

CULTURAL LANDSCAPES AND ADAPTATION: IDENTIFYING THE ROLE OF CIVIC
ENGAGEMENT AND CULTURAL HERITAGE IN COASTAL ADAPTATION PLANNING

Madeleine Hood Helmer

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Advisor and Program Chair
Randall F. Mason
Associate Professor

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1. INTRODUCTION

The coast is, and always has been, an important aspect of American culture. For centuries, the coast has been a point of entry and departure, a frontline of defense, a source of livelihood, and a destination for recreation and pleasure. The traces of these stories exist in a rich cultural heritage. At the interface of water and land, the coast is also a landscape of dynamic change where barrier islands form and dunes drift, and tides ebb and flow. For the communities of the coast, nature and culture strike a delicate balance, as the ocean acts as both a source of vitality and a threat. And yet this space has retained a deep significance for generations of residents and visitors. From marinas to beach houses, boardwalks to estuaries, rocky shores to ports, this cultural landscape connects people to its rich and varied history as well as to their own sense of identity, place and community.

There is consensus within the science community that rapid climate change is occurring, evidenced by rising sea levels as well as more intense and frequent storms.¹ This is a threat to human coastal environments around the world. While climate models generate a range of projections and scientists cannot predict future hazards with precision, it is clear that the impacts of climate change will transform the coast.² These transformations will occur in both the natural and built environments. For example, in the mid-Atlantic U.S.A. the impact of climate change has already been observed in the loss of tidal wetlands due to saltwater intrusion, eroding beaches, warmer ocean

¹ IPCC, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)] (Geneva, Switzerland: IPCC, 2014).

² James Hansen et al., “Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2 °C global warming could be dangerous,” *Atmospheric Chemistry and Physics* 16:6 (2016): 3761-3812.

temperatures, and changes in ocean chemistry.³ Coastal hazards also pose a threat to built assets such as roads, homes, and landmarks, as well as livelihoods such as fishing and agriculture.⁴

Recognizing this emerging and intensifying risk for coastal communities, resilience and adaptation are now commonplace terms in urban planning practice.⁵ Adaptation planning seeks to reduce harm through methods of protection, accommodation and retreat. Resilience planning aims to build the capacity of cities to experience such harm by strengthening social, economic, ecological, and political systems. These frameworks work in concert to shape coastal planning efforts. However, coastal planning is primarily determined by a defined set of metrics and values.⁶ Relying on scientific projections of risk, and driven by the negotiations of policymakers, coastal planning often limits itself to the environmental and economic evaluations preferred by the science and policy community. Overlooked are the non-market, qualitative values of cultural heritage.⁷

Coastal adaptation is not just an environmental and economic problem, but also a historic preservation issue. Many of the landscapes and buildings that embody shared histories and local identity for communities will be lost, damaged or altered by the impacts of climate change. As difficult decisions are made regarding the future of these valued places, historic preservation must be a part of the conversation. While not every place on the coast can be preserved, historic preservation practice can assist with determining the most culturally significant components of communities. Cultural heritage contributes to a society's well being, cohesion, and identity, eliciting a connection to

³ Robin Leichenko, M. McDermott, E. Bezborodko, E. Namendorf. *Economic Vulnerability and Adaptation to Climate Hazards and Climate Change: Building Resilience in the Barnegat Bay Region* (Rutgers, 2013). (accessed online February 2017, http://bbp.ocean.edu/Reports/Leichenko-March2013_FinalReport%20with%20logos.pdf).

⁴ *Ibid.*

⁵ C. Rosenzweig, W. Solecki, S.A. Hammer, and S. Mehrotra. "Cities lead the way in climate-change action," *Nature* 467 (October, 2010), 909-911.

⁶ W. Neil Adger, I. Lorenzoni and K. O'Brien. *Adapting to Climate Change* (Cambridge: Cambridge University Press, 2009).

⁷ W. Neil Adger, J. Barnett, K. Brown, et al. "Cultural dimensions of climate change impacts and adaptation," *Nature Climate Change* 3 (November 2012).

place that strengthens communities.⁸ When we honor the connections that people share with their environment, and the layers of history and cultural activity that comprise our cultural landscapes, we will produce more resilient towns and cities.

Historic preservation is beginning to address the coastal impacts of climate change, but the practice mainly focuses on individual buildings and historic sites, seeking to retain the historic fabric and integrity of stand-alone structures or historic districts.⁹ But of course we know what defines the coast is more than its individual buildings. The coast is a place, with embedded meaning and associations for the people who value it. Drawing from a foundation in cultural landscape studies, this thesis seeks to consider the fabric of communities holistically and to develop methods for addressing the multiple values that they convey.¹⁰ Cultural landscape studies champion the ordinary, vernacular landscapes that bear multiple layers of time and cultural activity.¹¹ Applying this holistic approach to heritage, this thesis defines cultural heritage as the landscapes, buildings, and natural features that retain significance for a community.

The values of the coast are multiple and unique to each community. Often the only people who can define them are the community members themselves. Civic engagement is one method through which we may advance the incorporation of cultural heritage in adaptation and resilience planning. Civic engagement has been identified as a mechanism for identifying, assessing and

⁸ Jeremy J. Hess, J. Malilay, and A.J. Parkinson. "Climate Change: The Importance of Place." *American Journal of Preventive Medicine* 35:5 (2008): 468-478; United Nations Educational, Scientific and Cultural Organization, International Council on Monuments and Sites International Committee on Risk Preparedness, United Nations Office for Disaster Risk Reduction. *Heritage and Resilience: issues and opportunities for reducing disaster risks*. Fourth Session of the Global Platform on Disaster Risk Reduction (Geneva, 18-23 May 2013).

⁹ The Federal Emergency Management Agency's Environmental Planning and Historic Preservation (EHP) program ensures that disaster recovery and mitigation complies with federal environmental and historic preservation laws, and it provides technical assistance; Holtz, Debra, A. Markham, K. Cell, B. Eckwurz. *National Landmarks at Risk* Union of Concerned Scientists, May 2014.

¹⁰ Arnold R. Alanen and Robert Z. Melnick, *Preserving Cultural Landscapes in America* (Baltimore: John Hopkins University Press, 2000).

¹¹ *Ibid.*

promoting cultural heritage.¹² This thesis asserts that civic engagement can be applied as a tool for integrating cultural heritage into coastal planning.

Ultimately, the preservation of cultural landscapes is an action upon the land, an “imaginative transformation” that shapes a future place.¹³ As coastal municipalities plan for resilience and adaptation, they are imposing an imaginative transformation upon their landscape that will have lasting impacts. What then is the role of historic preservation in coastal planning in a time of global climate change? How has cultural heritage been integrated into coastal adaptation and resilience plans? What are strategies for advancing the integration of cultural values in this planning process? How might civic engagement be implemented to capture the multitude of values associated with the coast and coastal communities? By addressing these questions, this thesis seeks to improve coastal planning by addressing a gap in current adaptation planning practice. In doing so, it establishes a theoretical framework relevant to adaptation planning, resilience, place, and civic engagement (Section 2) and evaluates four case studies, featuring communities that have successfully integrated adaptation, resilience, place and civic engagement (Section 3). Establishing a better understanding of how civic engagement is integrated into coastal planning practice today, Section 4 analyzes methods, adaptation planning and civic engagement in 40 coastal municipalities in New Jersey. The devastation caused by Hurricane Sandy forced New Jersey into the public eye as well as to the forefront of adaptation planning. These 40 municipalities represent a range of community types, including fishing villages, seasonal beach towns, suburbs, and large diverse cities, showing that in just the 125-miles of New Jersey coastline, a multitude of cultural values is represented. Finally, referencing national precedent and original analysis of NJ communities, Section 5 provides a set of recommendations for integrating community engagement and cultural heritage into coastal planning.

¹² Randall Mason. “Promoting Cultural Preservation,” in *Rebuilding Urban Places After Disaster: Lessons from Hurricane Katrina*, ed.s Eugenie L. Birch and Susan M. Wachter (Philadelphia: University of Pennsylvania Press, 2006), 259-274.

¹³ Charles A. Birnbaum and Mary V. Hughes. *Design With Culture: Chasing America’s Landscape Heritage* (Charlottesville and London: University of Virginia Press, 2005), 2.

2. COASTAL PLANNING FRAMEWORKS AND CIVIC ENGAGEMENT: A LITERATURE REVIEW

Before considering how cultural heritage can be integrated into adaptation planning, it is important to understand the theoretical underpinnings of relevant urban planning frameworks, including adaptation, resilience, and place. These frameworks apply to coastal communities, and each can be strengthened by civic engagement. Effective civic engagement is also guided by a series of best methods for including communities in the adaptation planning process. The following four subsections define each planning framework and method, identify strategies employed by these methods in the context of coastal planning, and consider how the framework is strengthened through civic engagement. The section concludes by identifying effective civic engagement strategies that integrate cultural heritage into coastal adaptation planning.

2.1 Adaptation

Adaptation is the active response of human and natural systems to cope with climate-induced hazards, whether by reducing harm or optimizing opportunity.¹⁴ Coastal communities respond to harm that is both actual and anticipated.¹⁵ Through adaptation planning, municipalities allocate resources towards the conservation, alteration and relocation of the built and natural environments in coastal communities. These decisions are informed by a determined set of metrics

¹⁴ Richard J. T. Klein, Robert J. Nicholls, Sachooda Ragoonaden, Michele Capobianco, James Aston, and Earle N. Buckley. "Technological Options for Adaptation to Climate Change in Coastal Zones," *Journal of Coastal Research*, 17:3 (2001), 532.

¹⁵ *Ibid.*

and values to identify the most significant impacts and the most valuable assets that require intervention.¹⁶

Adaptation planning is informed and guided by an iterative planning process of data collection and outreach, design, implementation and monitoring.¹⁷ In order to decide upon adaptive strategies, communities gather information and raise awareness, plan and design adaptive actions, implement those strategies, and monitor and evaluate outcomes.¹⁸

According to the Intergovernmental Panel on Climate Change (IPCC), coastal impacts may be reduced through three coastal adaptation strategies: protection, accommodation and retreat.¹⁹ Protection is the implementation of hard, soft and indigenous options for reducing “the risk of an event by decreasing its probability of occurrence”.²⁰ Accommodation is the practice of increasing “society’s ability to cope with the effects of the event” and includes initiatives that improve a community’s capacity to experience disaster. Retreat is defined as the ability to reduce vulnerability by “limiting its effects.”²¹ Retreat is practiced through the movement of development and activity away from risk-prone areas, through setbacks, relocation efforts and other efforts to move away from the coast. The IPCC continues to apply this framework in its reports on coastal adaptation planning, promoting three strategies of protection, accommodation, and retreat.²²

Coastal adaptation strategies may be applied as individual techniques or in combination with one another. The tri-state Regional Planning Authority recommends localized solutions based on a

¹⁶ W. Neil Adger, I. Lorenzoni and K. O’Brien, 2009; See coastal vulnerability assessments, a tool for mapping vulnerabilities and determining “vulnerable infrastructure, environmental resources, and populations” to assist decision-makers with adaptation, mitigation and planning .(<http://www.state.nj.us/dep/cmp/docs/ccvamp-final.pdf>)

¹⁷ Klein et al, 2001; Susskind, Lawrence. “Responding to the risks posed by climate change: Cities have no choice but to adapt,” *The Town Planning Review* 81:3(2010).

¹⁸ Klein et al, 2001.

¹⁹ *Ibid.*

²⁰ *Ibid.*

²¹ *Ibid.*

²² IPCC, *Climate Change 2001: Impacts, Adaptation, and Vulnerability Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, J.J. McCarthy, O.F. Canziani, N.A. Leary, et. al. (eds.)]. Cambridge, UK: University of Cambridge, 2001. (accessed February 2017, <http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=627>)

community's risks and capacity, by providing a combination of adaptation strategies, fiscal tools and policy tools.²³ Scholars and practitioners promote dynamic response systems with the simultaneous implementation of multiple adaptation strategies.²⁴ Multiple adaptation strategies provide a robust system of protections where predictability is limited.²⁵

Hard structural protections are a tangible sign of safety, appealing to the imaginations of decision-makers and stakeholders.²⁶ IPCC members Klein, Nicholls and Thomalla state that coastal communities often prefer protective adaptation to accommodation or retreat.²⁷ Constructing a protective barrier allows a community to continue living in the same location and in the same manner: "Given the large populations and economic values in cities, there is usually a bias towards loss reduction".²⁸ These hard structural protections are built as levees, floodwalls, seawalls and bulkheads. Tidal barriers, floodgates, groins and breakwaters also serve as hard protections, while soft protective strategies include beach nourishment programs and saltwater intrusion barriers. Afforestation, wooden and stone walls, wetland restoration and coconut fiber stone units are indigenous options that also offer protection from climate hazards.²⁹

Accommodation strategies include emergency plans, evacuation routes, warning systems, and improved drainage such as enlarged pipes and improved pumps. Accommodation includes measures to adapt agricultural practices and land use, such as saline-resistant crops, as well as building interventions such as elevated structures, buoyant foundations, and wet flood proofing that permits inundation.³⁰

²³ Regional Plan Association. *Under Water: How Sea Level Rise Threatens the Tri-State Region* (December 2016).

²⁴ So-Min Cheong et al, "Coastal Adaptation with Ecological Engineering," *Nature Climate Change* 3 (September 2013): 787-791.

²⁵ *Ibid.*

²⁶ Klein et al., 2001.

²⁷ Richard Klein, R.J. Nicholls, F. Thomalla, "Resilience to natural hazards: How useful is this concept?" *Environmental Hazards* 5 (2003): 35-45.

²⁸ Klein et al., 2003.

²⁹ Klein et al., 2001.

³⁰ *Ibid.*

Methods for retreat are those actions that reduce the effects of a risk, principally by accepting loss and removing activities to safer areas. Techniques that achieve retreat include imposing setbacks for construction and activity, relocating threatened buildings, and prohibiting development in vulnerable zones.³¹ Communities can also conduct managed realignment, shifting protective barriers further inland to allow salt marsh and intertidal mudflats, and their wave buffering benefits, to migrate landwards as sea levels rise.³²

It is widely recognized that public participation is a critical component of adaption planning.³³ Because the impacts of climate change will be felt most by groups who are economically and socially vulnerable, there is a consensus that the decision process for adaptation efforts should be inclusive.³⁴ Stakeholders also contribute local perspectives, values and knowledge, which can guide research priorities and inform decisions.³⁵ Furthermore, public participation in adaptation planning generates a sense of ownership and an increased commitment to the adaptation effort.³⁶

³¹ *Ibid.*

³² Peter French. "Managed realignment: The developing story of a comparatively new approach to soft engineering," *Estuarine: Coastal and Shelf Science* 67 (2006): 409-423.

³³ K. Larsen and U. Gunnarsson-Ostling. "Climate Change Scenarios and Citizen Participation: Mitigation and adaptation perspectives in constructing sustainable futures," *Habitat International* 33 (2009): 260-266; S.R.J. Sheppard, A. Shaw, D. Flanders, S. Burch, A. Wiek, J. Carmichael, J. Robinson, S. Cohen, "Future visioning of local climate change: a framework for community engagement and planning with scenarios and visualization," *Futures* 43:4(2011): 400-412; Richard Few, K. Brown, E. Tompkins. "Public participation and climate change adaptation: avoiding the illusion of inclusion," *Climate Policy* 7:1(2007): 46-59.

³⁴ van Aalst, Maarten, T. Cannon, I. Burton. "Community level adaptation to climate change: The potential role of participatory community risk assessment," *Global Environmental Change* 18 (2008): 165-179; A. Aylett, "Conflict, collaboration and climate change: participatory democracy and urban environmental struggles in Durban, South Africa," *International Journal of Urban and Regional Research* 34 (2010): 478-495.

³⁵ Roger Few, K. Brown, E. Tompkins. "Public participation and climate change adaptation," *Tyndall Centre Working Paper* 95 (April 2006)

³⁶ P.B. Berke and T.J. Campanella. "Planning for Postdisaster Resiliency," *The Annals of the American Academy of Political and Social Science* 604(2006): 192-207.

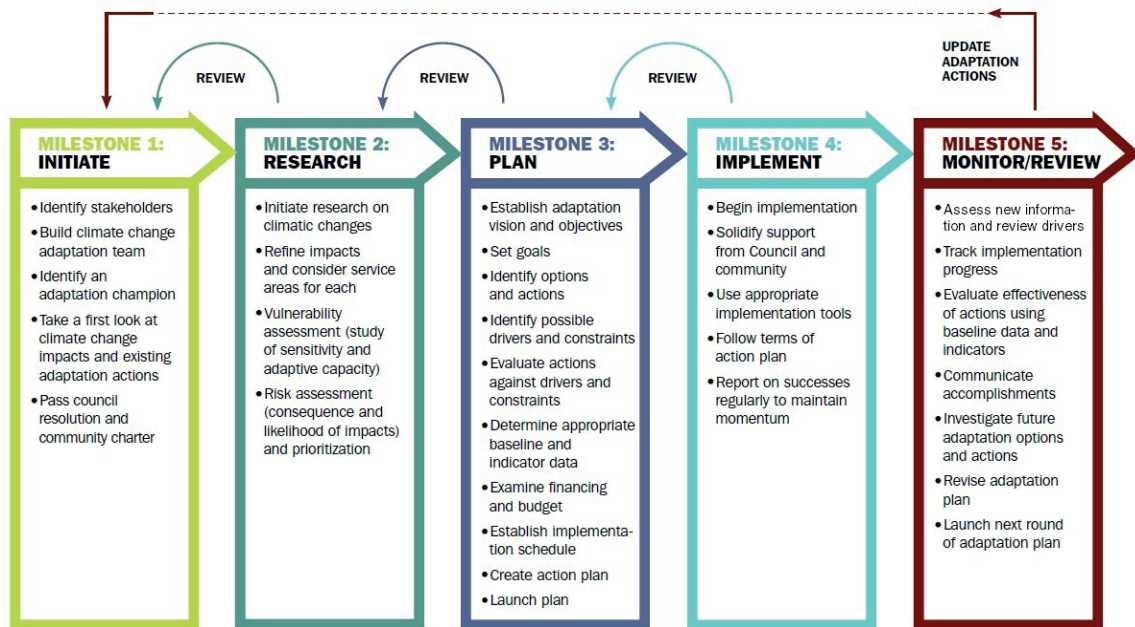


Fig.1. Stages of Adaptation Planning Adaptation is an iterative process. (Source: ICLEI. Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation).

2.2 Resilience

The origins of resilience are in ecology, where it is defined as “a measure of the ability of [...] systems to absorb changes [...] and still persist.”³⁷ In urban planning, resilience applies to human systems and their ability to withstand disaster and variability, and learn and re-organize into a functioning system.³⁸ Resilience is often used interchangeably with adaptation, but the intention of resilience is to build capacity for change by strengthening socioeconomic systems.

Various definitions of resilience contribute to how it is practiced in urban planning. While resilience may be defined as the capacity of a system to return to a desired state after disturbance, scholars present diverging interpretations on whether this desired state should be a return to equilibrium or an evolution to a new condition.³⁹ In a “non-equilibrium view” of resilience, a system absorbs and responds to disturbance and becomes a new entity.⁴⁰ This concept posits that a resilient system is dynamic and ever-changing, neither returning to an original state nor reaching a final condition, but remaining “in the game”.⁴¹ According to this outlook, resilience is a constant process as a system responds to vulnerabilities and adjusts to reach ever-increasing capacities to absorb adversity.⁴² In the urban planning application of resilience, a city or entity does not have to take on a new identity to be resilient, but it should be in a constant state of adjustment and monitoring to identify and respond to unforeseen risks.

³⁷ C.S. Holling, “Resilience and Stability of Ecological Systems,” *Annual Review of Ecology and Systematics* 4 (1973): 1-23.

³⁸ Susan, L. Cutter, M. Barry Barnes, et al. “A place-based model for understanding community resilience to natural disasters,” *Global Environmental Change* 18:4 (2008): 598-606; Rodin, Judith. *The Resilience Dividend* (New York: Public Affairs, 2014), 3.

³⁹ Stuart Pimm. “The Complexity and Stability of Ecosystems,” *Nature* 307 (1984): 321-326; Steve Carpenter, B. Walker, et al. “From Metaphor to Measurement: Resilience of What to What?” *Ecosystems* (2001): 765-781.

⁴⁰ S.T.A. Pickett, M. Cadanasso, J. Grove. “Resilient cities: Meaning, models, and metaphor for integrating the ecological, socio-economic, and planning realms,” *Landscape and Urban Planning*. 69:4 (2004): 369-384.

⁴¹ *Ibid.*

⁴² J. Kulig, D.S. Edge, B. Joyce. “Understanding Community Resiliency in Rural Communities Through Multimethod Research,” *Journal of Rural and Community Development* 3:3 (2008): 77-94; Klein et al, 2003; Pickett et al, 2004.

Resilience is a parallel practice to hazard mitigation planning, but it is also integrates a more holistic approach. Resilience involves the ability of a community to innovate and learn, with a “focus on developing an underlying capacity” for adaptation and change.^{43,44} A holistic, multifaceted and localized approach is integral to resilience. Both traditional disaster planning and resilience planning are concerned with long-term strategies that respond to perceived risks, but resilience focuses on the embedded social, economic, ecological, and political systems of a community.

Civic engagement contributes to resilience by building community cohesion through shared values and clear avenues of communication.⁴⁵ These conditions of a society lend to its ability to withstand disaster. Community cohesion occurs when people are emotionally invested in their community and they have a sense of belonging to an interdependent network.⁴⁶ Community cohesion influences how people respond to disaster, how they recover, and the adaptive measures they implement to avoid future harm.⁴⁷ Observations of communities find that resilience to adversity increases when people are more involved in community-building activities.⁴⁸ Evaluating community responses post-disaster, studies find that “self-efficacy and a sense of community were good predictors of community resilience and increased community capacity to respond to sudden changes.”⁴⁹ In cohesive communities, residents assist one another in recovery, they communicate about risks, and they are more committed to helping their neighbors and town to recover and adapt.⁵⁰

⁴³ Timothy Beatley. *Planning for Coastal Resilience* (Washington, DC: Island Press), 2009.

⁴⁴ *Ibid.*

⁴⁵ Henk Ovink, lecture at Urban Research Institute, University of Pennsylvania, March 30, 2017; Beatley, 2009

⁴⁶ Beatley, 2009.

⁴⁷ Elizabeth Brabec, E. Chilton. *Toward an Ecology of Cultural Heritage* 5:2 (Fall 2015): 266-285.

⁴⁸ Paton et al. “Disasters and communities: Vulnerability, resilience and preparedness,” *Disaster Prevention and Management* 10:4 (January 2001): 270-271; Beatley, 2009.

⁴⁹ Neil Tompkins and W. Neil Adger. “Does Adaptive Management of Natural Resources Enhance Resilience to Climate Change?” *Ecology and Society* 9:2(2004).

⁵⁰ Beatley, 2009.

Effective communication is a pillar of resilience.⁵¹ Communication methods between groups must be inclusive, supportive, and efficient to nurture and sustain their capacity to endure adversity.⁵² Douglas Paton, a psychologist, writes that social justice, community competence, empowerment, and trust contribute to communication and interaction in resilience planning.⁵³

⁵¹ Ovink, 2017.

⁵² Paton 2006, 315; Beatley 2009, 11.

⁵³ Douglas Paton, "Disaster Resilience: Building Capacity Do Co-Exist with Natural Hazards and Their Consequences," in *Disaster Resilience: An Integrated Approach*, ed.s D. Paton and D. Johnston Springfield (Illinois: Charles C Thomas, 2006).

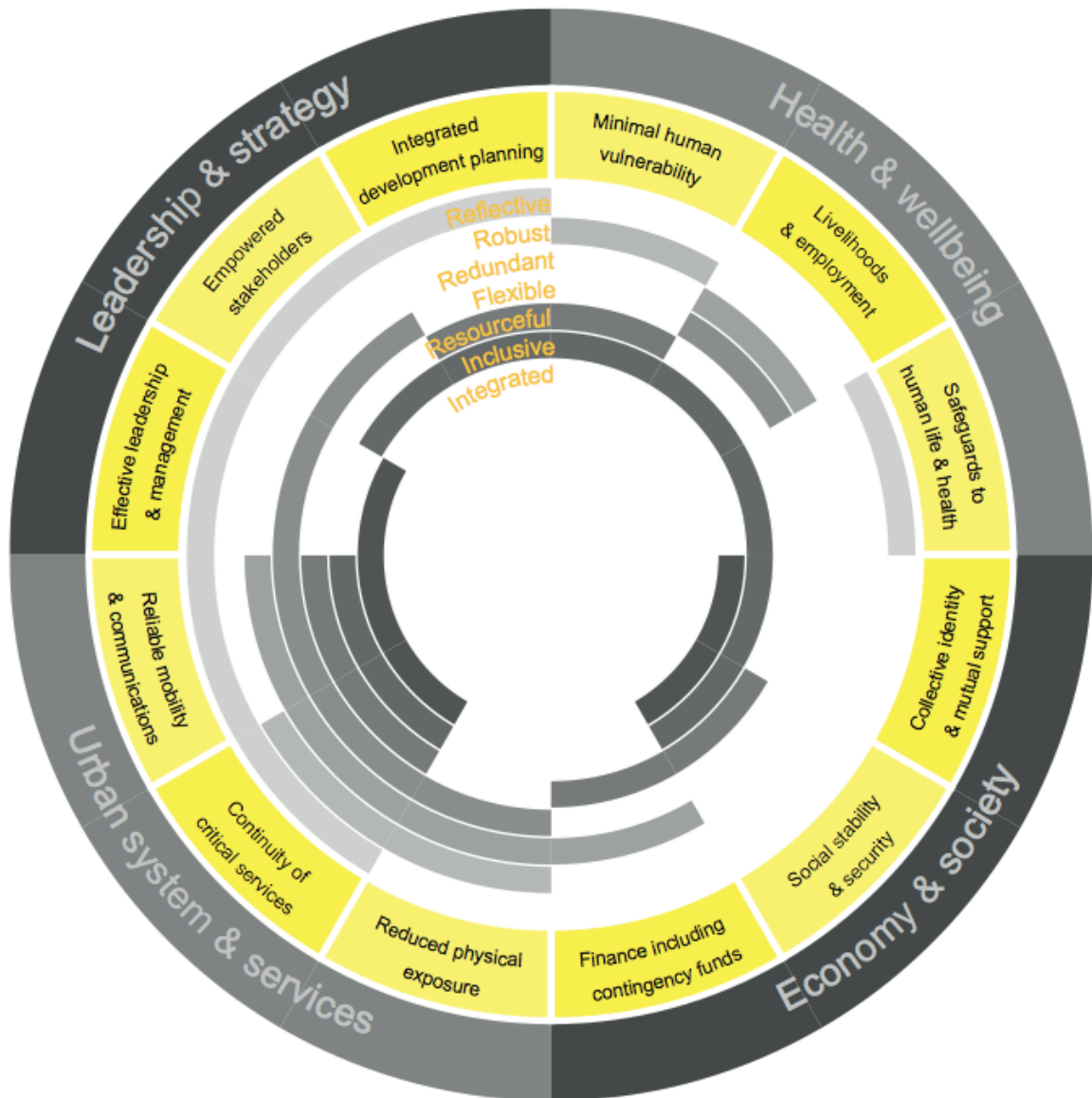


Fig.2 The Drivers of Resilience The Rockefeller Foundation's diagram shows the multiple components of resilience. (Source: Rockefeller Foundation, <https://www.rockefellerfoundation.org/new-orleans-birth-urban-resilience/>).

2.3 Place

The connection between people and their environment is a focus of historic preservation planning. Historic preservation practice has established methods for managing, assessing and communicating cultural heritage. For clarity in this thesis, place is defined as a space that retains cultural heritage. As geographer W. Neil Adger reflects, places are the “symbols, products, and containers of the various cultures that value them.”⁵⁴ To integrate place into the coastal planning process, communities can apply values based preservation.

A value assessment is a method for identifying and articulating the many qualities of a place that lend to its significance.⁵⁵ The qualities and characteristics of a place, known as values, can be identified and assessed in order to inform a planning and decision-making process, as well as material conservation.^{56,57} Values include qualities of aesthetics, feeling, meaning and symbolism, as well as identity, memory, commemoration, recreation, and history.^{58,59} An assessment of value provides a framework for planning for cultural resources.

Cultural heritage contributes to a community’s well being, sense of identity and community.⁶⁰ By strengthening connections between people and their environment, cultural heritage contributes to resilience. Scholars report that communities with strong place attachment exhibit more

⁵⁴ W. Neil Adger, Jon Barnett, F. S. Chapin, and Heidi Ellemor. "This Must Be the Place: Underrepresentation of Identity and Meaning in Climate Change Decision-Making," *Global Environmental Politics* 11:2 (2011): 1-25.

⁵⁵ Randall Mason. “Assessing Values in Conservation Planning.” In *Assessing Values in Heritage Conservation* Ed. De la Torre, Marta. Los Angeles: Getty Conservation Institute, 2002.

⁵⁶ *Ibid.*

⁵⁷ Alois Riegl. “Modern Cult of Monuments,” in *Historical and Philosophical Issues in the Conservation of Cultural Heritage* Getty Conservation Institute, ed.s Price, Tally and Vaccaro. (Los Angeles: Getty Conservation Institute, 1996), 69-83.

⁵⁸ Randall Mason, “Promoting Cultural Preservation,” 2006.

⁵⁹ Randall Mason, “Theoretical and Practical Arguments for Values-Centered Preservation,” *Journal of Heritage Stewardship* 3:2 (Summer, 2006), 31.

⁶⁰ Hess, et. al., 2008; United Nations Educational, Scientific and Cultural Organization, International Council on Monuments and Sites International Committee on Risk Preparedness, United Nations Office for Disaster Risk Reduction, 2013.

adaptive capacity.⁶¹ Individuals with place attachment are more committed to helping their fellow residents in recovery and rebuilding efforts after disaster.⁶² An individual who is connected to her sense place will also be more committed to adaptation.⁶³

In practice, the multiple values of a place are difficult to align with economic values and quantitative studies. Sometimes referred to as having “non-use” values, cultural heritage is best measured through qualitative methods, “ranging from narratives and analyses written by experts to interviews of ordinary citizens.”⁶⁴ Planning and evaluations of the built environment often disregards this type of qualitative assessment, despite the holistic perspective that it provides. Policy and planning relies on the economic and quantifiable evaluations of market forces and measurable studies, overlooking the significance of cultural heritage: “In a society increasingly driven by quantifying the value of things, and using markets to make decisions about what is important, cultural meaning – the richness and idiosyncrasy of human experience, creativity, all the things one would describe as ‘priceless’ – is often lost”^{65,66}

In adaptation planning, there exists a persistent disregard for the contributions of cultural heritage.⁶⁷ In the difficult decisions regarding loss and risk, policymakers are swayed by bottom lines and scientific projections, basing their decisions on metrics of economic and environmental risk.⁶⁸ As result, adaptation planning loses sight of the priceless and meaningful places of communities: “climate change policy underemphasizes, or more often ignores completely, the symbolic and psychological aspects of settlements, places, and risks to them.”⁶⁹

⁶¹ Beatley, 2009.

⁶² *Ibid.*

⁶³ Paton, 2006.

⁶⁴ Mason, 2002.

⁶⁵ Mason, Randall. “Promoting Cultural Preservation,” 2006.

⁶⁶ Throsby, D. *Economics and Culture* (Cambridge: Cambridge University Press, 2001).

⁶⁷ Adger et al, 2011.

⁶⁸ W. Neil Adger, J. Barnett, K. Brown, et al. “Cultural dimensions of climate change impacts and adaptation,” *Nature Climate Change* 3 (November 2012): 112-117.

⁶⁹ Adger et al, 2011.

Adaptation planning efforts risk being undermined if the cultural heritage of a place is ignored.⁷⁰ When place relationships are disturbed, people may experience psychological disorder and an acute sense of loss: “as culture and community are frequently rooted in place—from metropolitan areas through to marginal rural settlements—climate change impacts in these places may also change cultures and communities, often in ways that people find undesirable and perceive as loss.”⁷¹ If cultural heritage is ignored, adaptation efforts will fail because they will not reflect the values of individuals and communities.⁷² Heritage is a significant factor to a resilient response system, and its preservation will advance adaptation and resilience planning efforts.

Civic engagement is one method for including cultural values into planning. Other methods for integrating culture in adaptation planning process include ethnography, participant observation, historical analyses, and modeling behavior.⁷³ When the public participates in discussions about cultural heritage, they can set the limits for change, articulating what they are capable of losing and what they value.⁷⁴ Community participation can be an effective mechanism for integrating cultural heritage into adaptation planning. Civic engagement methods can convey the localized and the unique qualities of a place, and contribute to the pressing “need for more geographically and culturally nuanced risk appraisals that allow policy-makers to recognize the diverse array of climate risks to places and cultures as well as to countries and economies.”⁷⁵

⁷⁰ Agyeman, J., P. Devine-Wright and J. Prange, “Close to the edge, down by the river? Joining up managed retreat and place attachment in a climate changed world,” *Environment and Planning* 4 (2009), 509-513.

⁷¹ Adger et al., 2012; Hess, Jeremy et al, 2008.

⁷² Hess, Jeremy et al, 2008.

⁷³ Mason, Randall. “Promoting Cultural Preservation,” 2006.

⁷⁴ *Ibid.*

⁷⁵ Adger et al., 2011.

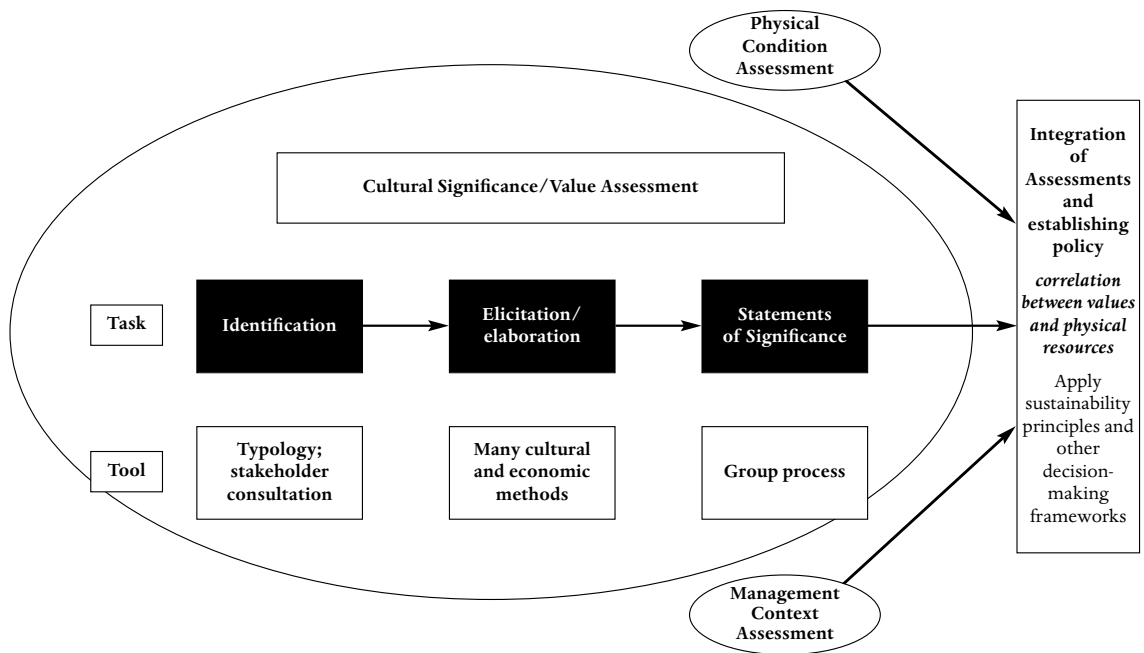


Fig.3 The cultural significance/value assessment process Intended as part of a larger planning methodology for resource management, this process guides planners in assessing value. (Source: Mason, Randall. “Assessing Values in Conservation Planning.” 2002).

2.4 Civic Engagement

Civic engagement is the proactive involvement of private individuals in “deliberating public issues and in helping to solve public problems.”⁷⁶ Civic engagement is a process, through which public outreach advances beyond communication and information to practices that actively include the public in decision-making.⁷⁷ An approach to equitable planning, civic engagement enables populations “presently excluded from the political and economic processes, to be deliberately included in the future.”⁷⁸ A tool for gaining public support for projects, civic engagement also contributes to public education and awareness and motivates a deeper commitment from citizens towards the implementation of adaptation efforts.⁷⁹

Advocacy planners of the 1960s espoused the importance of including citizens in public policy and planning decisions.⁸⁰ Today, this attitude has persisted and public participation is perceived as a crucial component to policy and planning.⁸¹ Although public participation is now institutionalized and integrated into contemporary urban planning practice, public outreach opportunities do not always achieve a high level of inclusive civic engagement.⁸²

⁷⁶ Barnes, William and B. Mann. *Making Local Democracy Work* (Washington DC: National League of Cities, 2010).

⁷⁷ Moser, Susan C. and Cara Pike. “Community Engagement on Adaptation: Meeting a Growing Capacity Need,” *Urban Climate* 14:1(2015): 111-115.

⁷⁸ Arnstein, 1969.

⁷⁹ J. M. Berry, Portney, K. E. & Thomson, K. *The Rebirth of Urban Democracy* (Washington, DC: Brookings Institution, 1993); W. R. Potapchuk and J.P. Crocker, Jr, “Exploring the elements of civic capital,” *National Civic Review* 88:3 (1999): 175-201.

⁸⁰ Sherry Arnstein. “A ladder of citizen participation,” *Journal of the American Institute of Planners* 35:4 (July, 1969): 216-221; Davidoff, Paul. “Advocacy and Pluralism in Planning.” *Journal of the American Institute of Planners* 31:4(1965): 331-338.

⁸¹ Godschalk, David R., and William E. Mills. “A collaborative approach to planning through urban activities.” *Journal of the American Institute of Planners* 32:2 (1966): 86-95; Arnstein, 1969; Richard Margerum, “Collaborative Planning: Building Consensus and Building a Distinct Model for Practice,” *Journal of Planning Education and Research* 21 (2002): 237-253; Arun Argawal and Clark Gibson. “Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation,” *World Development* 27:4 (1999); van Aalst et al., 2008; Margerum, 2002.

⁸² Jennifer Evans-Cowley and J. Hollander, “The New Generation of Public Participation: Internet-based Participation Tools.” *Planning Practice and Research* 25:3 (2010): 397-408.

To assist entities in facilitating outreach efforts that lead to more effective public participation, institutions and agencies have developed guiding frameworks.⁸³ These frameworks are based on an understanding that appropriate outreach methods will suit the intended level of interaction, the audience size and the objective of the participation process.⁸⁴ The International Association for Public Participation's (IAP2) "Spectrum of Public Participation" is a popular model, showing five levels of public participation.⁸⁵ Beginning with the lowest level and progressing to a higher level, the stages are: Inform, Consult, Involve, Collaborate, and Empower.⁸⁶ At the lowest stage, Inform, the entity provides information to the public through outreach such as fact sheets, websites, and open houses.⁸⁷ In Consult, the public is encouraged to offer feedback on a proposed concept, through public comment, focus groups, surveys or public meetings. Through Involve, the governing body or institution intends to work with the public to ensure that their concerns are part of the process, with practices such as workshops and deliberative polling. In Collaborate, the public becomes a partner in each aspect of a decision, through citizen advisory committees, consensus-building, and participatory decision-making. Lastly, the Empower stage enables the public to make the final decision, as citizen juries, ballots or delegated decision. The five stages of participation are intended to suit the different objectives of a planning process. For a successful civic engagement strategy, the entity performs the Spectrum framework as a linear progression, escalating from more minimal public involvement to a higher degree of interaction. An effective civic engagement process advances beyond simple communication to actively include the public.⁸⁸

⁸³ Arnstein, 1969; G. Rowe and L. Frewer, "A Typology of public engagement mechanisms." *Science, Technology & Human Values* 30:2 (2005): 251-290.

⁸⁴ eg. International Association for Public Participation, Communitymomentum.org and Dialogue Partners.

⁸⁵ International Association for Public Participation, <http://www.iap2.org/>

⁸⁶ *Ibid.*

⁸⁷ International Association for Public Participation, <http://www.iap2.org/>; Susskind, Lawrence and D. Rumore. *Managing Climate Risks in Coastal Communities: Strategies for Engagement, Readiness and Adaptation* (London: Anthem Press, 2015).

⁸⁸ *Ibid.*

Scholars and practitioners agree that civic engagement is essential to climate adaptation planning.⁸⁹ In studies produced by governments, foundations and institutions, community participation is often presented as a component of the resilience and adaptation process.⁹⁰ Guidebooks on adaptation planning urge “early and active involvement” from the public.⁹¹ Despite widespread acknowledgement of the importance of civic engagement in coastal planning, public entities often do not actively engage the public in the adaptation process.⁹² Lawrence Susskind, academic and researcher at the MIT New England Climate Adaptation Project, points out this deficit in civic engagement, highlighting that public participation for climate change planning must advance to deliver inclusive outreach methods:

“Carefully structured and meaningful public engagement is critical to designing and implementing successful climate change adaptation plans at the local level. We feel strongly, though, that what sometimes passes for public participation – for example, sending minimal information out to the general public, seeking comments on what the government has already decided or asking a few members of the public to serve on a blue-ribbon advisory committees – is usually inadequate. Only joint decision-making, in which representatives of all stakeholder groups have an opportunity to engage in collaborative problem-solving, is likely to lead to successful implementation of adaptation projects, plans, and policies.”⁹³

The practice of civic engagement must promote collaborative, inclusive and meaningful public participation. A higher level of civic engagement allows the public to participate in shaping its future and, as Susskind states, leads to more successfully produced and implemented plans.⁹⁴ Practitioners can deliver outreach that responds to a community’s context and devise strategies to better capture audiences, cultivate dialogue, and respond to feedback. To achieve inclusive and collaborative adaptation planning, civic engagement methods need to be responsive, transparent, and inclusive.

⁸⁹ Larsen and Gunnarsson-Ostling 2009; Sheppard et. al., 2011; Few, Richard, K. Brown, E. Tompkins, 2007.

⁹⁰ Rockefeller Foundation, Kresge Foundation, ICLEI, National Climate Assessment.

⁹¹ Moser and Pike, 2015.

⁹² *Ibid.*

⁹³ Susskind and Rumore, 2015.

⁹⁴ *Ibid.*

Discussions about adaptation strategies should be tailored to an audience's interests and knowledge base.⁹⁵ Communicators must try to understand what a community cares about and how they comprehend the risks associated with climate change.⁹⁶ Furthermore, as social scientists Moser and Dilling point out, rather than incite fear to inspire action, communicators will be more effective if they provide the audience with possible solutions that can effectively reduce a problem.⁹⁷ Outreach efforts can also attempt to respond to the various cultural, psychological, and political perspectives of individuals. The Yale Program on Climate Change Communication finds that there are six unique audiences (Six Americas) when it comes to climate change communication: Alarmed, Concerned, Cautious, Disengaged, Doubtful, and Dismissive.⁹⁸ Local governments can use the profiles of these Six Americas to develop strategies for engaging with their residents about climate change.

Civic outreach should be transparent. Unknowingly, institutions can impose invisible frameworks of discussion that shape the way participants think about events or solutions.⁹⁹ These frameworks can also obscure local knowledge. Institutions must be wary of the power that they hold in the outreach process: "participation is a culturally charged political undertaking that obscures the cultural nature of the relationships between local people and bureaucrats who formulate and implement policy."¹⁰⁰ These unintended consequences of community participation can be overcome

⁹⁵ Susskind and Rumore, 2015; NOAA, Office for Coastal Management, "Seven Best Practices for Risk Communication" (accessed March 2017, coast.noaa.gov/digitalcoast/training/risk-communication.htm); Susan C. Moser and Lisa Dilling, "Communicating Climate Change", in *Creating a Climate for Change: Communicating Climate Change and Facilitating Social Change*. Ed.s Susan Moser and Lisa Dilling (Cambridge: Cambridge UP, 2007). 64-81.

⁹⁶ Moser and Dilling, 2007.

⁹⁷ *Ibid.*

⁹⁸ Yale Program on Climate Change Communication. "Global Warming's Six Americas", Web, (accessed March 2017, <http://climatecommunication.yale.edu/about/projects/global-warmings-six-americas/>)

⁹⁹ Jennings, Tori L. "Exploring the invisibility of local knowledge in decision-making: the Boscastle Harbour flood disaster", in *Adapting to Climate Change: Thresholds, Values, Governance*, eds. W. Neil Adger, Irene Lorenzoni and Karen L. O'Brien. (Cambridge, UK: Cambridge University Press, 2009), 244.

¹⁰⁰ *Ibid.*

if an institution examines its influential role in the planning process, the relationships between different community groups and within the participatory process.

Effective civic engagement includes a diverse group of participants. For large groups, institutions and organizations can assist with facilitating the outreach process.¹⁰¹ Steering committees provide an opportunity for resident volunteers to participate in consensus building, to address the complex issues at stake.¹⁰² In consensus building, a group of diverse stakeholders work with a facilitator to “create options, develop criteria for choice, and make the decisions on which they can all agree.”¹⁰³ To achieve consensus building, local governments conduct a stakeholder assessment, followed by joint fact-finding.¹⁰⁴ The plans developed by stakeholder groups can then inform local governments and planners. Stakeholders can include local residents, as well as business owners, landlords, corporations, environmental groups and state and federal agencies.¹⁰⁵

Various civic engagement strategies may be employed to promote cultural heritage in the coastal adaptation planning process. Three of these strategies are community-driven planning, citizen science programs, and storytelling.

Collaborative planning efforts can be delivered in a way that emphasizes local identity and place. The Orton Family Foundation is a nonprofit that assists small communities with long-term planning. Identifying the unique and valued qualities of their community in order to craft a vision of its future, the Foundation’s Heart and Soul approach is a resident-driven process: “By identifying the characteristics that make their community special and how these can be protected or enhanced, residents can equip themselves to steer change rather than simply cope with it. In doing so, they are crafting a positive message about the future that says ‘We know who we are. We know what’s great

¹⁰¹ Tompkins, Emma L, and W Neil Adger, 2004.

¹⁰² Innes, 1996.

¹⁰³ *Ibid.*

¹⁰⁴ Susskind and Rumore, 2015.

¹⁰⁵ Innes, 1996.

about this place. We know what we want our future to be.”¹⁰⁶ The best method for identifying values, according to the Foundation, is to listen to and work with the residents of that community.¹⁰⁷ The Foundation’s Heart & Soul Field Guide is a resource for communities wishing to engage in a collaborative and public decision-making process.

Communities can participate in the data collection and monitoring that informs adaptation planning. Civic engagement contributes to analyzing and measuring potential hazards and monitoring the adaptation strategies that have already been implemented. Citizen science programs enlist local community members to assist in collecting large quantities of scientific data. These programs are effective in educating participants about the natural systems within their neighborhood, inspiring stewardship and action.¹⁰⁸ Local residents can also contribute insider knowledge about an area and its systems. Mechanisms for connecting citizen observers to climate scientists and community leaders can help spread knowledge and motivate participation.¹⁰⁹

Finally, storytelling is a method for articulating the values of a place.¹¹⁰ Storytellers can share information and inspire collective action. As a Georgetown Climate Center report asserts, effective adaptation stories are grounded in place.¹¹¹ The National Park Service’s communication strategy for climate change includes the Every Place has a Climate Story program, an approach developed for NPS Park staff for discussing climate change to park visitors. Every Place has a Climate Story recognizes the power of bringing “climate change into a human scale that can be seen, touched, and

¹⁰⁶ Orton Family Foundation, Community Heart & Soul Field Guide, 2nd Edition, 2015.

¹⁰⁷ *Ibid.*

¹⁰⁸ Mackenzie Johnson, C. Hannah, et al. “Network environmentalism: Citizen scientists as agents for environmental advocacy,” *Global Environmental Change* 29(November 2014).

¹⁰⁹ Texas A&M University website, “Student-gathered data aiding coastal vulnerability research.” (accessed February 2017, <https://one.arch.tamu.edu/news/2015/12/14/student-gathered-data-aiding-coastal-vulnerability/>); Philip Berke presentation, University of Pennsylvania School of Design, February 27, 2017).

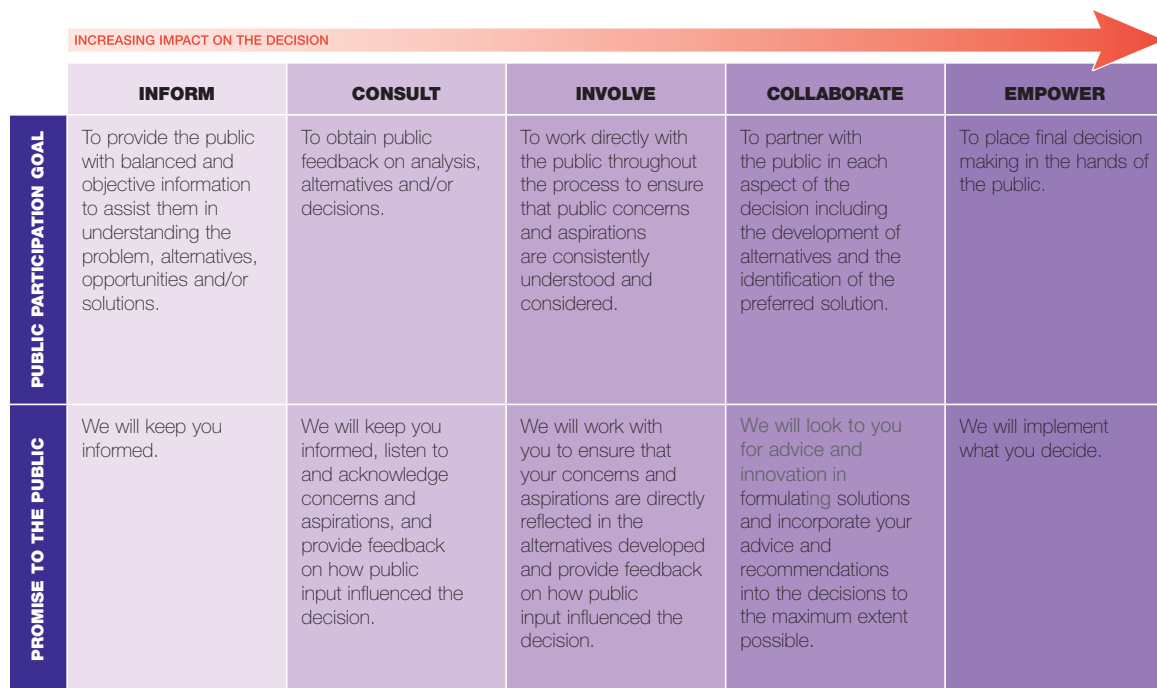
¹¹⁰ Allie Goldstein and Kirsten Howard. *The Great American Adaptation Road Trip: Lessons Learned about How Hometowns across the United States Are Building Their Resilience to Climate Change*. Georgetown Climate Center: 2015.

¹¹¹ *Ibid.*

felt.”¹¹² An example of storytelling at a New Hampshire site reveals that the bricks in a garden are flaking at a faster rate because there are more freeze-thaw cycles in winter.¹¹³ Stories like these bring climate change to a human scale.

¹¹² Marcy Rockman. “An NPS Framework for Addressing Climate Change with Cultural Resources,” *The George Wright Forum* 32:1(2015): 37-50.

¹¹³ *Ibid.*




INCREASING IMPACT ON THE DECISION 					
	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Fig.4 The International Association for Public Participation (IAP2) Spectrum The Spectrum includes five levels of public participation. (Source: International Association for Public Participation).

2.5 Conclusion

Cultural heritage elicits a connection between people and their environment, contributing to a society's cohesion, identity and well being. These are components of resilient systems. By promoting cultural heritage, coastal planners will honor the values that people associate with places, while also contributing to their efforts to inform adaptation practice, strengthen adaptive capacity, and build resilience. It is clear that an inclusive and engaged planning process helps to articulate cultural heritage, inform adaptation planning, and strengthen resilience. Civic engagement serves as a mechanism for furthering the objectives of coastal adaptation and resilience, while also conveying the multiple values of place.

3. CASE STUDIES: INTEGRATING ADAPTATION, RESILIENCE, PLACE AND CIVIC ENGAGEMENT

Four cities and regions were chosen to demonstrate the successful integration of cultural heritage and civic engagement in their coastal planning. In these communities, civic engagement has been employed as a mechanism to convey cultural heritage as part of the adaptation and resilience practice. Specifically, community participation is used as a mechanism for communicating, identifying and preserving cultural heritage in coastal planning. This is achieved through inclusive and proactive civic engagement.

The four case studies do not reflect common adaptation practice, but rather they are rare examples of this culturally integrative approach. The regions and cities are located in the Mid and South Atlantic Coast and the Gulf Coast of the United States, areas that have received attention for their vulnerability to the impacts of climate change. The case studies represent regions of varying size and governance, including one city, one state, a bay and a string of islands. These case studies were chosen because they do not limit cultural heritage to individual historic sites, but rather apply a cultural landscape approach to heritage that is more holistic and encompassing.

The following four adaptation plans represent innovative approaches to integrating cultural heritage and civic engagement in coastal planning. Each of these planning initiatives was developed within the past five years, perhaps indicating a recent shift in coastal planning towards cultural values and community participation. For each of the following case studies, the sub-sections will identify the community and its cultural heritage, describe public participation strategies, and assesses whether this practice led to a holistic plan that addresses the community's cultural heritage.

3.1 Norfolk Resilient City: Visioning to identify cultural assets

The City of Norfolk, Virginia released its resilience plan, Norfolk Resilient City, in 2015. The plan was developed with the support of the Rockefeller Foundation's 100 Resilient Cities Network. This waterfront municipality with over 400 years of history has endured a legacy of disturbances, in the form of storms, pandemic and social upheaval.¹¹⁴ Today, Norfolk is home to the largest naval complex in the world, it is a major international port, and its historic fabric serves as a destination for tourism. A connection with the water has always been integral to Norfolk's identity, but the water has also always been a source of risk. Continuing this dynamic relationship with the coast, Norfolk is adapting to coastal hazards as it plans for a thriving future.

Norfolk is threatened by rising sea levels, subsidence, and more frequent storms, with an expected local sea level rise of between 1.5 and 7.5 feet by 2100.¹¹⁵ A city of 245,000 people, Norfolk prides itself on its diversity, however the city also has a high level of income inequality, with 19% of residents living in poverty.¹¹⁶ To serve its vulnerable population, the city's resilience plan aims to advance economic opportunity and connect communities.

The planning process for Norfolk Resilient City included six months of conversations with hundreds of community members "representing residents, nonprofits, educational institutions, the military, the business sector, the faith based community, and local government."¹¹⁷ These conversations took place in public meetings and also through the leadership of steering committee and working groups comprised of residents, business owners, and representatives of nonprofits and local governance.

After Norfolk Resilient City was completed, the city launched an additional civic engagement effort to further advance the plan. Vision 2100 was a community planning process aimed to identify

¹¹⁴ *Norfolk's Resilience Strategy*, October 2015. (accessed February 2017, <http://www.nfkresilientcity.org/>)

¹¹⁵ *Ibid.*

¹¹⁶ *Ibid.*

¹¹⁷ *Ibid.*

important assets and stimulate dialogue. The process included a series of community meetings from January to August 2016, with agendas dedicated to asset mapping and visioning. In four community-led asset identification sessions, residents were prompted to identify on a map the significant Places, People and Events in the city. More than 500 participants took part in the process, and 4,000 unique data points were collected.¹¹⁸ A presentation of the findings identified shared qualities among the assets, identifying what Norfolk residents tend to enjoy: “A mix of historical vibe and culture with progressiveness, entrepreneurship, openness to new things, and friendliness.”¹¹⁹

Following the asset mapping, Vision 2100 included four visioning meetings where citizens analyzed the results of the mapping exercises. Participants were tasked with reaching a consensus on the most important assets, referring to the maps produced in the earlier meetings. With the assets categorized into areas of Economic Value, Cultural Value, Identity Value, and Potential Value, community members ranked the top ten areas of Norfolk. The top areas of Cultural Value were determined to be: Downtown Museums and Theatres, the Neon Arts District, Norfolk Botanical Garden, Virginia Zoo and Lafayette Park, and Attucks Theater.¹²⁰ For the top places of Identity Value, the community identified: Ghent Historic District and The Hague, Norfolk Botanical Garden, Ocean View Beaches, Colley and 21st Street Commercial, and Naval Station and Little Creek.¹²¹ These places serve to identify the cultural landscapes of Norfolk.

Concurrent with the public meetings, planners for Vision 2100 reached out to the public and community leaders to build awareness and collect more input.¹²² A social media campaign encouraged residents to post photographs of their favorite people, places and events in the city. In a

¹¹⁸ Norfolk Vision 2100, 2016. (accessed February 2017, <http://www.norfolk.gov/DocumentCenter/View/27768>).

¹¹⁹ Norfolk, “Vision 2100 Asset Mapping Wrap-Up and Visioning Kickoff Presentation”, Norfolk Vision 2100. (accessed February 2017, <http://www.norfolk.gov/DocumentCenter/View/25009>).

¹²⁰ Norfolk Vision 2100, 2016.

¹²¹ *Ibid.*

¹²² *Ibid.*

summer program at a school, children illustrated their vision for the city's future. Community leaders were also targeted to review the draft resilience plan.

The Norfolk Resilient City and Vision 2100 processes achieved planning outcomes that address the cultural heritage of the city. The initial plan, Norfolk Resilient City, did not address historic preservation explicitly, but its recommendations do draw upon the contributions of the city's significant visual and economic connection to the ocean. Norfolk Resilient City recommends enhancing and promoting the connection to the coast, capitalizing upon its role in attracting and retaining residents. The Vision 2100 process integrated cultural heritage much more directly, by identifying how neighborhoods and key assets contribute to Norfolk's identity. Vision 2100 recommends protecting historic neighborhoods within flood-prone areas, expanding the Neon Arts District, and protecting assets such as Ocean View beaches, the Zoo and the Hermitage Museum.¹²³

Norfolk's resilience strategy places value on local areas of identity and culture. Civic engagement is the mechanism that reveals the city's important places, people and events, directly informing the planning process. Furthermore, the public is also included in the process of deliberation to determine the most important community assets. These processes successfully allow places of cultural value and local identity to be recognized alongside those areas of economic value. As Norfolk experiences transformations to its waterfront in the coming decades, the entire city will be confronted with change. The city's resilience strategy recognizes the value of determining what people care about and what connects them to their environment and community.

¹²³ *Ibid.*

Community Value Areas

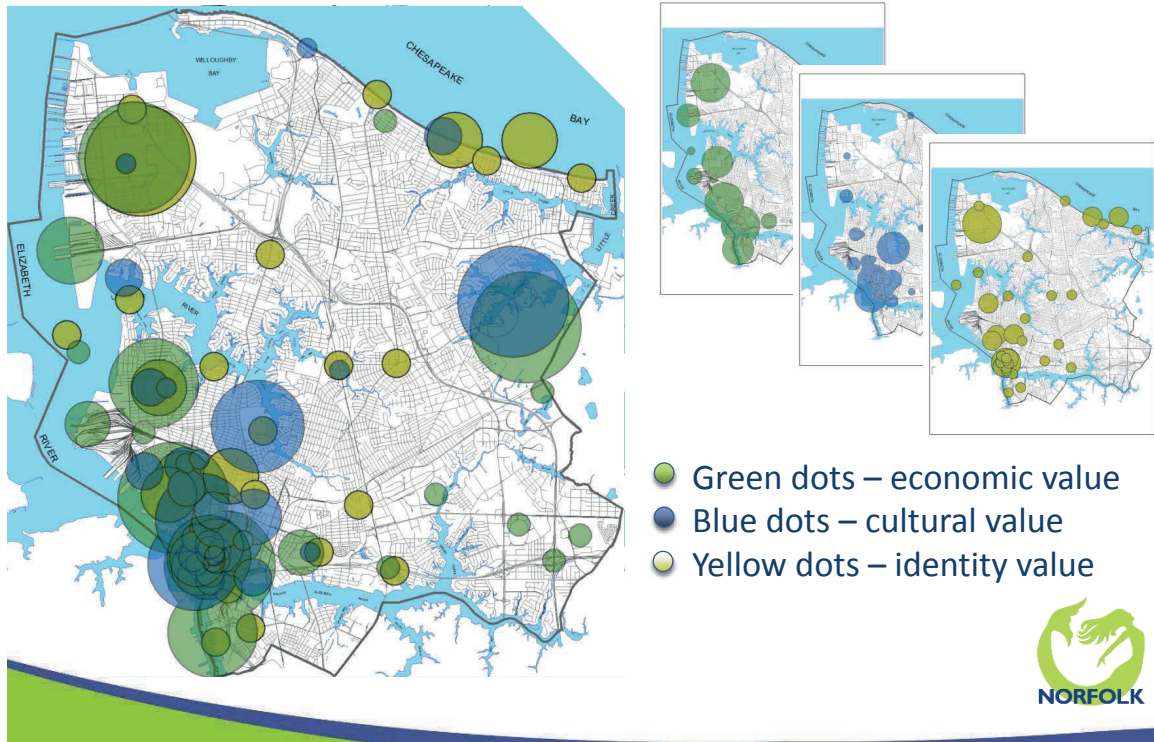


Fig.5 Community Value Areas Norfolk's place of economic, cultural and identify value as identified by the public. (Source: Vision 2100 Visioning Meeting 3 Presentation, Norfolk Vision 2100).

3.2 Resilience and the Beach: Using cultural heritage for managed retreat

In response to Hurricane Sandy, the Rebuild By Design competition was launched by the U.S. Department of Housing and Urban Development in 2013. As one entry to the competition, a multi-disciplinary team led by Sasaki Associates developed a resilience strategy for New Jersey's Toms River-Barneget Bay region.¹²⁴ The premise of their design is as follows:

“We present a framework for adaptation that enhances existing ecological, economic, and social connections across a heavily populated coastal region, from inland areas to the beach. This conservative and safe approach to sea level rise allows these functions to shift locations over time, as needed, so that shore areas do not have to be abandoned in haste as climate change progresses.”¹²⁵

By identifying the ecological, economic and social values associated with the shore, the Sasaki team designed a method for relocating these values in a careful process of managed retreat. The Sasaki team asserted that by relocating the cherished cultural heritage of the Shore to safer regions, residents would be able to more comfortably shift their activities and lives away from the coast.

To identify the multiple values of the coast, the team relied on civic engagement. Outreach was achieved through public meetings and a Resilience Network of non-profits, local governments, advocates for development and businesses, and residents.¹²⁶ The team also conducted surveys using CrowdGauge, a software that “helps communities achieve better public participation and understanding of trade-offs.”¹²⁷ The online survey helped to reveal ten leading community values and supported projects (See Table 1).

Cultural heritage was a key component of the team's plan. The proposal addressed the headlands, inland bays, and barrier islands of the coast: three typologies that experience different

¹²⁴ Joanna Burger, Karen M. O'Neill, Steven N. Handel, Brie Hensold, and Gina Ford. “The Shore Is Wider than the Beach: Ecological Planning Solutions to Sea Level Rise for the Jersey Shore, USA.” *Landscape and Urban Planning* 157 (2016): 512–22.

¹²⁵ Burger et al., 2016.

¹²⁶ *Ibid.*

¹²⁷ *Ibid.*

vulnerabilities to sea level rise. The proposed design for each typology was influenced by the ecological, economic and social vulnerabilities of the site, as well as its valued qualities and cultural associations.¹²⁸ In an effort to shift the cultural associations of the beach away from the coast, each design relocated a “cultural icon” of the Shore to a safer location.¹²⁹ For example, to redesign the barrier islands, the team proposed recreating an iconic beach “pier” in a safer location, providing a shared public space with similar social and cultural benefits as the original. Recognizing the value of the pier as a “community’s economic and social center”, the team reallocated these values to a similar space out of harm’s way.¹³⁰

The Toms River-Barnegat Bay proposal is a unique approach to managed retreat. The plan acknowledges the associative power of cultural heritage, and the necessity for including sense of place into adaptive practice. This unique and provocative proposal uses design and cultural heritage as a driver for change, to promote a gradual relocation of communities away from the more vulnerable areas of the coast.

¹²⁸ Sasaki, Rutgers, and Arup. “Resilience & The Beach: Jury Brief, Letters of Support & Cost Benefit Analysis,” 2014. (accessed February 2017, <http://www.rebuildbydesign.org/data/files/670.pdf>).

¹²⁹ *Ibid.*

¹³⁰ *Ibid.*

Table 1. Top 10 Community Values The CrowdGauge survey revealed ten leading community values, informing the Toms River-Barneget Bay proposal. (Source: Sasaki, Rutgers, and Arup. 2014).

<i>Top 10 Community Values</i>	
1	<i>We have clean air, water, and land</i>
2	<i>We invest in conservation efforts to protect the beaches, Pine Barrens, and other natural resources</i>
3	<i>There is well-maintained infrastructure</i>
4	<i>The Jersey Shore is a cultural and recreational amenity for future generations</i>
5	<i>I am safe from flooding and storm surge</i>
6	<i>I have views and/or access to the water</i>
7	<i>There is a vibrant, year-round tourism and recreation economy</i>
8	<i>I can live and work in my community</i>
9	<i>I know my neighbors and I feel like I belong to a community</i>
10	<i>There is less traffic</i>

3.3 Louisiana's Comprehensive Master Plan For a Sustainable Coast: Stakeholder engagement at each stage of the planning process

Louisiana's coast is swiftly disappearing, with more than 1,800 square miles of land lost between 1932 and 2010, including more than 300 square miles of land between the years 2004 and 2008.¹³¹ Loss of land is due to sea level rise, subsidence, hurricanes, storm surges, flooding, and human impacts.¹³² Many communities are vulnerable to future flooding, as the plan identifies ten communities that will be particularly vulnerable to flooding in 25 years, and eleven that will be "dramatically changed by flooding" in the next 50 years.¹³³ In 2017, the State of Louisiana developed a comprehensive plan for its coast, "Louisiana's Comprehensive Master Plan For a Sustainable Coast." Developed by the State Coastal Protection And Restoration Authority (CPRA), the plan recommends strategies that reduce land loss and lessen the impacts of storm surge.¹³⁴

Planning for the entire length of the coast, the 2017 Coastal Master Plan addresses a diversity of community types and stakeholders: "Given the concentration of industrial development and a large population made up of individuals who each have their own unique stories and sense of place, the master plan must represent a number of diverse groups with varied opinions."¹³⁵ The State addressed this wide scope by consulting a network of stakeholders, representing "communities, business and industry, federal agencies, non-profits, academia, local organizations, coastal scientists, planning experts, and more".¹³⁶

A tiered approach to civic engagement allowed the CPRA to reach the diverse and widespread stakeholder groups of the Louisiana coast. A Framework Development Team, consisting of nonprofits and community groups provided the additional outreach capacity necessary for

¹³¹ Coastal Protection and Restoration Authority of Louisiana, "Louisiana Comprehensive Master Plan For a Sustainable Coast", 2017.

¹³² *Ibid.*

¹³³ *Ibid.*

¹³⁴ *Ibid.*

¹³⁵ *Ibid.*

¹³⁶ *Ibid.*

reaching the many communities of the coast. These facilitators helped to distribute information about the plan and gather early feedback.¹³⁷ In addition to these satellite outreach efforts, the state held more centralized target meetings to engage small groups of citizens along the coast. Specialized focus groups targeted issues related to energy and industry, parish floodplain management and state floodplain management.¹³⁸ The 2017 plan also incorporated projects and suggestions that had been submitted for the 2012 Coastal Master Plan but not previously addressed.

For the 2017 Coastal Master Plan, civic engagement informs each stage of the adaptation planning process. As the plan goes into effect and is implemented in the form of structural and non-structural solutions along the coast, the CPRA intends to include stakeholder engagement in each of the seven stages of the CPRA's Adaptive Management Plan (see Figure 6).¹³⁹

The recommendations in the 2017 Coastal Master Plan highlight the importance of cultural heritage. The plan has five objectives: flood protection, natural processes, coastal habitats, cultural heritage, and working coast.¹⁴⁰ The objective for cultural heritage is described as the intention to “sustain the unique cultural heritage of coastal Louisiana by protecting historic properties and traditional living cultures and their ties and relationships to the natural environment.”¹⁴¹ The CPRA's emphasis on cultural heritage and local communities is a shift from earlier versions of this Master Plan: “More than ever, the 2017 Coastal Master Plan places a greater focus on our local communities”.¹⁴²

¹³⁷ *Ibid.*

¹³⁸ *Ibid.*

¹³⁹ *Ibid.*

¹⁴⁰ *Ibid.*

¹⁴¹ *Ibid.*

¹⁴² *Ibid.*

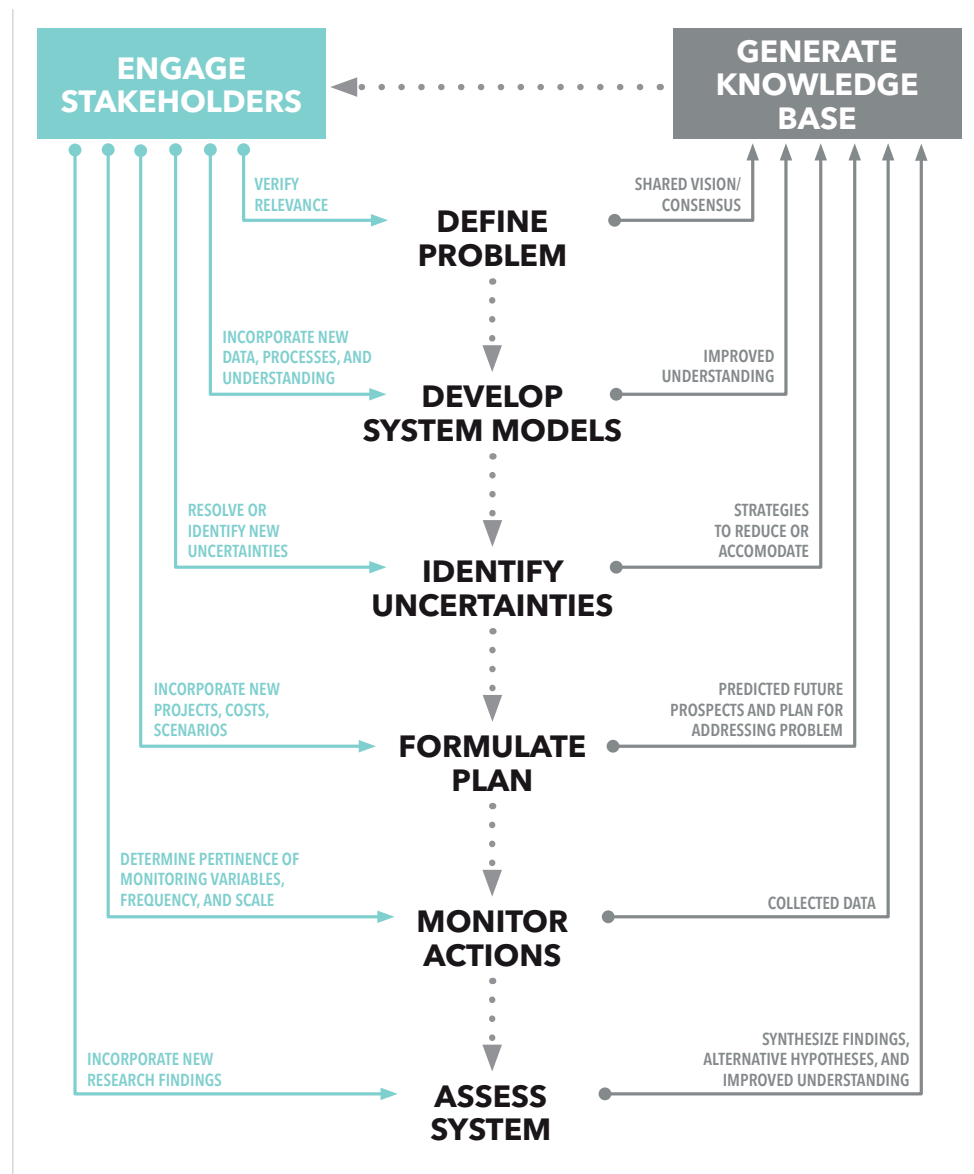


Fig.6 CPRA's Adaptive Management Plan Activities Stakeholder input is at every stage of the adaptation planning process (Coastal Protection and Restoration Authority of Louisiana, “Louisiana Comprehensive Master Plan For a Sustainable Coast”, 2017).

3.4 The Gullah Geechee: Storytelling to communicate and preserve heritage

The Gullah Geechee inhabit the Sea Islands, a string of barrier islands on the coast of North Carolina, South Carolina, Georgia and northern Florida.¹⁴³ Descendants of slaves brought from Western and Central Africa to the region centuries ago, the Gullah Geechee have retained a distinct culture and Creole language. The history of the Gullah Geechee is unique in that each family was given a small amount of land to cultivate, “a practice not found elsewhere in the American South and one which fostered strong bonds with the land.”¹⁴⁴ For generations, the inhabitants of these islands have relied on native plants and fish for their food, medicine, and livelihood. Their descendants continue these traditions, maintaining a strong connection to the coast. Interestingly, the Gullah Geechee’s cultural heritage has contributed to their adaptive capacity, employing an inherited technique for building oyster reefs and beds along the shoreline to protect against storm surge.¹⁴⁵

The communities of the Gullah Geechee are threatened by both climate and social factors. As sea level rises and storms increase, the land of these barrier islands continues to become more constricted and limited. Additionally, since the mid-20th century, the land surrounding the Gullah Geechee has become an attractive site for vacationers and retirees. As a result, development pressure and increasing property taxes threaten the ability of the Gullah Geechee community to persist.¹⁴⁶

Facing these complex challenges, the Gullah Geechee are employing civic engagement strategies to raise awareness and advocate for adaptation practices that preserve their cultural heritage. Although the Gullah Geechee Nation has not developed a formal adaptation plan, the community is advocating for the representation of their cultural heritage in adaptation planning practice. Founder of the Gullah Geechee Sea Island Coalition and Chieftess of the Gullah Geechee Nation, Queen

¹⁴³ Gullah Geechee Corridor, accessed 3/2017 at <http://gullahgeecheecorridor.org/>

¹⁴⁴ Brabec and Chilton, 2015.

¹⁴⁵ Rachel Cleetus, R. Bueno, K. Dahl. *Surviving and Thriving in the Face of Rising Seas: Building Resilience for Communities on the Front Lines of Climate Change* (Union of Concerned Scientists: 2015).

¹⁴⁶ Kim Severson. “Taxes Threaten an Island Culture in Georgia,” *New York Times* 25 September 2012. (accessed March 2017, <https://nyti.ms/2k0hvhL>); Brabec and Chilton, 2015.

Quet serves as a consultant to the U.S. Department of the Interior and a representative at the United Nations.¹⁴⁷ She raises the need for adaptation efforts that also preserve her community's cultural heritage: "The water is also our bloodline [...] so for us, it's very important to engage in processes [to protect the land] ahead of time, not wait until the storm comes and then try to rebuild."¹⁴⁸

Recent developments in adaptation planning indicate that the Gullah Geechee's advocacy methods are inspiring support. In July 2016, a collection of South Carolina institutions launched the Resilience Initiative for Coastal Education (RICE).¹⁴⁹ This organization is touring the state with educational programming. RICE plans to address local and state level planning strategies, including the communities of the Gullah Geechee.¹⁵⁰

The Gullah Geechee Heritage Corridor is a mechanism for regional planning within the Sea Islands, and could also serve as a planning tool for culturally integrative coastal adaptation in the region. The Corridor is a National Heritage Area, designated by Congress and managed by a Federal Commission with 15 members from the four states.¹⁵¹ The National Park Service offers technical and planning assistance, including the development of a management plan. The most recent management plan acknowledges the risks posed by the impacts of climate change on the region, though it does not provide solutions for adaptation and resilience.¹⁵² As the Corridor continues to plan for the preservation of the region's unique cultural heritage, this planning tool could serve as a channel for integrating cultural heritage into resilience planning for the region.

¹⁴⁷ *Ibid.*

¹⁴⁸ Goldstein and Howard, 2015.

¹⁴⁹ Smith, Bruce. "Sea level rise initiative targets Gullah coastal communities." *Washington Times*, 14 July 2016. (accessed 3/2017 at washingtontimes.com).

¹⁵⁰ *Ibid.*

¹⁵¹ National Park Service, Denver Service Center. *Gullah Geechee Cultural Heritage Corridor Management Plan*. 2012.

¹⁵² *Ibid.*

3.5 Conclusion

The adaptation efforts in Norfolk, Toms River-Barnegat Bay, the Louisiana Coast, and the Sea Islands demonstrate how civic engagement is employed to include cultural heritage in adaptation and resilience planning. In Norfolk, civic engagement takes on numerous forms, including mapping assets of Places, People and Events, visioning processes that prioritize areas of Economic Value, Cultural Value, Identity Value, and Potential Value, and steering committees. In the Toms River-Barnegat Bay plan, civic engagement is developed through a Resilience Network of stakeholders and public surveys, with a determined effort towards identifying the cultural icons that people cherish. In Louisiana, a multilateral system of outreach efforts ensures that a diverse and widespread group of stakeholders is included and heard. Lastly, in the Sea Islands a community leader advocates for adaptation practices that preserve the tangible and intangible cultural heritage of her community. These case studies demonstrate cultural heritage's contributions to community cohesion, identity, and resilience. In these studies, civic engagement alone does not capture cultural heritage; rather, civic engagement must be structured and strategically applied in a manner that reveals the multiple values of a place.

4. COASTAL ADAPTATION PLANNING IN NEW JERSEY: EVALUATING CURRENT PRACTICE

As the world's cities and regions prepare for the impacts of climate change, New Jersey has taken a leading role. The devastation caused by Hurricane Sandy prompted many New Jersey stakeholders and communities to acknowledge their risks and initiate planning for a more resilient future. Municipalities throughout the State are now engaged in local planning for climate adaptation and resilience. Cities and towns of varying sizes and composition are developing local adaptation plans, often with the assistance of state agencies, nonprofit organizations and hired consultants. Each of these plans is distinct, and they each reveal different approaches to civic engagement in adaptation planning. Some adaptation plans completely exclude public participation while other reports demonstrate a thorough process of active and inclusive engagement. An assessment of forty of these adaptation plans serves to establish a better understanding of how civic engagement is integrated into coastal planning practice today and the potential barriers to effective civic engagement. What are the conditions for civic engagement in coastal adaptation planning in New Jersey? Do communities who employ civic engagement share common demographic, economic, and social characteristics? And furthermore, when civic engagement is employed, does it result in a more holistic plan that includes cultural heritage? An in-depth analysis of a sample of coastal adaptation plans will help to answer these questions.

The following section begins by identifying the environmental threats to New Jersey coastal communities. This overview is followed by a survey of the policies and programs enabling local adaptation planning in New Jersey. Next, an analysis of coastal adaptation plans for 40 municipalities serves as a statewide study to compare civic engagement methods among municipalities, and determine whether certain characteristics of a community serve as indicators of the level of civic engagement in the coastal planning process. This assessment draws on demographic, social and

economic data for each municipality. Following the analysis is a summary of four particular municipalities, highlighting the civic engagement methods included in the adaptation planning process, the recommendations of the plan, and an evaluation of whether these outcomes reflect a consideration for cultural heritage. The section closes with a qualitative analysis of coastal planning in New Jersey, based on interviews with coastal planners and community leaders.

4.1 Threats to the Coast

A high-risk region that is densely populated, New Jersey is a prime case study for local adaptation planning. In October 2012, Hurricane Sandy caused damages to more than 130 communities in New Jersey.¹⁵³ This devastating event emphasized the need for resilience efforts on the coast, prompting many communities to embark on adaptation planning efforts. In the near future, coastal communities in New Jersey will expect more frequent and severe storms as well as sea level rise. By 2050, sea levels are projected to increase between 0.8 and 2 feet in Atlantic City and 0.8 to 1.9 feet in Cape May.¹⁵⁴ By 2100, sea levels will increase between 2.3 and 6.8 feet in Atlantic City and 2.3 to 6.8 feet in Cape May.¹⁵⁵ The range in these projections reflects different emissions scenarios and climate model assumptions. Although it is impossible to predict future sea levels with exact precision, it is clear that the region is at risk. Indeed, global models suggest that the northeast United States, including New Jersey, may experience above average rates of sea level rise due to the combined effects of local subsidence and global climate change.¹⁵⁶ New Jersey has many assets that are vulnerable to these higher sea levels, with 285 square miles of land and 210,890 housing units

¹⁵³ New Jersey Future. *In Deep* October, 2015.

¹⁵⁴ Climate Central. *New Jersey and the Surging Sea: A Vulnerability Assessment with the Projections for Sea Level Rise and Coastal Flood Risk* April, 2014.

¹⁵⁵ *Ibid.*

¹⁵⁶ Science News. "Regional sea-level scenarios: Helping US Northeast plan for faster-than-global rise." Science Daily Website, January 19, 2017. (accessed March 2017, <https://www.sciencedaily.com/releases/2017/01/170119111004.htm>)

lying less than five feet above the high tide line, and 230 municipalities located in coastal or tidally influenced areas.¹⁵⁷ The state's densely developed coastal counties contain nearly eight million residents, and even more people during the summer months.¹⁵⁸ A recent study shows that, with 6.0 feet of sea level rise in 2100, a future projected population of 827,449 people would be at risk.¹⁵⁹

4.2 Programs and Planning Efforts for Municipal Adaptation Planning

For New Jersey's municipalities, recovery and adaptation efforts occur at the local level. With home rule government, local leaders are enabled to enact master plans, set land-use priorities, and adopt zoning ordinances.¹⁶⁰ Through these mechanisms, local leaders are also responsible for adaptive actions. Such independence, however, has left many small coastal communities without the capacity to recover from storms or engage in long-term planning. Technical and financial support from federal and state programs, nonprofits and institutions has become an essential component to adaptation planning practice in the State.¹⁶¹ Municipalities targeting these support services and funding must comply with the requirements of the granting agency.

State and federal programs offer recovery efforts as well as assistance towards adaptation planning. At the federal level, recovery assistance and hazard mitigation planning is funded and administered through the Federal Emergency Management Agency (FEMA) and the U.S. Department of Housing and Urban Development (HUD). The National Flood Insurance Program (NFIP) is a FEMA program that offers affordable insurance to buildings in flood prone areas. NFIP

¹⁵⁷ "Map of NJ Coastal Municipalities: Municipalities listed includes those in the CAFRA Area and those with Tidally Influenced Waters", NJ State Website, (accessed March 2017, <http://www.state.nj.us/dep/cmp/docs/new-detailed-cafra-map.pdf>).

¹⁵⁸ New Jersey Department of Environmental Protection (NJDEP). "Getting to Resilience: A Coastal Community Resilience Evaluation Tool". Trenton, NJ: Office of Coastal Management, March 2011.

¹⁵⁹ Matthew Hauer, J. Evans, D.R Mishra. "Millions projected to be at risk from sea-level rise in the continental United States," *Nature Climate Change* 6 (2016): 691–695.

¹⁶⁰ New Jersey Municipal Land Use Law (Mlul) 2008.

¹⁶¹ New Jersey Future Planning Manager interview with author 3/30/17.

also encourages communities to adopt and enforce floodplain regulations and management, through incentives programs such as the Community Rating System (CRS). CRS offers reduced flood insurance rates for those communities who fulfill certain criteria to demonstrate improved floodplain management. Public outreach is one such activity that is promoted through the CRS program, contributing to a community's qualifications for lower flood insurance rates. Other leading FEMA grants, including the Public Assistance Grant (PA) Program and the Individual Assistance (IA) program, provide immediate recovery after a declared disaster or emergency. The U.S. Army Corps of Engineers (USACE) offers beach replenishment, bulkheads, seawalls, floodwalls, levees, and stream channelization directly to communities, and non-structural solutions to wet floodproof or dry floodproof particular buildings.¹⁶² Federal recovery and mitigation programs are also facilitated through the National Oceanic and Atmospheric Administration.

Many State programs in New Jersey are funded through the HUD Community Development Block Grant-Disaster Recovery (CDBG-DR) program. The State has initiated many programs targeting Hurricane Sandy-impacted communities, administering \$4.2 billion in funding for Hurricane Sandy recovery and adaptation efforts.¹⁶³ These funding streams provide assistance to individuals and municipalities. The largest program is the Homeowner Reconstruction, Rehabilitation, Elevation and Mitigation (RREM) program, which funds alterations to homes that include elevation and storm mitigation. A small portion of CDBG-DR and FEMA funding is allocated towards the Blue Acres program, an initiative for acquiring flood-prone houses and converting the land to public open space. Program streams for CDBG-DR also include rental housing and assistance, economic development programs, infrastructure programs, support for local governments, and other supportive services.

Counties also bear responsibility for long-term coastal planning through the FEMA hazard mitigation process. FEMA requires that counties and municipalities practice local hazard mitigation

¹⁶² "NJ Recovery and Reinvestment Plan" <http://www.nj.gov/recovery/infrastructure/acoe.html>

¹⁶³ Renew Jersey Stronger Website, "Sandy Recovery Program Dashboard" (accessed March 2017, <http://www.renewjerseystronger.org/transparency/sandy-recovery-program-dashboard/>)

planning to receive federal disaster recover funds. In New Jersey hazard mitigation planning is largely achieved through multijurisdictional hazard mitigation plans created by the county. The mitigation plans are produced in accordance with the Disaster Mitigation Act of 2000 that requires local and state hazard mitigation planning in order to receive federal disaster assistance and funds. These plans identify policies and strategies for reducing risk and future loss.¹⁶⁴ FEMA requires public participation during the planning process, as well as during implementation.¹⁶⁵

New Jersey allocates CDBG-DR funds towards local adaptation planning. With an installment of \$5 million in April 2013, and another \$10 million allocated in October 2013, the New Jersey Department of Community Affairs created the Post Sandy Planning Assistance Grant Program (PSPAG).¹⁶⁶ The program provides assistance to municipalities and counties for the development of long range planning efforts following Hurricane Sandy.¹⁶⁷ PSPAG funding was developed to provide municipalities and counties the funds to hire a planner to “address issues caused by the storm, draft plans to rebuild a more sustainable and resilient community that can withstand damage from future storms, and encourage sustainable economic growth.”¹⁶⁸ Completion of a Strategic Recovery Planning Report (SRPR) is required to be eligible for grant activities under the PSPAG program. Community engagement in the SRPR process was not required for PSPAG funding.

Nonprofit organizations have also played a major role in assisting local New Jersey municipalities with recovery and resilience planning efforts. To assist municipalities with adaptation planning efforts, there has developed a “cottage industry” of institutions and organizations offering

¹⁶⁴ “Multi-Jurisdictional Natural Hazard Mitigation Plan, Monmouth County, New Jersey”, March 2009.

¹⁶⁵ Federal Emergency Management Agency, *Local Mitigation Planning Handbook*, March 2013.

¹⁶⁶ Neptune Township, Strategic Recovery Planning Report. Prepared by CME Associates. August, 2014.

¹⁶⁷ *Ibid.*

¹⁶⁸ *Ibid.*

assistance.¹⁶⁹ One such organization is New Jersey Future, a nonprofit that promotes smart growth policy and public investments towards sensible development and growth. New Jersey Future assigned three Local Recovery Planning Managers to six communities on the coast to assist with long-term planning efforts. The nonprofit targeted communities that had experienced widespread storm damage from Hurricane Sandy, were mostly year-round residents, and had limited in-house capacity for planning.¹⁷⁰ Following these criteria, the organization chose to focus their efforts in Highlands and Sea Bright in Monmouth County, Tuckerton and Little Egg Harbor in Ocean County, and Maurice River and Commercial Township in Cumberland County. Communities participating in the program were required to agree to a Resolution of Engagement, committing to eleven aspirational actions, including “involving the community in the decision-making process”.¹⁷¹

Nonprofits and state agencies have collaborated to provide technical support and assistance in New Jersey. The New Jersey Resilient Coastal Communities Initiative (NJRCCI) is facilitated through the State Department of Environmental Protection and several nonprofit organizations, including the Jacques Cousteau National Estuarine Research Reserve and Rutgers University. This program has produced coastal vulnerability assessments for approximately 40 coastal towns, assisting town leaders as they identify assets at risk to sea level rise. The NJRCCI has also produced the Getting To Resilience questionnaire, an online self-assessment tool to help community leaders evaluate vulnerabilities and plan for adaptation and mitigation. The Getting To Resilience program is intended to initiate internal discussions about risk and resilience within a municipality’s departments, and does not provide guidance for public outreach.¹⁷²

¹⁶⁹ New Jersey Future Planning Manager interview with author 3/30/17.

¹⁷⁰ *Ibid.*

¹⁷¹ *Ibid.*

¹⁷² Jacques Cousteau National Estuarine Research Reserve Watershed Coordinator, interview with author 1/23/17.

4.3 Strategic Recovery Planning Report Analysis

From 2013 to 2016, 40 individual municipalities developed Strategic Recovery Planning Reports (SRPR). The SRPR is intended as an initial planning effort to address resilience in Sandy-affected New Jersey communities, to both recover from the effects of Hurricane Sandy and prepare for future disasters. These reports are intended to “identify specific recovery and rebuilding strategies [...] to help ensure that the community will be more resistant to damage from future storm events, and encourage sustainable economic growth.”¹⁷³ To be eligible for the program, a community must have sustained a tax ratable base loss of at least 1% or \$1 million due to Hurricane Sandy. The New Jersey Department of Community Affairs (NJ DCA) provides up to \$30,000 to fund the SRPR planning process so that any small community can hire a planner to perform the assessment.

The SRPR is not only a means to access PSPAG grants, but an opportunity for municipalities to initiate and guide their adaptation planning process.¹⁷⁴ The recommendations included in the plan serve as a guide for the PSPAG grants that the municipality receives.¹⁷⁵ The output of the document is therefore significant in determining the future adaptive strategies that are financed in a municipality. Financed through the NJ DCA, the SRPR also provides an opportunity for planning. Many coastal communities do not have a planning staff or the extra resources to plan long-term, and the SRPR provides the capacity for professional adaptation planning. In fact, 38 of the 40 municipalities in the study hired planning consultants or received assistance from nonprofit organizations to execute the SRPR process.

Among the 40 SRPRs, the documents share a similar format and content. For each municipality, the SRPR usually includes a brief profile of the town, an identification of existing plans that also relate to resilience and hazard mitigation in the municipality or region, an evaluation of the

¹⁷³ Highlands Borough Strategic Recovery Planning Report.

¹⁷⁴ New Jersey Department of Community Affairs. “Sample Request for Proposal”, (accessed March 2017, www.nj.gov/dca/services)

¹⁷⁵ *Ibid.*

impact of Hurricane Sandy upon the community and its features, and a list of recommendations. Some communities have included more detail than others, such as sea level rise projections in the exposure evaluations and community engagement.

Public participation is not a required component of the SRPR. New Jersey Municipal Land Use Law requires that municipalities advertise the SRPR in local newspapers, but there is no explicit requirement for public outreach and engagement. Without set criteria, the 40 SRPRs display a range of public participation effort. Some municipalities only offered an opportunity for public comment while others have developed steering committees, visioning sessions, surveys and other mechanisms for engaging local citizens in the planning process.

It is important to note that the SRPR is only one of many municipal adaptation efforts in New Jersey. As a single report type, with consistencies in form and content, the SRPR serves as a document that can be compared between municipalities to potentially reveal the intentions, capacity, values and concerns of the communities that created them.

4.4 Methodology

The following analysis compares the extent and efficacy of civic engagement processes for the 40 SRPRs completed between 2013 and 2016, and attempts to identify the qualities of the communities that actively integrated community participation in the adaptation process. This analysis attempts to identify common characteristics of the communities that chose to integrate civic engagement in the adaptation planning process. For each municipality that drafted a SRPR, this analysis includes select census data for the community as well as data regarding historic properties. This study applies data sourced from the years 2010 and 2008-2012 to reflect the conditions of the communities at the time of Hurricane Sandy and to avoid margin of error in many of the data points.

The data in this study that is sourced from the Decennial Census does not have a margin of error, providing a more accurate representation of each municipality.¹⁷⁶

Data for the 40 municipalities was sourced from the 2010 Decennial Census and the 2008-2012 American Community Survey 5-year Estimates.¹⁷⁷ Demographic data for this analysis was sourced from the United States Census Bureau. Data for Population, Median Age, Race, Hispanic Population, Housing units, and Seasonal Housing is sourced from the 2010 United States Decennial Census conducted by the U.S. Census Bureau. Data for Median Income, Educational Attainment, and Percent of People Below Poverty is sourced from the 2008-2012 American Community Survey 5-year Estimates by the U.S. Census Bureau. Other information regarding the municipality was sourced directly from the Strategic Recovery Planning Reports when available. Data for Historic Sites and Historic Districts was sourced from a February 2017 “New Jersey and National Registers of Historic Places” statewide survey published by the New Jersey Department of Environmental Protection Historic Preservation Office.

To identify and compare levels of racial diversity among municipalities, this analysis applies a racial diversity index. The racial diversity index (D) measures evenness of the distribution of a certain group within a larger population, using the formula:

$$D = 1 - ((x)^2 + (y)^2)$$

Where x and y are the percentages of the different groups that are being compared and D is the racial diversity index. This analysis employs information about race as the individual groups being compared. Those municipalities with more even racial distribution are deemed as more diverse. The racial diversity index (D) is measured on a scale from 0 and 1, with 1 the most evenly distributed and

¹⁷⁶ Studies show that the demographics of coastal communities in New Jersey have been transforming since Hurricane Sandy, as rising flood insurance rates and higher costs of repair lead longtime homeowners to sell their properties to those who can afford the risk. The next U.S. Decennial Census will allow for a closer study of this displacement. (Stephen Stirling, “The 20 fastest-shrinking towns in New Jersey”, NJ Advance Media for NJ.com, accessed March 2017, http://www.nj.com/news/index.ssf/2017/03/new_jerseys_20_fastest_shrinking_towns.html)

¹⁷⁷ American Community Survey, 5-year estimates 2008-2012; U.S. Census Bureau Decennial Census 2010.

therefore the most racially diverse, and 0 being the least evenly distributed and therefore the least diverse. This analysis includes data pertaining to single races identified in the U.S. Decennial Census for 2010, measuring the percentage of the population who identifies as White, African American, Asian and Other, the latter classification representing other racial groups as well as those who identify as multiple races. The percentage of each population who identifies as Hispanic is not represented in this metric. The racial diversity index does not serve as a comprehensive study on racial distribution in the municipalities, but serves instead as an approximation for comparison between communities.

4.5 Statewide Civic Engagement and Variables Analysis

The 40 New Jersey municipalities who performed SRPRs represent the diverse range of community types that inhabit the New Jersey Coast, with varying resources and populations. These communities vary in size, wealth, poverty rates, housing type, age and diversity. Furthermore, each municipal SRPR reveals a particular approach to the adaptation planning process. The following analysis attempts to identify how the various communities on the New Jersey coast have integrated civic engagement in their coastal adaptation process, and whether certain community characteristics can serve as indicators for the local level of civic engagement.

Studies have found correlations between a community's size and fiscal health and its capacity for adaptation planning.¹⁷⁸ Indeed, lack of financial and human resources is “one of the most cited

¹⁷⁸ Linda Shi, Chu, Eric, Debats, Jessica. “Explaining Progress in Climate Adaptation Planning Across 156 U.S. Municipalities,” *Journal of the American Planning Association* 81:3(2015): 191-202; Hamin, E. M., Gurran, N., & Emlinger, A. M. “Barriers to municipal climate adaptation: Examples from coastal Massachusetts’ smaller cities and towns.” *Journal of the American Planning Association* 80:2 (2014), 110–122; R.M. Krause. “Policy innovation, intergovernmental relations, and the adoption of climate protection initiatives by U.S. cities,” *Journal of Urban Affairs* 33:1 (2010): 45–60.

barriers to adaptation”.¹⁷⁹ Studies focusing on local climate adaptation planning have identified four leading barriers to successful adaptation efforts: limited fiscal and staffing resources; local leadership that is unsupportive of climate adaptation; the inability to obtain, interpret or communicate information about climate change; and a lack of resources and regulations at the state and federal level that could motivate local planning.¹⁸⁰

There are indications that the four barriers to adaptation are also impacting the delivery of effective and inclusive civic engagement in coastal adaptation planning. Studies find that communities fail to designate adequate resources towards public outreach.¹⁸¹ Leaders in governments, nonprofits and the private sector also lack training in effective engagement methods.¹⁸² Furthermore, surveys show that planners and leaders of outreach methods are not trained in how to communicate to the public information regarding climate change, risk and adaptation strategies.¹⁸³ It is clear that civic engagement in climate adaptation planning is influenced by local political, technical, and financial conditions.

The following section analyzes seven variables pertaining to demographic, social and economic conditions in the 40 coastal communities and their relationship to local levels of civic engagement. The 40 municipalities are located in Atlantic, Bergen, Cape May, Cumberland, Middlesex, Monmouth, and Ocean Counties. The municipalities vary in land area, from the community of Sea Bright covering only 0.5 square miles to Hamilton Township at 113 square miles. The smallest population is in Deal Borough, where 750 people are recorded to live, and the largest community is in Jersey City where 254,411 residents are recorded. Median income ranges from approximately \$40,000 in communities like Pleasantville City, Berkeley Township and Perth Amboy, to \$141,000 in Rumson Borough and \$108,000 in Bay Head Borough. According to the Diversity

¹⁷⁹ Shi, Chu, Debats, 2015.

¹⁸⁰ *Ibid.*

¹⁸¹ Moser and Pike, 2015.

¹⁸² *Ibid.*

¹⁸³ *Ibid.*

Index, the least diverse municipalities are Bay Head, Lavalette Borough, Monmouth Beach Borough and Rumson Borough, each with a score of less than 0.055. The most diverse municipalities, according to the index, are Perth Amboy, Edison Township, Pleasantville City, and Jersey City. Comparing housing in the municipalities, in 7 communities seasonal housing units comprise 50% or more of the total housing units. These communities include Deal Borough, Seaside Park Borough and Lavellette Borough.

4.5.1 Civic Engagement

The integration of civic engagement into the SRPR process has been analyzed for the 40 participating municipalities. To compare the level of civic engagement between communities, a Civic Engagement Metric was created for this analysis. The SRPR served as the only document consulted for the evaluation of each municipality's Civic Engagement Metric. The rating, ranging from 0 to 4, is based on a qualitative assessment of the following four criteria. Each of the SRPR documents was assessed for their inclusion of the four criteria, and the quality of the content for these criteria:

- Number of civic engagement events
- Level of public outreach (See IAP2 Spectrum)
- Subject of discussion at outreach events
- Integration of public comment into report

For those SRPR documents that did not include any mention of community outreach, the municipality receives a level 0 civic engagement rating. This rating of 0, or minimal outreach, is applied to 2 municipalities in the study.

A level 1 civic engagement rating is attributed to those municipalities that have included a recommendation for public outreach, or that have posted a draft of the SRPR for public comment. Some SRPRs write that public comment should be permitted when the document is presented to the planning board. This rating of 1, or minimal outreach, is applied to 15 municipalities.

A level 2 civic engagement rating is the next degree of community participation, attributed to those municipalities that have hosted public meetings and workshops. For these municipalities, community engagement was not as focused on long-term resilience efforts, and the results and recommendations made in these public meetings were not well integrated into the SRPR document. This rating of 2, or moderate outreach, is identified in 12 municipalities.

A level 3 civic engagement rating is attributed to those municipalities that have made more substantial efforts to establish a platform for public dialogue in the adaptation planning process, and who have included content regarding long-term efforts towards adaptation and hazard mitigation. Some of these municipalities have established a steering committee composed of residents, business owners, and town officials, while others provided questionnaires, visioning exercises, as well as town meetings and workshops. This rating of 3, or substantial outreach, applies to 8 municipalities.

The highest rating of level 4 civic engagement rating is for communities where public meetings and outreach have been held as in rating 3, and the recommendations, concerns and targets addressed in these meetings have been integrated into the SRPR document's recommendations. This rating of 4, or high outreach, applies to 3 municipalities.

Of the 40 plans surveyed, 42% (17) of municipalities did not engage with communities about adaptation planning, beyond allowing for public comment. Among these communities, 9 address the need to include civic engagement in future planning. Many include this recommendation as a means to acquire points in the Community Rating Survey. Twenty-three (58%) communities did integrate public outreach into the planning process, with public meetings, workshops, surveys and volunteer steering committees. For those communities who did employ public outreach, approximately half did not emphasize long-term planning in their informational meetings and outreach strategies. The remaining half included long-term strategies and public engagement. In the highest-rated municipalities, representing 10% of the communities in this analysis, the public was included in

discussions regarding adaptation strategies, and these recommendations informed the recommendations of the report.

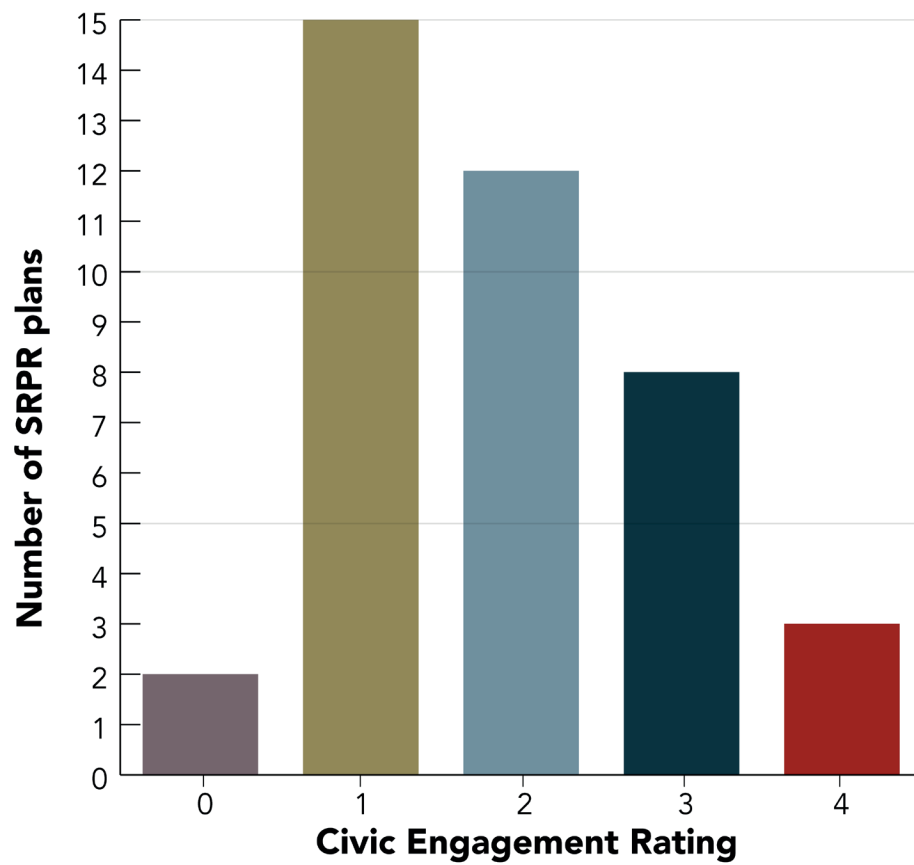


Fig.7 Quantity of Plans Per Civic Engagement Rating The largest proportion of SRPR plans receive a level 1 civic engagement rating, and the quantity of plans diminishes as the civic engagement rating increases.

4.5.2 Population

In research studies, population size has been linked to greater adaptation planning capacity.¹⁸⁴ It is widely observed that smaller municipalities lack staffing and fiscal resources required for adaptation planning.¹⁸⁵ The SRPR analysis reveals that larger communities are not practicing more civic engagement. Despite the increase of financial and staffing resources that may exist in larger communities, the analysis shows that larger communities are not doing more to engage citizens in climate adaptation. There appears to be no relationship between the size of a community and the extent and efficacy of its community engagement.

Of the three communities with the highest level of civic engagement, two have fewer than 7,000 people (Margate and Sea Bright). Perth Amboy is the outlier, with a population of over 50,000. In Sea Bright, a community of 1,412 people, there is no planning staff and the mayor is a volunteer position. Of the eight communities with a level 3 civic engagement rating, all but one have fewer than 26,000 people. In contrast, the categories of level 1 and 2 civic engagement rating include more large communities.

¹⁸⁴ Shi, Chu, Debats, 2015.

¹⁸⁵ Hamin et al., 2014

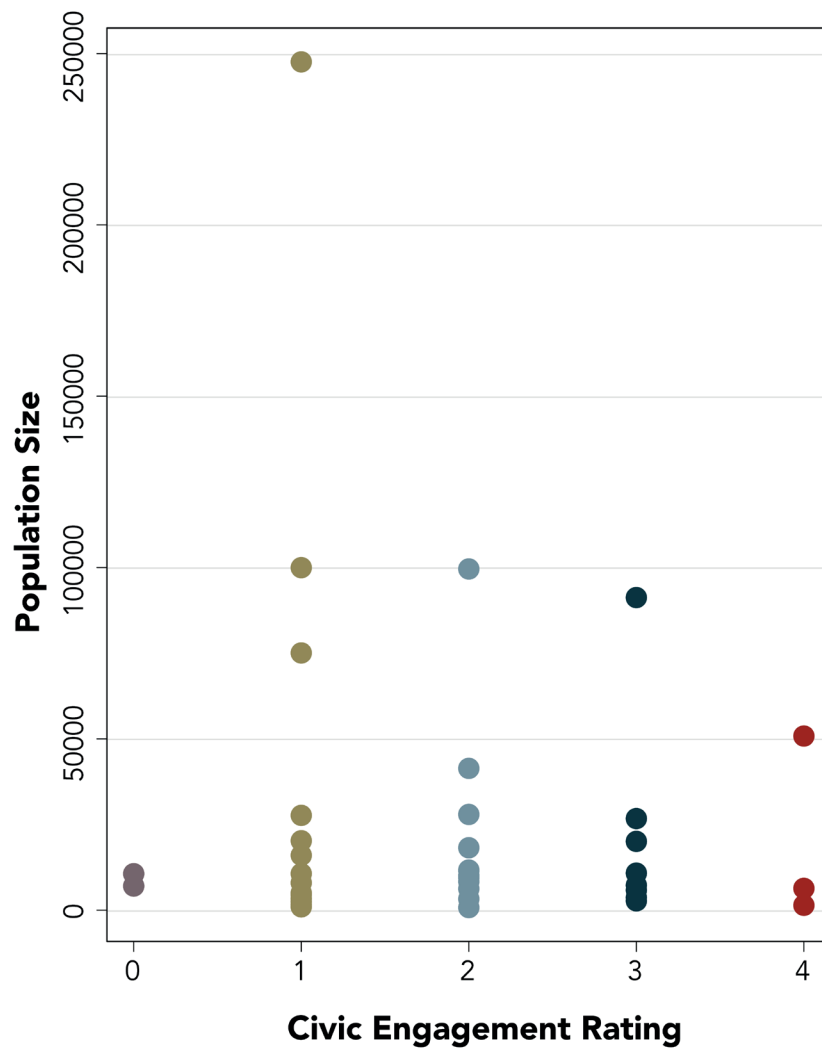


Fig.8 Population Size and Civic Engagement A high level of civic engagement does not correlate with population size, indicating that larger communities are not more likely to engage with the public in the adaptation planning process. Perth Amboy and Toms River have high civic engagement ratings and large populations. Jersey City is the largest community in the study (Data: 2010 U.S. Census Bureau).

4.5.2 Median Household Income

Previous studies and analyses have reported that higher income levels correlate with greater levels of civic engagement, environmental concern, and involvement in climate planning.¹⁸⁶ However, this analysis attributes no correspondence between higher median household income and higher levels of civic engagement in the 40 SRPRs.

The median household income in New Jersey in 2012 is \$71,637. Two of the wealthiest communities in the study show a 0 civic engagement rating (Little Ferry and Rumson). Of the ten municipalities with the highest median income, only two municipalities have substantial and high public engagement of level 3 or 4 civic engagement ratings (Sea Bright and Oceanport). Remarkably, of the ten communities with the lowest median income, four received a level 3 or 4 civic engagement rating (Perth Amboy, Moonachie, Somers Point and Keyport). All but three of the communities with 3 or 4 civic engagement ratings have median household incomes below the State median household income.

¹⁸⁶ Rothenberg, L. S. (2002) *Environmental Choices: Policy Responses to Green Demands*. Washington, DC: CQ Press; Rachel M. Krause. "Political Decision-making and the Local Provision of Public Goods: The Case of Municipal Climate Protection in the US," *Urban Studies* 49:11 (2012): 2399-2417.

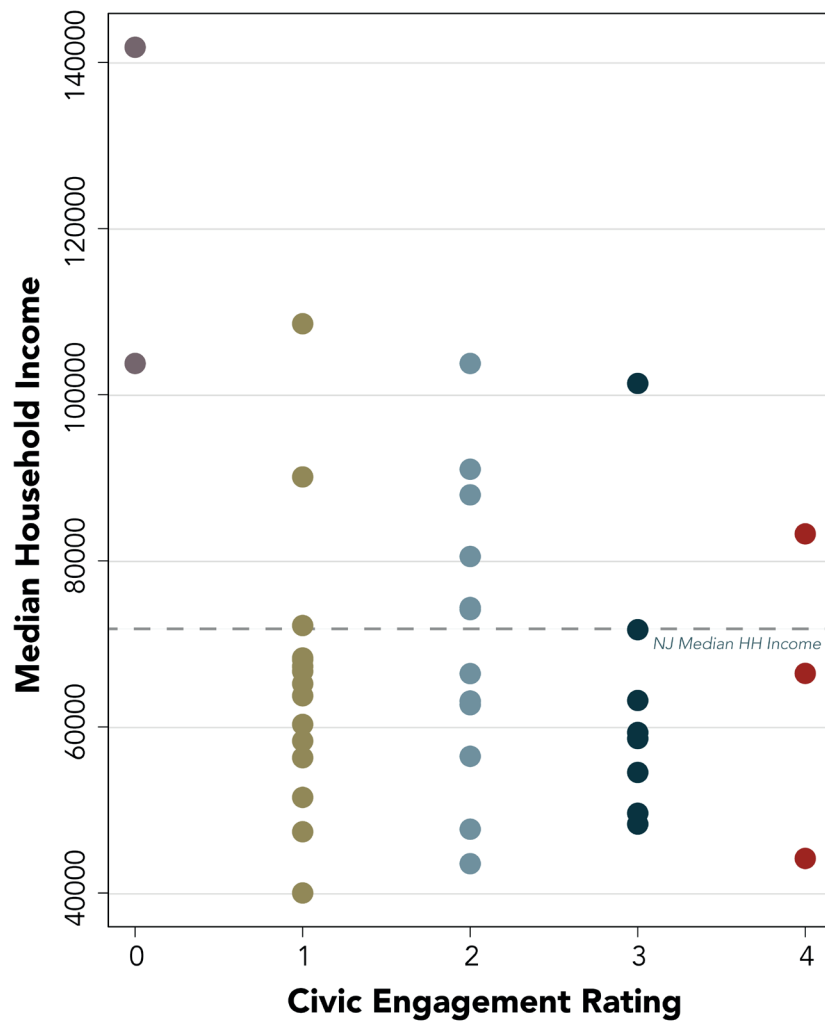


Fig.9 Median Household Income and Civic Engagement Some of the communities with the highest median incomes are not engaging the public in the adaptation planning process. Little Ferry and Rumson have the lowest civic engagement rating and some of the highest median incomes (Data: 2008-2012 American Community Survey 5-year Estimates).

4.5.3 Poverty Rate

Communities with poor fiscal health have been found to lack adaptation planning capacity.¹⁸⁷ High poverty rates may therefore indicate less civic outreach. More vulnerable populations may also not have the time or resources to attend a public meeting, thereby limiting channels of engagement and outreach. In the analysis, two of the poorest communities received a level 3 or 4 civic engagement rating (South Toms River and Perth Amboy). Higher poverty rates tend to indicate higher civic engagement ratings. There is no statistical trend, but the dataset shows a positive correlation, although minimal ($R^2 = 0.02$).

Fourteen municipalities have a higher poverty rate than the poverty rate of New Jersey, which in 2012 was 9.9%. The three communities with level 4 civic engagement ratings have poverty rates of 9.8%, 21.2%, and 11.4% (Margate, Perth Amboy and Sea Bright, respectively). Many communities with low poverty rates received level 0 and 1 civic engagement ratings, as 64% of low civic engagement communities have poverty rates lower than the State.

Adaptation planning practice recognizes the importance of equitable climate planning.¹⁸⁸ Economically and socially disadvantaged populations are more vulnerable to the risks of climate change, often relying on livelihoods that are more vulnerable to extreme events, tending to live in housing that is located in more flood-prone areas and often lacking the transportation to get out of harm's way or the economic and political clout to influence disaster response and assistance.¹⁸⁹ Advocacy groups for equitable climate policy promote the planning practices that actively engage these vulnerable populations. Those municipalities with higher poverty rates may be receiving additional support from outside actors, such as nonprofit organizations and government agencies.

¹⁸⁷ Shi, Chu, Debats, 2015.

¹⁸⁸ Georgetown Climate Central. Opportunities for Equitable Adaptation in Cities; United Nations ADP

¹⁸⁹ Cleetus et. al., 2015.

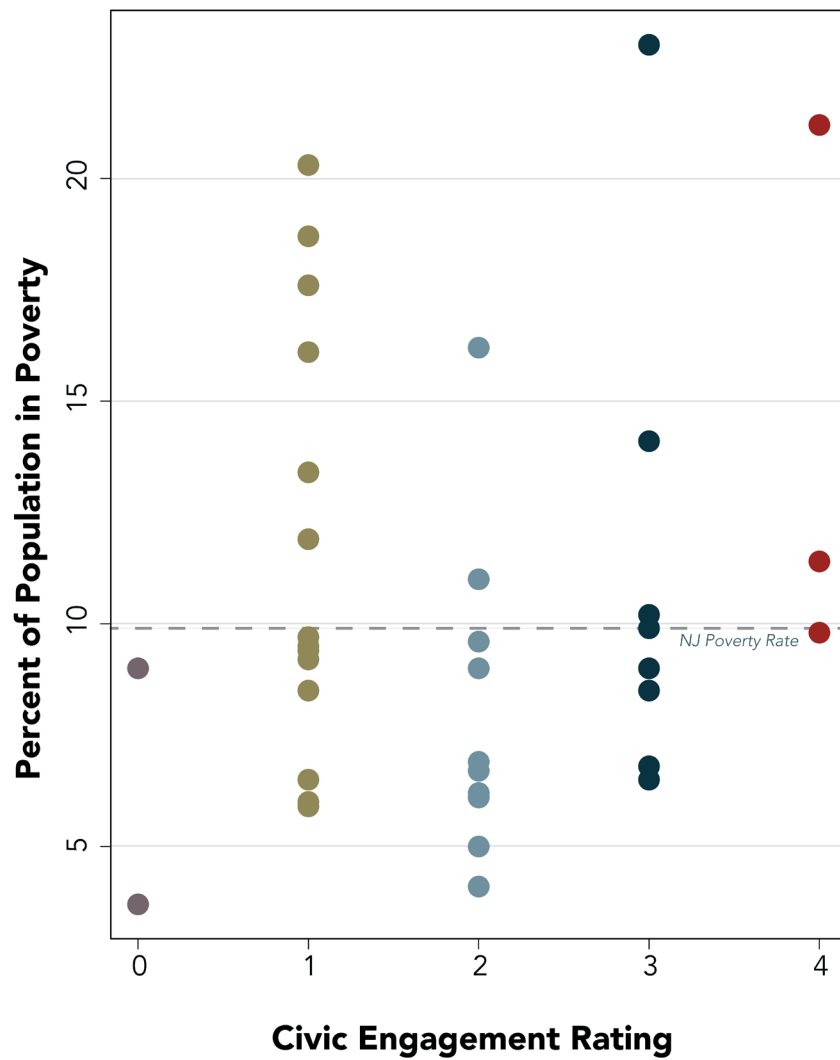


Fig.10 Poverty Rate and Civic Engagement Many communities with high poverty rates are not engaging the public in the adaptation planning process. Perth Amboy and South Toms River are the two communities with a high civic engagement rating and high poverty (Data: 2008-2012 American Community Survey 5-year Estimates).

4.5.4 Seasonal Housing

Seven communities in the study are dominated by seasonal housing. The owners of seasonal housing may potentially not be as invested in the resilience and recovery of a part-time home, although this has not been proven. A seasonal community may also lack the community cohesion and devotion sustained by year-round residents. In many coastal communities, families have been living there for generations and their sense of identity is deeply connected to their location near the coast.¹⁹⁰ Seasonal housing welcomes a population of renters and weekenders, who come to enjoy the seaside but may not actively engage with its preservation.

The summer communities in this analysis are those towns with over 50% of total housing units comprised of seasonal housing units. Out of the seven summer communities in the study, Margate is the only one that included a substantial or high civic engagement rating for the SRPR. Three communities integrated minimal outreach, including Seaside Park and Lavellette, which are comprised of more than 60% seasonal housing. Those communities with a large percentage of seasonal housing are less likely to include significant public outreach for the SRPR.

¹⁹⁰ Interview, New Jersey Future Planning Manager, 3/30/2017.

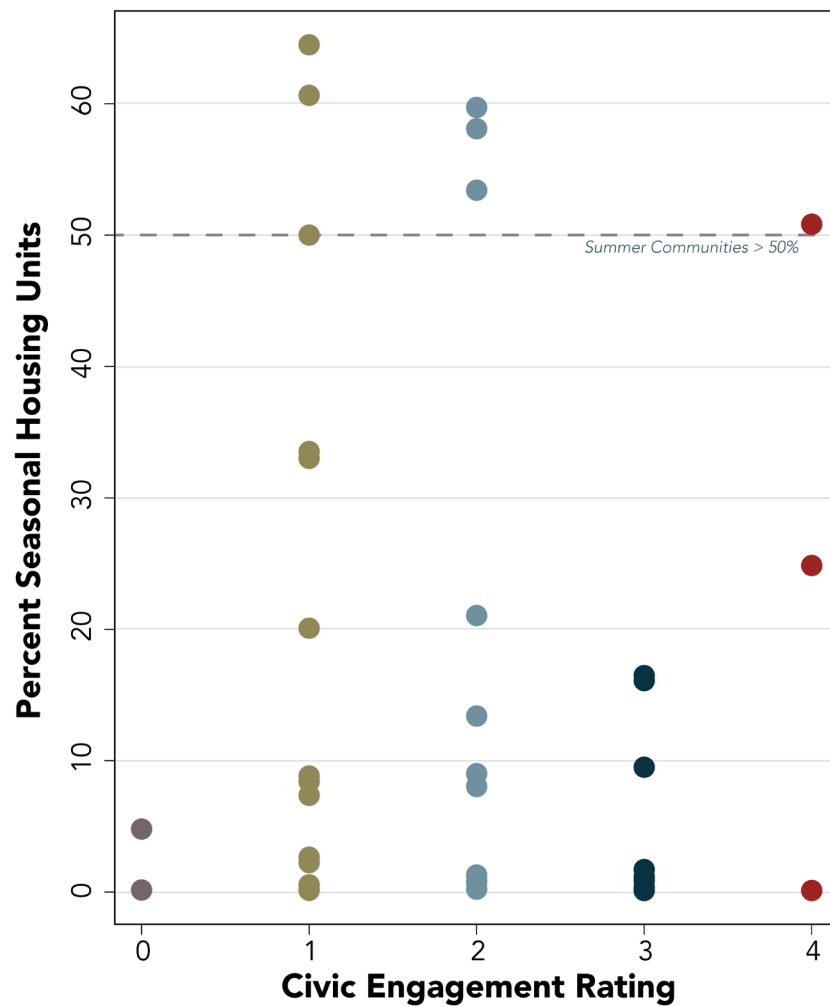


Fig.11 Seasonal Communities and Civic Engagement The large majority of summer communities are not engaging the public in the adaptation planning process. Margate is the only community with a high civic engagement rating that is also a seasonal community (Data: 2010 U.S. Census Bureau).

4.5.5 Median Age

The median age of a population may indicate the level of civic engagement for adaptation planning, potentially influencing planning capacity or communication methods. In the analysis, older communities do not show high levels of civic engagement.

The median age of residents in New Jersey is 39 years old. Eleven municipalities in the analysis have populations younger than the New Jersey median, with Perth Amboy having the youngest median age of 32.4 years. Out of the 11 young municipalities, three communities have a level 3 or 4 civic engagement rating. Out of the ten oldest communities, only one municipality has a level 3 or 4 civic engagement rating (Margate).

As with economically disadvantaged groups, the communities with higher proportions of elderly residents are more vulnerable to extreme events.¹⁹¹ These vulnerable populations should be considered in the coastal adaptation process.

¹⁹¹ Cleetus et. al., 2015.

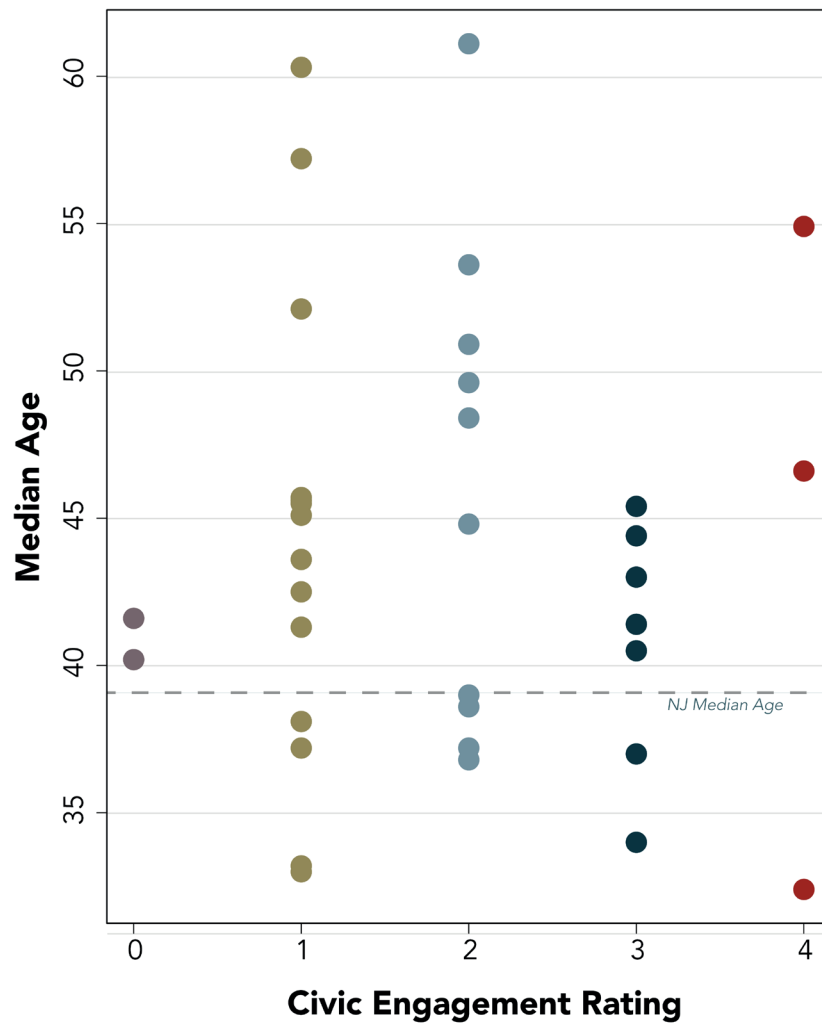


Fig.12 Median Age and Civic Engagement Older communities are not as likely to engage with the public in the adaptation planning process (Data: 2010 U.S. Census Bureau).

4.5.6 Racial Diversity

For communities that are more racially diverse, civic engagement practices must be tailored to target and engage various perspectives, values and cultures. The analysis shows that communities with high diversity receive a low civic engagement rating.

To indicate racial diversity, this analysis measures the distribution of races within each municipality. The most diverse communities are Jersey City, Pleasantville City, Edison Township and Perth Amboy. Of the top ten most diverse municipalities in this analysis, two have a level 3 or 4 civic engagement rating (Hamilton and Perth Amboy) and five have a level 0 or 1 civic engagement rating. Similarly, of the ten least diverse communities in the municipality, only two have a level 3 or 4 civic engagement rating community outreach (Sea Bright and Margate) and five receive a level 0 or 1 civic engagement rating.

Communities that are more diverse require engagement practices that respond to and include to a plurality of voices, concerns, and values.¹⁹² Despite the necessary role that civic engagement plays in bringing together disparate perspectives and considering the many social values of a community, however, a higher level of civic engagement is not performed more in highly diverse communities.

¹⁹² *Ibid.*

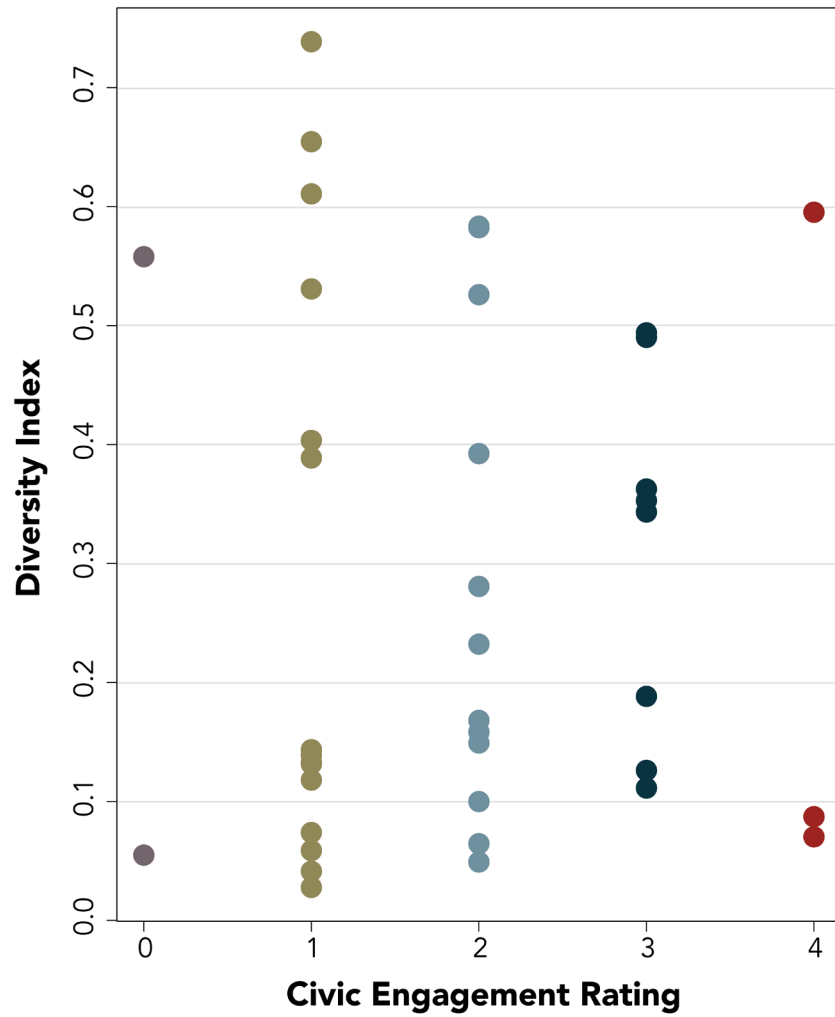


Fig.13 Diversity and Civic Engagement Many of the high-diversity communities are not engaging the public in the adaptation planning process. Edison, Pleasantville City, and Jersey City have the highest Diversity index score and a low civic engagement rating (Data: 2010 U.S. Census Bureau).

4.5.7 Educational Attainment

Education has been found to be positively correlated with greater environmental concern and civic engagement.¹⁹³ In this analysis, however, educational attainment is not shown to correspond with higher level of civic engagement.

In each of the five categories of civic engagement, educational attainment for high school and college varies widely. The percentages of the population over 25 years old with a high school diploma, and over 25 years old with a Bachelor's degree, range widely in the coastal communities in the study.

¹⁹³ Rothenberg, L. S. *Environmental Choices: Policy Responses to Green Demands*. Washington, DC: CQ Press, 2002; S. Verba, K.L. Schlozman, H. Brady and N.H. Nie. "Race, ethnicity and political resources: participation in the United States," *British Journal of Political Science*. 23 (1993): 453–497; Krause, 2012.

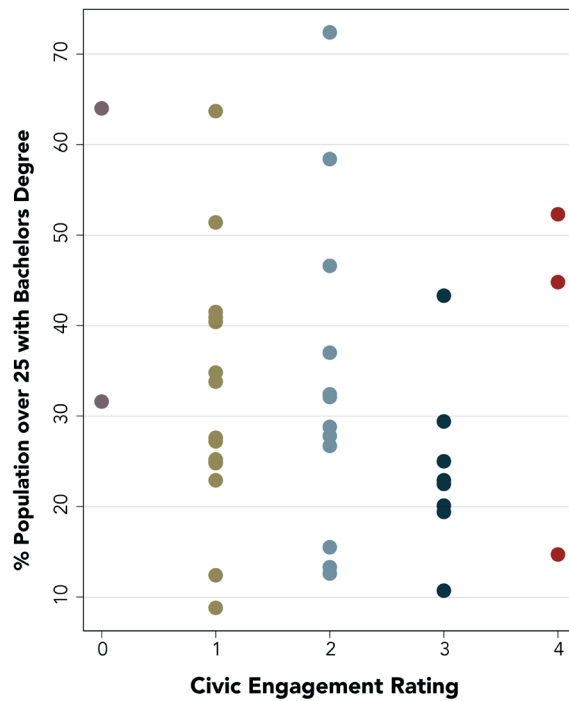
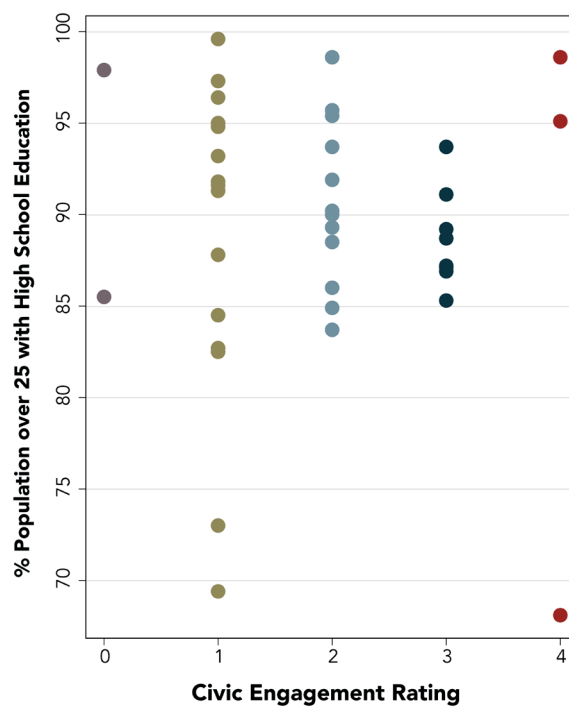


Fig.14 Educational Attainment and Civic Engagement High School and College Educational attainment is not shown to indicate civic engagement level. (Data: 2008-2012 American Community Survey 5-year Estimates).

4.5.8 Discussion of Results

Research has identified multiple barriers to adaptation planning, including: a lack of financial and human resources; unsupportive local leadership; an inability to communicate, collect and interpret data; and a deficit of state and federal policies to provide resources and enforce progress.¹⁹⁴ Furthermore, studies show that financial resources, staffing resources, fiscal health, and high educational attainment all strengthen planning capacity.¹⁹⁵ These studies paint a profile of the affluent, populous, and educated community as the most civically engaged. The findings from the featured SRPR analysis support some of these studies, while other results indicate significant deviations.

In the 40 SRPR plans analyzed, higher planning capacity did not always correspond with civic engagement. In previous studies, planning capacity is reportedly impacted by a community's size and fiscal health, but the SRPR analysis finds that population size and median income are not indicators for higher levels of civic engagement. The SRPR analysis included municipalities ranging in size from under 1000 to over 140,000 residents, it is remarkable to note that greater population size is not an indicator for higher levels of civic engagement. Municipalities with higher median income also did not reveal higher levels of civic engagement. Indeed, the only two municipalities that received a zero rating for public outreach are among the top ten highest median income communities in the study. Furthermore, the two communities with the highest poverty rates had some of the highest civic engagement. Are there more barriers to civic engagement for communities with affluence? Are communities with more vulnerable populations receiving more planning support from government agencies and nonprofit organizations?

According to the results of the SRPR analysis, seasonal communities appear less likely to integrate civic engagement in the coastal planning process. It is possible that seasonal communities lack cohesion and commitment from community members, because residents do not live there year-

¹⁹⁴ Shi, Chu, Debats, 2015.

¹⁹⁵ Rothenberg, 2002; Verba, Schlozman, Brady, Nie, 2015; Moser and Pike, 2015; Shi, Chu, Debats, 2015.

round. Seasonal communities may also have economies that rely heavily on their connection to the coast, and discussions about future risk and adaptive actions may be perceived as a threat to local businesses and livelihoods. The limited results from this analysis should be further explored, to determine if there is a relationship between seasonal communities and public engagement.

In the SRPR analysis, all but two of the municipalities outsourced adaptation planning to consultants and nonprofits. As many as 80% of the SRPRs were authored by private consultants. It is questionable whether these external consultants have an interest in providing an outreach process that is not required. For the firm that developed the largest quantity of SRPRs, the average civic engagement metric was only a level 1.6 civic engagement rating. More promising, however, is the range of civic engagement practices among consultancy groups, with some private planning practices leading adaptation planning processes that received much higher civic engagement ratings.

The SRPR analysis is limited by a small sample size and the methods of analysis. Of the 130 municipalities impacted by Hurricane Sandy, this analysis only addresses 40 towns and cities. The SRPR document is also not necessarily representative of a municipality's total approach to civic engagement in adaptation planning. Although all of the independent variables for this analysis were sourced from quantitative data, the civic engagement variable is based on a qualitative assessment by the author. The civic engagement metric also features only four categorical values, thereby limiting its potential for a robust analysis.

In the 40 municipalities analyzed in the SRPR analysis, only 27.5% received a level 3 or 4 civic engagement rating. From this analysis, it is apparent that there is a deficit in civic engagement throughout New Jersey, and a deliberate choice by many public leaders to shield the planning process from communities. The motivations behind these decisions are not always apparent. The three communities that reveal the highest civic engagement ratings demonstrate civic leaders that are actively working to include local stakeholders in the adaptation process and integrate the public's vision and recommendations into adaptive strategies.

4.6 Communities in Focus: Planning Outcomes of Civic Engagement

Three communities included a high level of outreach in the SRPR process, actively pursuing civic engagement strategies and including the public's recommendations, vision and concerns into the report. Featuring recommendations developed by the community, these plans are more holistic, nuanced and place-based. Civic engagement reveals areas within the community that are valued for their social and economic contributions. The recommendations of these reports are also more diverse because they are so place-specific.

The three communities that integrated advanced community engagement in the plan are dissimilar from one another. In Margate, half of the housing is seasonal, the median age is 55 years old, and over 95% of residents are White. Sea Bright is one of the smallest communities, comprised of over 95% white residents and with a median income of \$83,000. Perth Amboy is a large and diverse city with a 21% poverty rate.

4.6.1 City of Margate, Atlantic County

To connect with its citizens, the City of Margate established a volunteer steering committee and a series of public meetings targeting those who live and work in Margate. The volunteer steering committee developed a set of “post Sandy recommendations” that was ultimately incorporated into the SRPR document. One recommendation was the inclusion of protective adaptations for the bay side of the community, including, but not limited to an inventory and assessment of existing bulkheads, as well as a higher bulkhead requirement for new development or improved properties.

The recommendations of the Margate SRPR also propose protections and accommodations for the Amherst Avenue Business District, an area with bars, restaurants, housing and marinas that has long been the target of revitalization efforts in the city and is presently an attraction for new

housing, commercial reinvestment and a waterfront park.¹⁹⁶ The plan recommends a new bulkhead on the avenue, with a new boardwalk on the waterfront for pedestrian access.

The third area targeted by improvements is the beachfront, an area badly damaged by Hurricane Sandy. Planning initiatives are recommended for this area, including a new master plan, zoning revisions, a sustainability plan, a revised capital improvements plan, and an economic and community development plan for business districts. Infrastructure recommendations in Margate include the rehabilitation of the City Hall, improvements to bulkheads, as well as improvements to the downtown business district to attract investments and build economic resilience.

The adaptation strategies proposed for Margate are place-specific and targeted, collectively addressing issues of long-term resilience. The SRPR is noteworthy in that it fully integrates the Steering Committee's recommendations into the report. Ultimately, Margate's SRPR plan is a holistic approach that recognizes areas with both cultural and economic contributions.

4.6.2 Sea Bright, Monmouth County

The community of Sea Bright in Monmouth County drafted its SRPR based largely on the recommendations of Sea Bright 2020, an earlier adopted long-term resilience plan produced through a community-driven process. Sea Bright 2020 was adopted in 2013.

Sea Bright 2020 was developed by a Steering Committee to identify “key projects and strategies intended to revitalize the Borough with a focus on sustainability and resilience”.¹⁹⁷ The Committee held a series of public workshops and presented their identified projects to the public. Upon presentation to the elected officials, the plan was adopted by the municipality. The SRPR for Sea Bright served as a means for implementing some of the recommendations of Sea Bright 2020. For the SRPR planning process itself, public meetings were held to include some outreach, but the

¹⁹⁶ City of Margate Strategic Recovery Planning Report.

¹⁹⁷ Sea Breeze Strategic Recovery Planning Report May 2014, Updated June 2015.

SRPR does recommend more advanced communication in the future, targeting internal dialogue within the Borough government and external outreach to constituencies throughout the community.¹⁹⁸

The Sea Bright 2020 Recovery Plan was developed to identify and address recovery issues following Hurricane Sandy, and create strategies to respond to future disasters. The Recovery Plan included “a three-month intensive effort on the part of residents, businesses and local officials of the Borough of Sea Bright”.¹⁹⁹ Through community workshops, participants identified recovery issues and developed projects, in order to ensure “that the whole community’s core values and vision for the future are reflected in the plan to guide on-going recovery activities.”²⁰⁰ Three community meetings were held for the public to raise their concerns and suggestions and respond to project proposals developed by a Steering Committee of volunteer residents and stakeholders. This group of 50 volunteers met weekly for nine weeks to address the identified issues and develop potential solutions to present to the public. The Sea Bright 2020 Recovery Plan includes targeted recommendations that highlight community facilities, economic development, housing and neighborhoods, and waterfront restoration. The plan is place-based and nuanced, reflecting deep consideration of the values and vision of Sea Bright community members.

4.6.3 Perth Amboy, Middlesex County

Similar to Sea Bright, Perth Amboy had already established a steering committee of local residents and business leaders prior to the SRPR process. This Waterfront Recovery and Redevelopment Advisory Committee was established in January 2013 with a “mission is to study and prioritize projects needed to stabilize, replace, enhance and restore facilities and infrastructure

¹⁹⁸ *Ibid.*

¹⁹⁹ *Sea Bright 2020 Recovery Plan* 2013.

²⁰⁰ *Ibid.*

destroyed by Sandy.”²⁰¹ The city’s SRPR was produced with the assistance this Committee, as well as a steering committee and an open house.

The reports and recommendations from the Waterfront Recovery and Redevelopment Advisory Committee were incorporated into the SRPR as the list of primary projects, categorized as “Hazard Mitigation”, “Preparedness”, and “Enhancements”. Hazard Mitigation includes repairs and construction at the fishing pier and marina, wave wall in Bayview Park and Front Street, pump stations on Second Street, and the location of areas for the installation of dune grass and dune fencing. Preparedness projects include a public space near the water, zoning adjustments, and the assessment for the potential of an offshore breakwater to protect the harbor. Enhancements include decorative lighting, the reconstruction of the pedestrian promenade, and new historic maritime wayside exhibits.

The recommendations in the Perth Amboy report reflect an in-depth approach to the planning process. The high level of community engagement in this process was a contributing factor to a detailed and diverse set of recommendations. Cultural heritage is included, with recommendations for enhancing the waterfront for pedestrians, and improving drainage and hard protections near the marina and harbor.

4.7 Barriers and Opportunities to Community Participation

Despite widespread acknowledgement that adaptation planning is improved through civic engagement, many municipalities do not include the public in conversations concerning the long-term resilience of their community. To supplement the statewide SRPR analysis, interviews were conducted with state and regional planning practitioners, as well as local leaders, including The Division of Coastal and Land Use Planning at the New Jersey Department of Environmental

²⁰¹ Perth Amboy Strategic Recovery Planning Report

Protection, New Jersey Future, and the Jacques Cousteau National Estuarine Research Reserve. Each of these organizations has experience working with coastal communities in New Jersey. The government agency and two nonprofit groups have developed an understanding of the challenges to integrating community participation in the adaptation planning process. Staff at each office provided insight into the issues influencing public participation in New Jersey communities and possible solutions. Two broad themes and observations emerged from these conversations, pertaining to the role of local governance and the willingness of residents to participate in adaptive planning. The observations of practitioners indicate that local leaders are hesitant to engage the public in adaptation planning, but that stakeholders are often interested to know more and pursue solutions.

4.7.1 Local officials are hesitant to talk to communities

Local elected community leaders often determine the existence and level of community participation in the adaptation planning process, and there is a remarkably wide range of responses from community leaders when it comes to integrating public participation in coastal resilience efforts. Although some leaders believe in the importance of involving their communities early to obtain support during a difficult decision-making process, many civic leaders are hesitant to open up the discussion.

Some elected officials are unwilling to open the resilience conversation to the public because they fear a loss in their tax ratable base. As property taxes are a guiding force in many land use decisions for small municipalities, a loss in the tax ratable base can be paralyzing. Local officials are hesitant to hold conversations with their community members because the highest property values are often on the coast: “Elected officials don’t want residents to believe there is no future on the coastal edges.”²⁰² One of the few qualifying factors for participation in the PSPAG is a minimum tax

²⁰² New Jersey Future Planning Manager interview with author 3/30/17.

ratable base loss of \$1 million or 1% of the total, indicating the significant role of local property taxes in determining local planning decisions.

Other elected officials believe that discussions concerning sea level rise projections and increased storms could incite fear. In one community where a nonprofit offered assistance, it took four months to convince public officials to hold a meeting with the public.²⁰³ For families who have lived in a town for generations, the possibility of losing a home, a street, and community to sea level rise and storms could incite fear or stress. Local leaders may not want to raise these issues because they are afraid of not being re-elected.²⁰⁴ Still other leaders of communities do not believe in climate change.²⁰⁵

Before raising an issue with the public, some community leaders believe that they need to generate possible solutions internally.²⁰⁶ Leaders are interested in holding public discussions only when strategies and planning efforts have already been adequately explored and developed. This is apparent in many of the SRPR plans, where public meetings are held to discuss the SRPR but not inform the content of the document.

4.7.2 Residents Want to Engage

The residents of vulnerable communities are often more willing to hold conversations and meetings than the elected officials. In towns that experience flooding and natural disaster more frequently, the residents are more vocal and involved. According to a staff member at a nonprofit, residents attending public meetings in these communities are often eager to learn more and attend

²⁰³ *Ibid.*

²⁰⁴ Division of Coastal & Land Use Planning, NJ Department of Environmental Protection, Supervisor, interview with author 3/24/17

²⁰⁵ *Ibid.*

²⁰⁶ *Ibid.*

future events.²⁰⁷ In the coastal community of Oceanport, triple high tides or a Nor'easter can cause flooding to more than a dozen streets in the town, slowing traffic and blocking the route to the regional high school: "we are acutely aware of how water impacts our community".²⁰⁸ For these communities, climate change is a tangible issue.

The municipalities with a greater sense of loss from Hurricane Sandy may also be more likely to include public outreach in the SRPR. Monmouth Beach, Point Pleasant Beach, Toms River, and Sea Bright incurred substantial damages, with a significant loss in their tax ratable base. These are among the communities with the highest civic engagement ratings. Monmouth Beach lost \$52 million in assessed value, Point Pleasant Beach lost \$99 million in assessed value, Toms River lost \$2 billion in assessed value and Sea Bright lost \$69 million in assessed value. Toms River and Sea Bright were two of the hardest hit communities, and they also included substantial civic engagement in the SRPR process.

²⁰⁷ New Jersey Future Planning Manager interview with author 3/30/17

²⁰⁸ Oceanport Mayor, interview with author

5. RECOMMENDATIONS AND CONCLUSION

Resilience is undoubtedly strengthened by cultural heritage and civic engagement, and adaptation efforts gain traction when communities and the places they care about are included in the planning process. Drawing from frameworks that inform coastal planning and historic preservation, case studies of culturally integrative adaptation planning, and an analysis of current municipal adaptation practices in New Jersey, this section provides a set of recommendations for civic leaders, advocates and practitioners. The following recommendations are targeted at expanding opportunities for civic engagement in the adaptation process, and improving civic engagement practices so that adaptation efforts promote and preserve cultural heritage. Addressing key components of adaptation planning, the recommendations are delivered as methodological, governance, and communication opportunities and challenges in adaptation planning.

5.1 Methodological Recommendations

5.1.1 Talk about place

In order to have public participation inform adaptive actions that are culturally integrative, civic engagement strategies must deliver a platform for talking about place. Clear and inclusive public participation may not be enough. As observed in this thesis, the most effective strategies show that leaders can actively create a dialogue about the community's meaningful places. This dialogue can allow for a plurality of values to be conveyed, including economic and environmental assets alongside places of identity and culture.

5.1.2 Integrate engagement early

Civic engagement strategies should be included early in the adaptation planning process. Two of the leading SRPR communities, Sea Bright and Perth Amboy, embarked on a public outreach process long before the SRPR was even developed. These municipalities harnessed the “window of opportunity” of greater political and public awareness after disaster by establishing steering committees composed of businesses and volunteer residents. Furthermore, one of these towns has only 1,400 people, demonstrating that the strong will of a community can overcome those often-cited barriers of planning capacity. The Sea Bright and Perth Amboy steering committees began early in the adaptation process and they also developed solutions through a combination of outreach to the public and internal consensus building.

5.1.3 Use multiple outreach efforts

Multiple channels of outreach produce more robust recommendations that recognize a community’s diversity of cultural heritage. Communities can engage citizens through many strategies, including focus groups, public meetings, workshops, visioning, mapping, and surveys. By employing multiple channels of civic engagement, a community can reach different stakeholder groups. For the development of the Louisiana Comprehensive Master Plan For a Sustainable Coast, community groups, nonprofits, and the Framework Development Team provided outreach assistance in reaching the widely distributed communities of the Louisiana coast. This method of outsourcing engagement efforts to community groups can serve as an example for local municipalities, who can also enlist the assistance of local groups and organizations to distribute information about climate adaptation and gather feedback. The valued cultural heritage of some stakeholder groups may not be recognized in adaptation plans if these groups are not heard. This is an issue of environmental justice, as the cultural heritage of disadvantaged groups must be reflected in municipal adaptation planning.

The issues and recommendations addressed in the outreach process must be integrated into the adaptation plan and its goals and recommendations. Only 10% of the New Jersey SRPRs explicitly show that the public outreach efforts informed the plan. The connection between public engagement and implementation is significant, especially when civic engagement is the principal method for conveying cultural heritage.

5.2 Governance Recommendations

5.2.1 Lead locally

Civic engagement in local climate adaptation planning is obscured by the concerns of local elected officials. Municipalities need local leaders who are committed to adaptation and resilience efforts, as well as a system of governance that supports the public deliberation on the impacts of climate change and the difficult tradeoffs required for a community's continued vitality.

5.2.3 Provide studies that inform leaders

Technical assistance can embolden elected leaders to promote resilience and engage with the public. Community leaders can be motivated by studies that show an economic incentive for resilience, such as an evaluation of the tax ratable base that is vulnerable to the effects of sea level rise. These studies could initiate conversations about resilience, and lead to outreach efforts that include community stakeholders. Nonprofits or state agencies can offer technical assistance to coastal New Jersey communities to provide these analyses and initiate planning recommendations that would mitigate loss, such as targeted protective strategies in vulnerable areas or long-term planning for managed retreat. New Jersey Future performed assessments to inform long-term planning initiatives in coastal communities, identifying the projected sea levels in a community and the structures at risk

to permanent inundation, and calculating the total loss in assessed value for all structures damaged by sea level rise. Quantitative measures of loss can be an effective way to communicate the anticipated damages to a community, especially when these damages are not apparent. An evaluation of lost property taxes can also inform communities as they prepare for sea level rise, to adjust capital improvements planning and zoning ordinances to curb development away from those areas that will be inundated. A calculation of projected lost revenues will also motivate town leaders to plan for protecting those assets, and embark on a more concerted planning process with the community.

5.2.4 Require civic engagement in state and federal programs

Government programs should require more civic engagement and impose frameworks for performing inclusive and proactive civic engagement. The Community Rating Survey provides an incentive for communities to include civic engagement in hazard mitigation planning, with the potential of lower National Flood Insurance rates for the towns that comply. If the SRPR program required such outreach, or offered incentives to the municipalities who engaged with the public, the communities would surely have been more motivated towards including public participation in the planning process. The New Jersey Department of Environmental Protection is currently developing a regional planning approach for the 15 towns of Two Rivers, with a strategy to integrate higher levels of outreach in the process. State programs should offer added incentives to those municipalities who do engage with their citizens, especially as those communities who do include community participation will develop better adaptation plans. American coastal communities boast a cultural heritage that is a national asset, as the piers, marinas, beaches and seaside villages of the coast retain significance for populations well beyond their borders.

5.3 Communication Recommendations

5.3.1 Make resilience tangible

Climate change is difficult to perceive. The communities who experience greater losses, or see the impacts of sea level rise on a regular basis, are more committed to discussing adaptive strategies. For those communities who are not as exposed to the impacts, communication methods can convey the issue in a tangible way. Public artwork can draw attention to sea level rise in a community, such as a line indicating the future high water mark. Public programming can also engage citizens in interpreting the abstract into everyday life. Storytelling in the form of performances, writing, or simple oration can communicate information and motivate adaptive action. These efforts give the public a vision of how climate change will impact their surroundings.

5.3.2 Educate

Access to accurate and clear information about risk will help communities make more informed choices, and empower citizens to initiate planning processes. Local leaders may be more likely to include the public in the planning process when climate change and resilience planning is already a topic of conversation in the community. However, not all municipalities have access to clear and accurate information. Local municipalities need assistance mapping their vulnerable assets, interpreting data, and knowing their options for adaptive strategies. The NJRCCI program has provided mapping services, but not every municipality has received such assistance. When stakeholders have maps that are accurate and comprehensible, they can see what places are at risk and embark on community-led planning.

5.4 Conclusion

Confronted with the unpredictable and unrelenting impacts of climate change, coastal towns and cities are making difficult decisions. Adaptive efforts require significant resources and they have long-term impacts on a community's economic, social and environmental vitality. With deliberate and careful adaptive strategies, however, communities on the coast can cope with disaster, rebound, and persist.

Historic preservation is integral to the advancement of coastal planning. Historic preservation challenges planners and policymakers to consider the multiple values of place and to reframe planning methodologies in a way that delivers a more complete vision of a community. An effective local adaptive process will be based on assessments of a community's economic and environmental resources, as well as its social and cultural assets. By identifying and evaluating non-use values such as identity, history, and meaning, leaders and practitioners will deliver more nuanced and localized adaptation strategies and build more resilient communities.

Coastal planning and historic preservation are becoming more integrated but more work is required. Cultural heritage is gaining recognition as a contributor to resilience and, conversely, state and local agencies are recognizing the importance of heritage and civic engagement in the adaptation planning process. However, as previous studies and this thesis reveal, it is clear that local adaptation practice often fails to integrate cultural heritage and civic engagement. In many communities, public outreach is incorporated only as a last step or a recommendation. Communities are experiencing various barriers that impede effective public outreach, through issues related to planning capacity, communication, and local governance. As the analysis in Section 4 shows, effective outreach is not always dependent on financial and human resources, and it is possible for the smallest municipalities to practice effective community outreach. To overcome these obstacles will require a reconceptualization of the planning process towards incorporating public outreach early, often, and with intent to reveal cultural heritage.

Civic engagement is one mechanism for communicating a community's vision. Other methods of evaluation can contribute to the integration of non-use values in adaptation planning. Hedonic evaluations can be tailored to reveal how populations interact with their environment. Social media can be studied to reveal popular landmarks and gathering spaces, while online reviews or travel patterns could also show evidence of hotspots of activity and well-traveled corridors. Maps of historic development patterns could indicate the places with layers of history and meaning. Interviews, storytelling, and citizen science programs can also help reveal the spaces that retain significance for communities.

Coastal climate adaptation and resilience planning is rapidly developing to address a growing and intensifying issue. As the impacts of climate change become more severe, more municipalities will engage in adaptation efforts. This is an opportunity to develop innovative tools, strategies and methods that challenge conventional practice. Today, professionals, advocates, leaders and scholars are presented with an opportunity to craft the planning methodologies that will shape the coastal communities of the future. Through an integrative approach that incorporates the multiple values of place and the voices of a community, adaptive strategies can be established to reflect a community's vision and deliver long-term resilience.

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APPENDICES

Appendix 1. Level 3 and 4 Civic Engagement Municipalities

Appendix 2. Dataset for SRPR Analysis

Appendix 1. Level 3 and 4 Civic Engagement Municipalities Sample of variables criteria for three municipalities with highest Civic Engagement scores (Data: 2008-2012 American Community Survey 5-year Estimates, 2010 U.S. Census Bureau).

Civic Engagement Rating	Municipality	County	Year	Author: Private/Nonprofit/Municipality	Education HS	Education Bachelors	Population	Median HH \$ (margin of error varies)	% Pop. Below Poverty Line	Median Age	Racial Diversity index	Housing Units	% Summer Housing
	3 MOONACHIE BORO	BERGEN COUNTY	2015	Private	87.2	20.1	2,708.00	\$48,306.00	6.5	44.4	0.352936	1053	0.85%
	3 SOMERS POINT CITY	ATLANTIC COUNTY	2014	Private	88.7	22.9	10,795.00	\$49,607.00	14.1	41.4	0.362596	5556	9.50%
	3 KEYPORT BORO	MONMOUTH COUNTY	2014	private	85.3	22.5	7,240.00	\$54,522.00	10.2	40.5	0.343288	3272	0.12%
	3 LITTLE EGG HARBOR TWP	OCEAN COUNTY	2014	Private	89.2	19.4	20,065.00	\$58,598.00	9	45.4	0.111272	10,324	16.48%
	3 HAMILTON TWP	ATLANTIC COUNTY	2014	Private	86.9	25	26,728.00	\$59,330.00	9.9	37	0.493898	9490	1.15%
	3 SOUTH TOMS RIVER BORO	OCEAN COUNTY	2015	private	87.1	10.7	3,684.00	\$63,182.00	23	34	0.490114	1160	0.34%
	3 TOMS RIVER TWP	OCEAN COUNTY	2014	private	91.1	29.4	91,239.00	\$71,706.00	6.8	43	0.18833	43,334	16.09%
	3 OCEANPORT BORO	MONMOUTH COUNTY	2014	private	93.7	43.3	5,832.00	\$101,354.00	8.5	44.4	0.126088	2390	1.72%
	4 SEA BRIGHT BORO	MONMOUTH COUNTY	2014	Nonprofit	98.6	52.3	1,412.00	\$83,244.00	11.4	46.6	0.087186	1211	24.86%
	4 PERTH AMBOY CITY	MIDDLESEX COUNTY	2014	Private	68.1	14.7	50,814.00	\$44,166.00	21.2	32.4	0.59529846	16556	0.12%
	4 MARGATE CITY	ATLANTIC COUNTY	2014	Private	95.1	44.8	6,354.00	\$66,444.00	9.8	54.9	0.070248	7114	50.83%

Appendix 2. Dataset for SRPR Analysis (Source: 2008-2012 American Community Survey 5-year Estimates, U.S. Census Bureau; 2010 Decennial Census, U.S. Census Bureau)

Civic Engagement Rating	Municipality	County	Year	Author	Author Private/Public /County	Population over 25 with High School Education(2008-2012 ACS)	Population over 25 with Bachelors Education(2008-2012 ACS)	Historic properties	Historic district	Population (2008-2012 ACS)	Median HH \$ (margin of error varies) (2008-2012 ACS)	% Population Below Poverty Line (2008-2012 ACS)	Median Age (2010 Census)	Diversity Index	Housing Units (2010 Census)	Seasonal Housing # (2010 Census)	% Summer Housing
0	LITTLE FERRY BORO	BERGEN COUNTY	2014	Clarke Caton Hintz	Private	85.5	31.6	0	2	10,626.00	\$103,760.00	9	40.2	0.55793	4439	7	0.16%
0	RUMSON BORO	MONMOUTH COUNTY	2014	T&M	private	97.9	64	8	0	7,044.00	\$141,830.00	3.7	41.6	0.054894	2,585	124	4.80%
1	PLEASANTVILLE CITY	ATLANTIC COUNTY	2014	CME Associates	Private	69.4	12.4	0	2	20,249.00	\$40,009.00	20.3	33	0.654618	7219	40	0.55%
1	VENTNOR CITY	ATLANTIC COUNTY	2014	Remington, Vernick and Walberg	Private	82.5	27.2	5	2	10,650.00	\$56,295.00	11.9	45.5	0.403474	7829	2584	33.01%
1	MAURICE RIVER	CUMBERLAND COUNTY	2015	NJ Future	nonprofit	73	8.8	2	1	7,976.00	\$66,699.00	9.4	38.1	0.530848	1,506	40	2.66%
1	JERSEY CITY	Hudson County	2014	Jersey City	Municipality	84.5	41.5	139	34	247,597.00	\$58,308.00	17.6	33.2	0.738654	108,720	577	0.53%
1	EDISON TWP	MIDDLESEX COUNTY	2014	Bignell	Private	91.8	51.4	11	6	99,967.00	\$90,101.00	6.5	38.1	0.610746	36302	90	0.25%
1	SOUTH RIVER BORO	MIDDLESEX COUNTY	2014	Bignell	Private	82.7	22.9	3	3	16,008.00	\$68,105.00	9.5	37.2	0.38875	5957	8	0.13%
1	HIGHLANDS BORO	MONMOUTH COUNTY	2014	NJ Future (with T&M)	nonprofit	97.3	40.9	6	0	5,005.00	\$67,292.00	18.7	45.1	0.132994	3146	278	8.84%
1	BAY HEAD BORO	OCEAN COUNTY	2016	David Roberts	Private	99.6	63.7	2	3	968.00	\$108,542.00	8.5	57.2	0.027726	1022	511	50.00%
1	BRICK TWP	OCEAN COUNTY	no data	no data	nd	91.6	25	14	3	75,072.00	\$68,304.00	6	43.6	0.131494	33,677	2479	7.36%
1	LACEY TWP	OCEAN COUNTY	2014	T&M	Private	93.2	24.8	9	2	27,664.00	\$72,208.00	5.9	41.3	0.07388	11,573	973	8.41%
1	LAVALLETTE BORO	OCEAN COUNTY	2014	O'DONNELL, STANTON & ASSOCIATES, Inc	private	96.4	33.8	2	0	2,471.00	\$63,750.00	9.2	60.3	0.041308	3207	2,068	64.48%
1	POINT PLEASANT BEACH	OCEAN COUNTY	2014	T&M	private	94.8	40.4	3	1	4,665.00	\$65,198.00	13.4	45.7	0.143514	3,373	1,131	33.53%
1	SEASIDE PARK BORO	OCEAN COUNTY	2014	CME	private	95	34.8	1	0	1,579.00	\$51,518.00	9.4	52.1	0.058714	2703	1639	60.64%
1	STAFFORD TWP	OCEAN COUNTY	2015	CME	private	91.3	27.6	4	2	4,437.00	\$47,377.00	16.1	45.6	0.13889	2,319	52	2.24%
1	TUCKERTON BORO	OCEAN COUNTY	2015	NJ Future	nonprofit	87.8	25.2	4	1	3,347.00	\$60,301.00	9.7	42.5	0.117982	1902	382	20.08%
2	BRIGANTINE CITY	ATLANTIC COUNTY	2014	Rutala Associates	Private	91.9	32.1	0	0	9,450.00	\$63,119.00	9	48.4	0.23222	9222	4926	53.42%
2	EDGEWATER BORO	BERGEN COUNTY	2016	Clarke Caton Hintz	Private	95.7	72.4	9	0	11,513.00	\$103,760.00	9	37.2	0.583542	6282	78	1.24%
2	OCEAN CITY	CAPE MAY COUNTY	2015	Randall E. Scheul	Private	95.4	46.6	14	2	11,701.00	\$56,463.00	6.9	53.6	0.149116	20871	12125	58.09%
2	WOODBIDGE TWP	MIDDLESEX COUNTY	2014	Heyer, Gruel and associates	Private	89.3	32.4	13	4	99,585.00	\$80,519.00	6.2	38.6	0.582334	36124	88	0.24%
2	ABERDEEN TWP	MONMOUTH COUNTY	2013	T&M	Private	93.7	37	0	3	18,210.00	\$87,941.00	6.1	39	0.392386	7102	16	0.23%
2	DEAL BORO	MONMOUTH COUNTY	2014	T&M	Private	88.5	28.8	0	1	750.00	\$74,375.00	11	50.9	0.158374	926	553	59.72%
2	KEANSBURG BORO	MONMOUTH COUNTY	2014	T&M	private	83.7	12.6	0	0	10,105.00	\$47,686.00	16.2	36.8	0.280766	4318	56	1.30%
2	MONMOUTH BEACH BORO	MONMOUTH COUNTY	2014	T&M	private	98.6	58.4	1	0	3,279.00	\$91,023.00	5	49.6	0.049092	1981	417	21.05%
2	NEPTUNE TWP	MONMOUTH COUNTY	2014	CME	private	90.2	27.8	1	0	27,935.00	\$62,674.00	9.6	44.8	0.526026	12991	1044	8.04%
2	UNION BEACH BORO	MONMOUTH COUNTY	2014	T&M	private	86	13.3	0	0	6,245.00	\$66,419.00	4.1	38.6	0.168102	2269	18	0.79%
2	BERKELEY TWP	OCEAN COUNTY	2014	T&M	Private	84.9	15.5	6	3	41,376.00	\$43,535.00	6.7	61.1	0.099882	23818	2147	9.01%
2	OCEAN TWP	OCEAN COUNTY	2014	T&M	private	90	26.7	2	1	8,333.00	\$74,121.00	6.1	49.6	0.064498	4291	575	13.40%
3	HAMILTON TWP	ATLANTIC COUNTY	2014	Clarke Caton Hintz	Private	86.9	25	0	3	26,728.00	\$59,330.00	9.9	37	0.493898	9490	109	1.15%
3	SOMERS POINT CITY	ATLANTIC COUNTY	2014	Rutala	Private	88.7	22.9	2	3	10,795.00	\$49,607.00	14.1	41.4	0.362596	5556	528	9.50%
3	MOONACHIE BORO	BERGEN COUNTY	2015	L+C Design Consultants PA	Private	87.2	20.1	0	0	2,708.00	\$48,306.00	6.5	44.4	0.352936	1053	9	0.85%
3	KEYPORT BORO	MONMOUTH COUNTY	2014	Maser	private	85.3	22.5	0	3	7,240.00	\$54,522.00	10.2	40.5	0.343288	3272	4	0.12%
3	OCEANPORT BORO	MONMOUTH COUNTY	2014	Clarke Caton Hintz	private	93.7	43.3	2	2	5,832.00	\$101,354.00	8.5	44.4	0.126088	2390	41	1.72%
3	LITTLE EGG HARBOR TWP	OCEAN COUNTY	2014	T&M	Private	89.2	19.4	7	3	20,065.00	\$58,598.00	9	45.4	0.111272	10,324	1,701	16.48%
3	SOUTH TOMS RIVER BORO	OCEAN COUNTY	2015	Maser	private	87.1	10.7	0	1	3,684.00	\$63,182.00	23	34	0.490114	1160	4	0.34%
3	TOMS RIVER TWP	OCEAN COUNTY	2014	Maser	private	91.1	29.4	20	5	91,239.00	\$71,706.00	6.8	43	0.18833	43,334	6,974	16.09%
4	MARGATE CITY	ATLANTIC COUNTY	2014	Rutala Associates	Private	95.1	44.8	1	1	6,354.00	\$66,444.00	9.8	54.9	0.070248	7114	3616	50.83%
4	PERTH AMBOY CITY	MIDDLESEX COUNTY	2014	Maser	Private	68.1	14.7	35	3	50,814.00	\$44,166.00	21.2	32.4	0.59529846	16556	20	0.12%
4	SEA BRIGHT BORO	MONMOUTH COUNTY	2014	NJ Future	Non Profit	98.6	52.3	3	0	1,412.00	\$83,244.00	11.4	46.6	0.087186	1211	301	24.86%

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