Coastal Justice: Climate Change and Social Resilience in Florida

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Part I: Research Scope and Process

Research informing this paper was conducted over the course of five months and includes both "desk-based" research and empirical research. The desk-based research covered primary and secondary resources on the topics of:

> **Indicators and Frameworks** | Social vulnerability and resilience indicators and frameworks used in policymaking primarily in Florida and in the southeastern region of the United States.
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> **Climate Science** | Climate science on climate impacts in Florida, specifically sea level rise, extreme weather events, algae blooms, and flooding.
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> **Policies** | Existing local and state-wide climate policies as they relate to social resilience and social vulnerability. Reviewed comprehensive plans in four climate vulnerable counties to understand climate and social resilience preparation. The counties reviewed are St. Johns, Miami-Dade, Palm Beach, and Bay.
>
> **Emerging Strategies** | Successful social resilience strategies emerging throughout Florida.

The empirical research included four months of in-person and phone interviews with climate resilience experts throughout the state. In all, there were 30+ individuals interviewed with backgrounds in local government, activism and advocacy, social science, geographic information system mapping ("GIS"), law and policy, community-based engagement, and more. In person interviews were conducted in Riviera Beach, Panama City, Little Haiti, Southeast Miami, Pensacola, and St. Augustine (focused on efforts in Lincolnville). These locations were chosen because of interest from stakeholders, the racial and economic diversity of the residents, and the proximity to current and expected climate change impacts. Interviews were conducted with individuals that worked across the state and locally on climate resilience initiatives.

This paper is a summary of findings from this research. It also recommends strategies to expand effective social resilience policies and initiatives in Florida.

Part II: Climate Resilience Context and Status of Policies

Context + Framing

The climate resilience three-legged stool in Florida consists of (1) resilience in the natural environment, (2) resilience in the built-environment, and (3) human or social resilience. Florida has made incredible advancements in climate resilience and adaptation strategies for the natural environment through robust policymaking. In recent years, Florida has begun to emerge as a leader in policymaking that supports climate resilience in the built environment, as well.

These efforts have been largely locally led. Places like St. Augustine in St. Johns County have become leaders in historical preservation and designing policies that protect Florida's built environment.

The third leg of the climate resilience stool, or the human aspect of environmental protection and climate change, is all too often left out of policy conversations. We see topics such as economic justice, human health, emotional and physical safety, education, racial justice, gender equality, and food security as topics separate from the health of our planet. This separation of humans from our environment is an unfortunate distraction that has sent us spiraling into destructive and ineffective siloes. When we start to look more honestly into root causes of worker exploitation, overproduction and over consumption, power imbalances reinforcing gender and racial discrimination, inequitable geographic distribution of resources across geographic areas (e.g. away from rural areas), and lack of local control over local resources (allowing for environmental and human exploitation), we can start to see the importance of designing policy solutions and redistributing resources in ways that address root causes of all of these issues and ultimately provide equitable benefits for humans and the environment.

It is well documented that marginalized populations, those who often contributed the least to the climate disaster, are the ones impacted first and worst by climate change.[1] Across the world, there are communities that are living within systems of marginalization that are often designed to limit access to the resources and power building necessary to successfully navigate climate related disruptions. Prioritizing adaptation actions for the most vulnerable populations would contribute to a more equitable future within and across communities.[2] Florida specifically has 22 out of the top 25 cities with high social vulnerability populations at risk of coastal flooding by 2050.[3] Experts at the University of Florida caution that Florida's affordable housing crisis exacerbates social vulnerabilities to climate change significantly. According to research by the Shimberg Center for Housing Studies, 1.4 million low-income households in Florida pay more than 40% of their income for housing, with above three-quarters of these households living in Florida's 35 coastal counties. They further point out that Florida has only 49 affordable rental units available for every 100 low-income renter households, and only 23 affordable units available for every 100 "extremely" low-income renters.[4]

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[1] Maxine Burkett, *Climate Reparations*, 10 Melb. J. Int'l L. 509, 510 (2009); Reidmiller et al., *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment*, Volume II, U.S. GLOBAL CHANGE RESEARCH PROGRAM (2018), https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf.

[2] Reidmiller et al., *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment*, Volume II, U.S. GLOBAL CHANGE RESEARCH PROGRAM (2018), https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf.

[3] Climate Central, *These U.S. Cities Are Most Vulnerable to Major Coastal Flooding and Sea Level Rise,* (Oct. 25, 2017), https://www.climatecentral.org/news/us-cities-most-vulnerable-major-coastal-flooding-sea-level-rise-21748.

[4] Shimberg Center for Housing Studies, 2019 Rental Market, (May 2019), http://www.shimberg.ufl.edu/publications/RMS_2019.pdf.

Along the Florida coast specifically, lower-income households often have deep historic roots in their communities. Buildings occupied in these areas tend to pre-date new building codes. Due to either a lack of resources or a desire to preserve the historic value of the building (sometimes both), maintenance and upgrades to these buildings have been scarce leaving these buildings and communities even more vulnerable to climate change impacts. This includes largely outdated and inadequate septic systems in coastal areas that are becoming increasingly harmful as a result of sea level rise and heavier rains.[5]

This white paper is born out of the understanding and acknowledgement that human resilience is a topic that has been largely under-resourced, ignored, or inadequately understood in policymaking. It is therefore the leg of the stool that is in urgent need of inclusive, effective and equitable action.

The Urgency of Climate Change

Extreme heat days, toxic algae blooms, sunny day flooding, and vector-borne[6] diseases are examples of once infrequent events that are steadily increasing under a changing climate.[7] The health impacts of these climate change realities are also significant.[8] Florida's doctors and clinicians are seeing the impacts of climate change on their mental and physical health of their patients, and report that their most vulnerable patients are struggling the most.[9] Extreme heat is a growing issue for those working outside for extended hours, and there is significant concern that there is not sufficient indoor cooling available for low-income residents, particularly the elderly.

The state of Florida is on the frontlines of these impacts. According to a 2018 Union of Concerned Scientists study, due to a high concentration of assets along the coast, Florida will suffer the most nationwide from coastal climate change impacts across the United States, with

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[5] Miami-Dade County Department of Regulatory and Economic Resources & Miami-Dade County Water and Sewer Department & Florida Department of Health in Miami-Dade County, *Septic Systems Vulnerable to Sea Level Rise*, (Nov. 2018), https://www.miamidade.gov/green/library/vulnerability-septic-systems-sea-level-rise.pdf.

[6] World Health Organization, *Vector-borne diseases*, (Oct. 31, 2017) ("Vector-borne diseases are human illnesses caused by parasites, viruses and bacteria that are transmitted by mosquitoes, sandflies, triatomine bugs, blackflies, ticks, tsetse flies, mites, snails and lice."), https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases.

[7] D. J. Wuebbles et al., *Climate Science Special Report: Fourth National Climate Assessment*, Volume I, U.S. GLOBAL CHANGE RESEARCH PROGRAM (2017), pp. 333–363; Daniel Cressey, *Climate change is making algal blooms worse*, NATURE (Apr. 25, 2017), https://www.nature.com/news/climate-change-is-making-algal-blooms-worse-1.21884; NASA, *The Effects of Climate Change*, GLOBAL CLIMATE CHANGE, https://climate.nasa.gov/effects/; American Public Health Association, *Extreme Heat Can Impact Our Health In Many Ways*, https://www.cdc.gov/climateandhealth/pubs/EXTREME-HEAT-Final_508.pdf; Andrew K. Githeko et all., *Climate Change and vector-borne diseases: a regional analysis*, WORLD HEALTH ORG., https://www.who.int/bulletin/archives/78(9)1136.pdf.

[8] Roderick King, MD, MPH, *Health and Sea Level Rise: Impacts on South Florida*, FLA. INST. FOR HEALTH INNOVATION (2016), *available at* http://flhealthinnovation.org/wp-content/uploads/2016/07/Health-and-Sea-Level-Rise-Full-Report-2016.pdf.

[9] Ian Stewart, *In Florida, Doctors See Climate Change Hurting Their Most Vulnerable Patients*, NPR (Mar. 30, 2019), *available at* https://www.npr.org/2019/03/30/706941118/in-florida-doctors-see-climate-change-hurting-their-most-vulnerable-patients.

New Jersey also showing significant vulnerabilities.[10] Within the next 30 years, more than one-third of the roughly 14,000 commercial coastline properties at risk to climate change in the United States are located in Florida or New Jersey.[11]

According to the Union of Concerned Scientists (UCS), homes at risk for damage from sea level rise in Florida jumps to more than 1 million by 2100.[12] According to UCS, this reflects the scale of development happening in Florida's low-lying inland regions.[13] Experts in Florida also warn of rising groundwater projections that will put even more households at risk for flooding and water infiltration than what is expected from sea level rise.[14] A 2018 UCS report goes on to state that "Florida leads the nation in the number of homes—along with property value and tax base (based on current values for each)—at risk of chronic inundation through the end of the century.[15] The Miami area, the Florida Keys, and Tampa-St. Petersburg stand out as being the most highly exposed within the next 30 years.[16] By the end of the century, nearly 100 ZIP code areas in Florida could see properties chronically flooded. This represents 40 percent or more of Florida's property tax base today."[17]

In a 2016 report, Freddie Mac acknowledged that the impacts of climate change will be greater than the Housing Crisis and Great Recession. This is based on research by the World Economic Forum identifying climate change as a top five threat to the world economies every year since 2013.[18] The Union of Concerned Scientists reports that "The low-lying and highly developed coastlines of Florida and New Jersey make the commercial sector in both states particularly exposed to chronic flooding as sea levels rise."[19]

By 2030 the southeastern region of Florida is anticipated to see three to seven additional inches of sea level rise by 2030, 9-24 inches by 2060.[20] The region is also estimated to have four billion dollars of assets exposed to impacts from climate change-induced coastal flooding.[21] Climate scientists predict that southeast Florida, which currently experiences about 10 tidal

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[10] Union of Concerned Scientists, *Underwater: Rising Seas, Chronic Floods, and the Implications for US Coastal Real* Estate, (June 2018), https://www.ucsusa.org/sites/default/files/attach/2018/06/underwater-analysis-full-report.pdf.
[11] *Id.* at 10–11.
[12] *Id.* at 7.
[13] *Id.*
[14] King, *supra* note 8.
[15] Union of Concerned Scientists, *supra* note 13.
[16] *Id.*
[17] *Id.*
[18] Top 5 Global Risks in Terms of Likelihood, *available at* http://reports.weforum.org/global-risks-2018/files/2018/01/II.-Risks-evolution-table-mid.png.
[19] Union of Concerned Scientists, *supra* note 11.
[20] *See* Technical Ad hoc Work Group (Southeast Florida Regional Climate Change Compact), *A Unified Sea Level Rise Projection for Southeast Florida* (document at iii), *available at* http://www.southeastfloridaclimatecompact.org//wp- content/uploads/2014/09/sea-level-rise.pdf.
[21] *See* Sydney Menees & Jessica Grannis, *Lessons in Regional Resilience: The Southeast Florida Regional Climate Change Compact*, GEO. CLIMATE CENTER (Jan. 2017), https://www.georgetownclimate.org/files/report/GCC-Lessons-in-Regional-Resilience-SE_FL_Compact-Jan_2017-v2.pdf.

floods a year, will see about 240 floods a year by 2045.[22] Of the top 10 urban centers most vulnerable to climate change in the United States, six are in Florida.[23] These statistics paint a story of urgency and grave consequence. People's lives, as well as billions of dollars in assets, are at risk in Florida.

Policy Landscape

Statewide Policies

In recent years, Florida has responded to an increase in climate change impacts by accelerating its leadership in climate resilience policymaking, particularly at the local level. While pinpointing when Florida first introduced climate policies will likely depend on who you ask and how you characterize "climate policies," statewide legislation likely began in 2006 with the Renewable Energy Technologies and Energy Efficiency Act.[24] This act focused primarily on reducing climate emissions. It was followed in 2007 by a string of three climate change executive orders,[25] including Executive Order 07-128 which directed a Governor's action team to establish an Energy and Climate Action Plan. That action plan was approved in 2008. To date, roughly 3 of the action plan's 28 goals have been completed and another 13 are in progress.[26] The implementation of this plan hit a major roadblock in 2011, however, when Governor Rick Scott signed a bill to abolish the Florida Energy and Climate Commission, transferring certain functions to the Department of Agriculture and Consumer Services.[27]

More recently Florida passed the Adaptation Action Areas policy and the Peril of Flood Act, both of which show significant progress in Florida's statewide climate resilience policymaking. "The 2011 Florida Legislature passed the Community Planning Act (CPA - HB 7207) making significant changes to the state's growth management laws, including the addition of optional adaptation planning for coastal hazards and the potential impacts of sea level rise."[28] These Adaptation Action Areas are defined as "an optional designation within a local government comprehensive plan for areas that experience coastal flooding and sea level rise - for the purpose of prioritizing funding for infrastructure needs and adaptation planning."[29]

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[22] Ian Urbina, *Perils of Climate Change Could Swamp Coastal Real Estate*, N.Y TIMES (Nov. 24, 2016), https://www.nytimes.com/2016/11/24/science/global-warming-coastal-real-estate.html.
[23] *Id.*
[24] Erin L. Deady, *Update on the Legal and Planning Issues of Climate Change Facing Florida*, ELULS Vol. XXXVIII, No. 4 (July 2018), *available at* http://eluls.org/wp-content/uploads/2018/07/The-Environmental-and-Land-Use-Law-Section-Reporter-July-2018.pdf.
[25] Signed by Governor Charlie Crist. Florida EO 07-126 - Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government; Florida EO 07-127 - Immediate Actions to Reduce Greenhouse Gas Emissions within Florida; EO 07-128 - Florida Governor's Action Team on Energy and Climate Change.
[26] Georgetown Law, *Preparing for Climate Change in Florida*, GEO. CLIMATE CENTER, https://www.georgetownclimate.org/adaptation/state-information/florida/overview.html?view=full.
[27] *Id.*
[28] Adaptation Clearinghouse, *Creation of "Adaptation Action Areas" in Florida's Community Planning Act*, CEO. CLIMATE CENTER (June 2, 2011), https://www.adaptationclearinghouse.org/resources/creation-of-e-adaptation-action-areas-e-in-florida-s-community-planning-act.html.
[29] Adaptation Clearinghouse, *Adaptation Action Areas Guidebook: A Planning Guidebook for Florida's Local Government*, GEO. CLIMATE CENTER (Aug. 2015),

To date, there are seven delineated Adaptation Action Areas across the state. Although these Adaptation Action Areas come a long way in effectively addressing issues like sea level rise and flood insurance, there is little mention of social resilience or how policies might better protect vulnerable populations. Furthermore, some local governments that are now working on implementing Adaptation Action Area policies cite to property buyouts as the primary solution considered for addressing properties identified as vulnerable under the framework. This approach is narrow, costly, and does not fully nor sustainably address vulnerability concerns. It will also create significant injustices if communities are not properly consulted or given the opportunity to influence the buyout process. Local governments are in search of additional strategies to complement or even replace buyouts.

Passed in 2015, Senate Bill 1094, also known as "An Act Relating to the Peril of Flood," or more commonly the "Peril of Flood Act,"[30] is a state-wide policy requiring that local governments consider sea level rise and flood risk from storm surges in comprehensive planning's redevelopment principles, strategies, and engineering solutions, as well as flood insurance requirements.[31] It also includes requirements for surveyors and mappers to submit a copy of each elevation certificate to the Division of Emergency Management. It also includes language around the removal of coastal real property from FEMA flood zones, strategies many would categorize as planned retreat from coastal areas impacted by rising seas and storm surges. Unfortunately, there is a significant lack of policy requirements, resources, and education in support of communities impacted by these relocation policies. For under-resourced and disenfranchised areas in particular, this lack of support is or will be devastating.

Florida can also turn to its state-wide and local environmental justice policies for direction. As an example, the Florida legislature in 1994 created a Florida Environmental Equity and Justice Commission.[32] This commission called for a Center for Environmental Equity and Justice (CEEJ) which was later established in 1998 as part of the Florida Agricultural and Mechanical University (FAMU).[33] The purpose of CEEJ is to "conduct and facilitate research, develop policies, and engage in education, training, and community outreach with respect to environmental equity and justice issues."[34] Still in place today, CEEJ should play a central role in Florida's climate resilience policymaking.

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https://www.adaptationclearinghouse.org/resources/adaptation-action-areas-guidebook-a-planning-guidebook-for-florida-s-local-government.html.

[30] 2015 Florida Senate Bill No. 1094, Florida One Hundred Seventeenth Regular Session, 2015 Florida Senate Bill No. 1094, Florida One Hundred Seventeenth Regular Session.

[31] Adaptation Clearinghouse, *Florida SB 1094: "An act relating to the peril of flood"*, GEO. CLIMATE CENTER (May 21, 2015), https://www.adaptationclearinghouse.org/resources/florida-sb-1094-e-an-act-relating-to-the-peril-of-flood-e.html.

[32] School of the Environment, The Center For Environmental Equity and Justice (CEEJ), FAMU, http://www.famu.edu/index.cfm?environmentalscience&CEEJ.

[33] 1998 Chapter 98-304, *Committee Substitute for House Bill No. 945,* (May 28, 1998), http://www.famu.edu/environmentalscience/ch98_304.pdf.

[34] *Id.*

In addition to legislation, Florida agencies are also stepping up with research, guidelines, funding, and other resources that support a climate resilient Florida. A great example of this is BRACE "Building Resilience Against Climate Effects." BRACE is an initiative by the Florida Department of Health that helps the "public health sector respond to the health effects of climate variability by incorporating the best available science into routine public health practice."[35] BRACE is an important resource for local governments and relevant stakeholders to forecast climate impacts, evaluate public health threats, and develop and implement climate adaptation plans.[36] BRACE also has a list of vulnerability assessment tools and indicators,[37] including a helpful social vulnerability index discussed below in Part IV.[38]

Another example of non-legislative state-wide action in Florida is the increasing amount of technical assistance provided to local governments and emergency management planning.[39] Agencies like the Florida Department of Environmental Protection and the Florida Fish and Wildlife Conservation Commission are collecting more and more data on the environmental and built infrastructure impacts of climate change in Florida.[40] Specifically, the Florida Department of Environmental Protection (DEP) launched the Florida Resilient Coastlines initiative in 2017. "The Florida Department of Environmental Protection is committed to marshaling resources to prepare Florida's coastal communities and habitats for the effects of climate change, especially rising sea levels. Through the Florida Resilient Coastlines Program, DEP continues its efforts to help ensure collaboration among Florida's coastal communities, and to offer technical assistance and funding to coastal communities dealing with increasingly complex flooding, erosion and habitat shifts."[41] This initiative appears to be very successful and has distributed approximately $2.2 million of funding to critical climate resilience projects. With an explicit focus on prioritizing vulnerable communities and supporting effective engagement with community members, DEP will be one of the most important stakeholders in equitable social resilience policymaking and funding. This work has already begun through its community planning and education and outreach focus areas where DEP has an explicit focus on strategies such as community assessments of goals and needs and increasing the diversity of perspectives involved in coastal resilience planning. Ideally, these resources are more accessible to marginalized communities and community-based organizations who can act as partners in supporting and leading climate resilience work.

With the exception of BRACE and DEP's Resilient Coastlines Initiatives, Florida's state-wide climate resilience work appears to focus more on the built and natural environment. Because

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[35] The Florida BRACE Program, *Impacts of Climate on Human Health*, FLA. BRACE (2017), https://flbrace.org.
[36] The Florida BRACE Program, *The CDC's Building Resilience Against Climate Effects (BRACE) Framework*, FLA. BRACE (2017), https://flbrace.org/brace-framework.html.
[37] The Florida BRACE Program, *Florida Vulnerability Assessment*, FLA. BRACE (2017), https://flbrace.org/fl-vulnerability-assessment.html.
[38] The Florida BRACE Program, *Social Vulnerability*, FLA. BRACE, https://flbrace.org/images/docs/climate-sensitive-hazards-in-florida-final-report-2.pdf.
[39] Deady, *supra* note 24.
[40] *Id.*
[41] Florida Department of Environmental Protection, *Florida Resilient Coastlines Program*, OFFICE OF RESILIENCE AND COASTAL PROT., https://floridadep.gov/rcp/florida-resilient-coastlines-program.

humans rely heavily on our built and natural environments, many of these strategies can be seen as having some benefits to the social resilience leg of the three-legged stool. For example, infrastructure strategies to flood proof homes in flood-prone areas or provide proper cooling technologies in housing in regions increasingly exposed to extreme heat threats are also critical social resilience strategies. However, without a significant amount of resources and attention focused primarily on social resilience, as opposed to secondarily with a primary focus on built infrastructure or the natural environment, Florida will fail to adequately serve and protect its population, particularly those most vulnerable to climate change impacts.

Local + Regional Policies

Upon reviewing relevant sections of the comprehensive plans for Palm Beach[42], St. Johns[43], Bay[44], and Miami-Dade[45] counties, it became apparent that there are significant inconsistencies in how climate resilience and social vulnerability is mentioned and addressed. Comprehensive plans are significant because they are legally mandated by the state, impact land use and emergency planning, and cover topics directly related to coastal resilience. They are also a critical access point for community members to learn about and influence policy discussions that may impact them in the future. Increasingly, local governments and interested stakeholders are turning to comprehensive plans to address climate change, clean energy, and other sustainability issues.[46]

The following heat map shows how the four counties researched cover the topic of climate resilience and social vulnerability. A blank box indicates that the comprehensive plan currently has no language on the topic; darker shading indicates that stronger language governing the topic is in place.

Planning Topic	St. Johns	Palm Beach	Bay	Miami-Dade
Climate Change				
Sea Level Rise				
Social Equity + Climate Resilience				

[42] Palm Beach County, 2017 Comprehensive Plan, https://discover.pbcgov.org/pzb/planning/PDF/ComprehensivePlan/ComprehensivePlan.pdf.
[43] St. Johns County, 2025 Comprehensive Plan, http://www.sjcfl.us/LongRangePlanning/media/CPA2025/2Adopted2025.pdf.
[44] Bay County, The Bay County Comprehensive Plan, https://www.co.bay.fl.us/322/Comprehensive-Planning.
[45] Regulatory & Economic Resources, *Comprehensive Development Master Plan (CDMP)*, MIAMI-DADE, https://www.miamidade.gov/planning/cdmp.asp.
[46] Deady, *supra* note 39.

Emergency Response				
Extreme Weather				
Flooding				

With the exception of some language on emergency planning for vulnerable populations, Bay and St. Johns Counties comprehensive plans provide little to no guidance or mandates to promote social resilience in the face of climate change. As members of the Southeast Florida Regional Climate Change Compact, discussed in more detail below, Palm Beach and Miami-Dade counties have stronger climate resilience language.

Ideally comprehensive plans across the state are conducted in an inclusive manner where socially vulnerable populations, many of which are often left out of the comprehensive planning process, are at the table of the comprehensive planning process and can serve as partners in Florida's climate resilience policymaking. In Part V below, there are tips and tools to help bring in more social equity and resilience into policies including comprehensive plans. Because these comprehensive plans must be updated at least every seven years, there will be significant and continuous opportunities for local governments and interested stakeholders to discuss and adopt climate policies that better prioritize social resilience strategies.

Since 2009, Florida has seen an emergence of regional climate collaboratives. The oldest and most active being the Southeast Florida Regional Climate Change Compact (SE Compact). Formed in 2010, the SE Compact coordinates climate resilience action across four counties - Palm Beach, Miami-Dade, Monroe and Broward - and is governed by a steering committee with representatives from each county and several cities. The Institute for Sustainable Communities is the administrator for the SE Compact and helps to facilitate, organize, and execute compact activities. The SE Compact plays an essential role in coordinating adaptation policies across the region, developing a uniform projection for sea level rise, and influencing the statewide conversation on climate change. Some engaged in the work of the SE Compact say that it is creating a race to the top for climate action in the region. The SE Compact was key in passing Florida's Adaptation Action Areas legislation in 2011. The compact has also developed a Regional Climate Action Plan (RCAP) with 110 climate resilience recommendations. RCAP 2.0, finalized in 2018, includes seven categories of social equity guidelines for climate resilience action.[47] The social equity goal of RCAP 2.0 is to "Guide and support municipalities and counties in the Compact region to create equitable climate policies, programs, and decision-making processes that consider local socioeconomic and racial inequities and ensure all can participate and prosper."[48]

[47] Climate Action Plan, Regional Climate Action Plan, Southeast Florida Regional Compact Climate Change, http://southeastfloridaclimatecompact.org/regional-climate-action-plan/?ot=&it=&rc=136.
[48] Climate Action Plan, Social Equity, Southeast Florida Regional Compact Climate Change, http://southeastfloridaclimatecompact.org/recommendation-category/eq/.

In a few regions in Florida, it has been the local regional planning councils[49] that have been leading in regional climate resilience work. As early as 2005, the Treasure Coast Regional Planning Council published their first climate policy document entitled Sea Level Rise in the Treasure Coast Region.[50] The Northeast Florida Regional Council,[51] formed in 1977, published its Regional Action Plan - A Report of the Emergency Preparedness Committee on Sea Level Rise in 2013.[52] Other regional climate action includes the Central Florida Resilience Plan[53], the Tampa Bay Regional Planning Council (TBRPC) sea level rise roundtable[54], and the recently formed Tampa Bay Regional Resiliency Coalition (part of TBRPC). Additional local efforts include a climate change element in the Broward County Comprehensive Plan,[55] Lee County Florida Climate Change Resilience Strategy (under the Southwest Florida Regional Planning Council), Satellite Beach Sea Level Rise Comprehensive Plan recommendations, and the City of Punta Gorda Florida Adaptation Plan.

Additional opportunities for incorporating climate resilience and social equity policies that are not covered in the scope of this research are the following local planning efforts: local mitigation strategies, special area management plans, economic development plans, post-disaster redevelopment plans, capital improvement plans, stormwater management plans, zoning laws, and historic preservation plans.[56]

Although more recent regional and local policy planning includes increasingly more language on inclusivity and social equity, there is still a significant gap in how the efforts are representing and effectively addressing the needs and vision of vulnerable communities across the state.

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[49] Florida Regional Councils Association, Regional Planning Council http://www.flregionalcouncils.org/directory/.

[50] Treasure Coast Regional Planning Council, *Sea Level Rise in the Treasure Coast Region*, Southwest Florida Regional Planning Council (Dec. 5, 2005), http://www.tcrpc.org/special_projects/TCRPC%20SLR%20Report%2012-05-05.pdf.

[51] Northeast Florida Regional Council serves seven counties – Baker, Clay, Duval, Flagler, Putnam, Nassau and St. Johns and 27 municipalities.

[52] Emergency Preparedness Committee on Sea Level Rise, *Summary and Regional Action Plan*, Regional Community Institute of Northeast Florida, Inc. (Sept. 2013), http://www.nefrc.org/WiP/PDFs/Resource-Library/Regional-Action-Plan.pdf.

[53] Adaptation Clearinghouse, *Heartland 2060 – Building a Resilient Region Plan (Central Florida)*, GEO. CLIMATE CENTER (2014), https://www.adaptationclearinghouse.org/resources/heartland-2060-building-a-resilient-region-plan-central-Florida.html.

[54] Florida Regional Councils Association, *Tampa Bay RPC Hosts Sea Level Rise & Climate Resilience: A Regional Roundtable Conversation,* http://www.flregionalcouncils.org/2018/02/01/tampa-bay-rpc-hosts-sea-level-rise-climate-resilience-regional-roundtable-conversation/.

[55] Broward County Comprehensive Plan, *Climate Change Element*, (2015), http://www.broward.org/Planning/FormsPublications/Documents/Climate-Change-Element.pdf.

[56] Florida Department of Environmental Protection, *Sea–Level Rise Vulnerability Assessment Tools and Resources - A Guide for Florida's Local Governments*, (2015), *available at* https://floridadep.gov/sites/default/files/SLR-VA-tools-extended_1.pdf, page 19.

Glossary of Key Terms

The following definitions are intended to help ground readers in a common language and ultimately help navigate the research findings and recommendations with greater ease and deeper understanding and connection to the topics discussed.

- **Climate Vulnerability** | Climate vulnerability describes the degree to which natural, built, and human systems are at risk of exposure to climate change impacts. Vulnerable communities experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality. Integrated Climate Adaptation and Resiliency Program, Technical Advisory Council[57]
- **Community-Driven** | Community members, often historically marginalized, have significant decision-making and advisory roles in policy and planning.
- **Frontline Communities** | In the context of this paper, these are the communities that are being hit first and worst by climate change.
- **Just Recovery** | Disaster recovery that does not displace communities or widen health and wealth disparities, but instead contributes to the positive restoration and transformation of historically marginalized communities and results in equitable outcomes from recovery efforts.[58] This is an emerging body of work based on the just transition framework developed by environmental justice and labor union movements.[59]
- **Redlining** | Redlining is an unethical practice that puts services (financial and otherwise) out of reach for residents of certain areas based on the racial, ethnic, and immigrant make up of an area. It can be seen in the systematic denial of mortgages, insurance, loans and other financial services.[60] The policy of redlining is felt most by residents of predominantly immigrant communities and communities of color.[61]
- **Resilience** | The capacity of a system (whether a community or an economy) to maintain an intact core identity in the face of change, and a state of dynamic balance within which change can be avoided or recovered from without a fundamental transition to a new form.[62] Radical healing and course correction, community wealth and social

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[57] Integrated Climate Adaptation and Resiliency Program (ICARP) & ICARP Technical Advisory Council, *DEFINING VULNERABLE COMMUNITIES IN THE CONTEXT OF CLIMATE ADAPTATION,* Governor's Office of Planning And Research (July 2018), http://opr.ca.gov/docs/20180723-Vulnerable_Communities.pdf.

[58] Brentin Mock, *Rebuilding Puerto Rico From the Grassroots Up*, CITYLAB (Oct. 11, 2017), https://www.citylab.com/equity/2017/10/rebuilding-puerto-rico-from-the-grassroots-up/542601/.

[59] Justice and Ecology Project, FROM BANKS AND TANKS TO COOPERATING AND CARING, MOVEMENT GENERATION, https://movementgeneration.org/wp-content/uploads/2016/11/JT_booklet_English_SPREADs_web.pdf.

[60] Will Kenton, *What Is Redlining?*, INVESTOPEDIA (Sept. 6, 2019), https://www.investopedia.com/terms/r/redlining.asp.

[61] *Id.*

[62] Rosa Gonzalez, *Community-Driven Climate Resilience Planning: A Framework*, Version 2.0, NACRP (May 2017), *available at*

cohesion, and connection to cultural norms and heritage are all elements of a resilient community.
    - Transformative Resilience - requires resilience strategies that work toward localized and systemic changes that transform an individual or community into a space where resilience work is not needed because they are no longer exposed to the current harm.
    - Restorative Resilience - requires resilience strategies that heal and reverse damages caused as a result of the harm currently being challenged through the resilience strategies.
- **Social Equity** | Requires (1) acknowledging past and present injustices against historically oppressed members of society - e.g. women, elderly, people of color, low-income individuals, differently abled individuals, LGBTQ individuals and (2) distributing resources and engaging in policymaking in ways that make whole those populations that have been and are currently marginalized and harmed by those injustices.
- **Social Vulnerability** | Reduced ability of an individual or community to survive, resist, cope, or thrive in the face of an external natural or man-made stressor. Vulnerability is a consequence of injustices, not a condition of a person or community.[63]
- **Transformative Capacity (Change)** | The degree to which fundamentally new governance, economic, and social systems are created to adapt to current conditions.[64] For example, the ability of a community, on their own terms, to voluntarily, equitably and justly relocate their populations deemed too at risk due to climate change impacts.[65]

Part III: Research Takeaways

The topic of coastal resilience in Florida is urgent and, in some ways, daunting. Even when focusing specifically on the social vulnerability leg of the three-legged stool, the topic is expansive and complex, with issues of flooding, social justice, pollution, land development, tourism, climate communication, local and state politics, and extreme storms all playing a role in the discussion. In short, this is a topic that deserves and requires an enormous amount of resources and attention, immediately. There is no question about it, Florida must fully commit, with urgency, to climate action. The story that will unfold for Florida will be complex and incredibly influential. As does this diverse peninsula state, so does the world – at least on topics of coastal resilience. The following are some observations and key takeaways from this research.

https://kresge.org/sites/default/files/library/community_drive_resilience_planning_from_movement_strategy_center.pdf.

[63] *Id.*

[64] Institute for Sustainable Communities, Urban Sustainability Directors Network, and the Government of the District of Columbia, *Developing Urban Climate Adaptation Indicators*, *available at* http://us.sustain.org/wp-content/uploads/2017/01/Urban-Adaptation-Indicators-Guide-2.9.16.pdf.

[65] *Id.*

Regional Planning

Regional planning efforts are critical and effective spaces for creating and implementing social resilience strategies and policies. Due to the diverse nature of Florida, it can be quite overwhelming, without significant resources and political buy-in, for climate resilience stakeholders to begin their efforts with a state-wide initiative. Instead, Florida has become home to several regional climate initiatives that are advancing coordinated climate policies and projects. As an example, the Southeast Florida Regional Climate Change Compact has, in less than 10 years, created a responsive and robust roadmap for responding to climate change in that region. The initial version did not cover social vulnerability and equity strategies; however, the second iteration covers several recommendations focused on the topic of social equity.[66] There seems to be a strong interest in continuing to better understand and respond to socially vulnerable communities throughout the region. It is likely that this initiative will continue to be a state, regional, and even worldwide leader in climate resilience.

More of Florida's climate resilience policymaking is emerging from existing regional planning initiatives. Required by law, these planning consortiums provide spaces and resources to promote and foster climate resilience planning. In these spaces there is an opportunity to bring together diverse stakeholders around the topic of climate resilience. Capacity building, technical assistance, cross-jurisdictional collaboration and alignment, communications support, regranting to local community-based organizations and local governments are all examples of activities regional climate collaboratives are equipped to carry out in Florida. All of this work must be done within a social equity framework and with marginalized communities at the decision-making table.

Although impressive and bold in their approach to climate change policymaking, all of these regional efforts currently lack an effective focus on social resilience. This requires acknowledging historic and current injustice and inequities that have impacted communities in the region. It further requires that goals, implementation commitments, staffing, and resource allocations are in place to move strategies that put the needs of the most environmental and socioeconomically vulnerable communities at the center. It also requires community engagement strategies that ensure a seat at the decision-making table for those very communities. This is an incredible opportunity to introduce inclusive and equitable policymaking that ensures that all Florida residents not only survive but can also thrive on their own terms in the presence of a changing climate.

There are some concerns about the efficacy of regional climate collaboratives. Researchers have found that these collaboratives may mask urgent needs and make decisionmakers complacent about taking meaningful action.[67] They have also shown significant weaknesses in

[66] Southeast Florida Regional Compact Climate Change, *Explore the RCAP*, http://southeastfloridaclimatecompact.org/recommendations/?ot=&it=&rc=136.
[67] Linda Shi, *A New Climate for Regionalism: Metropolitan Experiments in Climate Change Adaptation*, MIT DEPT. OF URBAN STUDIES AND PLANNING (2017).

their ability to address social justice issues and systemic inequalities.[68] These failures can largely be avoided as discussed below in Part V.

Overall, Florida's regional climate collaboratives are playing a critical role in driving forward climate resilience policymaking and have the potential, with a strong understanding of historic and present social injustices and committed leadership and principles around social equity, to bring forward social equity priorities in ways that many states and local governments have not been able to do. These efforts put certain regions of Florida at an advantage when navigating climate impacts and help to attract state and federal resources for climate action.[69]

It is important to recognize that the above recommendations should act only as guidance, and that there is not one model of regional climate collaboration.[70] Each regional collaborative will likely be very different, with a structure tailored to the needs, challenges, and opportunities unique to that region. All regional climate collaboratives across the state are at early stages and it is an exciting time to absorb learnings and tips from early adopters, but to ultimately make it region specific.[71]

Insufficient Social Equity Language in Climate Policies

There is an insufficient representation of social equity language in existing climate and environmental policies. This is covered in more detail in Part II above.

Economically Vulnerable Communities in Coastal Areas

A significant number of economically vulnerable communities are in coastal areas. Roughly 25% of Florida's communities that have poverty rates[72] of 25% or higher are located along the coast or abut a coastal inlet. This is significant and highlights the economic diversity of Florida's coastline. It is important to note that, although a powerful indicator, economic status is not the only social vulnerability factor Florida should use in climate resilience assessments. For information on the breadth of social vulnerability and resilience indicators, please see Part IV below. Due to the limited data that exists and limited time, the focus is only on economic status for this part of the research. Rental status, immigration status, race, gender, and age are examples of additional criteria that should ultimately be considered when identifying areas where there are the highest rates of social vulnerability to climate change impacts.

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[68] Linda Shi, *A New Climate for Regionalism: Metropolitan Experiments in Climate Change Adaptation*, MIT Dept. of Urban Studies and Planning (2017); Steve Adams & Karina French, *Regional Collaboratives for Climate Change – A State of the Art*, Institute for Sustainable Communities (2019), http://us.sustain.org/wp-content/uploads/2019/04/Regional-Collaboratives-for-Climate-Change-FINAL-1.pdf.

[69] Miami Herald Editorial Board, *Climate Change Compact is a Bright Spot in South Florida's History of Inaction*, MIAMI HERALD (Dec. 27, 2018, 02:38 PM) https://www.miamiherald.com/opinion/editorials/article223630730.html.

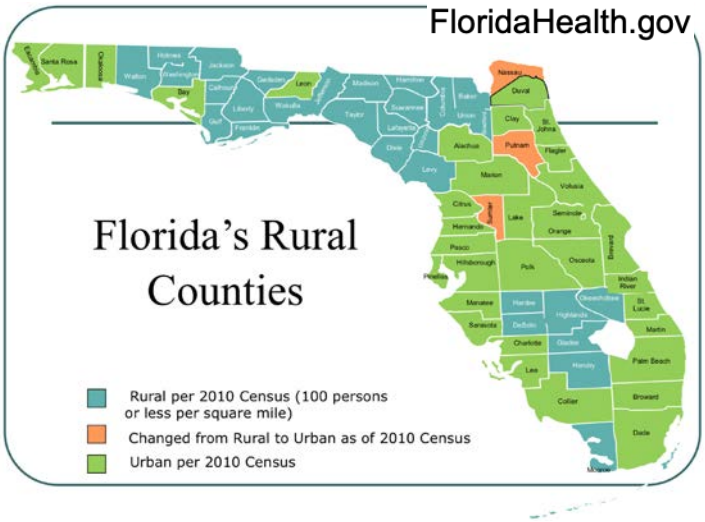
[70] Steve Adams & Karina French, *Regional Collaboratives for Climate Change – A State of the Art*, INST. FOR SUSTAINABLE COMMUNITIES (2019), http://us.sustain.org/wp-content/uploads/2019/04/Regional-Collaboratives-for-Climate-Change-FINAL-1.pdf.

[71] *Id.*

[72] Index Mundi, *Florida Poverty Rate by City*, https://www.indexmundi.com/facts/united-states/quick-facts/florida/percent-of-people-of-all-ages-in-poverty/cities.

Florida's Rural Communities

Suburban and rural communities are under researched and under resourced. Climate change resource allocations and policy making is primarily concentrated around larger city centers, Southeastern Florida and Miami-Dade County with a population of 2.76 million people[73] in particular being the region with the most climate policymaking activity. Rural communities, however, make up a significant population and geography within Florida. Close to half of Florida's counties are considered rural.[74] Even within the 37 counties considered urban, there are estimated to be over 1 million individuals living in rural areas.[75] It is reported that rural communities in Florida have an average poverty rate of 19.8% compared to 13.9% in urban areas.[76] Isolation of rural communities has also been used an indicator of climate change vulnerability in international studies.[77] Additional research is needed to understand socioeconomic variability even within rural populations.



Given the significance of rural spaces across the state and data showing social inequities between rural and urban spaces, a lack of resources and attention, particularly around social vulnerabilities to climate change, is a critical gap for Florida as it addresses climate change impacts.

Florida's Isolated Communities

Florida has a significant number of isolated and "pocket" communities, some of which are living at the margins. This is significant for at least two reasons. First, it makes it difficult for Florida to only pursue sweeping "cookie cutter" climate resilience policies. If Florida takes this approach alone, then marginalized communities will remain vulnerable and unique needs and opportunities will not be addressed or accounted for. Second, these communities appear to be relatively disenfranchised and not effectively included in policy, planning, or climate-related conversations. These communities appear to lack the resources, connections, and proximity to

[73] United States Census Bureau, *Miami-Dade County, Florida*, https://www.census.gov/quickfacts/fact/table/miamidadecountyflorida/POP060210.
[74] Florida's Rural Counties, http://www.floridahealth.gov/provider-and-partner-resources/community-health-workers/health-professional-shortage-designations/Rural%20Counties%20Map%202016.pdf.
[75] Rural Health Information Hub, *Florida*, https://www.ruralhealthinfo.org/states/florida.
[76] *Id.*
[77] Nick Brooks et al., *The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation*, (2004), *available at* https://www.sciencedirect.com/science/article/abs/pii/S0959378004000913.

decision-making conversations that ultimately impact their lives. As discussed above, more rural areas throughout Florida, must be represented in climate resilience policymaking and planning.

The same applies to "pocket" communities. These are enclaves or "pockets" of marginalized communities, generally lower-income and/or racially diverse, that are currently and/or have historically been left out of policymaking conversations. They include places like Homestead, a community in Southeastern Florida in Miami-Dade County that has a large community of migrant workers and is home to the controversial Homestead migrant detention center. Another example is Lincolnville in the city of St. Augustine. St. Augustine is located in St. Johns county, one of the wealthiest counties in the state. St. Augustine is a beautiful coastal town with incredible historic architecture, impressive beaches, and unique tourist experiences. In contrast to the predominantly white and economically wealthy St. Augustine, nestled in the center of St. Augustine is Lincolnville, a beautiful historic community that has been home to generations of African American families, many of whom were descendants of enslaved Africans who worked on nearby plantations. Another example is Glenwood Neighborhood community, a historically black and low- to moderate-income community located in the heavily tourist centric and recently hurricane-impacted community in Bay County. A final example is the predominantly immigrant and undocumented low-income residents in places such as Collier and Lee county that live close by to relatively wealthy areas.[78] There are many more areas across Florida. Elements of this diversity can be characterized as a positive, however where some of these more disenfranchised communities are being eclipsed by their neighbors politically, it requires policymaking that is able to identify, protect, and positively serve the needs of these communities.

Inclusivity in Climate and Environmental Policymaking

Florida's climate and environmental policymaking lacks effective community engagement as well as inclusivity and accountability to marginalized communities. This observation is by no means unique to Florida. Many government structures across the United States still apply systems of governance that were not historically intended to be fully inclusive. Earliest versions of the United States government were expressly designed to limit participation to white, male landowners.[79] To this day, voter suppression laws are preventing significant populations of people of color, elderly, students, and people with disabilities from participating in United States democracy.[80] In most corners of policymaking and politics, assets that are out of reach for many Americans such as financial influence, access to higher education, and privileged family legacies still tend to drive decisions and outcomes. The United States' history of civil rights injustices and the persistent and current disenfranchisement of black, brown, differently abled,

[78] Alexi C. Cardona, *Immigrant Communities in Collier and Lee on edge after recent arrests by ICE*, NAPLES DAILY NEWS (June 29, 2018, 6:02 PM), https://www.naplesnews.com/story/news/local/2018/06/29/ice-confirms-arrests-undocumented-immigrants-collier-county/746285002/.
[79] Teaching Tolerance, *Expanding Voting Rights*, https://www.tolerance.org/classroom-resources/tolerance-lessons/expanding-voting-rights.
[80] Fighting Voter Suppression, *VOTING RIGHTS 2016: WHAT'S AT STAKE*, ACLU (2016), https://www.aclu.org/issues/voting-rights/fighting-voter-suppression.

LGBTQ, veteran, immigrant, poor, previously incarcerated, female, and less-formally educated individuals continues at alarming rates.[81]

The legal field, as well as other professions such as engineering and scientific research, often promote an elite and exclusive culture that leaves us speaking only amongst "peer-reviewed" circles of privileged individuals. We therefore have become disconnected from the communities impacted by our work. In order to make policy and planning an experience that a broader chorus of voices can engage in and influence, these professions need to do the internal work necessary to bring down walls and promote a more inclusive culture.

In Florida, climate resilience policymaking generally happens through the statewide legislative process and locally through comprehensive plans and local ordinances at the city and county level. Once these policies become law, it is then a game of implementation where many laws may become more or less effective or equitable depending on the actions of outside stakeholders that have the resources to influence the implementation process. Unfortunately, for those who are not trained as an attorney or some other professional in a relevant field, do not have great amounts of time and/or wealth, and do not work within government or in a related field, it is quite difficult to learn of when government meetings are held, comment deadlines, or generally have a sense of how to effectively engage in policymaking, let alone have the ability to influence those policymaking forums. This is deeply and urgently problematic for promoting inclusive and equitable policymaking.

Fortunately, Florida has initiatives that are effectively engaging local communities. For example, in Palm Beach County, the Office of Sustainability is partnering with local community groups to spark dialogue with marginalized communities on the topic of climate resilience and incorporate their opinions into their decision-making. There are many strategies available to policymakers to make the process more inclusive. This paper addresses these in more detail below under Part V.

Availability of Relevant Data on Expected Climate Change Impacts

A significant amount of relevant data on expected climate change impacts in Florida is available. There is an exciting amount of resources that Florida has already put into understanding climate vulnerabilities. There is even data to help identify socially vulnerable areas. Much of the work has been done. It is critical at this point for Florida to capture more granular and community-driven data.[82] Organizing the data in ways that are useful for social resilience policymaking is also needed.

Grassroots Climate Resilience Work throughout Florida

Effective, but relatively isolated, social resilience strategies are happening. Of the areas covered by this research, there exist significant and largely grassroots social resilience initiatives actively

[81] Michelle Alexander, The New Jim Crow: Mass Incarceration in the Age of Colorblindness, (The New Press, 2012).
[82] King, *supra* note 14.

responding to climate change. Over the last roughly ten years, there has been an emergence of climate activism and policymaking throughout Florida, particularly in the southeastern part of the state. It is worth noting here that most of these initiatives are women-led and were initially developed not as climate or environmental initiatives, but as social justice initiatives. These community-led initiatives range from anti-violence to faith-based to youth leadership development to community beautification. Due to the climate vulnerability of the areas they reside in and the need to be responsive to the communities they serve, these grassroots social groups have become local climate and environmental leaders.

The Potential for Inequitable Disaster Response

Natural disasters and recovery efforts have been found to widen wealth inequities, especially on the basis of race, education, and homeownership.[83] In the case of Bay County and Hurricane Michael in 2018, Bay County lost roughly 60% of its affordable housing from Hurricane Michael. It is estimated that it will take over five years to rebuild the destroyed housing, which was already oversubscribed prior to Hurricane Michael. The population of homeless children has more than tripled, from 1,500 to 5,000.[84] Intake for disaster response assistance is also oversubscribed, leaving volunteers, nonprofits, and government employees working around the clock just to help people find a roof over their head. The county is in a state of crisis, especially for vulnerable populations. Some individuals struggle to complete FEMA and other funding applications due to literacy difficulties, inadequate documentation (e.g. heirs property injustices), English language proficiency, as well as a lack of time, transportation, internet access, and other resources necessary to navigate the application process. Additional bottlenecks occur due to the incompatibility of federal and state disaster response policies. Because programs are not aligned, the proverbial “red tape” is preventing significant pots of federal and state money from reaching residents urgently in need of resources. Some residents also express concern that there is more interest in using disaster relief funds for businesses as opposed to direct aid to low-income residents in need of housing. Disaster efforts have also turned to accessing federal opportunity zone investments to help with rebuilding. Opportunity zone investments have no community benefits requirements and have the potential to cause and/or accelerate displacement and gentrification.[85]

Part IV: Vulnerability + Resilience Indicators / Assessments

There are numerous resources that provide guidance, data, and analytics on how to develop and use vulnerability and resilience indicators and assessments. This report flags some of these

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[83] Junia Howell & James R Elliot, *Damages Done: The Longitudinal Impacts of Natural Hazards on Wealth Inequality in the United States*, SOCIAL PROBLEMS Vol. 63, Issue 3 (Aug. 14, 2018), *available at* https://doi.org/10.1093/socpro/spy016.

[84] Bay County Long-Term Recovery Task Force, https://recoverbaycounty.com/wp-content/uploads/2019/06/LTCR-Plan-reduced-size.pdf.

[85] PolicyLink, *Recommendations for Opportunity Zones: Leveraging privet investment for equitable economic development*, https://www.policylink.org/sites/default/files/PolicyLink%20Recommendations%20for%20Opportunity%20Zones%20.pdf.

resources that were found to be particularly relevant for the state of Florida. Recommendations below use these and other resources as useful guidance, however it is critical that Florida develop its own sets of localized and socially equitable indicators. In addition, it is important not to conflate the use of vulnerability and resilience indicators. In most cases a vulnerability and resilience indicator might be the inverse of each other or, depending on how they are used, might be one and the same. For example, an indicator might be "Access to a vehicle." A low percentage of individuals with access to a vehicle shows a vulnerability to climate change impacts, especially sudden extreme weather events. However, if that percentage is high, it might show that the particular community surveyed is more resilient based on the apparently high rate of mobility of the population, thereby functioning as an indicator of resilience. There is also limited data to clarify what percentage of positive response to a particular indicator question is required for a community to be considered "resilient." Using our previous example, what percentage of car ownership is required before a community can say that they are classified as resilient based on that one indicator – 50%, 85%, 100%? This is critical in translating pure data into actual information that can be used to influence and guide climate action. More research and data are needed in this area and will likely need to take into account a diversity of factors unique to a particular community.

Choosing between a primary focus on (1) vulnerability indicators and assessments or (2) resilience indicators and assessments is important and should be done with awareness of the differences between those options. Under a vulnerability framing, indicators and subsequent assessments of those indicators (discussed more below) follow a deficit model and are looking at what is lacking in a community. Focusing on vulnerability indicators and assessments can be useful throughout building and executing a climate action policy framework, particularly in the beginning when it is necessary to identify areas of most acute concern and to help prioritize action where resources and capacity for action is limited. However, it is critical, particularly when a specific community has been identified as an area of focus, to bring in a resilience framework as well. This allows for the climate action to bring in the assets and strengths of a community. This strengths-based approach allows for communities to contribute and engage in climate action planning and execution in a positive way and to be rewarded or at least acknowledged for these strengths. It also brings in additional resources that might otherwise be missed if just focusing on climate vulnerabilities. Ideally, climate strategies are able to use both vulnerability and resilience indicators and assessments.

It should also be noted that there are significant limitations to the use of indicators. They are in fact a substitute used to measure and tell a story of reality. They are "indirect numerical surrogates of real phenomena."[86] The use of indicators to attempt to quantify what is inherently qualitative will result in unavoidable inaccuracies that should be acknowledged, understood, and ideally accounted for in policy decision-making as much as possible.[87]

[86] Farin Fatemi et al, *Social vulnerability indicators in disasters: Findings from a systematic review*, INT'L JOURNAL OF DISASTER RISK REDUCTION Vol. 22, p 225, *available at* https://doi.org/10.1016/j.ijdrr.2016.09.006.
[87] *Id.*

Indicators + Assessments

Florida has at least two existing vulnerability assessments tools that can be useful in social resilience policymaking. The BRACE framework discussed above under Part II and the Geospatial Assessment Tool for Operations and Response or GATOR. GATOR is an interactive tool operated by the Division of Emergency Management and the State Emergency Response Team.[88] With data inputs such as flood zones, storm surge zones, hurricane evacuation zones, mobile home parks, migrant labor camps, demographics, and social vulnerability index data, GATOR is an excellent tool for local government planning, particularly if used along with additional community-driven data through a transparent participatory planning process. More on how to use GATOR can be found through Florida Department of Environmental Protection web resources.[89]

The NAACP has an online resource available to help understand how equity can be incorporated into adaptation planning by using pre-existing social vulnerability indicators, considering intersectional vulnerabilities, and defining socially equitable adaptation outcomes.[90] In California, Senate Bill 246 mandated an Integrated Climate Adaptation and Resiliency Program (ICARP) housed under the Governor's Office of Planning and Research.[91] ICARP operates with a technical advisory committee of multi-disciplinary stakeholders and has created a comprehensive list of climate vulnerability indicators and social equity principles that may also be useful for consideration locally in Florida.[92]

Below is an illustrative list of social vulnerability and resilience indicators to climate change that have relevance locally, as well as on a state-wide basis in Florida. The indicators listed below are informed by published research on vulnerability and resilience indices, as well as interviews with climate resilience stakeholders across the state of Florida. The following is intended to help generate conversation and perhaps provide some guidance for stakeholders interested or involved in bringing the social resilience leg of the stool into their climate change work. Ideally, a climate strategy uses targeted, measurable, comprehensive, and collectively identified indicators. This makes it more manageable to assess, update, and create policies that effectively use the indicators. Ultimately, any indicators used in Florida should be developed by Florida residents as part of a transparent, equitable, inclusive (all impacted communities, especially those historically marginalized and most impacted by climate change should be at the table driving the process), and dynamic (regularly updated and improved upon) process. The

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[88] Geospatial Assessment Tool for Operations and Response (GATOR), *Florida's State Emergency Response Team (SERT) uses an interactive map to view RECON reports and other activities along the shore*, (Sept. 2, 2011), https://www.arcgis.com/home/item.html?id=d5f29787955e44e985d6db27df2a6064.

[89] Florida Department of Environmental Protection, *Sea–Level Rise Vulnerability Assessment Tools and Resources - A Guide for Florida's Local Governments*, (2015), *available at* https://floridadep.gov/sites/default/files/SLR-VA-tools-extended_1.pdf.

[90] Patterson, *Equity in Building Resilience in Adaptation Planning*, NAACP, https://www.naacp.org/wp-content/uploads/2016/04/Equity_in_Resilience_Building_Climate_Adaptation_Indicators_FINAL.pdf.

[91] Governor's Office of Planning and Research, *Vulnerable Communities*, CA.GOV, http://opr.ca.gov/planning/icarp/vulnerable-communities.html.

[92] ICARP, *supra* note 57.

United States Climate Resilience Toolkit, Developing Urban Climate Adaptation Indicators report[93], Integrated Climate Adaptation and Resiliency Program Guidebook[94], NAACP's Equity in Building Resilience in Adaptation Planning[95], and the CalBRACE Vulnerability Assessment Framework[96] are additional resources that have useful guidance and indicators to consider.

Individual Indicators	Significance
Race and Ethnicity	Communities of color generally face more discrimination, are more vulnerable to climate change, and are less resourced to navigate impacts.
Gender	Due to gender discrimination, lower paying wages and childcare responsibilities, women tend to be more vulnerable to climate change impacts.
Sexual Orientation	Individuals with diverse sexual orientations, gender identities and gender expressions tend to face social, economic, health, and emotional discrimination that inhibit social stability and access to financial wealth.[97]
Income	Individuals with higher incomes are better resourced to respond to climate change impacts.
Age	Elderly populations are more likely to die during a climate disaster largely due to limited mobility and increased reliance on electrically powered life-saving devices. Both elderly and children are more likely to be reliant on other people for their wellbeing.[98]
English Speaking	It is more difficult for non-English speakers to access public resources available for responding to climate change impacts or participate in climate change policymaking discussions.

[93] Institute for Sustainable Communities, *supra* note 64.
[94] ICARP, *supra* note 92.
[95] Patterson, *supra* note 90.
[96] California Department of Public Health, *Climate Change and Healthy Vulnerability Indicators for California*, California Building Resilience Against Climate Effects (CALBRACE), https://www.cdph.ca.gov/Programs/OHE/Pages/CC-Health-Vulnerability-Indicators.aspx.
[97] Kim P, *Study: LGBT Statistics*, Credit Donkey (Feb. 25, 2018), https://www.creditdonkey.com/lgbt-statistics.html; Crosby Burns & Jeff Krehely, *Gay and Transgender People Face High Rates of Workplace Discrimination and Harassment*, CENTER FOR AM. PROGRESS (June 2, 2011, 9:00 AM), https://www.americanprogress.org/issues/lgbt/news/2011/06/02/9872/gay-and-transgender-people-face-high-rates-of-workplace-discrimination-and-harassment/.
[98] Fatemi, *supra* note 86.

Emergency Contacts	Individuals that are more isolated from a community or a friend or loved one may experience more difficulty in responding to and surviving a climate disaster.
Differently Abled	Individuals with certain disabilities may be more reliant on others for their wellbeing and may have unique physical, emotional, or mental qualities that make them more likely to be harmed by a climate disaster or the recovery process.
Access to a Vehicle	Access to a vehicle is a critical indicator in an individual's ability to survive a climate disaster.
Savings / "Rainy Day" Funds	Important for increased costs associated with addressing climate change impacts, e.g. hospital bills, flood protection home renovations, relocation costs, disaster recovery.
Job Security	Job security indicates stability in income necessary for increased costs associated with climate change, e.g. hospital bills, flood protection home renovations, relocation costs, disaster recovery.
Income / Job Relies on Coastal Economy or any other climate vulnerable economy (e.g. agriculture)	This should include coastal communities and populations working in flood zones, as well as farm workers and other populations that are exposed to longer and more intense extreme heat days when working outdoors.
Health Insurance	Individuals with health insurance can better afford to address health impacts from climate change and their costs.
Uses a life-saving technology that requires electricity	Florida clinicians identify this as a major health vulnerability, particularly for elderly residents
Has a criminal record	A criminal record can act as a barrier to accessing certain resources and job security.
Education level	This has been associated with negative economic and health outcomes that increase vulnerability to climate change.[99]
Possession of a state issued ID	Lack of a government issued ID significantly impacts ability to move around within the state, impeding an individual's ability to seek aid during a disaster and freely access their household.
Influence on Political Process	Used more frequently in international vulnerability assessments, this indicator speaks to the civil liberties and political rights of an individual which translates to an individual's ability to push for protections and resources

[99] King, *supra* note 82.

	necessary to navigate climate change impacts.[100] In Florida this might look like being registered to vote and/or being on relevant government listservs or mailing lists for climate resilience planning.
Immigration Status	Immigrants that lack government-mandated documents are subject to threats of criminal action and deportation that can prevent them from accessing public resources available for addressing climate change impacts or participating in climate change policymaking discussions.
Household Indicators	**Significance**
Household Income	Households with higher incomes are better resourced to respond to climate change impacts.
Rental Status	Renters often have less power over decisions that impact the vulnerability of their home.
"Cloudy" Title / Heirs Property	This is a barrier to receiving government aid in the event of a disaster.
Literate English Speaker in Household	Having at least one English speaker can help a household navigate government interventions associated with climate change impacts.
Household Insurance	Those vulnerable to climate impacts without flood, home, and renter insurance policies in place have a decreased ability to rebuild and recover after a disaster.
Part of a renter or homeowner collective	Homeowner or renter associations can empower a household's ability to engage in and benefit from climate resilience strategies.
Older home / Home has Significant Deferred Maintenance	Older homes and homes with significant deferred maintenance are more vulnerable to climate change impacts.
Mobile Home Park	Mobile home parks are more vulnerable to climate change impacts.
Farmworker Housing	Farmworker housing tends to be more vulnerable to climate change impacts.
Affordable Housing	Affordable housing units might be less equipped with climate resilient infrastructure and house residents who

[100] Brooks, *supra* note 77.

	have income limitations that make them more vulnerable to climate change impacts.
Rural / Geographically Isolated	Rural residents are generally isolated from public infrastructure, are dependent on locally based resource economies such as agriculture and have statistically lower income than urban areas making them more vulnerable to climate change impacts; high-density urban areas complicate evacuations and sheltering.[101]
Community Indicators	**Significance**
Local Community-Based Organizations Present	Local CBO presence is necessary to develop and implement social resilience strategies that will help to reduce climate vulnerability and represent the needs of community members in decision making circles.
Local Government Plans Have Strong Equity, Climate, and Emergency Response Mandates	These resources are important for developing and implementing disaster response strategies that will help to reduce climate vulnerability.
Local Government Has Climate, Sustainability, and or Social Equity Staff	This capacity is necessary to develop and implement social resilience strategies that will help to reduce climate vulnerability.
Local Government Climate Action is Transparent and Accessible to the Most Vulnerable and Marginalized	Access to these resources is critical for vulnerable and marginalized populations to benefit from climate resilience strategies.
Community Connectivity	Community banks, community land trusts, existence and use of community centers, residents knowing their neighbors, extended families living in the same community, community engagement in local governance are some potential characteristics of community connectivity. This is also an indicator of intergovernmental resilience.[102] This should be locally defined.
Community Awareness of Potential Climate Impacts	This will contribute to a community's ability to prepare for climate change impacts and avoid or reduce harmful impacts.
Community Awareness of Resources and Tools to Respond to Climate Impacts	This will contribute to a community's ability to access the resources available to prepare for climate change impacts and avoid or reduce harmful impacts.

[101] Florida BRACE, *supra* note 37.
[102] King, *supra* note 99.

Public Infrastructure	Weakness of public infrastructure has a direct correlation to social vulnerability of a community. Having public infrastructure not up to "climate resilient standards" (e.g. proper flood management, shoreline infrastructure, infrastructure located in flood zones, can withstand strong winds) and significant deferred maintenance are indicators of vulnerable public infrastructure. Critical infrastructure such as hospitals, fire departments, schools, and elderly care facilities are of particular importance and should be monitored closely.
Homeowner and renter protections in place for community members	As an example, these are essential for preventing climate displacement and gentrification.
Exposure to Pollution / Proximity to a toxic facility	This increases health vulnerabilities for communities exposed to significant levels of pollution. There are also additional risks associated with toxic facilities that can breach during events such as flooding and storm surges.
Exposure to displacement / gentrification	Exposure to displacement and gentrification increases a community's vulnerability to climate change impacts by disrupting and weakening community cohesion and cultural bonds, increasing cost of living, reducing community wealth, increasing homelessness, etc. Furthermore, climate change is a multiplier for social and economic displacement and gentrification. Higher and less flood prone areas will see an increase in climate-induced migration.[103]
Climate Vulnerability Indicators	
Exposure to Sea Level Rise	
Flood Zone / King Tide Exposure	
Green / Red Tide Exposure	
Exposure to Wildfires	
Exposure to Extreme Heat	

[103] Maxine Burkett et al., *Reaching Higher Ground: Avenues to Secure and Manage New Land for Communities Displaced by Climate Change*, CENTER FOR PROGRESSIVE REFORM (May 2017), http://progressivereform.org/articles/ReachingHigherGround_1703.pdf; Keenan et al., *Climate gentrification: from theory to empiricism in Miami-Dade County, Florida*, ENVTL. RESEARCH LETTERS Vol. 13, Number 5 (Apr. 23, 2018), *available at* https://iopscience.iop.org/article/10.1088/1748-9326/aabb32.

Exposure to Drought
Exposure to Tropical Diseases Worsened by Climate Change

Part V: Recommendations

The recommendations below are greatly informed by conversations with climate resilience stakeholders across the state.

Ground Current Climate Resilience Policymaking in Historic Injustices

Land use planning as well as housing and financial industries across the United States have a history of contributing systematically to injustices in low-income communities and communities of color. The practice of redlining is an example of a land use and lending practice in Florida that has contributed to low-income communities and communities of color experiencing more destructive land use practices and having less access to positive public and private financing opportunities.[104] Those discriminatory lending and insurance practices have real consequences today. A study in San Francisco found that 87% of the communities that were historically illegally labeled “hazardous” by banks and governments to lending and insurance opportunities are currently undergoing, or have undergone, gentrification.[105]

Another harmful practice is known as NIMBYism. Coined in the 1980’s, NIMBY or not in my backyard is an expression used to show opposition by local citizens to the locating in their neighborhood of a civic project that the community deems undesirable, e.g. jail, oil refinery, freeway, toxic facility, garbage dump.[106] This leads to an increase in environmental pollution burdens in communities, predominantly low-income and communities of color, who are less resourced and able to influence public and private sector actors and protect their communities from the siting of toxic facilities. As Professor Robert Bullard states in his book Dumping in Dixie: Race, Class, and Environmental Quality, "[t]he cumulative effect of not-in-my-backyard (NIMBY) victories by environmentalists appears to have driven the unwanted facilities toward the more vulnerable groups. Black neighborhoods are especially vulnerable to the penetration of unwanted land uses .... NIMBY, like white racism, creates and perpetuates privileges for whites at the expense of people of color."[107]

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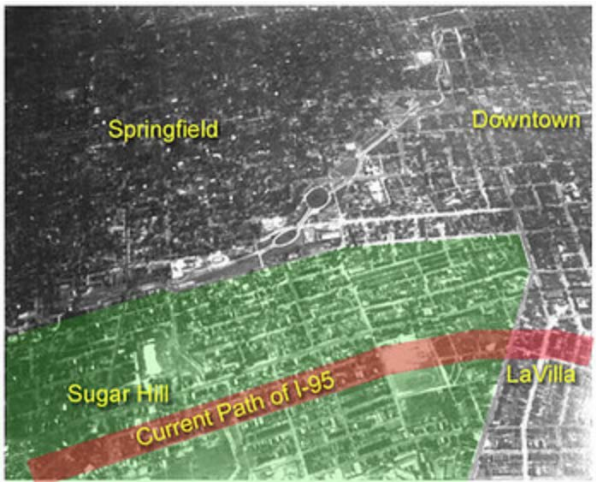
[104] Kriston Capps & Kate Rabinowitz, *How the Fair Housing Act Failed Black Homeowners*, CITY LAB (Apr. 11, 2018), *available at* https://www.citylab.com/equity/2018/04/how-the-fair-housing-act-failed-black-homeowners/557576/.
[105] Urban Displacement Project, *The Legacy of Redlining*, *available at* https://www.urbandisplacement.org/redlining.
[106] Dictionary.com, https://www.dictionary.com/browse/nimbyism.
[107] Robert D. Bullard, Dumping in Dixie: Race, Class, and Environmental Quality 46, 108 (1990).

These impacts can be illustrated by looking at the case of Sugar Hill and also a statewide analysis of toxic facility sitings across the state. The pictures and maps below are of Sugar Hill, a historically black area of Jacksonville. In the early 20th Century Sugar Hill was defined as being "Hazardous" by a local housing development corporation despite being an upscale residential district for African Americans. A few years later, a freeway was built directly through the heart of the neighborhood and public funds earmarked for "urban renewal" were used to erase large sections of this once thriving community.[108]

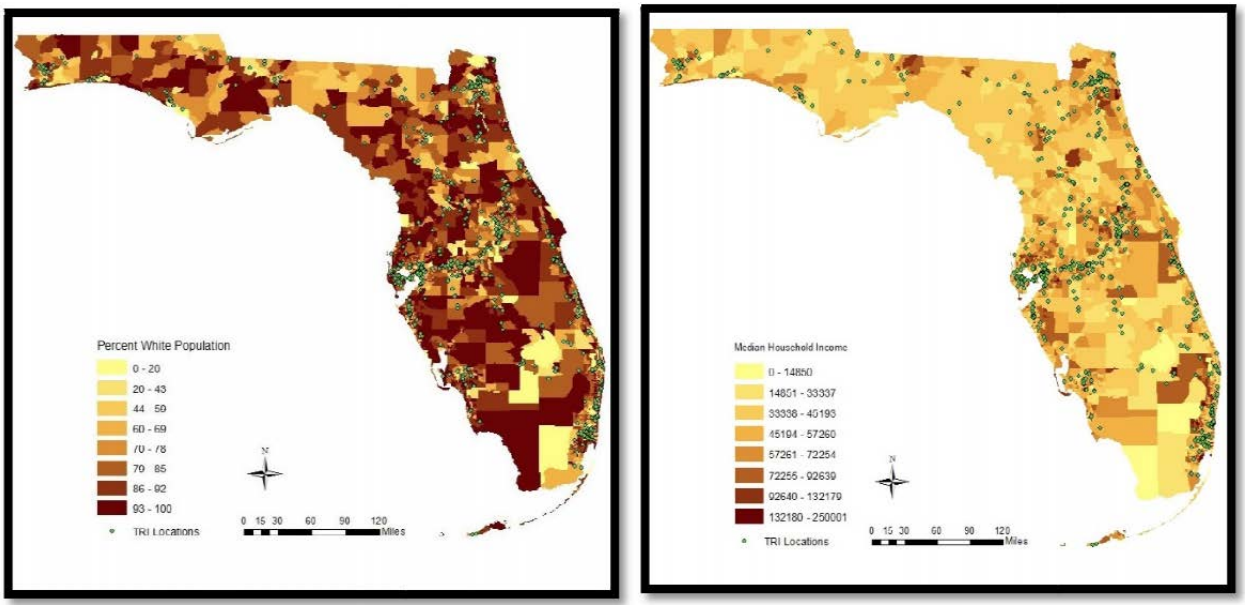


1940 Aerial of Sugar Hill[109]


Davis Street, Sugar Hill, 1940's[110]

In Florida, low-income communities and communities of color are more likely to live close to a toxic polluting facility.[111] The map below illustrates the correlation between toxic facilities and low-income households and communities of color. This reality is attributable, at least in part, to land use planning, politics, and the disenfranchisement of impacted communities.

[108] Ennis Davis, *Erasing the Past. What Sugar Hill Was*, NEIGHBORHOODS (Feb. 1, 2015) https://www.metrojacksonville.com/article/2015-feb-erasing-the-past-what-sugar-hill-was; Kriston Capps & Kate Rabinowitz, *How the Fair Housing Act Failed Black Homeowners*, CITYLAB (Apr. 11, 2018), https://www.citylab.com/equity/2018/04/how-the-fair-housing-act-failed-black-homeowners/557576/.
[109] Ennis Davis, *Lost Jacksonville: Sugar Hill*, Neighborhood (Mar. 2, 2009), https://www.metrojacksonville.com/article/2009-mar-lost-jacksonville-sugar-hill.
[110] *Id.*
[111] Jeff Vaz & Sam Wasserman, *Examining Environmental Injustice in Florida*, ENVTL. STUDIES PROGRAM, Colby College, https://digitalcommons.colby.edu/cgi/viewcontent.cgi?article=1115&context=atlas_docs.



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Because the legacies of these injustices live on today, this history of discrimination must be accounted for in policies moving forward in order for Florida to seed and grow effective climate resilience policies that successfully address social vulnerabilities. A more thorough account of these topics should be incorporated into climate resilience policymaking in Florida.

Explore a Dual Track for Community-Driven Policymaking

Due to the impressive diversity[113] across the state of Florida, coastal climate change policymaking will have to have both hyper-local and regional elements in order to maximize benefits and avoid unintended consequences. Simultaneously, the scale of climate impacts Florida will be facing will require a mobilization of resources and policies that reach outside of Florida - federally, throughout the southeastern region of the United States, and even into the Caribbean. In short, as the most vulnerable state in the United States, Florida cannot face these issues on its own. Given the need to both localize and have a diversity of policy making strategies that match the diversity of Florida, as well as the need to show a united front across the entire state that will enable Florida to engage effectively in federal conversations and regionally, this research suggests the value of a two-track policy strategy.

One track is more regional, localized and internally facing and the other focusing on statewide initiatives that promote cohesion, long term goal setting, and produces a unified and externally influential voice on climate change policies. By pursuing both tracks simultaneously and in coordination with each other, Florida will bring forward policy solutions that are deeply responsive to the needs of climate vulnerable communities while also functioning as a coordinated jurisdiction moving toward common goals and engaging with out-of-state stakeholders as a united voice.

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112 *Id.*

113 Diversity across many indicators including geographic (rural, coastal, urban, etc), racial, cultural, professional, industries, etc.

Track One

The first track is where the bulk of the work lies. It is largely community-facing and hyper-responsive to local and regional needs and opportunities. It is also largely already in motion across the state with the social resilience leg of the stool needing the most attention and resources. This research defers to experts within Florida to determine how to define "local" in the most effective way, whether that might be city, county, region, neighborhood, or some other geographic area.

Policymaking in this track is driven by local community members, community-based organizations, and local governments. It requires robust community engagement and applying social equity principles. The National Association of Climate Resilience Planners framework on community-driven climate resilience planning is a comprehensive and valuable resource for this work and can be applied to both tracks of policymaking but is most critical for this first track.[114] Important steps to ensure this track of policymaking is locally responsive include:

- Identify and implement local community-driven social vulnerability criteria in resilience planning.
- Develop community-driven baseline data of assets and vulnerabilities in identified socially vulnerable areas. Community assessments should be frequently updated, at least annually.
- Increase community-based organization involvement in policymaking to ensure balance and equity in resilience policies.
- Organizations, businesses, and individuals that serve the interests of socially vulnerable communities should act as advisors and decisionmakers in resilience planning and program implementation for the communities they serve.
- Resilience strategies must be driven by the communities they intend to serve and include robust community engagement and community decision-making power. Working "with" communities, instead of engaging in exclusive policymaking, will yield more equitable and sustainable results.
- Where possible, connect across these smaller and more nimble policymaking efforts to help share lessons learned and build collaborative initiatives across multiple communities.

Example policy:
California SB 1072 establishes a program to build and support existing regional climate collaboratives across the state that will assist "under-resourced communities" to access state funding for climate change mitigation and adaptation projects.

[114] Gonzalez, *supra* note 63.

Track Two

The second track is a collaborative, inclusive, and united statewide commitment to an equitable climate resilience policy strategy. As the most vulnerable state in the United States to climate change, Florida has enormous influence nationally and internationally on what is increasingly being seen as a bipartisan issue.

Example Policy:
On November 14, 2008, Governor Arnold Schwarzenegger called on the California Natural Resources Agency (CNRA) to develop a state Climate Adaptation Strategy in coordination with public and private entities at the local, regional, state and federal levels (Executive Order S-13-08). CNRA organized state agencies into seven resource-based sector working groups. Each working group identified both short- and long-term adaptation goals and a process for reporting on progress.

Example Policy:
SB 246 established an Integrated Climate Adaptation and Resiliency Program for California as of January 1, 2017. The program will coordinate regional and local efforts with state climate adaptation strategies to adapt to the impacts of climate change. There is to be an emphasis on climate equity considerations across sectors and regions and strategies that benefit both greenhouse gas emissions reductions and adaptation efforts, in order to facilitate the development of holistic, complementary strategies for adapting to climate change impacts.

All Policymaking

When doing community engagement work and developing socially equitable policies, it is important to meet communities where they are. It can be as simple as starting with one simple question: What do you need? This helps to ground future engagement with the community in ways that directly support, or at a minimum do not disrupt, the priorities that people are already spending time and resources on. An important second follow-up question: What work is already being done? This helps to avoid disrupting or displacing good work already being done and helps identifying initiatives in the community that complement the work an outsider hopes to accomplish. Whether it is safety, health care, insurance, food security, jobs, etc. - climate change touches all of these issues. In many instances it has a multiplier effect. As an example, the city of Riviera Beach includes education, workforce development, and water pollution as some of their top priorities. Statewide, there is a growing interest from local governments to address climate change impacts and vulnerabilities. Building resilience strategies that have strong education, workforce development, and water pollution co-benefits, as examples, could go a long way in increasing and maintaining community engagement and support, as well as maximizing positive impacts for the investments made.

The Florida Department of Environmental Protection's "Sea–Level Rise Vulnerability Assessment Tools and Resources - A Guide for Florida's Local Governments" is a valuable tool that outlines community engagement steps and inclusive policymaking principles useful for climate resilience policymaking throughout the state.[115] From the nonprofit sector, the Community Tool Kit: Building Coastal Resilience by Understanding and Responding to the Effects of Climate Change on Community Health and Wellbeing, known as the ReACT Toolkit, provides valuable resources for better community outreach on issues of health and climate change in underserved communities.[116]

Figure 1: Adaptation Planning Process

Florida Department of Environmental Protection

Nationally, the United States Climate Resilience Toolkit is another great resource with an interactive web presence and useful data and frameworks for state and local decisionmakers - which ideally includes community members as well as public officials. This resource follows the following five step process.

In addition to these robust toolkits and frameworks, the following are some additional strategies available for climate resilience policymaking with social equity priorities.

[115] Florida Department of Environmental Protection, *supra* note 89.
[116] Unitarian Universalist Justice Florida's Climate Resilience Ministry, *Community Tool Kit: Building Coastal Resilience by Understanding and Responding to the Effects of Climate Change on Community Health and Wellbeing,* http://reacttoolkit.net/.

Innovation | Climate change impacts across the global are occurring at unprecedented scales and with overwhelming frequency. Existing policy mechanisms are not enough. More emphasis on policy and technology innovation through public-private partnerships can play an important role. As an example, through its CalSEED program[117], California has been able to resource and seed influential, equitable, and accessible new technologies to address climate change.

Social Equity | Social equity policymaking requires first an acknowledgement and understanding of how and which populations have been and are currently being exposed to social, economic, cultural, health, and/or environmental injustices. Policies and resource allocations should then seek to make whole those who have been harmed by those injustices. In the context of climate change policies, this requires prioritizing resources and policy action to make whole those communities that are facing significant climate impacts and are simultaneously burdened by additional socioeconomic and environmental injustices. These social equity policies should allow for community-driven solutions that lead to transformative resilience as well as just and restorative climate action.

Transparency and Inclusivity | Transparent policymaking helps to build accountability and public trust. It requires strong, ideally mandatory, communications and community engagement initiatives. Creating inclusive spaces for climate resilience policymaking is an important strategy. Many local governments and community-based organizations have programs in place to ensure their work is inclusive - these include participatory planning and policymaking, engaging community members through town halls and other community meetings, partnering with trusted local community organizations, and working with communities on community visioning and asset- and vulnerability-mapping exercises. The key with these strategies is to monitor and measure impacts to ensure they are actually working. If a strategy is not working, governments must seek out and invest in new inclusivity strategies.

Positive Community Engagement | It is important to include solutions and positive language in community engagement and education. The CLEO Institute refers to this as “urgency and agency.” People must feel, and actually have, agency in their ability to respond to climate change challenges. A dialogue that is always reactive, alarmist, and focused on problems will deter engagement on the topic and have negative mental health consequences. Individuals are more likely to engage in climate change action if they are empowered to act.[118]

Here are some questions policymakers can ask to ensure social equity is at the center of climate resilience policymaking.

[117] CalSEED, *Investing in California’s Energy Future*, http://www.calseed.fund.
[118] King, *supra* note 102.

Representation | *Who is at the decision-making table? Are all communities, particularly the most vulnerable adequately represented?*

Transparency | *Are policy discussions and decisions transparent to all impacted stakeholders?*

Prioritization | *Is there language in the policy that explicitly calls for (1) prioritization of socially vulnerable communities, and (2) socially equitable actions on behalf of socially vulnerable communities? Is there language in the policies that mandate the inclusion of socially vulnerable communities in the implementation process?*

Research Gaps | *Are there social equity research gaps that policies can help address?*

Here is a policymaking framework that can be applied.

Engage | *Work alongside impacted communities to collectively vision climate resilience policy action.*

Define | *Define priority geographical areas through a vulnerability assessment. It is critical for Florida to identify and acknowledge rural, pocket or isolated communities that are socioeconomically and racially marginalized as well as vulnerable to climate change impacts. See the CalEnviro screen mapping tool[119] as an example. This tool applies roughly 20 socioeconomic and environmental indicators to a mapping tool to identify areas throughout the state of California that are most impacted by poverty and pollution.*

Understand | *Understand the community challenges, needs and assets within the priority area (can be done through a community asset mapping process).*

Prioritize | *Explicitly prioritize the communities identified above under "Define" in climate resilience policymaking and resource allocations.*

Execute | *Execute strategies and policies that reduce and eliminate harm to vulnerable communities. These strategies and policies must be developed out of a community-led, inclusive process with meaningful engagement from community-serving groups.*

Adapt | *Use an adaptive management approach by regularly measuring climate resilience impacts, seeking community input, and remaining accountable to a vision and/or set of goals. Then have a policy mechanism to change course or "adapt" if policies are not having the consequences intended or are unintentionally causing harm.*

[119] California Office of Environmental Health Hazard Assessment, https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30.

See the California Energy Commissions Equity Indicators initiative and mapping tool[120] *as an example.*

Share | *Commit to accessibility to and transparency of the policymaking and implementation process.*

On the issue of inclusive and equitable policymaking, the environmental policymaking world, and the legal field at large, can borrow from an emergence of analysis and literature on broadening participation in STEM[121] fields through strategies such as placing more value and emphasis on indigenous knowledge, better understanding diverse community perspectives, addressing unconscious bias, and creating inclusive career pathways.

Use Vulnerability and Resilience Assessments as Starting Points

Vulnerability and resilience assessments are important tools for beginning to prioritize social equity in climate resilience policies. These assessments can help identify which communities are most vulnerable to climate change as well as which are most exposed to additional socioeconomic and environmental injustices. This can clarify for policymakers where and how they might prioritize resource allocations and policy action across the state. See Part IV for more guidance on vulnerability and resilience assessments.

Prioritize Housing and Wastewater Infrastructure in Socially Vulnerable Communities

Given the significance of aging infrastructure along the coast, particularly in socioeconomically marginalized communities, local and statewide policy should implement strategies that will ensure the safety of individuals reliant on this infrastructure. For example, an assessment of where affordable housing, structurally vulnerable housing (e.g. older homes with deferred maintenance, mobile homes, farm worker housing) are located and prioritizing these households for climate resilience projects will significantly advance social resilience strategies. The University of Florida Schimberg Center for Affordable Housing[122] as well as the University of Miami Office of Civic & Community Engagement are two of the stakeholders exploring this intersect between climate change, social resilience, and affordable housing.[123]

Elevate Social Responsibility in Environmental and Conservation Work

All environmental, climate, and conservation efforts should include social vulnerability and equity frameworks. There is an impressive amount of conservation and climate research, project development, and policymaking happening across the state of Florida. With relatively low time or resources, this existing work can be tweaked to include social equity priorities.

As an example, Cedar Key has partnered with the University of Florida and Florida Sea Grant to identify opportunities along its coast for living shoreline investments. The project brings together

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[120] California Energy Commission, *Energy Equity Indicators*, CA.GOV, https://ww2.energy.ca.gov/sb350/barriers_report/equity-indicators.html.
[121] Science, Technology, Engineering, Mathematics.
[122] University of Florida Shimberg Center for Housing Studies, http://www.shimberg.ufl.edu.
[123] University of Miami Office of Civic & Community Engagement, https://civic.miami.edu.

legal, GIS, engineering, climate and conservation expertise to map out parcel by parcel where private and public land would benefit from a living shoreline investment. It is an impressive multi-disciplinary and localized project. The social resilience benefits of this project and others like it could be dramatically enhanced with a few social resilience strategies.

First, the study could add social vulnerability indicator layers to the GIS and legal analyses. In addition to understanding a parcel's storm surge, flooding, and sea level rise vulnerabilities, this type of study can also include indicators such as age, race, gender, rental status, income, primary language spoken, access to a vehicle, etc. Second, the project does a good job carrying out community meetings to help build awareness in the Cedar Key community of living shorelines and also get input from community members on what they envision for their community. Taking additional steps to ensure marginalized communities are engaged is a key step in building inclusivity in a project. These steps include clearly defining and understanding who the most vulnerable and marginalized communities are, partnering with trusted community leaders and organizations, using culturally competent and accessible language and means of communication, being transparent, tracking attendance of meetings and other metrics to understand marginalized community engagement, and including marginalized community members in decision-making forums and committees. Third, a very simple but significant step toward strengthening the social resilience impacts of a built or natural environment resilience project is to simply expand the definition of resilience to explicitly include human resilience. This will help to bring issues such as social equity and human health and safety directly into the framing, goal setting, and execution of the project.

Partner with Community Groups Representing Socially Vulnerable Populations

State and local government agencies should resource and partner with community groups to develop and execute effective and accessible climate resilience strategies that incorporate social equity strategies (many of which are discussed in this paper). These partnerships should also provide critical information about likely climate impacts and ways communities can respond, protect themselves and their assets, and ultimately thrive. See below under "Support and Resource Homegrown Resilience Strategies" for a list of community groups below that are currently engaged in effective climate resilience work using a social equity framework. When seeking out partners it is important to note that many of the most effective groups are not formally considered climate or environmental organizations, but instead were created to respond to immigration, social justice, economic equity, violence, education, and other issues within their communities. Given, however, the presence of climate change impacts in the communities they serve, these groups have also become effective climate resilience advocates.

Invest in Coordination and Connectivity Across Stakeholders

With all of the climate resilient activity emerging across Florida, it will be beneficial to promote strong coordination across key resilience stakeholders (e.g. state-wide and regional climate justice committees, advisory committees for local and regional planning). This can be facilitated by any qualified stakeholder resourced to do so, including state government, academia, nonprofits, and philanthropy. The FAMU's CEEJ appears to be well-suited for this type of coordination. Furthermore, due to the complexity of climate change impacts, improving

connectivity across science, policymaking, communities, businesses, and communications strategies will also be key.

Support Equitable Regional Climate Action

Regional climate collaboratives are a powerful tool in driving forward climate change policies in Florida. Ideally this work continues and expands across the state. As discussed above, it is an important asset in the localized Track 1 policymaking strategies. Successful regional climate collaboration requires adequate resources, intergovernmental alignment of resources and policy commitments, committed leadership, inclusivity at all levels of decision-making, transparency, SMARTER[124] goals and metrics, having social equity front and center of policymaking and implementation, and commitment and engagement of local agencies that have the jurisdiction to mandate action under law (e.g. planning agencies).[125] Having a planning agency with legal jurisdiction to give any mandates coming out of a regional climate collaborative teeth is essential to its success. For an in-depth analysis of regional climate collaboratives, particularly in urban centers, please see the Institute for Sustainable Communities' "Regional Collaboratives for Climate Change - A State of Art."[126]

Invest in Mapping Tools for Identifying Socially Vulnerable Communities

Due to the diversity across Florida and the existence of rural and pocket communities throughout the state (discussed more in depth above), Florida will benefit from having an interactive mapping tool that uses socioeconomic and environmental indicators (see Part IV) to identify socially vulnerable communities across the state. See CalEnviroScreen 3.0 as an example of how this tool has been used in California. The version of this tool used in Florida should be as localized and granular as possible and reflect robust input from stakeholders in impacted communities.[127] Data that is at household or at least census block level will produce better policies than zip code level data.

The BRACE framework discussed above under Part II produced a helpful map and is a good starting point for identifying socially vulnerable communities.[128] Updating this tool with community-driven data that can account for diversities across rural and pocket communities and making it as interactive and accessible as possible will have great value in climate change conversations and policymaking throughout Florida. Participatory mapping and community engagement strategies have been successful and are on the rise in climate vulnerable

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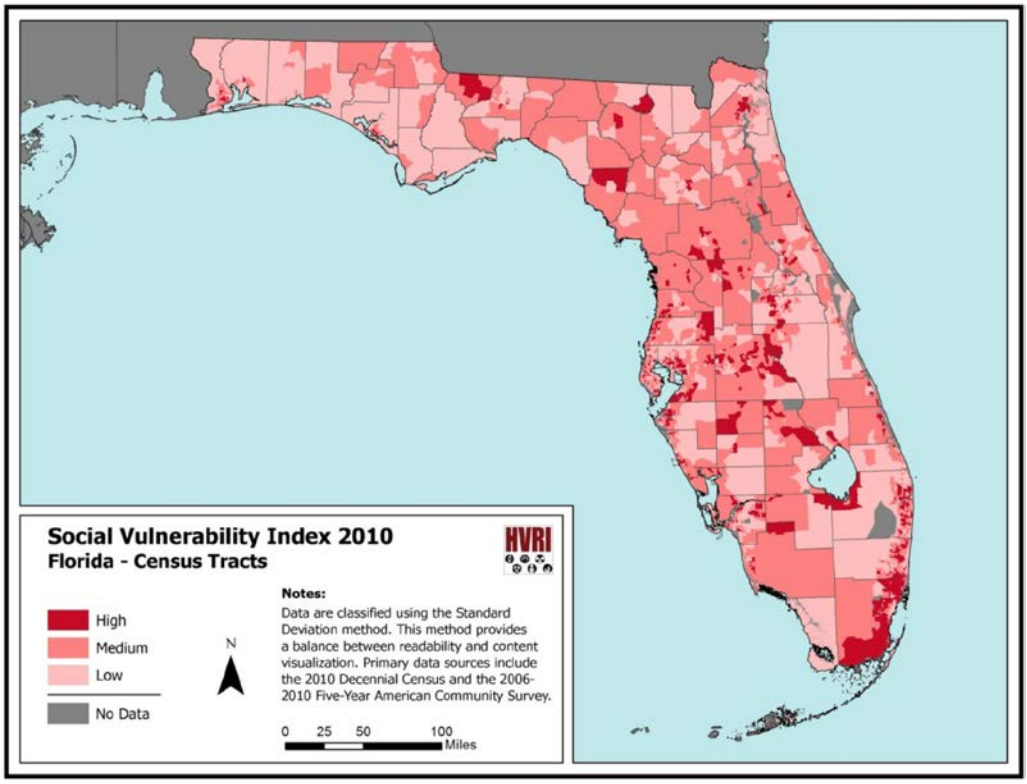
[124] There are many different variations of the SMART and SMARTER acronyms. For the purposes of this paper, SMARTER goals include Equitable and Responsible to the known SMART acronym for Specific, Measurable, Attainable, Relevant, and Timely.
[125] Darryl Young, *Essential Capacities for Urban Climate Adaptation: A Framework for Cities*, INNOVATION NETWORK FOR COMMUNITIES 41 (Mar. 2017), https://www.saenv.com/wp-content/uploads/2017/03/City-Adaptation-Essential-Capacities-Final-Report-03.17.pdf.
[126] Adams, *supra* note 70.
[127] King, *supra* note 118.
[128] Florida BRACE, *supra* note 101.

geographies in places such as Puerto Rico[129], the Gulf Region[130], California[131], and New Jersey[132]. There are many resources for designing and executing successful participatory mapping and policy projects. Some of these resources can be found below in Part VII.



Advocate Federally for the Benefit of Florida's Most Vulnerable Populations

Florida as a state should advocate federally for more efficient and equitable federal disaster recovery and rebuilding programs. The benefits of federal programs such as FEMA aid, Community Development Block Grants[133], opportunity zones investments, and SBA loans are not always accessible to low-income residents who experience barriers to participating meaningfully in those programs. Examples of barriers include - lack of clear title to property, lack of political influence, low literacy rates, insufficient credit score or personal assets available for collateral, and no or unreliable internet access. Funding that goes through both federal and state administering offices are inefficient at reaching any of the intended recipients due to an

[129] Imaginación Post María Participatory Planning and Just Recover 6-Step Process, La Maraña, http://www.lamarana.org/la-maraña--imaginación-post-mar%C3%ADa-español.html.
[130] Sea Grant – NOAA, *Framework for 2017 Sea Grant – NOAA Regional Integration Work Plan*, https://seagrant.noaa.gov/Portals/1/Regional%20Integration/GOM_Regional_Integration_2.14.2018.pdf.
[131] Greg Brown et al., *Using public participatory mapping to inform general land use planning and zoning*, ELSEVIER (2018), *available at* https://www.landscapevalues.org/publications/zoning_final.pdf.
[132] New Jersey Department of Environmental Protection Office of Coastal Management, *New Jersey's Coastal Community Vulnerability Assessment and Mapping Protocol*, (2011), *available at* http://www.midatlanticocean.org/022013_njccva_mp.pdf.
[133] HUD.GOV, *Community Development Block Grant Program – CDBG*, https://www.hud.gov/program_offices/comm_planning/communitydevelopment/programs.

excess of uncoordinated red tape. For example, in Bay County the county lost 60% of its already oversubscribed affordable housing and has seen a tripling of its homeless youth population due to the immense damage from Hurricane Michael in 2018. Despite being in a state of crisis there are new FEMA trailers and other resources that remain unused and inaccessible in Bay County because of bureaucratic red tape. A state like Florida would have significant influence on how these federal programs are structured and implemented. There is a need for disaster response and rebuilding programs to be better designed for and accessible to people living at the margins.

Properly Define and Resource Social Resilience in Climate Action

Climate resilience work cannot be successful if social resilience is not part of the definition of resilience. In other words, social resilience is inherently a central piece of climate resilience. It might require bringing into the climate movement unfamiliar and uncomfortable topics such as structural racism, affordable housing, and disaster capitalism, but if we do not address these topics, we will invest in solutions that only have temporary and isolated benefits for privileged communities. This will require (1) making social resilience a mandate within any climate action strategy and (2) providing adequate resources for implementing the work. If both of these steps do not happen the issue of social resilience will always be given short shrift. Topics that have been historically, culturally, and systemically marginalized will continue to be marginalized if there is not clear prioritization of social resilience, a strong equity framework is in place, and there are resources for implementation. Once it is a priority, government and policymakers must hire and train staff to effectively work on social equity issues and provide resources in the budget to execute strategies.

In 2011 Governor Rick Scott dismantled the Florida Energy and Climate Commission and transferred certain functions to the Department of Agriculture and Consumer Services.[134] Removing this internal capacity inhibits the state's ability to move robust state-wide climate action and execute a state Energy and Climate Action Plan.[135] In southeast Florida where the state has seen the most active on climate change planning and policymaking, each SE Compact county has its own resilience staff with Miami-Dade having the most staff and Monroe County having the least. Policy stakeholders such as the recently created Palm Beach County office of resilience are incorporating social resilience throughout their climate resilience activities and already seeing benefits of community partnerships and trust building. Higher staff levels (especially in positions of influence within their agency) allow for more robust climate policy implementation, while jurisdictions with fewer or no staff will struggle to translate policies into climate action.

It is important to support and allow for coordination across divisions within a government office. Similar to the value in comprehensive plans connecting climate and coastal language with other chapters covering issues such as housing, public infrastructure, public health, endangered species, tourism, water quality, and economic development, there is also value in government

[134] Georgetown Law, *Preparing for Climate Change in Florida*, GEO. CLIMATE CENTER, https://www.georgetownclimate.org/adaptation/state-information/florida/overview.html?view=full.
[135] *Id.*

divisions working across silos to develop and implement climate resilience strategies. The impacts of climate change are so ubiquitous that multi-disciplinary strategies will be essential in order to have effective and equitable resilience strategies in place.

In addition to staff, there is ideally a budget for implementation to support activities such as robust community engagement, developing educational materials, conducting climate and social resilience research studies, and implementing resilience projects identified by the community. Without proper resources, local governments will continue to feel frustrated and under-resourced on the topic of social resilience. All of the local government officials interviewed have expressed a strong interest in and commitment to improving social equity outcomes in their climate resilience work, but without the proper resources and technical assistance this will be a difficult road.

Develop Baseline Data for Socially Vulnerable Communities

Lack of baseline data is a major vulnerability (little documentation of what communities are fighting to go back to or protect). With an increased understanding of where and how Florida's coastal communities will be impacted by climate change, communities have the ability, ideally in advance of a major sudden or slow-onset disaster, to identify and map out critical community assets. These assets include built infrastructure such as schools, hospitals, and churches. The mapping should also include important natural landscapes, cultural, historical, spiritual assets, and any other assets or vulnerabilities identified by the community. This mapping should be led by communities, with the most disenfranchised and marginalized voices leading and participating in the process. Individuals, governments, nonprofits, and companies from outside of the community should not be the ones dictating what those assets are. Outside stakeholders can partner with and support the process of collecting and organizing baseline data, but this process should be driven by local community members themselves. Otherwise you will see those who have the most to gain or lose having to take a backseat in this process and outside interests that are geographically removed from the realities of what is actually happening in the community are allowed to design and drive the process, likely becoming the primary beneficiaries of policies and projects. This inevitably contributes to inequitable and unsustainable land management and policymaking. In Bay County, under-resourced communities are now under dire conditions and incredible resource constraints working to pull together community asset and vulnerability assessments that will help them equitably and effectively recover and rebuild from the devastation of Hurricane Michael.[136] Ideally, communities can collect this data in advance of a climate shock and in a methodical and inclusive manner.

Identify and Resource Social Vulnerability Research Gaps

Many facets of climate change impacts are relatively new. This is particularly true for the social resilience impacts related to climate change. The role of research and information gathering is therefore critically important to addressing and better understanding the intersection of social

[136] LEAD Coalition, http://www.leadabetterlife.org.

resilience and climate change in Florida. The following are some of the research gaps mentioned in interviews with climate resilience stakeholders in Florida.

- Understanding the social costs of climate displacement on low-income and marginalized communities in Florida.
- Understanding the psychological and emotional impacts of climate change in marginalized and vulnerable communities in Florida.
- Understanding the multiplier effect that climate change has on existing social vulnerabilities in Florida.
- More modeling and data on projected climate change-induced migration patterns throughout Florida and the Caribbean region.
- Developing baseline data in advance of climate disruptions so that communities can enter into rebuilding and recovery conversations and negotiations with existing data on what was lost.

Address Mental Health Needs

The psychological and emotional stability of an individual through climate change stressors is an incredibly important part of navigating issues associated with climate change such as job loss, flooding, displacement, increased cost of living, and extreme weather events. Therefore, the mental health of vulnerable populations should be a priority and receive state and local resources. Stakeholders such as Florida International University - Herbert Wertheim College of Medicine and Florida Clinicians for Climate Action[137] are looking to better understand this work and are developing trainings for clinicians to better diagnose and treat the physical and mental health impacts of climate change.

Explore and Resource New and Equitable Policy and Community Engagement Strategies to Address Climate Displacement, Gentrification, and Regional Migration

Climate displacement and gentrification are of significant concern in many climate vulnerable geographies. New models of land use management, property insurance, and land acquisition will need to be explored.[138] Alaska, Washington, and Louisiana are three states that have already turned to government funded relocation projects for climate vulnerable communities.[139] For socially vulnerable communities organizing, planning, and policymaking is urgently needed to address climate displacement and gentrification threats. This work has already begun in places like Liberty City and Little Haiti in Miami.[140] In places like the Florida Keys and parts of Miami, residents are facing daunting sea level rise projections necessitating immediate

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[137] The Medical Society Consortium on Climate & Health, *Florida Clinicians for Climate Action*, https://states.ms2ch.org/fl/fcca/?utm_source=Our+Daily+Planet+Subscribers&utm_campaign=ed0c53e325-EMAIL_CAMPAIGN_2019_04_02_02_32&utm_medium=email&utm_term=0_15a39131a0-ed0c53e325-62366173.

[138] Burkett, *supra* note 103.

[139] Kyla Mandel, *In Alaska, a town threatened by climate change gets federal funding to relocate*, THINK PROGRESS (Mar. 23, 2018), https://thinkprogress.org/newtok-alaska-gets-relocation-funding-35b4434242a6/.

[140] 2018 City of Miami Resolution to Study and Address Climate Gentrification, https://www.eenews.net/assets/2018/12/05/document_cw_02.pdf.

conversations and planning on how to respond. Strategies such as property buyouts, coastal armoring and flood proofing buildings will not be viable solutions in all areas of Florida, particularly some of the more vulnerable parts of Florida. The thought of a strategy such as planned relocation can be incredibly painful. This is an emotionally and legally complex topic that will require new strategies of community engagement and legal frameworks to address.[141] Communities should have the resources and data points necessary to assess their options and decide how best to proceed.

For communities facing climate gentrification, there must be government interventions to prevent harm and where market forces are too strong, make impacted communities whole. Communities found to be vulnerable to climate gentrification should receive immediate emergency legal protections such as strong rent control protections, a ban against fees and liens for minor land use violations, and a ban on any other strategies seen as harassment and bullying of residents. There also should be complete transparency of major land use purchases and planning and any major investments should be negotiated through and eventually approved by a panel or committee of community representatives.

Public and private sector groups working closely with acutely vulnerable communities across the state to jointly explore and understand scientific data on sea level rise, co-develop new studies, and work together to vision and plan for a healthy and sustainable future will help to lessen the burden of climate impacts. Avoiding topics such as climate gentrification, displacement, and planned relocation will leave communities under-resourced, under-prepared, and exposed to dangerous and costly climate change impacts. This must be a collective, transparent, inclusive, and resourced version of policymaking and land use planning that might feel costly and time consuming in the beginning but will ideally unite and orient vulnerable residents and governments toward a realistic and successful adaptation plan.

Topics such as climate change-induced migration and gentrification may also require regional action so that vulnerable and non-vulnerable areas can work together to respond to the movement of people. On the issue of migration, zooming out regionally and engaging more actively on this topic within the entire Caribbean will be a valuable strategy for Florida. As part of the Caribbean basin, climate induced catastrophes, from severe hurricanes to historic droughts that impact the Caribbean region, will undoubtedly have economic impacts and will influence migratory patterns within the state of Florida.

Proactively Engage the Private Sector

Private sector stakeholders do not appear to be actively engaged in public climate resilience conversations in Florida. There are opportunities to proactively engage some private stakeholders in productive climate resilience conversations. Because private companies have the resources and influence to dominate policymaking conversations, it is essential that impacted communities and marginalized voices lead the way, at a minimum having a seat at the

[141] Burkett, *supra* note 138.

table with the ability to influence the agenda and outcomes of any private sector engagement. The following are a few examples of private sector engagement opportunities.

Clean Energy | Located in Riviera Beach, SolarTech Universal is Florida's only solar panel manufacturer.[142] Their panels use advanced technologies and are rapidly gaining popularity throughout Florida and other parts of the United States.[143] The young company already has 40 employees, plus a growing network of authorized installers.[144] Having launched sales in 2016, this young company will continue upward hiring trends as they plan to triple their 2018 production capacity over the upcoming years.[145] SolarTech Universal is a growing, local renewable energy company. Engaging their staff in conversations on topics such as accessibility, community solar, clean energy jobs, and climate resilience strategies using solar (e.g. solar power generators and solar microgrid) would bring in a valuable private sector perspective and network of resources. Additionally, companies like SolarTech Universal should play a more central role in supporting local and statewide action to reduce climate change emissions and promote more climate resilient communities.

Resilient Shipping | Founded in 1963 and headquartered in Riviera Beach, Tropical Shipping is an international shipping company with routes spanning from Canada to South America. They have about 1,000 employees, serve 30 ports, and bring in an annual revenue of $410 million. Tropical shipping prides itself on its commitments to resilience, or "business continuity" as it is referred to in their industry. As an ocean cargo transportation company, Tropical's business operations are vulnerable to storms and hurricanes - in other words they are on the frontline of climate change disasters. In response, Tropical has developed an internationally renowned disaster management action plan. They also host annual disaster management workshops for the communities and customers they partner with as part of one of their corporate social responsibility initiatives. For Tropical Shipping preparedness is part of their culture, and to ensure the continuity of their business operations they understand the importance of the communities they work in also having resilience expertise and resources. Tropical Shipping has an impressive depth of expertise and resources alongside a committed staff of preparedness experts. Engaging them and other similar stakeholders in social equity-driven climate resilience policymaking will bring in a critical perspective as well as

[142] SolarTech Universal, https://www.solartechuniversal.com/.
[143] Susan Salisbury, *Sunshine State's lone solar panel maker flourishing in Riviera Beach*, PALM BEACH POST (Aug. 13, 2017, 1:36 PM), https://www.palmbeachpost.com/business/sunshine-state-lone-solar-panel-maker-flourishing-riviera-beach/BsheRvFlyldACNg6Gxv9OP/.
[144] Susan Salisbury, *Sunshine State's lone solar panel maker flourishing in Riviera Beach*, PALM BEACH POST (Aug. 13, 2017, 1:36 PM), https://www.palmbeachpost.com/business/sunshine-state-lone-solar-panel-maker-flourishing-riviera-beach/BsheRvFlyldACNg6Gxv9OP/.; SolarTech Universal, https://www.solartechuniversal.com/.
[145] John Weaver, *Hurricane Maria moves SolarTech Universal's expansion to South Florida*, PV MAGAZINE (May 21, 2018), https://www.pv-magazine.com/2018/05/21/hurricane-maria-moves-solartech-universals-expansion-to-south-florida/.

valuable expertise and resources. Bringing together frontline communities and frontline companies might also yield impactful climate resilience projects.

Responsible Developers | More engagement with and accountability from developers will be critical for addressing climate change in Florida. The developer community has enormous political influence and economic significance in Florida. Policymakers should engage these private sector actors in solution-oriented discussions early and often. Many of the issues around social resilience to climate change have to do with affordable housing. Bay County is in the middle of a dire housing crisis. Given the expertise and resources pouring into high rises along the coast, there might be opportunities for these same developers to contribute positively to the affordable housing crisis. Florida also must rethink the cost of doing business as a developer in Florida. The stakes are too high, and the consequences of unmitigated coastal development is already taking its toll. Policies such as requiring impact fees or imposing limitations on building through direct restrictions on developers are some of the strategies that could be used more to promote better climate resilience outcomes throughout Florida.

Engage Academia and Students

Universities are a key stakeholder group that are able to provide objective scientific research, non-politicized legal and policy input, grassroots community engagement, and capacity building for under-resourced communities. Universities have the ability to provide much needed local capacity building in areas such as law and policy, engineering, communications, community engagement, GIS, and economics. Professors and students across the state are catalyzing grassroots resilience work. This work is often done in interdisciplinary, youth-led, diverse, small teams on short-term collaborative research and policy projects without significant cost burdens to local partners. As a resource in this space, the Florida Climate Institute is a multi-disciplinary network of experts that coordinates across several Florida universities to deliver in-state stakeholders with a breadth of climate change resources and local capacity building support.[146]

Address Threats to Historically Black Communities

Cultural eraser and the displacement of black communities should be a focal point of climate resilience work in Florida. There are historically black communities across the state of Florida where climate change impacts, economic policies such as Opportunity Zones,[147] and the inequitable use of post-disaster response funding are compounding existing social injustices. If Florida can lead the country and perhaps the world in historic preservation of buildings, there should be leadership in preventing and reversing the eraser of historically black communities throughout the state. Below are just some of the communities impacted:

- Lincolnville, St. Augustine
- Belmont DeVilliers
- American Beach

[146] Florida Climate Institute, https://floridaclimateinstitute.org/.
[147] PolicyLink, *supra* note 85.

- Little Haiti
- Liberty City
- Riviera Beach
- Glenwood Neighborhood, Panama City

Support and Resource Homegrown Resilience Strategies

The following organizations and projects are currently implementing effective climate resilience strategies. The list is meant to be illustrative and representative of the underlying research of this paper; it is not meant to be exhaustive as there are undoubtedly many more organizations and projects throughout Florida leading in this space.

- Unitarian Universalist Justice Florida
- LEAD Coalition of Bay County, Inc.
- Florida Climate Institute
- Institute for Sustainable Communities - Florida
- Konscious Kontractors
- Family Action Network Movement
- Florida Clinicians for Climate Action
- The CLEO Institute
- Catalyst Miami
- Palm Beach County Office of Resilience
- Tropical Shipping
- Florida Immigrant Coalition
- Earth Ethics
- Bay County Community Recovery Center Rebuild Bay County, Inc.
- Doorways of Northwest Florida
- City of St. Augustine
- Lincolnville Community Redevelopment Agency
- Kresge Foundation

Part VII: Additional Resources

U.S. Global Change Research Program - Climate and Health Assessment (chapter 8 is on mental health) - https://health2016.globalchange.gov/downloads.

International Journal of Environmental Research and Public Health - https://www.mdpi.com/1660-4601/15/9/1806.

World Health Organization. Operational framework for building climate resilient health systems. 2015. http://www.who.int/globalchange/publications/building-climate-resilient-health-systems/en/.

Climate change and mental health: risks, impacts and priority actions, Int J Ment Health Syst, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5984805/#CR69 (includes some recommendations to proactively address mental health impacts)

Florida Division of Emergency Management - Disaster Preparedness Maps - https://www.floridadisaster.org/planprepare/disaster-preparedness-maps/.

Know Your Zone - Hurricane and Flood Zone Maps and Planning Tools (By County) - https://www.floridadisaster.org/knowyourzone/.

Imaginación Post María Participatory Planning and Just Recover 6-Step Process, La Maraña, http://www.lamarana.org/la-maraña--imaginación-post-mar%C3%ADa-español.html.

Stakeholder Engagement Strategies for Participatory Mapping, 2015, National Oceanic and Atmospheric Administration, available at https://coast.noaa.gov/data/digitalcoast/pdf/participatory-mapping.pdf.

Community-Driven Climate Resilience Planning: A Framework, Version 2.0, National Association of Climate Resilience Planners, 2017, available at https://kresge.org/sites/default/files/library/community_drive_resilience_planning_from_movement_strategy_center.pdf.

List of Adaptation Planning Tools: Florida Department of Environmental Protection, “Sea–Level Rise Vulnerability Assessment Tools and Resources - A Guide for Florida’s Local Governments,” (2015), available at https://floridadep.gov/sites/default/files/SLR-VA-tools-extended_1.pdf.

Social Vulnerability Assessments, Tools, and Maps: South Carolina, College of Arts and Sciences, Hazards and Vulnerability Research Institute - http://artsandsciences.sc.edu/geog/hvri/sovi®-0.

United States Climate Resilience Toolkit, 2014, available at https://toolkit.climate.gov.

Equity in Building Resilience in Adaptation Planning, https://www.naacp.org/wp-content/uploads/2016/04/Equity_in_Resilience_Building_Climate_Adaptation_Indicators_FINAL.pdf.

Community-Based Climate Adaptation Planning: Case Study of Oakland, California, Pacific Institute, available at https://pacinst.org/wp-content/uploads/2014/04/community-based-climate-planning-Oakland.pdf.