# Climate Adaptation and Community Development

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Adaptation is defined as an "[a]djustment in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects."[1] A more complete definition of adaptation "involve[s] both building *adaptive capacity* thereby increasing the ability of individuals, groups, or organizations to adapt to changes, and *implementing* adaptation decisions, i.e., transforming that capacity into action" [emphasis added].[2] In this regard, a central hallmark of adaptation is about building a capacity for not only managing risks (i.e., moderating negative effects) but also for taking advantage of beneficial opportunities. As such, climate adaptation and community development are uniquely aligned in that capacity building has been a central tenet of community development.

Until recently, popular action driving climate adaptation has been squarely nested within the public and civic sectors. Yet, with a greater empirical foundation for understanding the true distributed costs of climate impacts, there is greater recognition that the private sector must play a more fundamental role in guiding and resourcing climate adaptation interventions and investments. The private sector has always adapted–one either adapts to new markets, products, or services or they go out of business. But the current calculus is more than a function of market share. It is a function of where there will be a market at all. In this regard, there are both risks (and uncertainties) and opportunities with climate adaptation.

Banks and lending institutions, including Community Development Financial Institutions (CFDIs), play a key role in shaping our economy and the general trajectory of private sector enterprise. Increasingly, the banking and financial services sectors have begun to understand the risks and uncertainties associated with climate change. Whether it is asset management or asset pricing, the methodological and technological capacity to measure and estimate costs are nearly commensurate with any other avenue of commercial and enterprise risk.[3] Perhaps what is less understood are the full range of potential opportunities that climate adaptation could engender in the advancement of sustainable economies and communities.

This issue of the *Community Development Innovation Review* highlights not only modes and degrees of interdependency and mutual interest, but also methodologies and models

1 U.S. Global Change Research Program. "Climate Change: Glossary" (2019), available at https://www.globalchange.gov/climate-change/glossary.

2 Adger, W.N., Arnell, N.W., and Tompkins, E.L. "Successful Adaptation to Climate Change Across Scales," *Global Environmental Change*, 15(2) (2005), p. 78.

3 Financial Stability Board. "Recommendations of the Task Force on Climate-related Financial Disclosures: Final Report," Bank of International Settlements (2017); Financial Stability Board. "Technical Supplement: the Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities," Bank of International Settlements (2017); and Mazzacurati, E., Firth, J., and Venturini, S. "Advancing TCFD Guidance on Physical Climate Risks and Opportunities: Report of the European Bank for Reconstruction and Development," Four Twenty Seven and Acclimatise (2018).

for engaging a new set of parameters defined by social welfare outcomes consistent with community development practices and domains of engagement. Through a diverse range of contributions from different sectors across the U.S., this issue allows readers to see that climate adaptation is not just about building seawalls and sea level rise. It's about agricultural economies and youth education and global financial systems and the hard realities of everyday low-to-moderate income (LMI) households. This issue highlights that, in fact, all of us have a stake in climate adaptation.

## Analytical Discipline for Investment Analysis

This issue is not intended to be a methodological survey of how to analyze, design, plan and execute climate adaptation interventions and investments. For a more comprehensive review and practical approach, readers should reference *Climate Adaptation Finance and Investment in California*[4] and *Climate Adaptation Investment and the Community Reinvestment Act*.[5] Both of these freely accessible resources provide references for understanding conceptual and analytical distinctions within a broad field of allied knowledge that falls under the wider umbrella of climate adaptation, including hazard mitigation, engineering resilience, ecological resilience, community resilience, and maladaptation.

There are very often conflicts–sometimes as simple as opportunity costs–by and between different strategies. Likewise, the interventions and investments associated with these different concepts will yield different benefits to different people (and ecosystems) over different time horizons. For instance, engineering resilience may be maladaptive to an environmental constituency (e.g., grey infrastructure vs. habitat preservation) and ecological resilience may be in direct conflict with community resilience (e.g., habitat preservation vs. siting of affordable housing). The challenge is to translate subjective outcomes to discrete elements that can be evaluated based on objective criteria informed by empirical science, social science, and culturally derived knowledge of people and place.

Defining, measuring and analyzing synergies and conflicts by and between different courses of action (framed as different concepts) is central to providing the analytical discipline necessary to fully engage the private sector. As such, the analysis must reflect robustness and not simply net present value optimization. Likewise, it is highly desirable for the public and civic sectors to promote such discipline because it speaks to a more well-informed discourse that supports the development of public policies. Ultimately, it will be through a combination of market forces and democratic processes that society will determine what we should protect and what we should give up in the face of climate change–for better and for worse. The goal of this issue is to identify those elements of commerce and community development that provide a pathway for engagement with stakeholders in a variety of sectors in order to understand where investments can be made that advance collective interests in the face of impacts and uncertainties from a rapidly changing world.

4 Keenan, J.M. *Climate Adaptation Finance and Investment in California*, Routledge (2018).
5 Keenan, J.M. and Mattiuzzi, E. "Climate Adaptation Investment and the Community Reinvestment Act," Community Development Research Brief, Federal Reserve Bank of San Francisco (2019).

## Navigating this Issue

The diversity of contributors to this issue demonstrates the wide ranging professional impetus driving engagement at the intersection of climate change, community development, and financial services. To fully navigate this issue, it is helpful to understand a little bit about the contributors and their frame of reference. The lead article is by Michael Berman, a former banking executive, advisor to a U.S. Department of Housing and Urban Development (HUD) secretary, and head of the Mortgage Bankers Association. Today, he is leading a high-level national effort to prepare our mortgage system for climate change. In his article, *Flood Risk and Structural Adaptation of Markets: An Outline for Action*, Berman provides a framework for understanding not only the challenges but a range of practical solutions. This article is juxtaposed next to an article by a group of leading young economists, Asaf Bernstein, Matthew Gustafson, and Ryan Lewis, who have provided the most robust and sophisticated evidence yet of the economic impacts of sea level rise on housing and real estate. Their article, *Real Estate as a Tool for Adaptive Banking*, presents the current evidence within the context of a more resolute understanding of the economic vulnerability of LMI households and communities. To this end, they lay the emerging empirical foundation for potential intervention through the Community Reinvestment Act (CRA). Together, these articles tackle one of the most immediate challenges to social welfare and the accrual of wealth: housing.

Next, the debate is shaped by contributors from two leading economic consulting firms as to whether insurance is a leader or a follower of more systematic adaptation to climate risk as it relates to everything from mortgage underwriting to land use patterns. Of course, these considerations are critical for community development, particular in post-disaster recovery and environmental justice contexts. Mark Northcross argues in his article, *Rebuild to Fail or Rebuild to Adapt: How CRA Lending Can Guide Climate Change Disaster Response*, that insurance is a perpetual laggard by virtue of the architecture and timing of the mechanisms of its various markets. He utilizes emerging insurance market failures following recent California wildfires as his case in point. However, he also provides a set of conditions that can mitigate risky behavior and incentivize investment in resilience and hazard mitigation that are linked with actuarially sound insurance products. In their article, *Insurance Innovation and Community-Based Adaptation Finance*, Shalini Vajjhala and James Rhodes argue that new insurance products are critical for supporting everything from large scale infrastructure to more distributive property level investments. More fundamentally, they suggest that new products can capture network level benefits from resilience and adaptation investments.

The next article carries forward the idea of instrumentalizing network level benefits from adaptation, resilience, and hazard mitigation investments. *Forest Finance Unlocks Opportunities for Rural Communities: Exploring the Triple Bottom Line Impacts of the Forest Resilience Bond Model*, by Nathalie Woolworth and Zach Knight, makes a compelling argument for how ecosystem services valuation of forest performance can provide the financial basis for debt instruments that catalyze investment in not only forests but rural communities. This partnership between civic-minded entrepreneurs and the U.S. Forest Service is grounded by an exploration of the

inaugural deployment of this investment model. The article provides a prescient exploration of the range of challenges facing rural communities and the extent to which climate adaptation can represent a net-positive contribution to economic development and social welfare, while also advancing responsible ecological management.

Natalie Ambrosio and Yoon Kim, in their article, *Community Resilience and Adaptive Capacity: A Meaningful Investment Across Assets*, carry forward the idea that investments in community resilience have reciprocal economic benefits to commercial enterprise. They provide a high-level discussion on emerging practices and for supporting measurement of the adaptive capacity of enterprises and communities. Adaptive capacity–often in support of organizational resilience and continuity of supply-chains–is an increasingly well-defined analytical frame in business scholarship and corporate governance practices.[6] However, this article challenges us to move beyond the four corners of an enterprise-level assessment. While resilience is generally understood to have limited functionality based on internal designs for known risks, adaptive capacity is understood in broader terms to utilize both internal and external designs to both known and unknown risks and other non-probabilistic phenomena. For this reason, adaptive capacity is a central and powerful frame for further exploration at the intersection of commercial and community organizations, structures, resources, and intelligence capacities.

Moving from an organizational and community scale, John Cleveland, Jon Crowe, Lois DeBacker, Trine Munk, and Peter Plastrik provide a roadmap for public finance and municipal jurisdictions in their article, *Hunting for Money: U.S. Cities Need a System for Financing Climate Resilience and Adaptation*. Building off recent initiatives in Boston, the contributors highlight substantive barriers that are thwarting standardization in financial products and services that, as a system, could support adaptation and resilience investments. The article provides a useful survey of ongoing innovations–tested and untested–that offer some hope for future development. The contributors highlight the practical role that philanthropy, CDFIs and CRA investors can play in stimulating and supporting experimentation with these innovations in the advancement of seeing what works and what does not.

A.R. Siders and Carri Hulet provide a link between municipal finance and governance with the long-term social welfare of displaced persons in their article, *Climigration and the Private Sector*. This contribution explores the potential role that the private sector can play in mitigating the negative impacts of population displacement. In their article, *Building Community Wealth through Community Resilience*, Johanna Bozuwa and Thomas Hanna take a different perspective on the role of the private sector to advance social welfare. These contributors challenge conventional practices of grants, subsidies and tax breaks that they see as "wealth extraction." Rather, the contributors challenge readers to draw upon examples of community

6 Engle, N.L. "Adaptive capacity and its assessment," *Global Environmental Change*, 21(2) (2011), pp. 647-656; Friedman, Y., Carmeli, A., and Tishler, A. "How CEOs and TMTs build adaptive capacity in small entrepreneurial firms," *Journal of Management Studies*, 53(6) (2016), pp. 996-1018; and Aggarwal, V.A., Posen, H.E., and Workiewicz, M. "Adaptive capacity to technological change: A microfoundational approach," *Strategic Management Journal*, 38(6) (2017), pp. 1212-1231.

wealth building that can take advantage of collateral benefits from public climate adaptation investments. Elizabeth Rogers, Anna Brown, and Keith Bisson frame the challenges for the state of Maine in similar community and economic development terms in their article, *Building on Shared Values to Communicate with Mainers on Climate Change*. This article highlights the collective engagement of community stakeholders to research and refine modes of community in order to fully engender a conversation and action on climate change in Maine. Through sophisticated opinion research, this collective was able to not only understand climate vulnerability, but they were able to frame actions and opportunities in a way that catalyzed support and provided a platform for a more robust public discourse.

Advances in climate communications are critical to the idea of building community coalitions, community wealth, and community resilience. In her contribution, *Embracing the Challenge of Climate Education and Engagement*, pioneering climate communicator Caroline Lewis provides some insight in how community development organizations may cultivate this conversation. This article highlights the full range of outreach activities and the equal measure of ways that climate science and adaptation science can be grounded to resonate with people's everyday lives. In the process, a more engaged citizenship can foster and support more effective advocacy for climate adaptation investments. One emerging area of climate communications where communities have organically organized is within the media landscape of podcasts. This low-cost, highly accessible format has been a productive avenue for sharing and distilling not only complex climate science but also stories and experiences of a variety of stakeholders who are often less visible in the popular climate change press. Doug Parsons and Dan Ackerstein highlight the global success and lessons learned from *America Adapts*–the world's most popular climate change podcast–in their article *America Adapts: The Value of Podcasting in Climate Communications*. The contributors highlight avenues by which community development organizations can think about content creation and the prospects of reaching new and expanded audiences through the power of narrative.

The next set of contributors challenge us to think, not just about expanded and diverse audiences, but also about the full range of demographics that should be engaged in the adaptation planning and investment process. A new generation of public health scholars, Seciah Aquino, Josefina Flores Morales, Max Aung, Mary Keovisai, and Jennifer K. McGee-Avila, propose a broad framework for understanding climate changes unique to an aging society. In *Healthy Aging: A Conceptual Model of Community-based Solutions in the Face of Climate Change and Global Demographic Changes*, they pinpoint the central role that community investment can play in advancing everything from household savings to access to simple things like air conditioners. Deborah McKoy, Amanda Eppley, and Shirl Buss work in the other direction to highlight the unique capacities and insights of youth in *The Critical Role for Young People and Schools in Resiliency Planning*. The contributors argue that civic engagement and public education are central to the urban and climate planning processes. This is not merely a function of inclusivity for purposes of political mobilization, rather the benefits speak to a bilateral engagement that informs and shapes the scope and execution of climate investments.

The following contributors bring life to what it really means to shape equitable and inclusive engagement and participation in climate planning activities, offering insight into an expanded range of values and models that serve as overlays to our day-to-day challenges of infrastructure, regional governance and coordination, and environmental degradation. In *Drawing a New Roadmap: The Resilient by Design Bay Area Challenge*, Allison Brooks highlights an emerging process for matching professional and community expertise with real world challenges packaged in design projects that offer both inspiration and technical and programmatic specificity. The contribution highlights real-world experience in how to organize productive groups of stakeholders and how to maximize the value of design in catalyzing investments–albeit with many self-defining barriers along the way. Kokei Otosi extends this line of thinking in *Promoting Equitable Climate Adaptation through Community Engagement*, highlighting real world civic and public partnerships that have utilized participatory planning and design as a means of advancing distributive equity and procedural justice outcomes that are so critical for the validation and effectiveness of climate adaptation investments.

Robert Freudenberg, in his contribution *Investing in the Virtuous Cycle*, argues that any such public and civic investments should be reinforced by an institutional investment in community development and regional economic development and urban planning research. The article provides impactful examples from where such partnerships have provided the information and the data necessary to give underrepresented populations and communities the resources necessary to advocate for the appropriate investments to advance community resilience and climate adaptation. Finally, Laurie Schoeman returns to where we started–housing and community development. *Pre- and Post-Disaster Investments in Housing and Community Development Under the CRA* gets to the heart of the community development sector and asks us to think about structural challenges and interim opportunities for investing in hazard mitigation, community resilience, and engineering resilience within the context a broader interpretation of the CRA. This contribution provides a salient blueprint for expanding the reach of CRA to include both pre- and post-disaster investments. From urban data, research and communications to "mortgage financing 101," the opportunities are already yielding benefits in existing practices. Together, these contributions highlight not only the nature of emerging practices but also a vision for systems of finance, models of engagement and investment conduits that offer potential pathways for supporting efficient, effective, and equitable climate adaptation.

## Conclusions

Unfortunately, there are no conclusions. Adaptation is a process that has no end. This issue of the *Community Development Innovation Review* simply offers a window into the diversity of ideas and people shaping climate adaptation and community development. Through responsible stewardship of communities and the environment, there are opportunities to advance investments that offer collective benefits to a variety of constituencies, sectors, and communities. The contributions in this issue have been made by people whose careers have

intersected with climate change in unexpected ways. They have chosen to address, head-on, a set of challenges that will take many generations to firmly resolve, even under the best-case scenarios. Nevertheless, they share a sense of obligation and hope that climate adaptation will open new pathways for redefining and addressing perennial challenges. They share a vision for collective prosperity and uniform opportunity. Together, these contributors offer a glimpse into a field of practice and an area of scholarly inquiry that–even in its earliest stages–will yield benefits across asset classes and life-cycles to impact the social welfare of everyday people.

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