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Racialized Landscapes and Climate Adaptation Economies

Abstract: This article examines how the enduring legacies of racial capitalism and discriminatory land policies shape climate vulnerability and adaptation in US cities, using Miami as a primary example. It highlights how flooding and heat waves disproportionately impact marginalized, historically disinvested neighborhoods, which are further threatened by displacement resulting from “climate gentrification.” Miami illustrates these dynamics, as affluent residents relocate from vulnerable coastal zones to higher-elevation, previously segregated neighborhoods, driving investment and property value increases that endanger longtime residents with displacement. The article explores how factors such as land use policy, zoning, and public investments embed racialized landscapes and drive displacement risk in these communities. The article calls for “just adaptation economies” that embed antidisplacement measures in resilience investments, support community ownership and stewardship of land instead of speculative development in historically marginalized neighborhoods, and prioritize policies that counteract persistent social and spatial inequities. The article explores a few examples of where adaptation economies are emerging through designated justice-oriented green urban development zones.

Keywords: climate gentrification, climate justice, environmental justice, racial capitalism, adaptation economies, cities and climate change

I. Introduction

Miami, Florida, is emblematic of the risks coastal cities face due to climate change. Estimates suggest that Miami is the most vulnerable coastal city in the world, with one-hundred-year floods potentially occurring every few years (Raimi et al. 2020). Miami Beach frequently floods during high tides, and extreme rainfall events threaten much of Miami’s infrastructure. Climate change is also increasing the frequency and intensity of heat waves, leading Miami-Dade County voters to elect the first chief heat officer in the world in 2021. If the worst of climate predictions come to fruition, city residents will face massive disruption and displacement, affecting as many as four out of five residents (Robustelli and Vassigh 2022; Seeteram et al. 2023).

As with most cities around the world, climate impacts in Miami occur on an unequal landscape, posing disproportionate risks to socially and economically marginalized populations. Historically Black neighborhoods experience higher and more lethal temperatures than the city average during severe

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heat waves (Robustelli and Vassigh 2022; Green 2023). These areas often have older, less energy-efficient housing and are more vulnerable to extreme weather events. Increased flooding from heavy rains will significantly impact low-income populations as habitable areas shrink and housing prices rise, making it possible only for affluent residents to relocate away from flooding risks.

A broader demographic of Miami residents is also exposed to climate risk, particularly those residing on land situated less than three feet above the high-water mark in some of the city's most exclusive areas. These affluent households face frequent flooding as a result of rising sea levels, which has already led to significant losses in real estate value. Notably, the fate of those residents living in expensive coastal areas and those living in the most marginalized neighborhoods are intertwined in ways that raise important issues for climate adaptation policy and implementation in cities.

Miami was the first city to be the subject of an emerging literature on “climate gentrification.” According to this research, climate change is inverting the value of elevation in coastal cities like Miami. High- and moderate-income households at risk of sea-level rise are relocating to higher-elevation areas that were previously neglected and historically marginalized (Keenan et al. 2018; Tedesco et al. 2022). For instance, high-elevation noncoastal neighborhoods like historically Black Liberty City and Little Haiti were developed on inexpensive land in the 1930s—largely as segregated public housing—but are now attracting investment and more affluent populations. Conversely, property values in coastal areas have experienced stagnation.

The migration from high-climate-risk areas to safer areas can be seen as a form of individually driven adaptation within elastic housing markets (Kim and Park 2023). However, while risk mitigation accounts for the movement from high-risk to low-risk areas, climate risk alone does not entirely explain why certain neighborhoods are prone to gentrification. Researchers have struggled to understand the relationships between neighborhood characteristics and other factors that might be drivers of climate migration into specific neighborhoods. In some locations, high elevation, low-income populations, and ongoing demographic transitions in neighborhoods are strongly correlated with a high risk of future climate gentrification (Aune et al. 2020). In other places, diverse land uses and flexible zoning in low-exposure areas have been identified as markers of potential gentrification (Tedesco et al. 2022). Additionally, researchers have highlighted the presence of affordable housing and targeted community redevelopment areas as significant factors in determining which neighborhoods are likely to undergo gentrification due to climate migration (Best et al. 2023; Melix et al. 2023).

This article posits that as climate impacts and adaptive responses play out across Miami's physical environment, they directly interact with the ways in which racial capitalism has been embedded in the city. To make sense of the factors driving climate gentrification and the differential impacts of other adaptation practices and policies, it is essential to understand how racialized landscapes in American cities, such as Miami, interact with climate adaptation dynamics and economies. The term “racialized landscape,” as used by critical geographers, refers to the ways in which processes of racialization shape specific places through discrimination and exclusion. These processes often legitimize and normalize racial hierarchies and segregation as part of the natural order (Schein 2003; 2006).

This article employs insights from the literature on racial capitalism together with an emerging body of social science literature to illuminate the connections between climate risk, historical and contemporary land use practices, and adaptation practices and policies that sustain economies of

dispossession and racially differentiated landscapes. Through a high-level overview of Miami's history, this article connects the dynamics of racial capitalism to different aspects of Miami's climate adaptation response today: climate gentrification, resilience investments, and the protection of coastal property and amenities. In Miami, race has shaped—and still shapes—the economic value assigned to people and places. Over the course of Miami's history, anti-Black policy and planning decisions have devalued some neighborhoods in order to create relative value in others (Connolly 2014).

Like climate impacts, climate adaptation economies frequently emerge on unequal and racialized landscapes of property relations and land use patterns, historic and current. Climate adaptation economies are created by significant public and private investments made in response to climate impacts. These investments are reshaping cities and the communities within them. In Miami, a historic municipal bond measure, the Miami Forever Bond, is funding infrastructure projects such as elevating streets, shoreline stabilization, parks, public transportation, and affordable housing. While these investments are critical to Miami's ability to ameliorate the effects of extreme weather and to create more resilient neighborhoods, residents and advocates worry that these investments may worsen racial and class inequalities (Grove et al. 2020).

This article concludes with a call for “just adaptation economies.” Climate adaptation measures must focus on dismantling structural and racial inequalities, or they risk reinforcing them in the name of climate resiliency. Cities like Miami can, and sometimes do, invest in affordable housing and displacement mitigation. However, these efforts are often insufficient to address deep-rooted racialized landscapes that continue to extract wealth and resources from most climate vulnerable and racially marginalized populations.

The article is structured as follows. Part II draws from the literature on racial capitalism to highlight the specific dimensions and dynamics of racialized landscapes within the context of historical land use practices. This section connects these racialized landscapes to the distribution of climate impacts and vulnerability, as well as to adaptation economies, through a robust body of social science literature that helps to illustrate these connections. Part III uses Miami as a case study, examining how its history of racial stratification and the devaluation and dispossession of Black land and resources have laid the groundwork for a climate adaptation economy that continues to do the work of racial capitalism. Part IV explores how cities can move toward just adaptation economies and offers examples of how and where just adaptation economies are beginning to take root through designated justice-oriented development zones.

II. Climate Change, Adaptation, and Racial Capitalism

The literature on racial capitalism has elucidated how the mechanisms of capitalism, in conjunction with state cooperation, have laid the groundwork for the persistent challenges faced by Black, Indigenous, and other racially marginalized communities today. Predatory financial practices and racial discrimination, including redlining, have left a legacy of underinvested neighborhoods, land dispossession, and extractive economies (Gonzalez and Mutua 2022). The current housing affordability crises, mortgage and property-tax foreclosures, and widespread displacement can be seen as manifestations of this legacy (Park 2021). Increasingly, scholars are examining how the framework of racial capitalism relates to the origins of the climate crisis and the distribution of climate risks and impacts. However, the relationship between climate change risk, adaptation, and racial capitalism remains a relatively underdeveloped area of study.

This section draws on emerging evidence documenting the racial impacts of climate change and adaptation policy to enhance our understanding of these relationships, particularly as they inform demands for climate justice. Climate justice is conceptually linked to, and derivative of, environmental justice, calling for distributive, procedural, recognition, and reparative justice (Schlosberg and Collins 2014). The demand for climate justice includes accepting historical responsibility for the unequal impacts of climate change on marginalized populations, embedding human and Indigenous rights in climate policy, and ensuring participation and consent from affected communities (Salter 2023). Viewing climate justice through a racial capitalism lens adds additional texture to these demands by linking past and present land use practices to current climate risks and future land use patterns as they shape mobility and adaptive capacity for racially marginalized populations.

A. Racialized Property Relations and Land Use Practices

The concept of racial capitalism, introduced by Cedric J. Robinson in 1983, questions the idea that capitalism and the market economy are race neutral. Robinson argued that capitalism is intertwined with discriminatory practices such as slavery, violence, imperialism, and genocide. Capitalism developed in conjunction with processes of racialization and racial differentiation, according to Robinson. This differentiation created racial hierarchies and enabled the extraction of social and economic value from people belonging to marginalized racial identities. The resulting severe racial inequality in turn facilitates “the accumulation of more power and profit than would otherwise be possible” (Pulido 2016, 1).

Contemporary scholars have applied the theory of racial capitalism to gain insight into various phenomena, including persistent racial disparities in homeownership, wealth, and environmental burdens. Scholars have explored early racialized land markets and legal processes that have shaped the Western property system and contributed to exclusionary real estate development today (Park 2024; M. Kelly 2022). As K-Sue Park articulates, there exists a “mutually formative” historical relationship between race and the establishment of property interests and value through “the processes of (1) dispossessing nonwhites, (2) degrading their homelands, communities, and selves, and (3) limiting their efforts to enter public space and occupy or acquire property within the regime thereby established” (Park 2022, 1).

For instance, the extraction of land resources from Indigenous and other marginalized communities was facilitated by laws and processes that established “racial regimes” of property ownership (Bhandar 2018). Moreover, the development of innovative financial instruments that indebted Native Americans and subsequently resulted in the foreclosure of their land contributed to the formation of a racially demarcated dual-track economy (Park 2021). Scholars also have linked speculation on land taken from Indigenous people to the eventual creation of suburban developments with racial covenants (M. Kelly 2022).

In addition to the dispossession of land, racial capitalism scholars highlight that dispossession can remove wealth and resources from communities in other ways, such as through disinvestment and housing devaluation (Dantzler 2021). In housing and real estate, racial capitalism systematically excludes and dispossesses Black people from stable, secure housing (Gonzalez and Mutua 2022). For instance, the practice of redlining has created racialized geographies in many US cities and can be considered a modality of racial capitalism (Fields and Raymond 2021; Dantzler 2021). Redlining refers

to federal Home Owners' Loan Corporation (HOLC) maps that graded neighborhoods in over two hundred cities for inclusion in government home mortgage and lending programs. These color-coded maps rated areas from "A" (least risky) to "D" (most risky), with "D" areas (coded red) typically inhabited by Black residents.

Redlining prevented Black homeowners from qualifying for home loans backed by government insurance programs. The practice functioned similarly to a zoning map, designating areas where Blacks and whites could reside based on their ability to obtain a mortgage and other financial support. This led to prolonged disinvestment in historically Black neighborhoods and excluded these communities from wealth accumulation through homeownership across generations. Most of these formerly redlined areas have retained their original demographic composition and are predominantly inhabited by low-income Black and Latino populations. These areas often exhibit lower home values and other negative economic characteristics compared to other parts of their cities or metropolitan regions (Best and Jouzi 2022; Perry and Harshbarger 2019). Proximity to hazardous waste and wastewater discharge sites, traffic volume, and diesel particulate matter are also most pervasive in historically redlined neighborhoods (Shkempi and Neitzel 2025).

Other practices such as the use of eminent domain during the urban renewal era resulted in the taking of land and other resources in Black communities and transferring them to large business interests and developers (Cebul 2020). The urban renewal era is considered one of the most sweeping and systematic instances of the modern alteration of Black property, neighborhoods, culture, community, businesses, and homes. Later in the twentieth century, Black neighborhoods faced excessively high interest rates for mortgage lending (Fields and Raymond 2021; Dantzer 2021). The rise in subprime lending and subsequent wave of foreclosures in Black communities in 2008 was influenced as much by market forces as by entrenched racial segregation (Rugh and Massey 2010).

Exclusionary zoning laws and land use practices have contributed to maintaining high property values and facilitating wealth accumulation in predominantly white neighborhoods (Dantzer 2021; Gibbons 2016). At the same time, redlining and subsequent disinvestment over decades have resulted in the devaluation of nonwhite neighborhoods, even in the absence of physical deterioration, creating what geographer Neil Smith has termed a "rent gap" (1982). The rent gap theory describes the difference between the current rental income (or property value) and the higher potential income that could be achieved after redeveloping or upgrading a property. This gap creates a powerful incentive for real estate investors and developers to capitalize on undervalued assets (Smith 1982; Fluri et al. 2022). This gap can be leveraged through gentrification processes that marginalize nonwhite and low-income populations within the housing market.

The aforementioned land use practices allow corporations, with state consent, to impose costs on racially marginalized populations while extracting economic value from them. For example, low-income communities of color in industrial "sacrifice zones" bear the brunt of pollution from the fossil fuel economy (Gonzalez and Mutua 2022). One of the worst sacrifice zones, "Cancer Alley," stretching from Baton Rouge to New Orleans, and formerly consisting of slave plantations, contains over two hundred petrochemical plants. Today, these communities suffer from air, land, and water pollution, displacement from ancestral lands, degraded land, and reduced social cohesion (Donaghy et al. 2023). These effects disproportionately impact Black residents, exemplifying environmental racism (Cole and Foster 2001).

B. *Racial Capitalism and the Ecological Crisis*

Scholars have begun to extend racial capitalism analysis to climate change, highlighting the racialized systems underlying the ecological crises we face. The debate regarding the onset of the Anthropocene has been tied to racial capitalism, for instance, with some scholars contending that colonialism and slavery fueled industrialization and environmental degradation (Saldanha 2019; Gonzalez 2023; 2020b; 2017). Scholars argue that the same systems that exploited people and natural resources for economic gain are responsible for today's climate crisis.

Carmen Gonzalez's extensive work, for example, posits that the logic of racial capitalism influences every stage of the fossil fuel economy and many of its consequences, from resource extraction to the racialized workforce and disparate vulnerabilities to climate change impacts (2023; 2021; 2020b; 2020c). Gonzalez points out that climate mitigation efforts (that is, solutions to reduce the use of greenhouse gases) can reinforce these systems (2021), for instance by dispossessing Indigenous people of their land for wind farms and hydroelectric dams (2023; 2020c). She also links racial capitalism to international patterns of climate displacement and aggressive responses to Brown and dark-skinned migrants at borders (2021; 2020a; 2020c), analyzing how international law and policy can either perpetuate or dismantle racial capitalism (2021; 2020b; 2017; 2020a; 2020c).

There has been limited scholarly focus, however, on the intersection of climate adaptation and racial capitalism. Researchers are beginning to connect some of the ways that climate adaptation economies, which prioritize major physical and digital infrastructure projects, may protect existing capital accumulation and risk creating a system of climate apartheid (Long et al. 2020; Sharma 2023; Rudge 2023). However, few studies connect this to the emerging body of climate social science literature documenting the relationships between racialized property landscapes, climate risks, and adaptation economies.

C. *Climate Investments and Racialized Geography*

One of the manifestations of racialized land markets is that land value becomes associated with racial identity and the characteristics of neighborhoods and communities. Racially differentiated land markets have resulted in devaluation of and disinvestment in Black-owned property, while white-owned property is frequently protected and invested in. Historically, lower-income areas with predominantly Black residents have lacked access to safe and resilient infrastructure due to limited financing and investment from both the government and private sectors. This lack of investment is often influenced by perceptions of financial risk, resulting in higher costs for infrastructure investments that are less affordable to those who need them most (Ponder 2021).

The climate adaptation economy exhibits similar patterns. Green infrastructure investments typically go to areas with wealthier, predominantly white, and better-educated residents who are more likely to receive support for seawalls, funding to elevate homes, and drainage infrastructure (Shokry et al. 2020; Nance et al. 2022). Adaptive measures such as retrofitting and shoreline armoring tend to be found in areas with higher home values, household incomes, and population density, and lower racial diversity (Siders and Keenan 2020). These investment disparities do not happen in a vacuum. Rather, they are intertwined with the ways in which certain racialized land markets operate and reflect the influence of racial capitalism.

The “racial appreciation gap” is one way that racial capitalism continues to influence wealth and homeownership. Redlining has contributed to the racial appreciation gap in the US, where residential property values are structured such that home price appreciation rates tend to be higher in areas predominantly inhabited by white populations compared to those inhabited by Black populations (Markley et al. 2020). In addition to redlining, the racial appreciation gap is likely attributable to ongoing appraisal discrimination, as several studies have documented. These studies compare appraisal outcomes for otherwise similar properties and have found that homes owned by Black individuals or located in predominantly Black neighborhoods often receive lower valuations than comparable homes in white neighborhoods (Howell and Korver-Glenn 2018; 2021).

The appreciation of residential property is importantly influenced by neighborhood-level amenities, including investments in resilience and green infrastructure. These investments improve streets, install new drainage systems, plant more trees, and build seawalls and other protective armors against climate change impacts. Researchers have found racial disparities in these infrastructure investments, with less infrastructure investments in neighborhoods that have higher proportions of Black and low-income residents (Landry and Charkraborty 2009; Rigolon et al. 2018).

The racial disparities in climate-resilient infrastructure are empirically associated with historical patterns of redlining and disinvestment in certain communities over time, impacting the capacity of Black neighborhoods, in particular, to adapt to climate risks and build household and community wealth. For instance, one study of thirty-seven US cities found that areas previously redlined (designated D-graded) have approximately 23 percent tree canopy coverage, while higher HOLC grades (A- and B-graded) have about 43 percent tree canopy coverage today, enabling these neighborhoods to more effectively mitigate urban heat, as well as reap health, aesthetic, and other benefits (Locke et al. 2021; Namin et al. 2020).

Modern flood-risk geographies also closely resemble 1930s redlining maps. Formerly redlined, still predominantly nonwhite neighborhoods are at high risk of flooding compared to non-redlined areas (Katz 2021). These areas often lack flood-mitigating infrastructure relative to neighborhoods with higher HOLC grades (Wilson 2020). In addition to depriving these neighborhoods of infrastructure investments, which can improve the property and neighborhood values, they leave these communities more vulnerable to being displaced after a disaster.

D. Racialized Property Markets, Climate Adaptation, and Mobility

Federal and state-supported voluntary buyout and “managed retreat” can reinforce the racial appreciation gap and entrench racialized landscapes, in large part because historically underinvested neighborhoods have lower market demand and home values. Voluntary buyout programs offer homeowners financial incentives to sell their homes to a government or organization. These homes are typically in areas prone to flooding, wildfires, or other climate-related hazards. Managed retreat is a broader strategy that can involve buyouts to relocate entire communities away from vulnerable areas and to reduce exposure to hazards while promoting the sustainable and adaptive use of land.

Studies consistently show racial disparities in access to and utilization of buyout programs. For instance, although predominantly white counties have more access to federal buyout assistance, nonwhite neighborhoods in those counties see the highest rate of demolition of their homes (Elliott et al. 2020; Mach et al. 2019). Some environmental justice scholars express concern that, given these

disparities, federal buyout programs may end up demolishing low-income Black communities perceived as blighted (Bullard and Wright 2012). There is evidence indicating that these patterns are associated with HOLC redlined areas. Specifically, there is an observed increase in the number of buyout properties moving from HOLC grade A, which represents the lowest lending risk, to grade D, representing the highest lending risk (Zavar and Fischer 2021).

While buyouts could theoretically facilitate housing mobility, they often reinforce racially differentiated property markets. A national study of over ten thousand federally funded buyouts found that white families typically move to wealthier and whiter areas, whereas residents from majority-minority neighborhoods are more likely to move to majority-Black or majority-Hispanic neighborhoods (Elliott and Wang 2023). The study revealed that homeowners in majority-white neighborhoods are willing to endure 30 percent higher flood risk before selling to the government compared to those in majority-Black neighborhoods. Additionally, retreating Black homeowners are also more likely to end up in equally climate vulnerable or more vulnerable communities, while retreating white homeowners are more likely to move to less vulnerable communities.

Historically, cheaper land in racially marginalized communities has led to these areas being targeted for affordable and subsidized housing. Placing affordable housing in locations with low land costs and lower-income populations can be a double-edged sword, given climate risk geography. On the one hand, inexpensive land in environmentally risky zones can influence government decisions to situate affordable or public housing there (Lee and Jung 2014), potentially reinforcing market devaluation. On the other hand, placing affordable housing in less risky areas may prime those areas for postdisaster displacement and gentrification (Peacock et al. 2014). For example, the redevelopment of public housing into mixed-income units following a disaster, as it occurred in New Orleans after Hurricane Katrina, intensifies the shortage of public housing units and contributes to increasing housing prices. This poses challenges for residents attempting to return, and it accelerates the process of gentrification (Fussell et al. 2010; Fessler 2015).

Existing research on climate gentrification also shows that Black and Latino residents are disproportionately affected by displacement, often following increased investments in green resilient infrastructure and postdisaster redevelopment efforts in historically neglected neighborhoods. In Philadelphia, for example, green infrastructure investments have been linked to demographic changes, with increases in Black and Latino residents in areas with less climate protection and increases in white and affluent residents in cooler parts of the city (Shokry et al. 2020). Similarly, in Seattle, city investments in low-carbon infrastructure have been associated with rising housing prices and the out-migration of lower-income and nonwhite residents (Rice et al. 2019).

These studies suggest that climate investments, instead of protecting everyone, can instead further extract resources and wealth from racialized communities and increase white wealth at the expense of racialized communities. In this way, climate investments can compound racial inequalities previously driven by redlining and other discriminatory practices and arguably continue to do the silent work of racial capitalism. Instead of “accumulation by dispossession,” climate adaptation economies can be seen as more akin to “accumulation by adaptation” (Thomas 2024).

III. Climate Adaptation on Miami’s Racialized Landscape

Miami exemplifies how climate risks and adaptation economies are intertwined with racialized landscapes, which are a product of racial capitalism. Historical and ongoing processes of dispossession,

devaluation, and extraction of value from Miami's Black communities have shaped these landscapes. Racism has been used to justify the appropriation and devaluation of land and other resources from Black communities, and both states and corporations continue to impose various costs on these same communities. These costs include living in neighborhoods with the worst pollution and highest climate impact risks, as well as facing high energy rates, fees, and interest rates for municipal bonds that finance infrastructure frequently inaccessible to the most marginalized populations.

A. Miami's Racial Past

Miami is widely known for its luxury real estate, beaches, and foreign investment. Very few appreciate that much of the urban core of Miami is historically Black and low-income. The city's geography and racial landscape is influenced by its role as a destination for immigrants from the Caribbean and the American South. Before Miami's incorporation in 1896, the region was an important economic and cultural link to the Caribbean. Miami's transportation, agricultural, and service industries drew migration from the Bahamas and the American South (Francis and Harris 2020). Starting in the 1950s and accelerating in the late 1970s and early '80s, Haitian migration increased, leading many to settle in "Little Haiti."

In the mid- to late 1900s Jewish and Latino migrants began to make economic gains while Black Miamians remained structurally excluded (Francis and Harris 2020; Grove et al. 2020). White Cubans, who migrated to Miami primarily between 1959 and 1980 (Lewis 2023), built generational wealth by purchasing homes, while Black Miamians were facing the consequences of redlining and discriminatory financial lending practices (Francis and Harris 2020).

In the late nineteenth century and early twentieth century, restrictive clauses in land deeds enforced residential segregation throughout the city, with the Black population—including formerly enslaved people and immigrants from Bahamas, Jamaica, and Haiti—able to purchase land only in northwest Miami (George 1977). Originally referred to as "Colored Town," this area later became known as "Overtown" (ibid.). Underinvestment in Overtown, which George attributes to "municipal penuriousness" (436), led to inadequate streets, lighting, sanitary facilities, housing, and green spaces. Despite this, Overtown became a thriving neighborhood, known for successful Black-owned businesses and a vibrant entertainment industry.

Starting in the 1930s, the city began to view Overtown as an impediment to expanding the central business district (Mohl 2001). Liberty Square, a public housing development, was planned by the city to facilitate the relocation of Black residents from Overtown to Liberty City (Lewis 2023; Mohl 2001). Concurrently, the Dade Planning Board approved a plan to resettle Overtown's Black community to three remote rural areas, aiming to develop the vacated land for the white population (Mohl 2001). This approach persisted into the 1940s with "slum clearance" initiatives, which, although never actualized, reflect the period's segregationist objectives in land use and housing policy (ibid.).

In the 1960s, construction of a new section of the I-95 highway divided the remaining commercial and residential areas in Overtown (Lewis 2023). This was the culmination of the city's decades-long aim of moving Black residents out of Overtown. The neighborhood subsequently became characterized by low-income housing and homelessness (Mohl 2001; Albelda 2014). Substandard rental housing became the primary option for low-income and nonwhite residents, especially in predominantly Black neighborhoods such as Brownsville, Liberty City, and Coconut Grove (Lewis

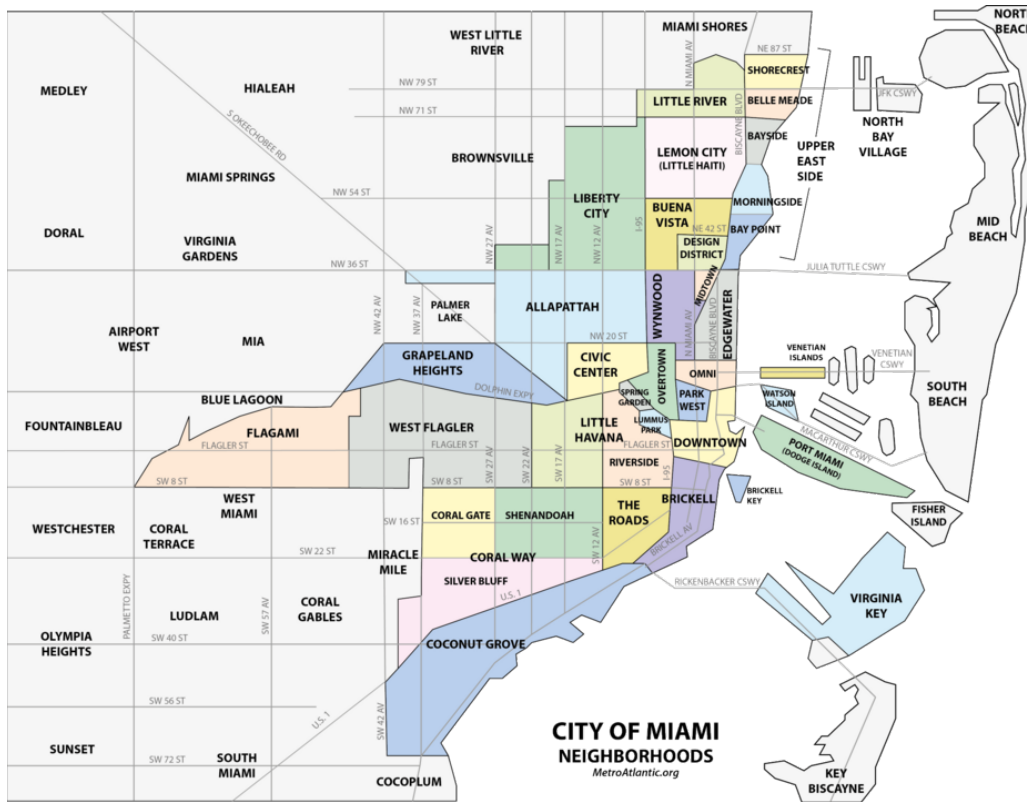
2023) (see Figure 1). During the 1980s and '90s, white developers acquired land in those parts of the city and constructed apartment complexes, which they subsequently neglected (Farrington 2023).

HOLC appraisers assigned C or D ratings to most of northwest Miami, which included predominantly Black neighborhoods such as Liberty City (Mohl 2001) (see Figure 2). This also encompassed undeveloped and unincorporated areas like Brownsville, likely because they were being planned for relocation of Black residents (ibid.). Over the following decades, the increasing Black population primarily was consigned to these undeveloped and vacant areas. White neighborhoods expected to become more diverse received low ratings as well (ibid.). Cuban and Jewish neighborhoods were ranked below white neighborhoods but above Black neighborhoods.

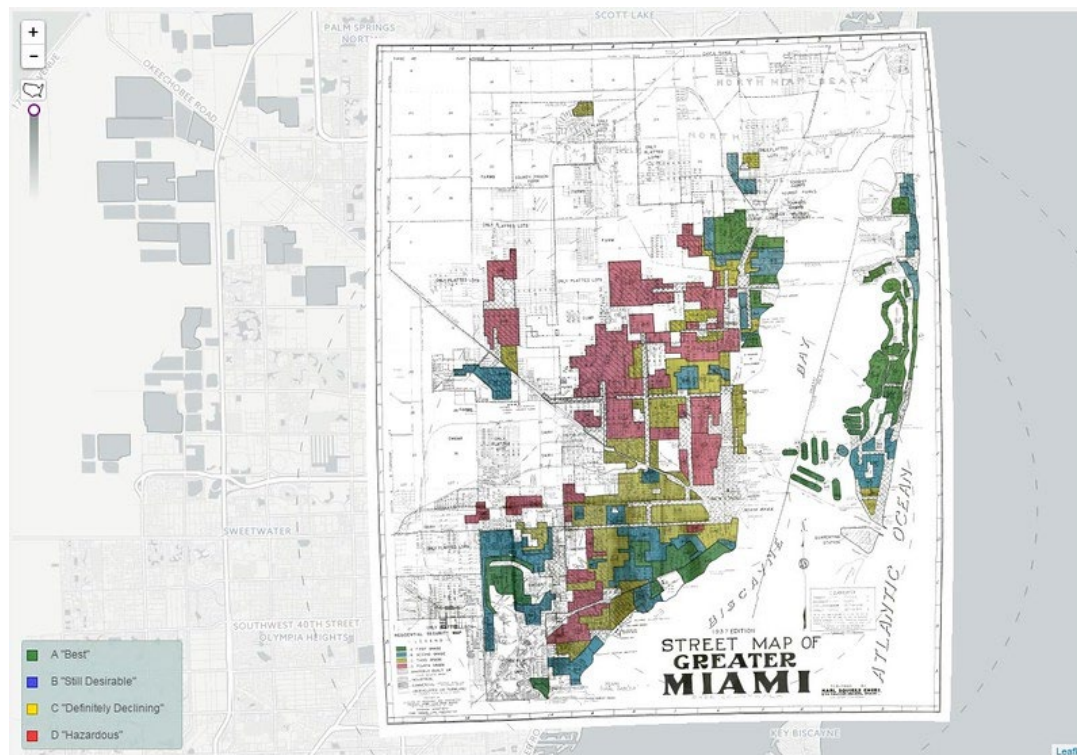
By the late twentieth century, Miami's economic growth "hinged on segregated real estate markets that allowed white and middle-class homeowners to siphon wealth off impoverished black renters and exclude minority groups from effective representation in local governance" (Grove et al. 2020). This racialized system of real estate persisted into the twenty-first century. During the 2008–2009 foreclosure crisis, minority homeowners were disproportionately affected as they were more likely to have received subprime housing loans, despite having credit scores, incomes, and loan sizes similar to those of whites (González-Rivera 2009).

The financial repercussions of the foreclosure crisis on municipal finance were significant, prompting the city of Miami to sue Bank of America and other financial institutions under the Fair Housing Act. The lawsuit alleged that these banks engaged in predatory lending practices specifically targeting African American and Latino neighborhoods and residents, offering loans on less favorable terms compared to equally creditworthy nonminority borrowers. *Bank of America Corp. v. City of Miami*, 137 S. Ct. 1296 (2017). This resulted in a disproportionate number of foreclosures and vacancies, hampering municipal efforts to ensure racial integration, reducing property-tax revenue, and escalating the demand for police, fire, and other municipal services.

Figure 1. Miami Neighborhoods



Source: Gurley (2013).

Figure 2. Redlining Map of Greater Miami

Source: Mapping Inequality (n.d.).

B. *Miami's Climate Risk Scope and Adaptation Economy*

Climate impacts and the city's adaptation economy intersect with Miami's racial history and racially differentiated development. As in many regions in the United States and globally, racially marginalized communities disproportionately suffer from climate impacts despite being the least responsible for climate change (Mahoney 2023). Contemporary real estate development builds on Miami's historically racially stratified landscape. Financial instruments, such as green bonds, and resiliency investments in infrastructure perpetuate wealth accumulation in Miami's most affluent areas. Conversely, gentrification deprives Black and Brown communities of resources while they face significant climate and health risks.

1. The Racial Geography of Climate Risks

In Miami, neighborhoods historically subjected to redlining face higher temperatures, older and less energy-efficient housing, and less favorable environmental conditions compared to non-redlined areas. These disparities have significant implications, as heat results in more fatalities than any other climate-related impacts. A study conducted in 2023 identified several zip codes in Miami with four times as many heat-related emergency visits and hospitalizations as other neighborhoods. These disparities were closely correlated with areas formerly redlined (Green 2023).

Wealthy Miami neighborhoods also tend to have more green infrastructure, such as a tree canopy. For example, HOLC A-graded areas in Miami like Coral Gables have 44 percent tree canopy coverage, while some predominantly Latino neighborhoods, such as Medley, have as little as 5 percent coverage (Hochmair et al. 2021). Black, low-income neighborhoods such as Overtown and Liberty City have average land temperatures many degrees higher than the city average, whereas wealthier neighborhoods like Coral Gables have land temperatures many degrees below the city average (Hoffman 2020).

A similar picture emerges with flood risks. Inland flood risks, including surface water and rainfall flooding, also affect property values and reinforce racialized land and housing markets. In metro Miami, non-Hispanic Black and Hispanic populations are significantly more likely to live in areas prone to inland flooding and have fewer amenities, due to limited housing options (Chakraborty et al. 2014). More affluent residents and non-Hispanic whites tend to live in areas rich with amenities (Montgomery and Chakraborty 2015). Researchers have found that inequities in flood-risk exposure in Miami are more related to racial/ethnic minority status than social vulnerability characteristics (ibid.).

2. Climate Displacement and Gentrification

The seminal study by Keenan et al. utilizes Miami as an example of climate gentrification, demonstrating that the appreciation rate of single-family home prices increases with higher elevation, whereas lower-elevation areas do not experience comparable appreciation (2018). Historically, Liberty City—a noncoastal, inland neighborhood with a predominantly Black population—had inexpensive land when it was developed in the 1930s, primarily as segregated public housing. It is now attracting public investment and more affluent populations due to its inland location (Contreras 2024). Conversely, property values in coastal suburbs have been stagnating (ibid.).

Since the Keenan study, other researchers have provided additional insights into climate gentrification in Miami by introducing various factors influencing household mobility. These factors include property speculators buying property in higher-elevation neighborhoods, ongoing development in coastal luxury property markets supported by protective infrastructure investment, rising insurance premiums that increase cost burdens in suburban areas with higher rates of homeownership, and flood insurance and disclosure requirements in home sales contracts (Taylor and Aalbers 2022; Li and Grant 2022; Kim 2020). In addition, displacement from the coast occurs for households that do not receive protective investments in their neighborhoods (Butler et al. 2022). These areas typically have the following characteristics: low socioeconomic status, Hispanic homeowners, Hispanic renters in unstable neighborhoods, single-parent households in stable neighborhoods, and areas with high eviction rates but desirable neighborhood characteristics (for example, school proficiency). (Butler et al. 2022, 9-10).

Nonclimate factors also influence gentrification in Miami's inland neighborhoods. Zoning regulations make dense development difficult, limiting growth to single-family-dominated neighborhoods outside of the urban core (Trone and Shedd 2019). There are few places in greater Miami left to develop without densification (Butler et al. 2022). Additionally, many inland neighborhoods along transportation corridors fall within federally designated investment zones like those created by the "Opportunity Zone" program, designed to attract private capital. Although the objective of attracting private capital to historically underserved neighborhoods is commendable, some critics contend that

such investment and developer-led initiatives may exacerbate displacement issues, potentially even more than climate-induced migration does (*ibid.*).

Many of these factors are converging in the Magic City Innovation District (MCID) being developed in Little Haiti, an economically disadvantaged but culturally rich neighborhood. The MCID is one of many large-scale development proposals that have coincided with a “wave of climate resilience policy action in Miami, peppered with stated goals about equity” (Hoermann 2025). Although the project aligns with regional resilience goals such as developing flood-resistant areas, it also threatens to displace more than three thousand low-income, cost-burdened households (*ibid.*). Marketing materials claim the MCID offers protection against storm surges and climate impacts, developed in a high-elevation, infill location (Butler et al. 2022).

The project aims to entice skilled workers (potentially pushing out the existing lower-income, less-educated population) for galleries, offices, restaurants, and pop-up retail (Li and Grant 2022). The city has evicted a mobile home community in order to assemble land for the site, and speculative land purchases have increased, leading some to describe MCID in the language of racial capitalism: “From this viewpoint, the promotion of the Magic City Innovation District in Little Haiti is then not merely an expression of a local ‘gentrification 2.0’ phenomenon, but an example of a further cycle of accumulation by dispossession, in which capital surplus searches and finds a profitable outlet for investment in the hitherto neglected and abandoned neighborhood” (Tardanico and Oslender 2021).

Similarly, county officials and real estate developers are investing millions of dollars to revitalize the historically Black community of Liberty City, following decades of neglect. This development includes demolishing deteriorated housing structures to construct new mixed-income housing. Liberty City, which is situated twelve feet above sea level, has become a highly sought-after location for both private and public investment. Despite assurances from the county that current residents in this “neighborhood that never floods” would not be displaced, the majority of completed housing units were leased to new tenants who could afford market-rate rent (Contreras 2024). Consequently, many low-income, Black residents received vouchers to seek apartments elsewhere in the private market.

The emerging body of literature on climate gentrification highlights various “pathways” leading to displacement, many of which are associated with broader systemic factors (Keenan et al. 2018; Best and Jouzi 2022). Although some of these “pathways” might be rationalized as straightforward market dynamics in competitive urban markets, the history of Miami suggests that more is at play. Like other forms of gentrification, climate gentrification is predicated on the historic disinvestment and devaluation of Black land, communities, and culture (Hwang and Ding 2020). The disinvestment and devaluation then become the “preconditions to produce profit from investment for developers and city governments,” even as justifications for the new targeted investments “never connect the disinvestment processes to race despite the fact that investment and disinvestment (like redlining) were highly racialized” (Rucks-Ahidiana 2021, 179).

3. Climate Financing and Race

In 2017, Miami voters approved the Miami Forever Bond to “build a stronger, more resilient future for Miami” (City of Miami 2017). This \$400 million general obligation bond will fund sea-level-rise adaptation and flood prevention, stormwater pumps, and seawalls; affordable housing; parks and

cultural facilities; and public safety. The vote was successful despite concerns that the bond program might not be implemented equitably and could negatively impact vulnerable populations.

Historically, bonds have been utilized to finance public amenities such as schools, parks, and other infrastructure projects, with debt repayment sourced from taxes or fees levied on the general population. The history of municipal bonds reflects a pattern wherein cities accumulated substantial debt, but the benefits predominantly accrued to white neighborhoods, leaving Black communities comparatively underserved (Jenkins 2021). This history is important as past municipal credit ratings influence the ability to finance resilience investments in struggling cities, which may perpetuate past inequitable decisions (Cox 2023). Scholars have pointed out that ratings can be influenced by racial bias (Smull et al. 2023).

For decades, improvement projects funded by municipal debt were primarily located in or near white neighborhoods in Miami (Cox 2023). This pattern resulted from historical politics surrounding bond passage: legally, only individuals who could prove property ownership were permitted to vote on bond referenda, excluding many nonwhite residents who had been denied mortgages (ibid.). Even as voting restrictions changed, bonds continued to benefit white residents. A notable example is the 1972 bond referendum worth \$4.5 billion (in 2022 dollars), which relied on support from Black voters and community leaders to pass. Despite this key backing, the only two provisions that failed were those benefiting Black Miamians (ibid.). Due to this historical context, Black residents generally did not support new bonds until the Miami Forever Bond (ibid.).

The Miami Forever Bond succeeded partly due to advocacy by the Miami Climate Alliance for a Citizens Oversight Board to ensure equitable project funding. The bond's timing also played a role; Hurricane Irma had recently highlighted disparities in recovery efforts between tourism districts and predominantly Black neighborhoods. The bond was seen as a way to secure resilience investments despite potential risks in implementation (Cox 2023).

The Miami Forever Bond has provided funds for affordable housing, which includes matching funds for future affordable developments, as well as parks and public transportation in predominantly Black and immigrant neighborhoods such as Liberty City, Little Havana, and Allapattah. Additionally, it supports a pilot home rehabilitation program aimed at preventing climate displacement (Cox 2023; Kallergis 2019). Notably, in 2019, \$7.15 million from the bond was designated for two developments in Little Havana, one in Allapattah, one in Coconut Grove, and the third phase of a redevelopment in Liberty City (Kallergis 2019). These are historically or currently Black and immigrant neighborhoods.

Miami's green bond aims to direct investment and fund infrastructure improvements in neighborhoods that have historically lacked investment. However, its impact on areas like Little Haiti and Liberty City is complicated by Miami's history of neighborhood development. While the bond provides necessary investment in these long-neglected neighborhoods, these infrastructure improvements and resilience measures may attract investors and potentially lead to gentrification. This situation reflects the complexities of Miami's racialized history and climate risk scape. To address these challenges, additional measures will be required to mitigate the risk of displacement and climate vulnerability for Miami's racially marginalized communities.

4. Protection of Coastal Property

Resiliency investments are facilitating the gentrification of inland areas like Little Haiti and Liberty City, while also safeguarding property values on the coast. Miami's coastal neighborhoods continue to grow and densify due to their amenities and their flood insurance subsidies (Kim 2020). Both domestic and foreign investors are employing short development timelines to hedge against long-term sea-level-rise risk and meet ongoing demand for these areas (Butler et al. 2022). In recent years, as much as \$6 billion in short-term development and construction lending has poured into new high-rise developments on the coast (Taylor and Aalbars 2022). As long as land values and profit potential remain high in certain coastal areas, this growth paradigm is unlikely to change (Butler et al. 2022).

Municipal infrastructure planning encourages this growth, with engineered solutions (such as a proposed seawall) protecting the coastal real estate market and spurring the additional development of public projects and luxury housing (Butler et al. 2022). Just as private developers created segregated neighborhoods with the support and incentives of the local government, they now rely on the municipal debt-funded protection of largely white-owned assets to continue densifying the coast.

Coastal resilience projects are protecting risky developments in high-wealth areas while imposing housing-related cost burdens on and displacing low-income populations. In Miami Beach, for example, adaptation projects have led to increases in property taxes, which has led to the out-migration of low-income residents (Li and Grant 2022). At first glance, these investments in coastal amenities seem rational to many because they support the Miami tourism industry. On the other hand, the high and growing rates of sea-level-rise projections, and the resulting risk to property and lives along the coast that will be increasingly expensive to mitigate, render these investments suspect in a highly racialized landscape.

IV. Conclusion: Toward Just Adaptation Economies

Cities like Miami have been developed, and continue to develop, on landscapes influenced by racial dynamics. Historical and contemporary development choices often involve the dispossession and devaluation of property, neighborhoods, and individuals, particularly within Black communities. At the same time, these cities have historically invested in and protected the wealth of well-resourced neighborhoods, predominantly in affluent white communities. Climate risks and adaptation strategies can amplify these racialized landscapes, aiming to reduce climate exposures for more affluent populations while externalizing the costs of adaptation to racially marginalized communities.

Various legal, policy, and planning mechanisms are emerging to help cities like Miami adapt to climate change using nonextractive community development and investment models. While a full description and analysis of these mechanisms are beyond the scope of this article, one notable strategy is justice-oriented Green Development Zones. These zones, sometimes referred to as Climate Justice Zones, aim to avoid entrenching racialized landscapes by curating investments in underserved communities and promoting some degree of community control over those investments. This allows communities to reap and retain the benefits of those investments. As the examples below illustrate, cities and states are adopting or supporting these zones to promote environmental and climate justice, equitable development, and community-guided investments.

Cities often use their legal authority over infrastructure and land use to promote development values that align with climate adaptation and resiliency goals. Planning and zoning are typically the most effective tools for achieving these objectives. The city of Miami, for example, updated its comprehensive zoning plan in conjunction with its climate resiliency planning strategies. Among the zoning mechanisms adopted was the Special Area Plan (SAP), which eases the way for developers to assemble large plots of land for mixed-use developments like Little Haiti's Magic City Innovation District (Hoermann 2025). For Little Haiti's MCID, the SAP approval process included significant community input regarding its neighborhood impact, including concerns about gentrification and affordable housing. Developers responded by committing \$31 million to the Little Haiti Revitalization Trust to support community initiatives such as affordable housing projects and cultural preservation efforts. These kinds of Community Benefit Agreements can be a tool to address gentrification concerns but are limited to the project's scope and impact and do not address broader market pressures or systemic forces that render communities vulnerable to displacement (Salkin and Lavine 2008).

Even the most well-crafted community benefit agreement may conflict with the objectives of the Magic City Innovation District. Innovation districts are designed to capitalize on agglomeration economies by bringing together anchor institutions, companies, entrepreneurs, and other private entities to foster knowledge economies and transform neighborhoods (Katz and Wagner 2014). One of their frequently stated goals is to provide opportunities to disadvantaged populations in nearby low- and moderate-income neighborhoods. However, despite these intentions and commendable efforts, innovation districts can sometimes exacerbate inequitable development patterns (Ehlenz 2015). As new businesses, upscale housing, and amenities emerge, increased demand for space and higher wages typically drive up property values and rents. This often results in longtime residents and small locally owned businesses being priced out, thereby accelerating gentrification. The prosperity generated by these clusters usually benefits highly skilled, high-income workers such as tech professionals and specialized researchers, which can deepen socioeconomic divides. Further, innovation districts can erode local heritage, cultural traditions, and community cohesion, as existing social networks may be sidelined in favor of economic redevelopment and aesthetic modernization.

In contrast, some cities are trying to catalyze *community-driven* revitalization through the establishment of special districts or zones that promote local control or ownership of projects, recognizing that sustainable change is more likely when communities lead the process. The core purpose of these zones is to direct or leverage public and private investments toward the most marginalized neighborhoods facing intersecting environmental, climate, social, and economic risks. Social scientists are now developing indices and mapping tools that cities can use to identify specific areas and populations at the neighborhood level that are subject to these compound risks (Tedesco et al. 2024). Cities are encouraged to utilize these kinds of indices and criteria to designate zones that require a different investment approach (Foster et al. 2024).

Another objective of these zones is to place development decisions more firmly under the control of community members. This can involve structured community engagement—from initial needs assessments to the collaborative design and implementation of solutions. It often includes forming local committees, hosting participatory workshops, and integrating local feedback mechanisms into every phase of a project. The more robust versions of these zones are “bottom-up” initiatives where the community establishes the zone, even informally, and collaborates with state and municipal agencies to attract investment for plans it has developed. These zones can align with new models of

decentralized governance, granting local communities greater autonomy and fostering collaboration with local governments, thereby enhancing local governments' ability to address localized challenges (Foster and Iaione 2022).

For example, Minneapolis has created two Green Development Zones (GDZs): the Northern Green Zone and the Southside Green Zone. Each Green Zone focuses on areas with disproportionately high levels of cumulative environmental pollution and racial/political/economic marginalization. Community members have some decision-making power within each Green Zone through representative taskforces that lead community engagement and advise the City Council and mayor while holding them accountable. A specific goal of the Minneapolis 2040 Plan is to “ensure that sustainability investments in the Green Zones are carefully implemented to avoid gentrification and the displacement of small, diverse, and locally owned businesses and low-income residents” (City of Minneapolis n.d.).

Other GDZs are established not directly by the city in a top-down manner, but rather by high-capacity community-based organizations supported by state and city programs and investments. For example, People United for Sustainable Housing (PUSH) in Buffalo developed a 25-square-block GDZ in Buffalo's West Side with the aim “to grow communities without displacing residents, thereby maintaining the fabric of the neighborhood” (Hart and Magavern 2017, 12). PUSH's ultimate aim is to build a “resilient and regenerative community” through a “just transition” from the old, fossil fuel-driven economy toward a “new economy” that values people and planet over profit (ibid. at 1). Toward that end, PUSH's GDZ focuses on constructing affordable housing, reducing land vacancy, insulating homes, eliminating health hazards like lead, increasing access to healthy food, and remediating brownfields.

PUSH facilitates community control so that benefits can remain within the community. Its land bank manages vacant structures in the GDZ, preventing gentrification and displacement by holding properties until they are transitioned to affordable housing (Hart and Magavern 2017). PUSH created the Buffalo Neighborhood Stabilization Company to retain ownership of the land they develop into affordable housing and control the price at which homes are resold. The GDZ also includes renewable energy projects and urban agriculture with notable community involvement. Development projects within the GDZ employ individuals from PUSH's workforce development initiatives, for example training residents to rehabilitate and weatherize homes. These efforts generate employment opportunities, enhance energy efficiency, and contribute to the revitalization of the neighborhood.

PUSH collaborates with state and local officials, drafting legislation and mobilizing support for funding. This funding helps PUSH renovate houses in the GDZ. PUSH's success led to the GDZ's principles being incorporated in New York State's Sustainable Neighborhoods program. By investing in climate-resilient development, the GDZ aims to utilize climate-resilient investment and development to enhance and preserve the neighborhood's local economy in a self-sustaining way, using short-term community development opportunities to create green sectors and workforces that can thrive in the long term.

The City of Providence, Rhode Island, ambitiously announced the establishment of “Climate Justice Zones” (CJZs), representing an evolution of GDZs that center equity and justice while explicitly addressing historically entrenched racialized land and property systems. The city's two proposed CJZs would be developed in disinvested and disproportionately burdened communities that predominantly

consist of Indigenous, Black, Latino, and Southeast Asian populations. These areas would be targeted for substantial investments driven by community input and aligned with their needs (G. Kelly 2020a; 2020b).

Providence's Green Justice Zones (GJZs) were part of its 2019 Climate Justice Plan, which acknowledged that past urban development was driven by the legacy of racial capitalism. The Plan seeks to "tackle climate change by addressing the root causes: structural racism, economic inequality, and our extractive economy." It explicitly linked the contemporary challenges faced by its underresourced neighborhoods to the history of economic and ecological exploitation that has shaped these communities:

Providence's economic success came at a human and environmental cost. It depended on cheap cotton from the south, which was grown and harvested by slave-labor; Indigenous communities lost their access and rights to the land; and rivers were polluted with toxic chemicals as mills and other industries dumped untreated waste into them. More than 200 years later, our post-industrial landscape remains contaminated with lead that poisons 10 to 30% of our kindergarten-age children, depending on the neighborhood. (City of Providence 2019)

Providence's GJZs were ultimately more aspirational than realized. Implementation has been minimal, hampered by utility industry pressure, gubernatorial hostility to environmental justice, and scarce funding (Rubinoff et al. 2021; Fitzgerald 2020). Of the \$220 million 2020 Capital Improvement Plan, only \$1 million went to the city's two GJZ projects, neither of which met the holistic, antidisplacement vision of a robust GJZ (G. Kelly 2020a; 2020b; Sustainability Commission 2023). Subsequent city budgets and plans omitted the Zones entirely. A 2023–2024 push to embed GJZ-inspired industrial restrictions into the city's Comprehensive Plan—backed by residents and modeled on the 2023 Green Justice Zone Act—was abruptly reversed after organized labor opposition, preserving the status quo of polluting uses in the Port of Providence (Brown and Stang 2024).

The experiences of Minneapolis, Buffalo, and Providence reveal both the transformative potential and the profound challenges of catalyzing community-driven development and climate investments that confront the history of racialized land markets head-on. Where local organizations are empowered and provided with sustained resources—as with Buffalo's PUSH GDZ—meaningful change can take root, channeling climate investment into antidisplacement strategies, affordable housing, workforce development, and enduring neighborhood stewardship. Minneapolis illustrates the importance of embedding these efforts within comprehensive urban plans that explicitly guard against displacement and prioritize the needs of historically marginalized residents. Conversely, Providence's ambitious Climate Justice Zones underscore how structural barriers—political inertia, insufficient funding, and resistance from established interests—can limit the realization of even the best-conceived policies and plans.

Efforts by these cities to address the intertwined legacies of racial capitalism and environmental degradation in the most marginalized communities highlight the necessity of robust, reparative policy and budgeting frameworks. These frameworks aim to hardwire antidisplacement guardrails into resilience investments; fund community ownership and public land stewardship over speculative growth in historically marginalized neighborhoods; and budget to close health, wealth, and infrastructure gaps that have been created by policy, not by accident. As more cities consider adopting

and refining these frameworks, the lessons learned from early Green Development and Climate Justice Zones will serve as crucial guides, reminding policymakers that they can lead if they orient resilience planning and climate investments toward repair. The path to repair will be forged through sustained advocacy, active partnerships with marginalized communities, allocation of resources where harm has been greatest, and a willingness to counteract the social and spatial inequities that climate change exploits.

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