such as the National Environmental Justice Advisory Council, the National Urban and Community Forestry Advisory Council, and the National Environmental Education Advisory Council. They have helped develop strategies for civic and institutional capacity building across their respective fields, clarified core democratic values and best practices, and promoted innovation anchored by informed research and professional standards. Citizen advisory committees such as these exist in other relevant policy domains.

To build upon their potential, we would make two recommendations. First, develop new citizen advisories, or workgroups and subcommittees within existing advisories, specifically for civic engagement and collaboration in each relevant climate policy area.

Second, establish a National Advisory Council on Civic Climate Collaboration that can leverage the work of these advisories at the highest levels of policy formation and governance. This new advisory council should help develop integrative strategies for capacity building across all relevant federal agencies and, by extension, at all levels of the federal system.

This new council should also address unintended and potentially perverse consequences of some forms of civic engagement, such as exacerbating participatory inequalities, promoting unjust outcomes, managing to the lowest common denominator, or eroding independent organizing – and it should explore correctives.

The council would have to be configured around the recent creation of the White House Environmental Justice Advisory Council and the White House Office of Domestic Climate Policy. President Biden’s Justice40 initiative provides an additional foundation upon which to build.

White House Office of Civic Collaboration on Climate

In creating the White House Office of Domestic Climate Policy, President Biden has opted for greater coordination of policy. An office within the domestic climate office focused specifically on civic engagement and collaboration would enhance its work. This office could be configured jointly with the Council on Environmental Quality (CEQ) and the Office of Management and Budget (OMB).

An Office of Civic Collaboration on Climate could draw upon an emergent set of federal agency mission statements and strategic planning processes, as well as a cluster of citizen advisory committees, as recommended above. In turn, it can help guide agencies that might be outliers or laggards. Its focus is to help build civic and institutional capacity across the federal system to enable robust and effective engagement and partnerships. It is not a public outreach office, as is the Office of Public Engagement.

An Office of Civic Collaboration on Climate would enable concerted attention to the civics of climate change, which might otherwise be lost or marginalized amid the array of other worthy policy tools and staff duties.

Such an office could develop procedures for apportioning congressional funding, especially if some version of an overall statutory minimum for federal climate investment in civic capacity were to be implemented. Even if such a funding rule were indefinitely delayed or never passed in the proposed form, the Office of Civic Collaboration on Climate could nonetheless help develop appropriate metrics for civic budgeting and management. Indeed, this might lay the proper foundation for a minimum funding rule in future congressional legislation five or ten years hence.

Deeply Dedicated Funding

Federal funding for civic capacity building needs to be substantial and systemic, not a tiny add-on to explore program innovation or to mollify the grassroots with a dozen or so grants per year in each policy area, as has too often been the case. To be sure, funding should be distributed according to appropriate criteria and on timetables that are manageable and support learning among networks of grantees and agency staff, as happens in many grant programs. Funding should also be diversified and leveraged, wherever possible.

Yet funding for place-based grants to community groups and partnerships tends not to attract the active attention of major national environmental organizations, and indeed sometimes elicits their passive opposition if it threatens their own preferred internal allocation of limited agency funds.

One possible way around this funding dilemma would be for Congress to stipulate a minimum percentage rule for climate funding that is dedicated to civic engagement and capacity building. Climate funding will certainly entail trillions of dollars of investment over the next several decades – at least if we hope to succeed in our common enterprise. So, as a nation we should commit up front: we will stipulate a minimally appropriate percentage of funding to help ensure that our citizens can self-govern and co-create solutions that make sense.

This rule could establish a minimum baseline – let's start with 3 percent – for all relevant federal spending that would impact neighborhoods, cities, regions, watersheds, coastlines, landscapes, and other ecosystems. Thus, for every \$1 trillion in overall federal climate investment, this rule would yield \$30 billion as an investment in civic infrastructure appropriate to and aligned with the larger federal investments in green infrastructure, broadly conceived.

More than 3 percent might be desirable in view of the challenges ahead, but this relatively modest overall percentage could be justified publicly and jumpstart civic investment at scale. Funding a Civilian Climate Corps, an essential complement to various other forms of civic investment, should remain separate since its cost is determined largely by full-time stipends, educational and other benefits.

For example, a rust belt city or Appalachian coal community awarded a major grant for green economic and energy development would thus get three percent of this amount to enable robust engagement by residents and workers to actively plan, collaborate, and implement with public agencies, businesses, and other institutional stakeholders, such as universities. All must become key partners in crafting green growth strategies and governance coalitions for their cities and regions.

The more complex the set of economic and ecosystem challenges and the more diverse the configuration of stakeholders, the more this type of grant could be calibrated at the higher end of a graduated scale, with special emphasis on ensuring the active engagement of typically underrepresented parts of the community or region. Other types of grants might fall at the medium or lower end, but with a minimum that signals the indispensability of investing in civic voice, community stewardship, and robust partnership.

Matching grant incentives or requirements could expand the amount of funding available, as determined among various local, state, business, and philanthropic partners.

Deeply dedicated funding thus means, first and foremost, specifically designated for the civic components of federal climate policy.

A 3 percent civic funding rule could be justified in terms of a clearly defined goal of climate policy to foster effective, collaborative, and equitable engagement from all sectors of American society. It would thus send a powerful message that federal policy considers civic engagement an indispensable feature of effective strategies for sustainability and resilience across all communities, and that this is fully worthy of federal support.

Deeply dedicated thus also signals profound and visible commitment to core norms of civic engagement and inclusive problem solving. No hemming and hawing, no burying the intent. No nickel-and-diming this key feature of climate policy, no burying it in congressional committee deal making. No pretending that it's just too expensive or an add-on luxury that can easily be cut.

Signaling deep commitment is what the president and Congress should do so that the public can see that its civic skills and co-productive work are valued by our elected officials. See and feel – clear cognitive and emotive policy signals validating everyday citizens, associations, and partner institutions in the noble, hopeful, and shared public work of creating sustainable, resilient, and just communities during these frightful times.

Let's put our money where our civic republican mouths are if we genuinely intend to keep our democratic republic amidst the coming decades of climate crisis. That is the overriding message of the funding design.

Renewable Civic Energy

These concluding proposals provide an initial sketch of how to provide shared strategic leadership that is audacious in vision yet doable in practice, concerted at the highest levels yet credible as institutional process.

To borrow a metaphor, they can help generate renewable civic energy along an institutional grid suitable to the challenges of the twin crises of climate and democracy.

Ideally, shared strategic leadership would proceed from the White House and congressional committees downward, federal agencies outward, and community organizations, local public agencies, citizen advisory councils, nonprofits, and other institutions upward. Ideally, climate movement and advocacy organizations would also recognize how civic approaches could complement and enrich their preferred mobilizing repertoires.

In a less than ideal world, selective but significant progress can be made by expanding various grant programs, developing a civilian climate corps well integrated with collaborative public agency strategies, and through other civic capacity building initiatives in each of the fields we have reviewed. Considerable funding has recently been made available for land and water conservation, environmental justice, infrastructure and related projects, though very little has yet been specified for creative and collaborative forms of civic engagement.

Community activists, democratic professionals, and public servants have been building the foundations over the past several decades. Our job is to now leverage their work to the next level, and indeed to the next levels after that, commensurate with the grave and unprecedented crises we face in our climate and in our democracy.

If not now, when?

Appendix A: Participant Biographies

Conference Organizers



Carmen Sirianni

Carmen Sirianni is the Morris Hillquit Professor Emeritus in Sociology and Public Policy, Brandeis University. He was academic advisor to the EPA's Community Action for a Renewed Environment (CARE) Program and served as Academic Chair of Partnering with Communities: National Workshop on Federal Community-Based Programs, in collaboration with the White House and federal agencies in 2009-2010 during the Obama administration. Carmen also served as research director for the joint White House Domestic Policy Council and Ford Foundation Governance initiative on Reinventing Citizenship during the Clinton administration and he co-directed the action research project on Youth Civic Engagement Networks for the Pew Charitable Trusts. He has held research appointments at the Ash Center for Democratic Governance and Innovation at the John F. Kennedy School of Government at Harvard University, the Institute for Advanced Study in Princeton, and the Minda de Gunzburg Center for European Studies at Harvard. He is an elected fellow of the National Academy of Public Administration and served as co-principal investigator of Non-State Actors in Environmental Governance, sponsored by the National Socio-Environmental Synthesis Center (SESYNC), University of Maryland, with funding from the National Science Foundation. Among his books are *Sustainable Cities in American Democracy* (University Press of Kansas, 2020), *Investing in Democracy: Engaging Citizens in Collaborative Governance* (Brookings Institution Press, 2009), and *Civic Innovation in America* (University of California Press, 2001). Carmen is editor-in-chief of CivicGreen.



Peter Levine

Peter Levine is the Associate Dean of Academic Affairs and Lincoln Filene Professor of Citizenship & Public Affairs at Tufts University's Jonathan M. Tisch College of Civic Life, with appointments in the Philosophy and Political Science departments. He was deputy director of the National Commission on Civic Renewal and director of the Center for Information and Research on Civic Learning and Engagement (CIRCLE), and has served on the boards of various civic organizations and national initiatives. Among his books are *What Should We Do? A Theory of Civic Life* (Oxford University Press, 2022), *We Are the Ones We Have Been Waiting For: The Promise of Civic Renewal in America* (Oxford University Press, 2013), and *The Future of Democracy: Developing the Next Generation of American Citizens* (University Press of New England, 2015). Peter is executive editor of CivicGreen.



Valerie Lemmie

Valerie Lemmie is the Director of Exploratory Research at the Kettering Foundation and the immediate past chair of the board of the National Civic League. She served as city manager for the cities of Petersburg, Virginia, and Dayton and Cincinnati, Ohio. She is a fellow of the National Academy of Public Administration and has served on numerous local, federal, and international boards and commissions. She is author of *Democracy Beyond the Ballot Box: A New Role for Elected Officials, City Managers, and Citizens* (Kettering Foundation Press, 2008).



Joel Mills

Joel Mills is Senior Director of the American Institute of Architects' Center for Communities by Design, a leading provider of pro bono technical assistance and democratic design for community success. Joel's work spans five continents and, in the United States, he has provided consultative services to hundreds of communities, leading participatory processes on the ground in over 85 communities across 35 states.



Ann Ward

Ann Ward is a Ph.D. candidate in sociology at Brandeis University and is writing her dissertation on youth climate activists and the way they process emotions about climate change. She served as a Bonner Service Leader through AmeriCorps for four years. She is the Education and Outreach Program Administrator at Tufts University's Office of Sustainability. Ann is managing editor of CivicGreen.

Conference Participants



Diane Jones Allen

Diane Jones Allen is Program Director and Professor of Landscape Architecture, University of Texas, Arlington. She is Principal Landscape Architect with DesignJones LLC, which received the 2016 American Society of Landscape Architects (ASLA) Community Service Award. Diane is part of one of two cross disciplinary teams that won the 2020 SOM Foundation Research Prize focused on examining social justice in urban contexts. She also received an appointment as fellow for Garden and Landscape Studies at Dumbarton Oaks for the 2021-2022 academic year. Diane is co-author of *Design as Democracy: Techniques for Collective Creativity* (Island Press, 2017).



Bryan Bell

Bryan Bell is a public interest designer and writer, who teaches at North Carolina State University. He has co-edited *Public Interest Design Practice Guidebook: SEED Methodology, Case Studies, and Critical Issues* (Routledge, 2016), and *Public Interest Design Education Guidebook: Curricula, Strategies, and SEED Academic Case Studies* (Routledge, 2019). Bryan is Founder and Executive Director of the nonprofit Design Corps in 1999, and was a co-founder of the SEED (Social Economic Environmental Design) Network in 2005. Design Corps administers the SEED Evaluator and Certification Program, the Public Interest Design Institutes, and the Structures for Inclusion conference series.



Michael R. Boswell

Michael R. Boswell is Professor of City and Regional Planning and department head at California Polytechnic State University (Cal Poly) in San Luis Obispo. His book, *Climate Action Planning: A Guide to Creating Low-Carbon, Resilient Communities*, revised edition (Island Press, 2019), is widely used in developing strategic planning initiatives in communities, as well as in professional education. The 2020 *California Adaptation Planning Guide* and *SB 1000, The Planning for Healthy Communities Act Toolkit*, draw directly upon the ongoing work of his team of researchers and practitioners



Maxwell Boykoff

Maxwell Boykoff is the Director of the Center for Science and Technology Policy Research, part of the Cooperative Institute for Research in Environmental Sciences at the University of Colorado Boulder. He is also chair of the Environmental Studies program and is Adjunct faculty in the Geography Department. In addition, Max is a Senior Visiting Research Associate in the Environmental Change Institute at the University of Oxford. He is author of *Creative (Climate) Communications: Productive Pathways for Science, Policy and Society* (Cambridge University Press, 2019) and *Who Speaks for the Climate? Making Sense of Media Reporting on Climate Change* (New York: Cambridge University Press, 2011).



Judy Braus

Judy Braus is executive director of the North American Association for Environmental Education (NAAEE), and has also led environmental education programs for the National Audubon Society, the National Wildlife Federation, and the World Wildlife Fund. She is editor of *Tools for Engagement: A Toolkit for Engaging People in Conservation* (National Audubon Society, 2011).



Lindsay K. Campbell

Lindsay K. Campbell is a research social scientist with the USDA Forest Service Northern Research Station. She is based at the New York City Urban Field Station, which is a partnership between the USDA Forest Service and the NYC Department of Parks & Recreation. She is co-lead of the Stewardship Mapping and Assessment Project (STEW-MAP) and is the author of *City of Forests, City of Farms: Sustainability Planning for New York City's Nature* (Cornell University Press, 2017).



Lewis Friedland

Lewis A. Friedland is the Vilas Distinguished Achievement Professor Emeritus in the School of Journalism and Mass Communication at the University of Wisconsin in Madison. He is co-author most recently of *Battleground: Asymmetric Communication Ecologies and the Erosion of Civil Society in Wisconsin* (Cambridge University Press, 2022). He is also author of *Public Journalism: Past and Future* (Kettering Foundation Press, 2003) and co-author of *Civic Innovation in America* (University of California Press, 2001). Lew has won several awards for documentary and public broadcasting, including the Corporation for Public Broadcasting Gold.



Tonya Gayle

Tonya Gayle is Executive Director of Green City Force (GCF), an AmeriCorps program based in New York City. She is a board member of The Corps Network, as well as Environmental Advocates of NY, which focuses on environmental justice. GCF participants are residents of New York City Housing Authority (NYCHA) properties. GCF partners with NYCHA and the city, engaging Corpsmembers in projects to promote sustainability and equity goals. Among other projects, GCF Corpsmembers run farms on NYCHA properties to expand access to fresh food, provide environmental education, and inform NYCHA residents about energy and water efficiency programs for which they are eligible.



Julia Hillengas

Julia Hillengas is the co-founder and Executive Director of PowerCorpsPHL, an AmeriCorps program based in Philadelphia, PA. She was named a White House Champion of Change in 2015, an Echoing Green Finalist in 2016, and was part of the inaugural, global cohort of the University of Pennsylvania's Center for Social Impact Strategy's Executive Program. PowerCorpsPHL works as a partnership with the City of Philadelphia to engage young adults facing barriers to work and education in hands-on work experience and training with the City's parks and water departments. PowerCorpsPHL is one of several programs that comprise the Delaware River Climate Corps, an initiative funded by the William Penn Foundation to expand Corps programming in DE, NJ, NY and PA.



Karen Imas

Karen Imas is the Waterfront Alliance's Vice President of Programs overseeing programming, advocacy, and outreach to advance and build consensus and equity on the New York and New Jersey waterfront. The Waterfront Alliance is a coalition of more than one thousand organizations and a major convener of the Rise to Resilience campaign. Karen brings significant experience crafting public affairs strategies in the nonprofit, private, and public sectors.



Faith Kearns

Faith Kearns is a scientist and science communication practitioner with the California Institute for Water Resources, University of California, Division of Agriculture and Natural Resources. She previously served as Officer with the science division of the environment program at the Pew Charitable Trusts, where she collaborated with policy and advocacy staff to develop research projects and integrate scientific information into campaigns. Faith served as a AAAS Science and Policy Fellow at the US Department of State. She is author of *Getting to the Heart of Science Communication: A Guide to Effective Engagement* (Island Press, 2021).



Marva King

Marva King has had a distinguished career at the US Environmental Protection Agency as Advisor to the Associate Administrator for Environmental Justice and Community Revitalization; EJ Coordinator in the Office of Air and Radiation; Senior Policy Advisor in the Office of EJ; Co-Chair of the Community Action for a Renewed Environment (CARE) Program; and Program Manager for the National Environmental Justice Advisory Council (NEJAC). Marva is the recipient of the 2017 EJ Trailblazer Award at EPA, the 2010 Gold Medal for the CARE Program, and the 2010 Children's Environmental Health Network's Child Health Advocate Award. Currently, she is Chair of Coming Clean, Inc.'s Board of Directors.



Marianne Krasny

Marianne Krasny is Professor of Natural Resources and the Environment at Cornell University. She directs the Civic Ecology Lab and chairs the graduate program in Natural Resources. Marianne is also a former director of the EPA's National Environmental Education Training Program. Among her books are *Advancing Environmental Education Practice* (Cornell University Press, 2020), *Civic Ecology: Adaptation and Transformation from the Ground Up* (MIT Press, 2015), and *Communicating Climate Change: A Guide for Educators* (Comstock, 2018).



Charles Lee

Charles Lee served as the director of the environmental justice program at the United Church of Christ and was the principal author of its 1987 ground-breaking report, *Toxic Wastes and Race in the United States*. He helped to organize the First National People of Color Environmental Leadership Summit in 1991 and served on the National Environmental Justice Advisory Council (NEJAC) in the 1990s before being recruited to the US Environmental Protection Agency. At EPA, he has continued to coordinate various EJ and NEJAC projects, as well as the EJ Interagency Working Group across more than a dozen federal agencies.



Christopher Lepczyk

Christopher Lepczyk is Professor of Wildlife Biology and Conservation, Auburn University. He is co-editor of *Handbook of Citizen Science in Ecology and Conservation* (University of California Press, 2020). He recently received the Gerald and Emily Leischuck Endowed Presidential Award for Excellence in Teaching.



M. Merlene Mazyck

M. Merlene Mazyck has served as Program Manager for the USDA Forest Service Volunteers & Service Program since 2010, which engages more than 100,000 volunteers and service members on 175 national forests and grasslands. Presently she is serving as the Civilian Climate Corps Coordinator and as the acting assistant director for the newly established Workforce Development Partnerships Service Hub. She has been active in expanding opportunities through the 21st Century Conservation Service Corps Program and the Resource Assistants Program. Prior to joining the Forest Service, Merlene was director of AmeriCorps NCCC (National Civilian Community Corps).



Frank Niepold

Frank Niepold is the Climate Education Coordinator at the Climate Program Office of the National Oceanic and Atmospheric Administration (NOAA) in Silver Spring, Maryland. He is Climate.gov Education section lead, a co-chair of the U.S. Global Change Research Program's Education Interagency Working Group, and the U.S. Climate Action Report Education, Training, and Outreach chapter lead for the U.N. Framework Convention on Climate Change (UNFCCC). At NOAA, he develops and implements NOAA's climate goal education and outreach efforts that specifically relate to the agency's climate goal and literacy objective.



Jeffrey Payne

Jeffrey Payne is Director of the Office for Coastal Management at the National Oceanic and Atmospheric Administration (NOAA) and has broad managerial experience in natural resource, community resilience, service equity, and climate adaptation issues. He helps to coordinate multiple interagency working groups on disaster resilience and recovery, and has served in the White House Office of Management and Budget.



Jeffrey Peterson

Jeffrey Peterson has forty years of experience in environmental policy development at the US Environmental Protection Agency and in Congress. Before his retirement in 2017, he was Senior Advisor in EPA's Office of Water on climate change policy. He is the author of *A New Coast: Strategies for Responding to Devastating Storms and Rising Seas* (Island Press, 2019).



Rico Quirindongo

Rico Quirindongo is the Acting Director of Seattle's Office of Planning & Community Development. Before his appointment in 2021, he was with the international architecture firm DLR Group where he served as Civic Design Leader for the Northwest Region. Rico was chair of the Pike Place Market Preservation and Development Authority Council, a Downtown Seattle Association board member, and American Institute of Architects (AIA) Seattle Chapter President in 2012-2013. He was recognized by AIA National as a Citizen Architect in 2020 and is a Northwest and Pacific Regional Representative on the national AIA Strategic Council.



Breece Robertson

Breece Robertson has until recently been Director of Partnerships and Strategy, Center for Geospatial Solutions, at the Lincoln Institute for Land Policy. She has more than 18 years of experience leading collaborative and strategic initiatives that leverage data-driven platforms, GIS, research, and planning for the park and conservation fields. Breece combines geospatial technology and storytelling to inspire, activate, educate, and engage. During her career at the Trust for Public Land, she led geospatial innovations that supported the protection of 3,000 places and two million acres of land. Currently she works with One Tree Planted, a global organization that focuses on restoration, regeneration, and reforestation. Breece is author of *Protecting the Places We Love: Conservation Strategies for Entrusted Lands and Parks* (Esri Press, 2021).



Christina Rosan

Christina Rosan is Associate Professor in the Geography and Urban Studies Department at Temple University. She is co-author of *Reimagining Sustainable Cities: Strategies for Designing Greener, Healthier, More Equitable Communities* (University of California Press, 2021) and *Growing a Sustainable City? The Question of Urban Agriculture* (University of Toronto Press, 2017). Tina was the Co-PI on an EPA STAR research grant, Performance and Effectiveness of Urban Green Infrastructure: Maximizing Benefits at the Subwatershed Scale through Measurement, Modeling, and Community-Based Implementation.



Sandy Scott

Sandy Scott co-leads AmeriCorp's climate change initiatives and advises on policy, strategy, partnerships, and engagements. He has served at AmeriCorps since 1995 in a variety of positions including director of public affairs, state commission liaison, press secretary, director of government relations, and senior writer. In 2020, he served on a year-long detail as director of government affairs and external relations at the National Commission on Military, National, and Public Service. Prior to AmeriCorps, he worked on Capitol Hill for seven years as a professional staff member of the House Natural Resources Committee and as a legislative assistant for a Member of Congress from Minnesota. He has also worked at environmental and civic engagement organizations in Texas and California.



Tammy Seale

Tammy L. Seale is Associate Principal at PlaceWorks, Inc., and leads their Climate Action and Resiliency Services Division. She is co-author of *Climate Action Planning: A Guide to Creating Low-Carbon, Resilient Communities*, revised edition (Island Press, 2019). Her work on sustainability, climate and resilience planning, community engagement, and smart growth extends to over seventy communities. The 2020 *California Adaptation Planning Guide* and *SB 1000, The Planning for Healthy Communities Act Toolkit*, draw directly upon the ongoing work of her team.



Surabhi Shah

Surabhi Shah is the Acting Director of the Office of Community Revitalization in the Office of Policy and the Office of the Administrator, U.S. Environmental Protection Agency. She has also served as Director of the Urban Waters Program, an interagency team that included EPA and the departments of Agriculture, Interior, and Housing and Urban Development. In 2017, she was honoured with the People's Choice Award from the Partnership for Public Service.



Cybelle Shattuck

Cybelle Shattuck is associate professor with a joint appointment in the Institute of the Environment and Sustainability and the Department of Comparative Religion at Western Michigan University. Her research focuses on the intersection between religion and sustainability, a subject she explores through fieldwork that examines the motivations and processes through which faith communities implement earth care actions. She is the author of *Faith, Hope, and Sustainability: The Greening of US Faith Communities* (State University of New York Press, 2021).



Bora Simmons

Bora Simmons is Founding Director and Senior Research Associate of the National Project for Excellence in Environmental Education at the North American Association for Environmental Education (NAAEE). As such, she has coordinated the development of Guidelines for Excellence among thousands of creative educators in the US and around the world. These guidelines cover a broad range of areas, such as K-12 environmental education (EE), professional development, early childhood EE, and non-formal EE. She has served as executive editor of *The Journal of Environmental Education*, and is currently at the University of Oregon.



Steven Rathgeb Smith

Steven Rathgeb Smith is Executive Director of the American Political Science Association and a scholar of nonprofits and public policy. For many years, he served as the Nancy Bell Evans Professor at the Evans School of Public Policy and Governance at the University of Washington and director of the Nancy Bell Evans Center for Nonprofits and Philanthropy. He is the author and editor of many books, including *Public Policy for Democracy* (Brookings Institution Press, 1993), *Nonprofits for Hire: The Welfare State in the Age of Contracting* (Harvard University Press, 1993), and *Nonprofits and Advocacy: Engaging Community and Government in an Era of Retrenchment* (Johns Hopkins University Press, 2014).



Andrew Spaeth

Andrew Spaeth serves as an Environmental Planner in the Forest Health and Resiliency Division at Washington State Department of Natural Resources. He works with a team of scientists and planners implementing the Forest Action Plan and 20-Year Forest Health Strategic Plan: Eastern Washington. He is coordinator of the Forest Health Advisory Committee of the Department of Natural Resources. Prior to joining the team at DNR, Andrew worked as the Forest Program Director at Sustainable Northwest, a nonprofit based in the Pacific Northwest.



Mary Ellen Sprenkel

Mary Ellen Sprenkel is President and CEO of The Corps Network, which represents some 145 youth service and conservation corps across the country. She has served as a member of the Federal Advisory Committee tasked with providing recommendations to federal land management agencies on how to implement a 21st Century Conservation Service Corps. Prior to joining the Corps Network as its Director of Government Relations, she served on Capitol Hill for a decade, as well as in other nonprofit and educational organizations.



Skip Stiles

Skip Stiles is Executive Director of Wetlands Watch, an organization focused on education, citizen engagement, advocacy, and collaboration across Virginia's Tidewater communities. Skip spent several decades early in his career working on national-level environmental and science policy in Congress.



Jim Stone

Jim Stone is the chair of Blackfoot Challenge, which builds upon several decades of partnerships among ranchers, foresters, public agencies, and conservation NGOs in the Blackfoot River Watershed of Western Montana. Collaborative process and trust anchor efforts to protect natural resources, family ranches, and a rural way of life from subdivisions and commercial development. Jim is the owner of Rolling Stone Ranch in Ovando.



Elena Takaki

Elena Takaki is the Director of Professional Development and Conservation Education at the Association of Fish and Wildlife Agencies, where she focuses on developing ecosystem stewardship skills for youth in urban environments and leadership capacities for professionals. Elena oversees Project WILD, a national wildlife-based conservation, climate, and environmental education program. She served as lead staff at the Maryland Department of Natural Resources for the Maryland Partnership for Children in Nature, and was president of the Maryland Association for Environmental and Outdoor Education.



Rebecca Trout

Rebecca Trout is the Program Director of the All-America City Award & Communications at the National Civic League. In this role, she connects the over 500 AAC communities with resources around local good governance practices and civic engagement strategies through research, a mentorship program and monthly webinars. Additionally, she serves as the assistant editor of the *National Civic Review*, managing the online design of the quarterly publication, as well as distribution.



Edward P. Weber

Edward P. Weber is the Ulysses Dubach Professor of Political Science in the School of Public Policy at Oregon State University. His books include *Bringing Society Back In: Grassroots Ecosystem Management, Accountability, and Sustainable Communities* (MIT Press, 2003), *Pluralism by the Rules: Conflict and Cooperation in Environmental Regulation* (Georgetown University Press, 1998), and *New Strategies for Wicked Problems: Science and Solutions in the 21st Century* (Oregon State University Press, 2017). Ed has served in advisory roles with federal agencies, such as the National Oceanic and Atmospheric Administration and the Bureau of Land Management, as well as state and regional projects.



Sacoby Wilson

Sacoby Wilson is an Associate Professor with the Maryland Institute for Applied Environmental Health and Department of Epidemiology and Biostatistics in the University of Maryland, College Park, School of Public Health, where he directs the Center for Community Engagement, Environmental Justice, and Health. Sacoby is a member of the US EPA's Science Advisory Board, on the board of the Citizen Science Association, a member of the National Academy of Sciences' Board on Environmental Studies and Toxicology, editor-in-chief of *Environmental Justice*, and a former member of the National Environmental Justice Advisory Council (NEJAC). Sacoby has received many awards, including the 2018 Taking Nature Black Environmental Champion Award.

Research Contributions

We also wish to acknowledge others who contributed to the design of our conference, provided interviews and contacts, and worked with us to develop resources for CivicGreen.

Melissa Bass is associate professor of Public Policy Leadership at the University of Mississippi, and author of *The Politics and Civics of National Service: Lessons from the Civilian Conservation Corps, VISTA, and AmeriCorps* (Brookings Institution Press, 2013).

Harry Boyte is co-director of the Institute for Public Life and Work at Augsburg College and an Affiliate Faculty Member at the Humphrey School of Public Affairs, University of Minnesota. With St. Paul mayor Jim Scheibel, Harry founded Public Achievement, the youth political and civic education initiative, which has spread to more than 20 countries. He is author of *Awakening Democracy through Public Work: Pedagogies of Empowerment* (Vanderbilt University Press, 2018), among many other works on civic engagement.

Rob Brenner, as director of the Air Policy Office at the U.S. Environmental Protection Agency for more than twenty years, played a key role in the development, Congressional passage, and implementation of the Clean Air Act Amendments of 1990. He also helped nurture the Community Action for a Renewed Environment (CARE) program, which built voluntary, cross-media partnerships in more than 100 local communities.

Jason Corburn is professor in the Department of City and Regional Planning and School of Public Health at the University of California-Berkeley, and is author of many books, including *Street Science: Community Knowledge and Environmental Health Justice* (MIT Press, 2005) and *Toward the Healthy City: People, Places, and the Politics of Urban Planning* (MIT Press, 2009). Jason co-directs the joint Master of City Planning (MCP) and Master of Public Health (MPH) degree program at UC Berkeley.

Jim Diers, an international consultant, was the director of the Seattle Department of Neighborhoods under three mayors, which helped establish the template for community engagement through the *Towards a Sustainable Seattle* comprehensive plan. He is author of *Neighbor Power: Building Community the Seattle Way* (University of Washington Press, 2004).

Albert Dzur is Distinguished Research Professor in political science and philosophy at Bowling Green State University and author of *Democratic Professionalism: Citizen Participation and the Reconstruction of Professional Ethics, Identity, and Practice* (Penn State University Press, 2008) and *Democracy Inside: Participatory Innovation in Unlikely Places* (Oxford University Press, 2019).

Connie Flanagan is the Vaughan Bascom Professor of Women, Family and Community and Associate Dean Emerita of the School of Human Ecology at the University of Wisconsin-Madison. She is author of *Teenage Citizens: The Political Theories of the Young* (Harvard University Press, 2013) and is currently working on a research project, Youth and the Environmental Commons, funded by the National Science Foundation and the Spencer Foundation.

Erin Gallay is a Research Program Manager for the University of Wisconsin-Madison, where she studies the development of young people's commitment to the commons and interest in STEM and "green" careers through the application of civic science in K-12 education. She works closely with teachers and community based organizations to engage young people in collective work to address environmental problems in their communities.

Sarah Hines serves as coordinator and project manager of the Urban Field Station Network within the USDA Forest Service, working with diverse communities to develop and advance knowledge and practical solutions to interrelated ecological, social, and economic issues and challenges. During her career in the Forest Service, she has linked research with practice at local and regional scales to inform holistic stewardship of natural infrastructure and communities, including in National Forests.

Helen Ingram is Professor Emerita at the University of California Irvine. She is author of *Water, Place and Equity* (MIT Press, 2008), *Policy Design for Democracy* (University Press of Kansas, 1997), and *The Power of Narratives in Environmental Networks* (MIT Press, 2013), and co-editor of *Public Policy for Democracy* (Brookings Institution Press, 1993).

Mirill Ingram is Participatory Action Research Scientist at the Center for Integrated Agricultural Systems, University of Wisconsin-Madison. She is author of *Loving Orphaned Space: The Art and Science of Belonging to Earth* (Temple University Press, 2022) and co-author of *The Power of Narratives in Environmental Networks* (MIT Press, 2013).

Lauren Marshall is Senior Manager for Program Innovation at the Arbor Day Foundation and served previously as the National Program Manager, Urban and Community Forestry at the USDA Forest Service, State and Private Forestry and Cooperative Forestry.

Mike McGrath is Director of Research and Publications at the National Civic League and is editor of *the National Civic Review*. He is an award-winning writer, editor, and researcher with expertise in local government, political reform, civic engagement and urban policy.

Matthew McKinney is Director of the Center for Natural Resources and Environmental Policy at the University of Montana and was founding director of the Montana Consensus Council for ten years. He is co-author of *The Western Confluence: A Guide to Governing Natural Resources* (Island Press, 2004) and *Working Across Boundaries: People, Nature, and Regions* (Lincoln Institute of Land Policy, 2009), among many other publications.

Alberto Medina is communications advisor to CivicGreen and oversees a wide range of projects at the Jonathan M. Tisch College of Civic Life at Tufts University, including its Center for Information and Research on Civic Learning and Engagement (CIRCLE). Alberto is a freelance writer and editor, and previously worked at national newspapers in his native Puerto Rico and at multinational publishing houses.

Vince Meldrun is a leading advocate for the incorporation of youth voice and civic engagement into STEM and environmental education. Over the last 35 years Vince has taught, coached, developed programs, and managed organizations all with an eye toward preparing young people to be active participants in their community and our democracy.

Michael Méndez is assistant professor of environmental policy and planning at the University of California Irvine and is author of *Climate Change from the Streets: How Conflict and Collaboration Strengthen the Environmental Justice Movement* (Yale University Press, 2020). Michael served as the inaugural James and Mary Pinchot Faculty Fellow in Sustainability Studies at the Yale School of Forestry and Environmental Studies and has been a senior advisor in the California State Legislature, Sacramento City Planning Commission, and the Los Angeles Regional Water Quality Control Board.

Adina Merenlender is a conservation biologist and Cooperative Extension Specialist at the University of California Berkeley. She is author of *Climate Stewardship: Taking Collective Action to Protect California* (University of California Press, 2021).

Bill Milton is a rancher in central Montana active in the Musselshell Watershed Coalition. He serves on the leadership team of the Western Collaborative Conservation Network, which supports capacity building and policy for collaborative conservation methods in forests, rangelands, and watersheds across Western states.

Tina Nabatchi is the Joseph A. Strasser Endowed Professor in Public Administration and the Director of the Program for the Advancement of Research on Conflict and Collaboration (PARCC) at the Syracuse University Maxwell School of Citizenship and Public Affairs. She is co-author of *Democracy in Motion: Evaluating the Practice and Impact of Deliberative Civic Engagement* (Oxford University Press, 2012), *Public Participation for 21st Century Democracy* (Hoboken, NJ: Wiley, 2015), and *Collaborative Governance Regimes* (Georgetown University Press, 2015).

Phaedra Pezzullo is associate professor of communications at the University of Colorado at Boulder. She is author of *Toxic Tourism: Rhetorics of Pollution, Travel, and Environmental Justice* (University Alabama Press, 2009) and co-author of *Environmental Communication and the Public Sphere*, sixth edition (SAGE, 2022).

Samina Raja is Professor of Urban and Regional Planning at the University of Buffalo and director of the Food Systems Planning and Healthy Communities Lab. She is author of *A Planners Guide to Community and Regional Food Planning: Transforming Food Environments, Building Healthy Communities* (American Planning Association, 2010).

Taryn Sabia is Research Associate Professor and Director of the Florida Center for Community Design and Research at the University of South Florida's School of Architecture and Community Design. Her work focuses on climate change adaptation and resiliency, equity in transportation and housing, and community engagement in urban design.

George Scarlett is a Senior Lecturer and Tisch Fellow in the Eliot-Pearson Department of Child Study and Human Development at Tufts University. He is also Editor of the online magazine, *Tomorrow's Earth Stewards* and a researcher for the New England Aquarium's youth programs.

Erika Svendsen is a social scientist with the USDA Forest Service and co-director of the New York City Urban Field Station. She helped to develop STEW-MAP as a mapping tool of civic stewardship work and is co-author of *Urban Environmental Stewardship and Civic Engagement: How Planting Trees Strengthens the Roots of Democracy* (Routledge, 2015).

Anne Taufen is associate professor of Urban Studies at the University of Washington Tacoma, graduate program coordinator of Community Planning, and Faculty co-director of Livable City Year. Her research focuses on urban waterways and waterfronts, place-based conservation, and narrating resilience, among other topics.

Appendix B: References

This report draws upon interviews and discussions with participants at our May 2022 conference, as well as scholarship across multiple social science disciplines. We cite major books that have informed each field, as well as agency and nonprofit reports that have been significant in orienting policy and practice, and toolkits for informed civic action and coproduction. In the interests of reasonable length, we cite only a small selection of scholarly articles that we have utilized.

The books and articles cited here, including those of our CivicGreen senior associate editors and our conference participants, draw upon many methods: qualitative field work and interviews, institutional and policy analysis, and quantitative and comparative analysis. Many of these studies reference the scientific, technical, and ecological dimensions of the challenges we face, though we leave these to others with the appropriate expertise.

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