8.

Transparency, Accountability and Justice: Why Governments Must Share Flood Protection Planning Leadership with Frontline Communities

Paul Gallay, Amelia Ding, Hellas Lee, Victoria Sanders and Bernadette Baird-Zars

While there may be no simple solution to the growing problem of coastal flooding, research findings are clear: the most effective flood protection plans are holistic, well-informed, and restorative, and government agencies in charge of keeping communities safe from flooding must abandon traditional top-down planning methods in favor of transparent and collaborative practices built on shared leadership with frontline communities (Morris et al. 2024).[1]

Flooding poses a truly *wicked problem* for planners and

1. An assessment of the need for a holistic approach to flood risk reduction is illustrated in comments from researchers at Rutgers, Dartmouth, Princeton, and other institutions, working together as the Megalopolitan Coastal Transformation Hub ("MACH") project, submitted to the United States Army Corps of Engineers on March 1, 2023. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

communities worldwide.[2] Because flooding has so many different causes, including storm surge, intense rainfall, sea level rise, erosion, and subsidence, planners need to consider a wide range of structural, non-structural, and nature-based features in order to identify the proper mix of solutions to address the different risk patterns and physical, socio-economic and demographic factors in each community (Depietri, Dahal, and McPhearson 2018). To make matters even more complex, many of the available solutions to flooding may work at cross purposes with other important community goals like maintaining waterfront access and views, protecting neighborhood character, and safeguarding natural systems and biodiversity.[3]

In the eastern United States, heavily developed states like New York and New Jersey face increasingly serious flood risks. For example, according to projections by the New York City Panel on Climate Change (2019), sea levels in the 2050s are likely to be 11 to 21 inches higher than in 2000. Heavy downpours like those seen during Hurricane Ida in 2021 and enormous storm surges like those seen during Superstorm Sandy in 2012 also are predicted to become more frequent, with the greatest impacts falling on communities already most vulnerable due to a history of redlining, disinvestment, and other inequitable land use policies.

To protect the states of New York and New Jersey from flooding, the United States Army Corps of Engineers ("US Army Corps"), along with officials from these two states and the City of New

2. Rittel and Webber (1973) describe "wicked" problems as those with multiple potential solutions, no precedents, unclear boundaries, and porous definitions, among other characteristics. See also Incropera (2015).

3. As one straightforward example, many residents near coastlines oppose walls, e.g. Geoff Dembicki (2023). For a sophisticated perspective on the multitude of systems, symbols, and problematic understandings of "stakeholders" see Maru-Lanning (2016). For analyses of power across national and global scales, as in the cross-case examination, see more in Goh (2021).

York, have been working since 2016 on what may be the largest and most complex flood protection study in US history: the *New York-New Jersey Harbor and Tributaries Study* ("NY-NJ HATS").[4] In September 2022, the US Army Corps proposed to construct 2.2 miles of in-water barriers and 50 miles of shoreline-based walls, to safeguard communities within the NY-NJ HATS study area from storm surge-driven flooding.[5] Two years later, however, this plan remains in limbo, as the US Army Corps struggles to respond to written expressions of concern from over 2,600 local residents, community-based organizations, members of Congress, and others, including the US Army Corp's own federal, state and local agency study partners.[6] Among the most frequently expressed concerns about the 2022 plan is that it's only designed to protect the region from wind-driven storms, not from stationary, rain-driven flooding, which took at least 36 lives in New York and New Jersey during Hurricane Ida in 2021 (Calvan et al. 2021), or from sea level rise, which not only threatens communities during storms but does

4. NY-NJ HATS is intended to protect 16 million people living along 900 miles of coastline in two of the nation's most densely populated states. The characterization of this study as being perhaps the largest study of its kind in US history was shared by Joseph Seebode, Deputy New York District Commander, United States US Army Corps of Engineers, in conversation with one of the authors of this chapter, on November 15, 2022.

5. In September 2022, the US Army Corps identified five possible approaches to flood prevention from which the Corps designated "Alternative 3B" as their tentatively selected plan. The flood protection elements in Alternative 3B are in water storm barriers at the mouths of Gowanus, Newtown, and Flushing Creeks in Brooklyn and Queens, structural shore-based barriers in Jersey City, on the lower west side of Manhattan, and in East Harlem, a combination of shore-based measures and in water barriers in from the mouth of Jamaica Bay to the Rockaway Peninsula, Lower Brooklyn, and two storm surge barriers on the mouth of the Arthur Kill and Kill van Kull tidal straits. Alternative 3B is projected to cost USD 52 billion, protect 63% of the NY-NJ HATS study area, and take 14 years to construct. See "New York-New Jersey Harbor and Tributary – Draft Feasibility Study and Environmental Impact Statement," September 2022.

6. See, for example, the following comment letters sent to the United States US Army Corps of Engineers regarding the 2022 New York-New Jersey Harbor and Tributaries Study Plan: New York State, New Jersey and New York City, March 31, 2023; New York City, March 24, 2023; National Oceanic and Atmospheric Administration, March 29, 2023; New York City Environmental Justice Alliance & Columbia Climate School, Center for Sustainable Urban Development, March 23, 2023; Bipartisan Coalition of 14 members of Congress, September 12, 2023. All letters are archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

so, increasingly, on clear, sunny days, as well (City of New York 2024). Another major concern is that the US Army Corps is failing to deliver on its promise to put frontline communities "at the front and center" of the NY-NJ HATS planning process to lift projects that address specific local needs and priorities.[7]

Fortunately, there is some hope for the introduction of new and more innovative approaches to flood reduction planning in New York and New Jersey, which could be useful in other coastal regions as well. On January 8, 2024, these two states invoked a never-before-used provision of the U.S. Water Resources Development Act of 2022 which will require NY-NJ HATS planners to address *all* major sources of flooding, including stationary downpours and sea level rise, in addition to storm surge-related flooding (Snider 2022), and to give greater consideration to natural and nature-based approaches, instead of relying solely on hardened shoreline seawalls and in-water barriers for flood protection that are the core of earlier NY-NJ HATS proposals.[8]

Calls have been made as well for fundamental changes to the relationship between the NY-NJ HATS project team and at-risk communities. On November 16, 2023, prompted by numerous

7. Jay Shannon, "Assistant Secretary of the Army for Civil Works issues Environmental Justice Guidance to the US Army Corps of Engineers," Department of the Army, March 22, 2022, https://www.army.mil/article/254935/assistant_secretary_of_the_army_for_civil_works_issues_environmental_justice_guidance_to_the_army_corps_of_engineers, at Section 10. At the commencement of the first public meeting on the 2022 NY-NJ HATS tentatively selected plan, on December 15 of that year, Colonel Matthew W. Luzzatto, then the commander of the US Army Corps New York District, promised *meaningful dialogue, community empowerment*, and *agency accountability* through the remainder of the planning process. Colonel Luzzatto's comments to this effect may be accessed in the US Army Corps recording of the meeting (https://www.youtube.com/watch?v=KoJ4_OaOTE4&t=23s), at minute 3:20.

8. See Note 4, above.

community and academic organizations,[9] the states of New York and New Jersey and the City of New York boldly demanded that the US Army Corps adopt a vastly expanded public engagement plan to ensure that frontline communities will be meaningfully engaged in all future NY-NJ HATS planning work.[10] Subsequently, on January 24, 2024, the US Army Corps announced its intention to create a first-of-its-kind *Environmental Justice Coordination Committee* to promote transparency and accountability to frontline communities for the remainder of the NY-NJ HATS project.[11] The US Federal Government, and this article, use the term "frontline" communities

9. For example, in May 2022, RCCP met with the US Army Corps NY-NJ HATS planning team to share the findings of its research interviews and press for a fully collaborative NY-NJ HATS process. At that meeting, the US Army Corps made a promise to convene a NY-NJ HATS environmental justice working group. New York District Commander Colonel Matthew Luzzatto and a dozen of his colleagues then visited Columbia University on November 18, 2022, for a briefing and dialogue with RCCP staff and advisory board members, at which the environmental justice working group was again discussed. RCCP again called for the establishment of the environmental justice working group in its March 23, 2023, comments on the US Army Corps tentatively selected NY-NJ HATS action plan (cited in Note 8, above). Finally, on December 11, 2023, over 20 months after the Corps' first promise of a NY-NJ HATS environmental justice working group, RCCP and 21 frontline community organizations, environmental advocacy groups, and other non-governmental stakeholders wrote to the states of New York and New Jersey to protest the US Army Corps failure to establish the environmental justice working group and appeal to those agencies for their assistance in this regard (multi-party letter to the Commissioner of the Department of Environmental Conservation of the State of New York and the Commissioner of the Department of Environmental Protection of the State of New Jersey, December 11, 2023, Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project).

10. Among the public consultation requirements set by the states of New York and New Jersey and the City of New York are: full responses to all public comments on the 2022 plan and continuing community dialogue on those matters; retention by the US Army Corps of a consultancy with expertise in reaching and educating affected communities, especially environmental justice and disadvantaged communities, to discuss proposed project elements and effectively obtain and appropriately act upon community guidance or critique; and, meaningful engagement in substantive discussions throughout the course of the study. Correspondence from the states of New York and New Jersey and the City of New York to the United States US Army Corps of Engineers, November 16, 2023. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

11. US Army Corps New York District Commander Alexander M. Young committed to establishing the NY-NJ HATS Environmental Justice Coordination Committee during a January 24, 2024, meeting with the New York City Environmental Justice Alliance, El Puente, and researchers from the Columbia Climate School, including the author. Later that day, Colonel Young shared this announcement with officials from New York State, New Jersey, and the City of New York, as well as investigators from six academic research partnerships, at a planning meeting for a proposed NY-NJ HATS technical advisory workshop. However, as of September 2024, the Environmental Justice Coordination Committee has yet to launch, as the Corps continues to deliberate about it internally. See also Dalban (2024).

to designate places that have a high risk of negative impacts from climate change due to historic patterns of injustice and exclusion.[12]

While these developments are intended to produce a more holistic, community-centered NY-NJ HATS study, many frontline community leaders remain skeptical that this will be the case, given their past experiences in resilience planning. Indeed, research involving the authors of this chapter illuminates several significant barriers to achieving truly shared leadership between government agencies responsible for flood protection planning and frontline communities, themselves. For example, leaders from ten New York-New Jersey metropolitan area community-based organizations interviewed in 2022 and 2023 by researchers from the Resilient Coastal Communities Project (RCCP), a partnership between Columbia Climate School and the New York City Environmental Justice Alliance,[13] described how perfunctory consultation and top-down government agency practice deny their communities the opportunity for meaningful participation in resilience planning. They also shared ten ideas for improved collaboration with government and academia, listed below in Figure 1, which they believe could help their communities become safer and more cohesive in the face of growing climate-related risks.

12. Using the definition from NOAA's Climate Adaptation Partnerships program (2024): "Frontline communities are defined here as those communities who are the most vulnerable to and will be the most adversely affected by climate change and inequitable actions because of systemic and historical socioeconomic disparities, environmental injustice, or other forms of injustice."

13. New York City Environmental Justice Alliance ("NYC-EJA") is a citywide network linking grassroots organizations from low-income neighborhoods and communities of color in their struggle for environmental and climate justice. Since November 2021, RCCP has worked to develop actionable, fundable, and equitable solutions to flood risks that also deliver complementary benefits, like habitat restoration, job creation, and greater community cohesion, through a combination of iterative engaged scientific research and active support for enhanced community participation in public planning. RCCP's effort to foster new collaborations on flood risk reduction between environmental justice communities, practitioners, and researchers is also in keeping with Columbia University's 2019 commitment to adopt an institutional "Fourth Purpose," designed to leverage scholarly knowledge to create more rapid and transformational societal and global impact. Accessed at: https://president.columbia.edu/news/fourth-purpose-task-force-report-and-recommendations.

Figure 1. Ten Community-Based Ideas for Improving Resilience Planning.

In addition to arguing for a more holistic approach to flood protection planning built on shared leadership between government planners and frontline communities, many of the community leaders RCCP interviewed called for planners to reimagine the concept of resilience, itself. They want the government to abandon

traditional resilience planning models—which are based on the expectation that frontline communities will have to endure repeated storm events and, after each one, endeavor to *bounce back* to the same inequitable conditions, created by redlining and other discriminatory practices, that they occupied before the storm—in favor of a new approach to resilience providing front-line communities with the opportunity to proactively *bounce forward* towards a more just and restorative future.

For example, advocates argued that a truly transformative NY-NJ HATS plan would support community needs such as greater access to open space and recreational opportunities, restoration of degraded ecosystems, air and water quality, creation of sustainable jobs as part of the transition to clean, efficient energy sources, and community revitalization, especially in communities that face structural disadvantages due to legacies of environmental injustice (Gallay et al. 2022). They explained that true resilience has its foundation in strengthening social capital and community cohesion and that disaster responses and resilience planning for the future must be based on a culture of caring and community solidarity supported by the necessary resources for social cohesion and healing (Morris et al. 2024).[14]

Achieving Community Goals for Flood Protection Planning

In 2022, RCCP invited representatives of ten local environmental and climate justice organizations[15] to share their past experiences

14. See also Bennett et al. (2016).

15. The community leaders interviewed by RCCP in 2022 included staff members from the following organizations: El Puente, GOLES, Guardians of Flushing Bay, Ironbound Community Corporation, Newtown Creek Alliance, New Jersey Environmental Justice Alliance, RISE, Staten Island Urban Center, The Point CDC, UPROSE.

in resilience planning, provide their perspectives on what a truly just and equitable planning process would look like, and explain what resources they would need to participate fully and effectively in future planning processes. RCCP provided honoraria to all in recognition of their time.

These community leaders expressed a deep willingness to help reform resiliency planning. They offered reasonable, implementable ideas for immediate action to address flood risk[16] and eliminate exclusions and gaps in resiliency planning. They also explained why narratives of place are essential to flood protection planning, given the interconnectedness of flooding risks with those linked to inadequate housing, high asthma rates, insufficient educational opportunities, and other indicators of systemic discrimination and disadvantage. Finally, they argued forcefully that community co-leadership in the planning process is just as essential to effective resilience planning as agency expertise. As Dariella Rodriguez, Director of Community Development at the Point Community Development Corporation put it: "[W]e need community members in those conversations... if we're not moving at the speed that our people need us to move in, then all the policy in the world, without that community power... we're gonna hit a wall..."[17]

RCCP interviewees highlighted problematic practices in resilience planning and shared pathways for new forms of participatory planning and community-driven just transition. For example,

16. The local organizational leaders RCCP interviewed in 2022 spoke extensively about needs like more extensive and effective floodproofing of homes and businesses, better maintenance of stormwater infrastructure, and more effective agency response in flood situations. They also pointed out that studies like NY-NJ HATS tend to focus too much on building barriers and other physical structures, rather than giving due attention to strengthening community partnerships and local response capacity, which has been shown to save lives during climate-related emergencies. See also Klinenberg (2012).

17. Interview with Dariella Rodriguez, Director of Community Development, The Point CDC, March 15, 2022.

the need identified in Figure 1, to *Begin with a Community Led Approach* is rooted in interviewees' frustration at being asked to consult on projects where "the agenda has already been created... This table has been set and then we're being brought to the table to eat food that is being force-fed to us..."[18] Community leaders also felt that, without community-led approaches, "There's this disconnect between... what happens on the community level, which is so valuable and what actually happens in... policy, institutes, government... we're the appropriate people to bridge that gap. It can't be bridged from the top down."[19]

Additionally, the community leaders RCCP interviewed urged that the entire topic of resilience should be reframed so that it will no longer center on simply reducing risk, but, instead, focus on creating a future where "we thrive in, and that we ourselves are active leaders in really creating, and recreating, and continuing to develop..."[20] The need to reframe resilience to prioritize thriving communities is again reflected in the observation that "Climate resiliency isn't anyone's priority in everyday life, not even our government... it has to be couched in terms that are immediately relevant to folks' lives. Climate resiliency has to immediately, and visibly improve our quality of life in the moment, not at some point in the unknown future."[21]

Community leaders also want government planners to give deference to resilience plans created by frontline communities, themselves, rather than ignoring those plans because they weren't

18. Interview with Elizabeth Yeampierre, Executive Director, UPROSE, February 17, 2022.

19. See footnote 17, above.

20. Interview with Frances Lucerna, Co-Founder, Artistic Director, & President, El Puente, March 8, 2022.

21. Interview with Melissa Miles, Executive Director, New Jersey Environmental Justice Alliance, February 24, 2022.

the product of a traditional, agency-driven process. Virtually all of the community-based organizations involved in RCCP's 2022–2023 research have prepared resilience-related plans, reflecting the high level of locally driven resiliency planning in the New York City metropolitan area, generally.[22] Community plans created by organizations RCCP interviewed, such as UPROSE's Green Resilient Industrial District and Staten Island Urban Center's Maritime, Education and Recreation Corridor, also seek to provide for restorative justice by increasing social cohesion and countering gentrification by creating jobs and strengthening community institutions based on principles of mutual support, a circular economy, and eco-industrial/environmental justice.[23] Elevating community plans in this manner would build accountability and trust and ensure that local needs and knowledge are given due consideration from the very start of project design.

Interviewees also warned that effective collaboration between agencies and communities depends on providing sufficient resources to support community participation and research needs. A final key to effective, community-centered resilience planning, according to those interviewed by RCCP, is to establish mutually supportive partnerships between agency planners and communities, based on dialogue, trust, accountability, and self-evaluation.

To summarize, frontline organization leaders want flood protection planners to make full use of the deep store of wisdom that communities possess, rather than simply defaulting to the technical

22. NYC Climate Regional Plan Mapper, Regional Planning Association, November 2022. Accessed at: https://rpa.org/maps/resilience.html.

23. UPROSE's "Green Resilient Industrial District," in particular, provided the blueprint for the offshore wind turbine assemblage plant currently under construction in Sunset Park, Brooklyn, uniting traditional environmental justice concerns relating to health and safety with the creation of green manufacturing jobs, job training programs, and community benefits. See Gallucci (2022).

expertise of their agency staff. Only by braiding the twin strands (Atalay 2019) local knowledge and agency expertise can fully inform, effective, and restorative flood protection plans emerge, interviewees noted. For now, this sort of co-produced resilience planning remains an unfulfilled but deeply imagined vision for the future, vividly illustrated by the following statement by the leader of the Williamsburg, Brooklyn-based organization, El Puente:

> *The deeper context and source of what we might call resiliency is our being able to imagine a future that we ourselves are not just existing but we thrive in, and that we ourselves are active leaders in really creating, and recreating, and continuing to develop.*[24]

Bringing Shared Leadership to Flood Protection Planning in New York and New Jersey

While the realization of community aspirations for a more collaborative and restorative approach to flood risk reduction planning is far from assured, those aspirations are increasingly reflected in official government policy and regulation. For example, on February 15, 2024, the US Army Corps released revised *Agency Specific Procedures To Implement the Principles, Requirements, and Guidelines for Federal Investments in Water Resources* ("Agency Specific Procedures"), explicitly directing that environmental justice considerations be incorporated into all phases of the planning and decision-making process in order to remove barriers to effective community participation, increase community access to benefits,

24. See footnote 20, above.

and drive restorative justice.[25] The US Army Corps published an overview of these new rules demonstrates a clear intent to center community experience and promises to:

> *[L]isten to the communities and ensure that they are engaged throughout the planning process. The communities themselves will likely help identify concerns and solutions to their water resources problems and opportunities as well as participate in the identification of any potential effects, mitigation measures, and benefits, including through sharing Indigenous Knowledge, as they deem appropriate.*[26]

The 2024 Agency Specific Procedures also require that the US Army Corps take a more considered approach to calculating the relative value of different flood risk reduction options. While the Corp's traditional "benefit-cost" scoring system puts economic goals above all others, these new rules require equal weight to be given to economic, environmental, and social factors, thus rebalancing the scales in favor of more socially beneficial or environmentally restorative flood protection investments. The US Army Corps characterized this new benefit-cost calculation rule as follows:

> *Federal investments in water resources have been mostly based on economic performance assessments [focusing] on investments that will improve national economic efficiency. This focus on national economic*

25. "Overview of Proposed Rule: Corps of Engineers Agency Specific Procedures to Implement the Principles, Requirements, and Guidelines for Federal Investments in Water Resources," Federal Register, February 15, 2024, Section 234.6(c)(1). Accessed at: https://www.federalregister.gov/documents/2024/02/15/2024-02448/corps-of-engineers-agency-specific-procedures-to-implement-the-principles-requirements-and.

26. Ibid., see also Section 234.7.

> *gains sometimes resulted in an unduly narrow benefit-cost comparison of the monetized and quantified effects. [R]elevant environmental, social and economic effects should all be considered … This more integrated approach would allow decision-makers to view a more complete range of effects of alternative actions and lead to more socially beneficial investments.*[27]

While these new rules are intended to bring change to US Army Corps flood protection planning, they have yet to be tested in practice and their actual impact remains to be seen. Realizing this, the officer in charge of the NY-NJ HATS project, New York District Commander Alexander Young, has expressed his hope that NY-NJ HATS will serve as "the tip of the spear" for US flood risk reduction planning reform[28] and that it will help convince other agencies and communities to embrace innovation in their planning processes.

In addition to the changes required to the NY-NJ HATS under the US Army Corps 2024 Agency Specific Guidelines, the Corps is grappling with the impact of the decision by the states of New York and New Jersey, in January 2024, to invoke Section 8106 of the Water Resources Development Act of 2022 ("WRDA 2022"), which changes the fundamental scope of the NY-NJ HATS study by requiring it to address *all* major flood risks, rather than just storm surge.[29] Specifically, this means that the flood protection

27. Ibid., see Section 234.4(c).

28. Comments by Alexander M. Young, New York District Commander, United States US Army Corps of Engineers, in conversation with members of the Rise2Resilience Coalition, March 27, 2024.

29. Water Resources Development Act of 2022, Division H, Title LXXXI of the National Defense Authorization Act for Fiscal Year 2023, Public Law 117-263, 136 STAT. 2395 (2023) at Section 8106. Also, correspondence from the states of New York and New Jersey and the City of New York to the United States US Army Corps of Engineers, November 16, 2023, and correspondence from the states of New York and New Jersey to the Assistant Secretary for Civil Affairs and Policy, United States Army, January 8, 2024.

projects in any future NY-NJ HATS proposal must be designed synergistically to:

> *Maximize the net benefits from the reduction of the comprehensive flood risks within the geographic scope of the study from isolated or compound effects of: (i) riverine flooding; (ii) coastal storms; (iii) tidally induced flooding; (iv) rainfall; (v) tides; (vi) seasonal water levels; (vii) groundwater upwelling; (viii) sea level rise; (ix) subsidence; or (x) other drivers of flood risk. (WRDA 2022)*

This is the first time that Section 8106 has been invoked since WRDA 2022 was enacted into law; it imposes daunting responsibilities on the US Army Corps, the States of New York and New Jersey, the City of New York, and other stakeholders in the NY-NJ HATS study process. They must combine the work already done by the NY-NJ HATS project team, which only addresses storm surge risk, with a new investigation into the "isolated or compound effects" of the nine other types of flooding covered by Section 8106.

Fortunately, a wide range of possible flood risk reduction measures are available to the NY-NJ HATS project team. The US Army Corps identified over forty different approaches to flood risk reduction,[30] including structural measures like seawalls, berms, and surge barriers, non-structural approaches such as expanded street-level green infrastructure programs and combined sewer overflow reduction strategies, and nature-based solutions like living shorelines, restoring wetlands, aquatic vegetation, and oyster reefs.

30. See New York-New Jersey Harbor & Tributaries "Draft Integrated Feasibility Report and Tier 1 Environmental Impact Statement," September 2022.

The key to success will be picking the right combination of these 40-plus interventions for each community in the 900-mile coastline covered by the NY-NJ HATS study.

The academic community has pledged support for this new, multi-hazard-focused NY-NJ HATS with applied research and consultation. Investigators from six New York and New Jersey-based research partnerships[31] are partnering with US Army Corps and state and local resilience planning officials to organize workshops to share and discuss relevant findings and proposals for further investigation on topics such as the extent of and interaction between varying flood risks, the most productive ways to deploy natural and nature-based flood risk reduction measures, and best practices for centering community expertise in flood risk reduction planning. Such efforts represent a significant opportunity for academic researchers to put their findings into service outside the university setting, gain a deeper understanding of the perspectives and experiences of communities and community-based organizations, and do more to meet the urgent need for better flood protection.

Given the complexity of flood protection planning described in the introduction to this chapter, the more thoroughly understood local conditions are in each community, the more likely it will be that effective combinations of flood safety interventions will be found for that community and the less likely planners are to propose projects

31. These research partnerships are the Center for Policy Research and the Environment, the Consortium for Climate Risk in the Urban Northeast, the Megalopolitan Coastal Transformation Hub, the New York City Panel on Climate Change, the Resilient Coastal Communities Project and the Vulnerability, Impact and Analysis Partnership.

that miss their mark or have unintended negative consequences.[32] The US Army Corp's new mandate to share NY-NJ HATS study leadership with frontline communities can reduce the risk of such outcomes. At the same time, while more data and more holistic thinking can certainly improve planning, there is no way to tell how soon the next major storm will hit, so planners must strive to find the best balance between *planning well* and *planning quickly*.[33]

In response to advocacy to support the promised incorporation of local expertise into NY-NJ HATS planning, the US Army Corps NY Regional team agreed to create an "Environmental Justice Coordinating Committee" (EJCC). The draft EJCC guidelines, developed in partnership with the RCCP, outline the intention to bring together community leaders, experts, and stakeholders into the same conversations as the US Army Corps staff and the non-federal sponsors, and to provide the dedicated space and time needed to uplift community voices and incorporate their feedback into the plan wherever possible and practicable. If fully implemented, the EJCC would represent a huge step forward for community engagement and help transform an outdated federal process by centering the very communities the US Army Corps is

32. For example, researchers from seven universities collaborating as the *Megalopolitan Coastal Transformation Hub* warned that the NY-NJ HATS action plan tentatively selected by the US Army Corps in 2022, which includes over fifty miles of shoreline and in water barriers designed to block storm surge, may increase the likelihood that rainfall-driven flooding will accumulate and worsen flooding in the communities on the land side of those barriers. Such concerns are also referred to as seeking to avoid "maladaptation." Letter from Researchers at Rutgers, Dartmouth, Princeton, and other institutions working together as the Megalopolitan Coastal Transformation Hub ("MACH") project, March 1, 2023. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

33. Given the challenges described here, it's fortunate that new funding for flood risk reduction projects is provided for in recent federal legislation such as the Infrastructure Investment and Jobs Act of 2021, Pub. L. No. 117–58, 135 STAT. 429 (2021), which will pump over USD 13 billion into such efforts. See Tompkins (2021). Projects funded in this manner may also be developed more equitably than they have been in the past, under the auspices of the Biden Administration's Justice40 Initiative which establishes a policy requiring that socioeconomically disadvantaged communities receive at least 40 percent of overall flood risk reduction project benefits. See Young et al. (2021).

tasked to serve and protect. However, despite verbal and written promises to bring the EJCC to fruition, the process has, as of late September 2024, been stalled for five months with little clarity on how to get the EJCC off the ground. The RCCP is hopeful that what currently seems like roadblocks will turn out to be more like speed bumps, in the long term, but past experience with this agency brings deep concern as to whether it will follow through on the EJCC, particularly in the spirit of which it is intended.

As encouraging as it would be for the EJCC to convene and establish a new model for community-centered flood protection planning, US Army Corps and collaborating government agency planners must be truly committed to such reforms if they are to succeed. If those planners, instead, view community consultation as *an obligation rather than an opportunity*, perhaps doubting the value of collaborating with community members who are not as highly technically trained as themselves, studies like NY-NJ HATS will remain mired in top-down thinking and fail to consider critical on-the-ground information.[34] However, if agency staff are ready to join community organizations at the table for a planning process based on transparency, accountability, and justice, those organizations say they are ready to come to that table and help design more collaborative and restorative flood protection plans.

The following section of this chapter analyzes how similar reforms have been employed during other resilience planning projects and how the lessons learned during those projects can be applied to the challenge faced by planners in current and future planning initiatives like the NY-NJ HATS.

34. Most of the community interviewees with whom RCCP spoke in 2022 indicated that they'd rather not be at the table at all, under such circumstances, given the enormous number of other responsibilities they are balancing at any given time. See Gallay et al. (2022, 1–2) and Morris et al. (2024, Section 3.2).

Examples of Resilience Plans Reflecting Commitments to Community Engagement

The ten community-based principles for equitable and collaborative resilience planning presented in Figure 1, above, provide a ready framework for centering communities in future planning projects, as the US Army Corps has promised to do in the NY-NJ HATS study project, through both structural policy reform and actual collaborative practice. There are numerous examples of resilience planning exercises utilizing some or even all of these principles, which can help guide the NY-NJ HATS and other studies like it. RCCP examined 18 such cases and arranged them into a hierarchy of engagement and empowerment, displayed in Figure 2, below, based on the degree to which each case *fosters respect and integrates community inputs, establishes meaningful reciprocal relationships, improves accessibility, and provides local capacity for community-led solutions*, locating each case on an "engagement scale" ranging from "no engagement and empowerment" to "true partnership." While many of the broader elements reflected in these 18 cases echo the perspectives of frontline leaders from New York and New Jersey, the details of each case are what matter most, as pro forma approaches to "engagement" and "participation" can too easily worsen trust and outcomes,[35] rather than helping to ensure that local voices will be respected and heeded in project planning.

35. See, for example, the summary by Innes and Booher (2004).

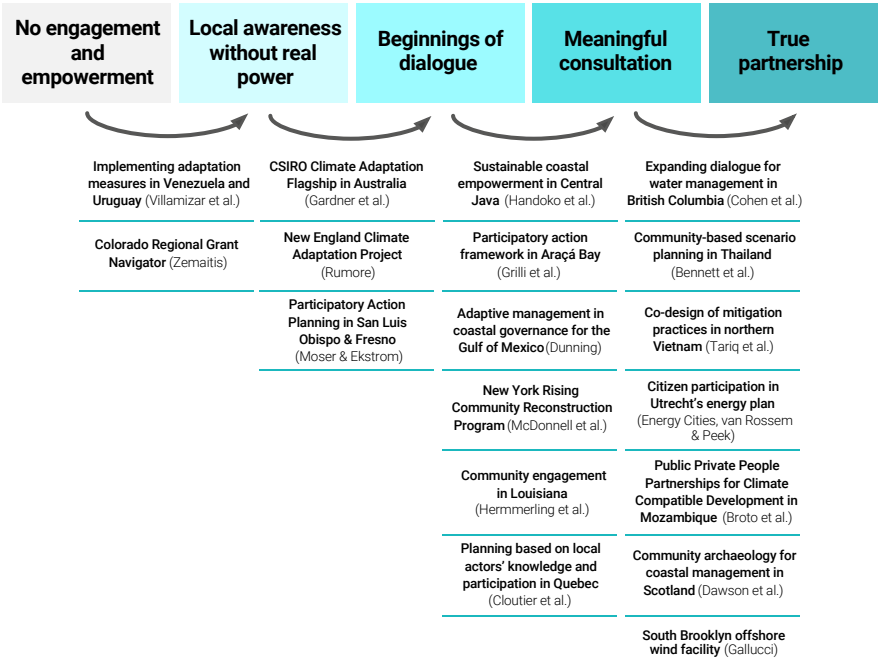

Figure 2. A Hierarchy of Engagement and Empowerment Drawn from 18 Resilience Planning Cases.

The cases listed in Figure 2 have also been placed into four levels of achievement, based on how close each one comes to creating the conditions necessary for community leadership that is recognized as true partners alongside agencies, as follows: Level 1 – *building climate awareness;* Level 2 – *creating platforms for dialogue;* Level 3 – *providing for meaningful community input and consultation;* and, Level 4 – *establishing true partnerships for lasting impact.* Levels 1–3 are neither sufficient nor satisfactory, per our examination, but each level contains elements that can be valuable components to support true partnerships. By examining and categorizing the extent and quality of community engagement reflected in these case studies in this manner, we hope to illustrate

the results produced in each case more fully and help government agencies improve their engagements with frontline communities in future resilience planning processes. Discussions of key cases from each grouping follow.

Level 1 – Participatory Beginnings: Building climate awareness

Raising climate risk awareness and effectively engaging frontline communities can be extremely difficult, especially when there is a history of injustice and top-down planning. "Informing" communities often take a one-way, top-down flavor, which is then harmful and tokenistic.[36] In this regard, related coastal community-based adaptation plans in Venezuela and Uruguay are informative, as they focus on expanding the use of early warning systems relating to climate risk and offer findings on how to use expanded communication channels as a resilience strategy. The recommended communication strategies were the culmination of a project that included monitoring and characterization of risks at the local level and a growing consciousness of how residential development affected risk, as well as a growing call for management and ownership of risk information at the local level.[37] In the last phase of the project, community members were trained in risk management utilizing community flood risk maps, flood gauges, and preventive education materials (Villamizar et al. 2016). Similarly, in Colorado, the *Regional Grant Navigator* program educated local municipalities about potential sources of funding to expand climate risk notification systems and guided them through the associated

36. See Arnstein's (1969) classic ladder; for more recent works, see more on Fitzgerald (2022), as well as reviews that note that much of the literature on climate risk communication and community engagement continues to fail to engage power imbalances, e.g. Hügel and Davies (2020).

37. See literature on participatory mapping or modeling, e.g. Landström et al. (2011).

application processes, to help build climate awareness and enhance risk communication (Zemaitis 2024). These cases offer lessons like the role of education on climate knowledge as well as resources available for initiatives on how to build frontline community capacity and awareness about climate risks, which is a critical pillar of effective community-centered planning.

Level 2 – Climate in Conversation: Improved platforms for dialogue

To empower communities facing climate risk, it is crucial to facilitate two-way dialogue between stakeholders as a way to ensure meaningful engagement. Stakeholder dialogues that are led by agencies, however, have a spotty track record.[38] To make them better, cases point to consistency, stability, and careful co-design of the dialogue platforms from the outset. For example, the *New England Climate Adaptation Project* used participatory research to build local capacity, translate climate projections into Summary Risk Assessments, and conduct interviews to learn more about stakeholder engagement (Rumore 2014). In *San Luis Obispo and Fresno, California*, Moser & Ekstrom conducted workshops with local decision-makers featuring beginning with presentations, facilitated small-group, sector-focused discussions, and short prioritizing exercises, before moving into public workshops designed to kickstart collaborative climate adaptation planning attuned to the local political climate and spark ongoing dialogue and partnerships (Moser and Ekstrom 2011). Similarly, the *Climate Knowledge Exchange (CKE)* in New York City, launched by the Mayor's Office of Climate and Environmental Justice, focused

38. See Arnstein's framing again, as well as the many contemporary cases, e.g. Satizábal et al. (2022).

on improving engagement processes and community capacity through sustained communication, improved access to critical information, and collaborative partnerships. By hosting workshops and intentional follow-ups that facilitate and create sustained engagement efforts between various stakeholders around the New York metropolitan area, the CKE has maintained consistent communication with stakeholders on how it is working to advance goals decided in prior CKEs to sustain funding, increase information accessibility, create and maintain partnerships, establish multi-way exchanges, and foster fair and accountable spaces to empower communities.[39] CKE's long-term success will, as in other cases, depend on how well it sustains this platform over administrations and prioritizes community leadership in decisions over traditional top-down bureaucratic prerogative.

Level 3 – Inclusive decision-making: Better community input and consultation

Innovative approaches to the challenge of integrating community knowledge and concerns into resilience planning were employed by Grilli et al.'s catalytic mobilization exercise in *Araçá Bay,* Brasil, which demonstrated ways to move from merely listening to community members to acting on their inputs and priorities. This process sought to mobilize stakeholders, strengthen local power, and enhance risk management at the local level through innovative approaches such as the formation of an "Araçá Guardians" working group tasked with creating a self-sufficiency-focused sustainable development plan. However, while the formation of

39. "Climate Knowledge Exchange." 2024. NYC Mayor's Office of Climate and Environmental Justice, August 16. Accessed at: https://climate.cityofnewyork.us/initiatives/climate-knowledge-exchange/.

the Araçá Guardians did increase community participation and help inform subsequent development plans, community members expressed concern that they were not able to share decision-making power or co-produce plans themselves, highlighting the need for more thorough and effective approaches to the challenge of enfranchising disempowered communities (Grilli et al. 2021). This finding parallels the observations of frontline leaders in New York and New Jersey, as well as the broader literature: inclusion of community priorities in plans is a first step but will often be weak in implementation without true partnerships from the beginning.

Level 4 – United efforts: True partnerships for lasting impact

Long-term partnerships between communities and institutions are crucial to creating and maintaining effective resilience planning, ensuring active participation, and accountability. For example, in Bennett et al.'s *community-based scenario planning initiative* in Thailand, workshops, created by researchers, involved a unique collection of activities like drawing, storytelling, and facilitated discussions in which community members broke into groups to identify problems, explore changes, and propose adaptation measures representing their needs and values. These workshops led to actionable community-level adaptation suggestions such as implementing environmental education and mangrove planting programs, creating a mangrove walkway for tourism, installing toilets in schools to facilitate attendance, and looking for government funds to improve community tap water (Bennett et al. 2016). In the *Okanagan Basin of British Columbia*, planners initiated a multi-year effort of homogenous and heterogenous focus group dialogues, which included activities such as presentations

and evaluations of efforts by other communities to integrate climate concerns into local planning. The community participants' full autonomy in decision-making and ease of collaborating in these activities helped them collaborate meaningfully in long-term development planning, wield greater authority in decision-making, and work to ensure that development plans addressed their adaptation needs (Cohen 2006). Similarly, in Scotland, the *ShoreDIG* project successfully centered local knowledge in coastal heritage management by establishing a citizen-science monitoring platform, allowing stakeholders to use their lived experiences to help create local-scale adaptation plans and facilitate discussions amongst all stakeholders (Dawson et al. 2017). The elements of success are often in the micro-details of the structure of processes, but one thing that all these projects share is a sustained, multi-year approach that respects community knowledge.

Key Principles for Empowering Community Engagement

The cases discussed above, like the rest of those listed in Figure 2, suggest useful strategies for developing actionable solutions to local climate adaptation challenges based on more effective community engagement practices. Many of these strategies are rooted in intra- and inter-sectional workshops, where the most effective activities center community priorities and actively involve individuals' participation (Moser and Ekstrom 2011). These approaches also resemble practices that the frontline leaders interviewed actively practice among their communities in New York and New Jersey; unsurprisingly they foreground the role of community-based organizations. On an individual level, participatory mapping and interactive evaluations about the controllability and feasibility

of adaptation measures, as used in Thailand, effectively illustrate possible avenues for engaging community members (Bennett et al. 2016). Integrating purposeful engagement is most empowering during the early stages of the project, where community members can contribute toward building an overall vision for community resilience and establish long-term partnerships for development.

Purposeful engagement during specific planning exercises can also help develop and maintain meaningful and lasting reciprocal relationships between professional planners and communities. This resonates with requests by frontline leaders in New York and New Jersey for agencies to be transparent about the actual space for action and their input. For example, some project leaders engaged with community members outside of project work, through community-led events, post-engagement mechanisms, and other efforts to maintain contact and get feedback (Gardner et al. 2009). Specific tactics included online feedback platforms and the establishment of citizen science monitoring programs, as seen in New England (Rumore 2014) and Scotland (Dawson et al. 2017), which allowed community members to share their first-hand experiences in a way that was easily interpreted and processed by other stakeholders, spurring wider discussions and creating opportunities to address community needs more holistically.

Lastly, in terms of increasing accessibility and local capacity, significant barriers addressed were related to funding and inter-sectoral knowledge gaps. Ensuring that the resources available to community members are audience-specific and easily accessible is essential to encourage participation and show respect for their positionality. Frontline groups in New York and New Jersey, similarly, often observe how they hold deep expertise in developing

and communicating with residents and could be valuable partners for agencies—with recognition and funding. Helping to pursue external funding, such as through federal grants, or curating summaries of climate risk information, as was done by the *New England Climate Adaptation Project*, can help planners meet residents and community organizations where they are, without expecting free labor.

In sum, the case studies described above underscore the critical importance of early and continuous community engagement in resilience planning and demonstrate that meaningful, inclusive participation not only strengthens community bonds but also enhances the effectiveness of adaptation strategies. Here are seven recommended practices for future resilience planning projects, derived from these case studies:

1. Engage community members early, before plans are set, to ensure resilience planning starts with a community-led approach.
2. Engage broadly and continuously: start before the commencement of planning, provide education as to the issues, engage consistently during planning, and maintain engagement during plan follow-up and evaluation.
3. Expand community outreach to ensure a full range of stakeholders are being engaged, rather than just solely relying on pre-existing community contacts.
4. Present background information in an audience-specific manner, providing tailored and translated summaries of risk assessments and stakeholder opinions to enhance understanding and engagement.

5. Participate in local community activities to strengthen relationships outside formal engagement processes.
6. During engagement, include interactive exercises such as discussing personal climate event experiences, participatory mapping, modeling, and scenario planning.
7. Incorporate integrated compartment models (ICMs), integrated biophysical models (IBMs), and scenario simulators to inform and engage community members.

For the resilience-focused community, further research should explore how the practices listed above can be scaled and adapted across diverse contexts, to ensure that community-led approaches are increasingly at the forefront of climate resilience efforts worldwide. Key questions for planners and researchers to keep in mind are:

- How can multi-stakeholder dialogue and agency accountability become foundational elements of public resilience planning?
- How can agency planners increase the degree to which public planning incorporates community-generated ideas and plans?
- How can public decision-making processes be structured to ensure reciprocal relationships, shared power, and continuous engagement with communities?
- How can resilience plans not only protect frontline communities from climate disruption but also improve community cohesion and quality of life more broadly?

Conclusion

There is no simple answer to the question "What does success look like," when it comes to coastal flood risk reduction. Because flooding has so many different causes, including storm surge, erosion, subsidence, intense rainfall, and sea level rise, planners need to consider a wide range of structural, non-structural, and nature-based features in order to identify the proper mix of solutions to address the different risk patterns and physical, socio-economic and demographic factors in each community under study. Given the complexity of flood protection planning, it's clear that the more thoroughly understood the conditions in local communities, the more likely it will be that effective combinations of flood safety interventions will be found for each community and the less likely planners are to propose projects that miss their mark or have unintended negative consequences.

As illustrated above, frontline communities also need flood protection plans to provide for restorative justice to redress long-standing inequities rooted in segregation, housing discrimination, and unequal enforcement of environmental permitting regimes.[40] Climate justice advocates thus seek to ensure that planners work with frontline community-based organizations to develop redress and accountability mechanisms for communities most impacted by climate change (Donoghoe and Perry 2023). Utilization of the ten community-based ideas presented in the introductory section of this chapter can help assure the success of these efforts, through tactical approaches such as the HATS Environmental Justice

40. In 2022, New York directly acknowledged that, due to "the inequitable pattern in the siting of environmental facilities, minority and economically distressed communities bear a greater environmental health burden due to the cumulative pollution exposure from multiple facilities." Preamble to "Environmental Justice in Permitting Act." New Jersey passed similar legislation in 2020. See also Loh, Coes, and Buthe (2020).

Coordination Committee. However, delays in convening the EJCC call into question the capacity or even the underlying commitment of the US Army Corps in these areas.[41]

This chapter has attempted to illustrate the benefits of co-produced, holistic, and restorative flood protection planning in addressing the growing risk of climate-related disruption and repairing the associated damage inflicted on frontline communities by systemic underrepresentation and disadvantages. In the eastern United States, the invocation of Section 8106 of the Water Resources Development Act of 2022, which will require the NY-NJ HATS to take a comprehensive, "multi-hazard" approach to flood risk reduction, along with the US Army Corps promise to create an Environmental Justice Coordinating Committee for the NY-NJ HATS study, could help establish a model for just and restorative flood risk reduction planning and provide 16 million residents of New York and New Jersey (and potentially, millions more in other coastal communities) with better protection from flooding and more equitable, vibrant, connected, and ecologically sound communities, as well.

41. The EJCC was first discussed by members of the Army Corps HATS project team and the RCCP in May 2022. It was publicly committed to by the Army Corps in January 2024, which then invited members of the RCCP project team to co-create a committee charter and invitation list, which were completed in April 2024. As of September 10, 2024, the Army Corps has yet to constitute or convene the EJCC, while professing its continued intention to do so. Cite the May 2022 meeting, statement by Colonel Young in January 2024 and September 10, 2024, an email communication from Clifford Jones to Victoria Sanders.

References

Arnstein, Sherry R. 1969. "A Ladder of Citizen Participation." *Journal of the American Institute of Planners* 35 (4): 216–224. https://doi.org/10.1080/01944366908977225.

Atalay, Sonya L. 2012. *Community-Based Archaeology: Research with, by, and for Indigenous and Local Communities*. University of California Press.

Atalay, Sonya L. 2019. "Braiding Strands of Wellness." *The Public Historian* 41 (1): 78–89. https://doi.org/10.1525/tph.2019.41.1.78.

Bennett, Elena M., Martin Solan, Reinette Biggs, et al. 2016. "Bright Spots: Seeds of a Good Anthropocene." *Frontiers in Ecology and the Environment* 14 (8): 441–448. https://doi.org/10.1002/fee.1309.

Bennett, Nathan James, A. Kadfak, and P. Dearden. 2016. "Community-Based Scenario Planning: A Process for Vulnerability Analysis and Adaptation Planning to Social–Ecological Change in Coastal Communities." *Environment, Development and Sustainability* 18 (6): 1771–99. https://doi.org/10.1007/s10668-015-9707-1.

Bey, Genie, Carrie McDougall, Sarah Schoedinger. 2020. *Report on the NOAA Office of Education Environmental Literacy Program Community Resilience Education Theory of Change*. https://doi.org/10.25923/MH0G-5Q69.

Broto, Vanesa, Emily Boyd, Jonathan Ensor, et al. 2014. "A Local Vision of Climate Change Adaptation: Participatory Urban Planning in Mozambique." Climate and Development Knowledge Network (CDKN), May.

Calmes, Maggie, and Samar Khurshid. 2016. "Fair Share: Design Flaws, Flashpoints & Possible Updates." Gotham Gazette, November 21. https://www.gothamgazette.com/city/6633-fair-share-design-flaws-flashpoints-possible-updates.

Calvan, Bobby Caina, David Porter, and Jennifer Peltz. 2021. "More Than 45 Dead After Ida's Remnants Blindside Northeast." Associated Press, September 2. https://apnews.com/article/northeast-us-new-york-new-jersey-weather-60327279197e14b9d17632ea0818f51c.

Cattino, Massimo, and Diana Reckien. 2021. "Does Public Participation Lead to More Ambitious and Transformative Local Climate Change Planning?" *Current Opinion in Environmental Sustainability* 52: 100–110. https://doi.org/10.1016/j.cosust.2021.08.004.

Checker, Melissa. 2020. *The Sustainability Myth: Environmental Gentrification and the Politics of Justice*. NYU.

City of New York. 2022. *State of Climate Knowledge: Workshop Summary Report*. April. https://climate.cityofnewyork.us/wp-content/uploads/2022/04/2022_CKE_Report_10.25.22.pdf.

City of New York. 2023. "Comments and Other Correspondence Relating to the United States US Army Corps New York-New Jersey Harbor and Tributaries Study." March 24. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

City of New York. 2024. "Chronic Tidal Flooding." Accessed June 8, 2024. https://climate.cityofnewyork.us/challenges/chronic-tidal-flooding/.

City of New York. 2024. "Climate Knowledge Exchange." NYC

Mayor's Office of Climate and Environmental Justice. https://climate.cityofnewyork.us/initiatives/climate-knowledge-exchange/.

Cloutier, Geneviève, Florent Joerin, Catherine Dubois, et al. 2014. "Planning Adaptation Based on Local Actors' Knowledge and Participation: A Climate Governance Experiment." *Climate Policy* 15 (4): 458–74. https://doi.org/10.1080/14693062.2014.937388.

Cohen, Stewart, D. Neilsen, S. Smith, et al. 2006. "Learning with Local Help: Expanding the Dialogue on Climate Change and Water Management in the Okanagan Region, British Columbia, Canada." *Climatic Change* 75 (April): 331–58. https://doi.org/10.1007/s10584-006-6336-6.

Cunningham, Mary. 2023. "Locals React to Plan to Add 15 Ft. Tall Seawall to Greenpoint Waterfront." Greenpointers, March 3. https://greenpointers.com/2023/03/03/locals-react-to-plan-to-add-15-ft-tall-seawall-to-greenpoint-waterfront/.

Dalban, Lauren. 2024. "NYC Environmental Justice Activists Feel Ignored by the City and the Army Corps on Climate Projects." Inside Climate News, August 31. https://insideclimatenews.us2.list-manage.com/track/click?u=7c733794100bcc7e083a163f0&id=0e15d0efc1&e=eb72b836ef.

Dawson, Tom, et al. 2017. "A Central Role for Communities: Climate Change and Coastal Heritage Management in Scotland." In *Public Archaeology and Climate Change*, edited by Tom Dawson et al., 23–33. Oxbow Books. https://doi.org/10.2307/j.ctvh1dp4n.

Dembicki, Geoff. 2023. "Coastal Residents Fear 'Hideous' Seawalls Will Block Waterfront Views." The Guardian, January 13. https://www.theguardian.com/us-news/2023/jan/13/us-cities-ugly-

seawalls-climate-crisis-miami.

Depietri, Yaella, Khila Dahal, and Timon McPhearson. 2018. "Multi-Hazard Risks in New York City." *Natural Hazards and Earth System Sciences* 18 (12): 3363–3381. https://doi.org/10.5194/nhess-18-3363-2018.

Donoghoe, Manann, and Andre M. Perry. 2023. "The Case for Climate Reparations in The United States." *Brookings Institution*, March.

Dunning, Kelly Heber. 2020. "Building Resilience to Natural Hazards through Coastal Governance: A Case Study of Hurricane Harvey Recovery in Gulf of Mexico Communities." *Ecological Economics* 176: 106759. https://doi.org/10.1016/j.ecolecon.2020.106759.

Energy Cities. 2017. "Utrecht, an Energy Plan Devised by Citizens." Accessed June 13, 2024. https://energy-cities.eu/best-practice/utrecht-the-netherlands-an-energy-plan-devised-by-citizens/.

Fecht, Sarah. 2019. "Should New York Build a Storm Surge Barrier?" State of the Planet, October 24. https://news.climate.columbia.edu/2019/10/24/new-york-storm-surge-barriers/.

Fitzgerald, Joan. 2022. "Transitioning from Urban Climate Action to Climate Equity." *Journal of the American Planning Association* 88 (4): 508–523. https://doi.org/10.1080/01944363.2021.2013301.

Floodnet. 2024. "Flooding Data for Hamilton Beach, Queens." Accessed June 8, 2024. https://dataviz.floodnet.nyc/viz?v=WZVYQzqyEgsCp27wUUXvW.

Gallay, Paul, Sanders, Victoria, Hernandez, Annel, Klopp, et al. 2022. *Designing Community-led Plans to Strengthen Social*

Cohesion: What Neighborhoods Facing Climate-driven Flood Risks Want from Resilience Planning. Columbia Climate School, Resilient Coastal Communities Project. June 27.

Gallucci, Maria. 2022. "A Brooklyn Neighborhood's Long Fight for Green Jobs Is Paying Off." Canary Media, October 13. https://www.canarymedia.com/articles/just-transition/power-by-the-people-green-resilient-industrial-district-sunset-park.

Gallucci, Maria. 2024. "Long-Awaited Offshore Wind Hub Breaks Ground in Brooklyn." Canary Media, June 13. https://www.canarymedia.com/articles/wind/offshore-wind-hub-new-york-sunset-park.

Gardner, John, Anne-Maree Dowd, Claire Mason, and Peta Ashworth. 2009. *A Framework for Stakeholder Engagement on Climate Adaptation*. CSIRO Climate Adaptation Flagship Working Paper 3.

Goh, Kian. 2021. *Form and Flow: The Spatial Politics of Urban Resilience and Climate Justice*. MIT Press.

Gould, Kenneth, and Lewis, Tammy. 2017. *Green Gentrification: Urban Sustainability and the Struggle for Environmental Justice*. Routledge.

Grilli, Natalia de Miranda, Mariana Martins de Andrade, Luciana Yokoyama Xavier, et al. 2021. "Step by Step: A Participatory Action-Research Framework to Improve Social Participation in Coastal Systems." *Ambiente & Sociedade* 24: e02551. https://doi.org/10.1590/1809-4422asoc20190255r1vu2021L1AO.

Handoko, Waluyo, Moermahadi Soerja Djanegara, Ida Irawati, Suwarno Suwarno. 2023. "Enhancing Community Participation for

Sustainable Coastal Empowerment: A Case Study of the Resilient Coastal Area Development Program in Central Java." *Research Horizon* 3 (4): 378–90. https://doi.org/10.54518/rh.3.4.2023.378-390.

Hemmerling, Scott A., M. Barra, H.C. Bienn, et al. 2020. "Elevating Local Knowledge through Participatory Modeling: Active Community Engagement in Restoration Planning in Coastal Louisiana." *Journal of Geographical Systems* 22 (2): 241–66. https://doi.org/10.1007/s10109-019-00313-2.

Hügel, Stephan, and Anna R. Davies. 2020. "Public Participation, Engagement, And Climate Change Adaptation: A Review of the Research Literature." *Wiley Interdisciplinary Reviews: Climate Change* 11 (4): e645. https://doi.org/10.1002/wcc.645.

Incropera, Frank. 2015. *Climate Change: A Wicked Problem. Complexity and Uncertainty at the Intersection of Science, Economics, Politics, and Human Behavior*. Cambridge.

Innes, Judith E., and David E. Booher. 2004. "Reframing Public Participation: Strategies for the 21st Century." *Planning Theory & Practice* 5 (4): 419–436.

Kimmelman, Michael. 2021. "What Does It Mean to Save a Neighborhood?" New York Times, December 2. https://www.nytimes.com/2021/12/02/us/hurricane-sandy-lower-manhattan-nyc.html.

Klinenberg, Eric. 2012. "Adaptation: How Can Cities Be 'Climate Proofed'?" The New Yorker, December 30. https://www.newyorker.com/magazine/2013/01/07/adaptation-eric-klinenberg.

Landström, Catharina, Sarah J. Whatmore, Stuart N. Lane, et al. 2011. "Coproducing Flood Risk Knowledge: Redistributing

Expertise in Critical 'Participatory Modelling.'" *Environment and Planning A* 43 (7): 1617–1633.

Langsdale, Stacy, Stewart Cohen, Rachel Welbourn, and James Tansey. 2012. "Dialogue on Adaptation to Climate Change in the Okanagan Basin, British Columbia, Canada." Critical Transitions in Water and Environmental Resources Management, April 26. https://doi.org/10.1061/40737(2004)154.

Maru-Lanning, Maru. 2016. *Tupuna Awa: People and Politics of the Waikato River*. Auckland University Press.

McDonnell, Simon, Pooya Ghorbani, Courtney Wolf, et al. 2018. "A Managed-Participatory Approach to Community Resilience: The Case of the New York Rising Community Reconstruction Program." *The American Review of Public Administration* 49 (3): 309–24. https://doi.org/10.1177/0275074018804663.

McKinley, E., P.R. Crowe, F. Stori, et al. 2021. "'Going Digital' - Lessons for Future Coastal Community Engagement and Climate Change Adaptation." *Ocean & Coastal Management* 208: 105629. https://doi.org/10.1016/j.ocecoaman.2021.105629.

Morris, Aya, Bernadette Baird-Zars, Victoria Sanders, et al. 2024. "Advancing Equitable Partnerships: Frontline Community Visions for Coastal Resiliency Knowledge Co-Production, Social Cohesion, and Environmental Justice." *Geoforum* 154: 104051. https://doi.org/10.1016/j.geoforum.2024.104051.

Moser, Susanne C., and Julia A. Ekstrom. 2011. "Taking Ownership of Climate Change: Participatory Adaptation Planning in Two Local Case Studies from California." *Journal of Environmental Studies and Sciences* 1: 63–74. https://doi.org/10.1007/s13412-011-0012-5.

Multi-party Advocates. 2023. "Letter to the Commissioner of the Department of Environmental Conservation of the State of New York and the Commissioner of the Department of Environmental Protection of the State of New Jersey." December 11. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

National Oceanic and Atmospheric Administration. 2023. "Comments and Other Correspondence Relating to the United States US Army Corps New York-New Jersey Harbor and Tributaries Study." March 29. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

New York City Environmental Justice Alliance & Columbia Climate School, Center for Sustainable Urban Development. 2023. "Comments and Other Correspondence Relating to the United States US Army Corps New York-New Jersey Harbor and Tributaries Study." March 23. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

New York City Environmental Justice Alliance. 2024. "Waste Equity." Accessed June 8, 2024. https://nyc-eja.org/campaigns/waste-equity/.

New York City Panel on Climate Change. 2019. "New York City Panel on Climate Change 2019 Report Executive Summary." *Annals of the New York Academy of Sciences* 1439 (1): 11–21. https://doi.org/10.1111/nyas.14008.

New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study. 2022. *Draft Integrated Feasibility Report and Tier 1 Environmental Impact Statement,* September 22. Archived at: https://www.nan.usace.army.mil/Portals/37/

NYNJHATS%20Draft%20Integrated%20Feasibility%20Report%20Tier%201%20EIS.pdf.

Nir, Sarah Maslin. 2021. "Trapped in Basements and Cars, They Lost Their Lives in Savage Storm." New York Times, September 2. https://www.nytimes.com/2021/09/02/nyregion/nyc-flooding-deaths.html.

NOAA's Climate Adaptation Partnerships Program. 2024. "Climate Adaptation Partnerships Program in the Justice40 Initiative." Accessed September 2024. https://cpo.noaa.gov/divisions-programs/climate-and-societal-interactions/cap-risa/justice40-initiative/.

Ottinger, Gwen. 2024. "Careful Knowing as an Aspect of Environmental Justice." *Environmental Politics* 33 (2): 199–218. https://doi.org/10.1080/09644016.2023.2185971.

Papenfuss, Mary. 2020. "'Get Your Mops & Buckets Ready!'—Trump's Infuriating Answer to Rising Seas." HuffPost, January 18. https://www.huffpost.com/entry/mops-and-buckets-trump-climate-change_n_5e23a83dc5b674e44b993aab.

Perdeaux, Suzanne. 2018. "Stakeholder Engagement & Consultation in Municipal Adaptation—Why Engage Stakeholders?" *Ontario Centre for Climate Impacts and Adaptation Resources*. Accessed June 13, 2024. https://coilink.org/20.500.12592/2zsg2n.

Pereira, Sydney. 2018. "Anti-flood Plan Surging Ahead Too Fast, Many Activists Say." The Villager, August 23. Accessed March 9, 2019. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

Rittel, H. W., and M. M. Webber. 1973. "Dilemmas in a General Theory of Planning." *Policy Sciences* 4 (2): 155–169. https://www.cc.gatech.edu/fac/ellendo/rittel/rittel-dilemma.pdf.

Rumore, Danya. 2014. "Building the Capacity of Coastal Communities to Adapt to Climate Change through Participatory Action Research: Lessons Learned from the New England Climate Adaptation Project." *Carolina Planning* 39. https://doi.org/10.17615/tda7-rh78.

Rutgers University, Dartmouth College, Princeton University, et al. 2023. "Comments and Other Correspondence Relating to the United States US Army Corps New York-New Jersey Harbor and Tributaries Study." March 1. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

Satizábal, Paula, Isabel Cornes, Maria de Lourdes Melo Zurita, and Brian R. Cook. 2022. "The Power of Connection: Navigating the Constraints of Community Engagement For Disaster Risk Reduction." *International Journal of Disaster Risk Reduction* 68: 102699. https://doi.org/10.1016/j.ijdrr.2021.102699.

Shannon, Jay. 2022. "Assistant Secretary of the Army for Civil Works Issues Environmental Justice Guidance to the US Army Corps of Engineers." United States Department of the Army, March 22. https://www.army.mil/article/254935/assistant_secretary_of_the_army_for_civil_works_issues_environmental_justice_guidance_to_the_army_corps_of_engineers.

Snider, Natalie. 2022. "New Provisions Included in the Water Resources Development Act of 2022." Environmental Defense Fund, December 16. https://www.edf.org/media/new-provisions-included-water-resources-development-act-2022.

Tariq, Azeem, Andreas de Neergaard, Lars Stoumann Jensen, et al. 2018. "Co-Design and Assessment of Mitigation Practices in Rice Production Systems: A Case Study in Northern Vietnam."

Agricultural Systems 167: 72–82. https://doi.org/10.1016/j.agsy.2018.08.012.

The State of New York, and the State of New Jersey. 2024. *The State of New York and the State of New Jersey*. January 8.

The State of New York, the State of New Jersey, and the City of New York. 2023. *The State of New York, the State of New Jersey, and the City of New York*. March 31.

The State of New York, the State of New Jersey, and the City of New York. 2023. *The State of New York, the State of New Jersey, and the City of New York*. November 16.

Tompkins, Forbes. 2021. "5 Ways the Infrastructure Bill Would Improve America's Flood Resilience." Pew Charitable Trusts, August 17. https://www.pewtrusts.org/en/research-and-analysis/articles/2021/08/17/5-ways-the-infrastructure-bill-would-improve-americas-flood-resilience.

Tracy Hadden, Christopher Coes, and Becca Buthe. 2020. "The Great Real Estate Reset, Separate and Unequal: Persistent Residential Segregation Is Sustaining Racial and Economic Injustice in The U.S." *Brookings Institution*, December 16. https://coilink.org/20.500.12592/z4sfkb.

United States (US). 2021. *Infrastructure Investment and Jobs Act of 2021*, Pub. L. No. 117-58, 135 STAT. 429.

United States (US). 2023. *Water Resources Development Act of 2022*, Division H, Title LXXXI of the National Defense Authorization Act for Fiscal Year 2023, Public Law 117-263, 136 STAT. 2395.

United States Army Corps of Engineers. 2022. "Overview of

Proposed Rule: Corps of Engineers Agency Specific Procedures to Implement the Principles, Requirements, and Guidelines for Federal Investments in Water Resources." Federal Register, February 15. Section 234.6(c)(1). Archived at: https://www.federalregister.gov/documents/2024/02/15/2024-02448/corps-of-engineers-agency-specific-procedures-to-implement-the-principles-requirements-and.

United States Army Corps of Engineers. 2022. "Video Recording of NY-NJ HATS December 15, 2022 Public Meeting." Accessed June 8, 2024. https://www.youtube.com/watch?v=KoJ4_OaOTE4&t=23s.

United States Army Corps of Engineers. 2022. *New York-New Jersey Harbor and Tributary – Draft Feasibility Study and Environmental Impact Statement*. September.

United States Army Corps of Engineers. 2023. "Slide Presentation: Engineers Request for Additional Resources." December. Archived at: https://csud.climate.columbia.edu/research-projects/resilient-coastal-communities-project.

United States Congress (bipartisan coalition of 14 members). 2023. *United States Congress*. September 12.

United States Environmental Protection Agency (EPA). 2021. "EPA Report Shows Disproportionate Impacts of Climate Change on Socially Vulnerable Populations in the United States." September 2. https://www.epa.gov/newsreleases/epa-report-shows-disproportionate-impacts-climate-change-socially-vulnerable.

Van Rossem, Nina. 2020. *Citizen Participation in Utrecht: The Involvement of Citizens in Mitigation Projects for the Energy Transition*. Bachelor Thesis. Utrecht University. https://studenttheses.uu.nl/handle/20.500.12932/39258.

Villamizar, Alicia, Maria E. Gutiérrez, Gustavo J. Nagy, et al. 2016. "Climate Adaptation in South America with Emphasis in Coastal Areas: The State-of-the-Art and Case Studies from Venezuela and Uruguay." *Climate and Development* 9 (4): 364–382. https://doi.org/10.1080/17565529.2016.1146120.

Young, Shalanda, Brenda Mallory, and Gina McCarthy. 2021. "The Path to Achieving Justice40." The White House, July 20. Accessed June 9, 2024. https://www.whitehouse.gov/omb/briefing-room/2021/07/20/the-path-to-achieving-justice40/.

Zemaitis, Libby. 2024. *Unlocking Community Resilience: Innovative Strategies to Access Climate Adaptation Funding*. Center for Climate and Energy Solutions, April. https://www.c2es.org/wp-content/uploads/2024/04/unlocking-community-resilience-innovative-strategies-to-access-climate-adaptation-funding.pdf.