

# HOW CAN CITIES USE INVESTMENTS IN CLIMATE RESILIENCE TO GENERATE ECONOMIC BENEFITS FOR LOW-INCOME NEIGHBORHOODS?

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## Research Report

# How Can Cities Use Investments in Climate Resilience to Generate Economic Benefits for Low-Income Neighborhoods?

Innovation Network for Communities  
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## Introduction

Add climate change to the long list of persistent challenges with which low-income neighborhoods in cities must struggle.

Their location within the city may be climatically problematic: it could, for instance, be low lying and flood-prone, features unwanted by more affluent city residents. Conversely, it could be safely elevated from rising seas and swollen rivers, and increasingly eyed by developers and potential occupants aware of climate risks, with increasing displacement pressure on incumbent businesses and residents. “Vulnerable communities are often the hardest hit by climate challenges, especially water-related challenges,” notes the US Water Alliance report, “An Equitable Water Future.”<sup>1</sup>

A neighborhood’s history of inequitable city investments and services, which left it isolated and marginalized, could foretell future city decisions that would shortchange the neighborhood’s defenses against climate hazards. Conversely, city investments in strengthening the neighborhood’s climate resilience could stimulate an influx of development and residents, gentrifying the area and displacing its low-income residents.

Even as climate changes may add to a low-income neighborhood’s list of challenges, the accompanying pressures are insidious and long-term: more frequent episodic flooding, increasingly poor air quality, hotter, drier summers. These challenges don’t supplant the consistent top concerns of the neighborhood’s residents: how to increase economic opportunities and affordable housing, and improve transportation, health, food, education, and other services. The context of seemingly intractable poverty and discrimination overshadows concern about resilience to climate change.

To respond to this situation, which cities increasingly face, a research team looked for ways that public investments in climate resilience could also respond to the economic needs of low-income neighborhoods by increasing the disposable income of households in the neighborhood and boosting residents’ collective influence over city systems that affect their economic capabilities and opportunities.<sup>2</sup> This report details four findings from that research.

<sup>1</sup> US Water Alliance, “An Equitable Water Future: A National Briefing Paper,” 12, <http://uswateralliance.org/initiatives/water-equity>.

<sup>2</sup> The critical importance of a neighborhood’s influence over city systems is highlighted in RW Ventures & Living Cities, RW Ventures & Living Cities, “Dynamic Neighborhoods: New Tools for Community and Economic Development,” 2009, <http://rw-ventures.com/dynamic-neighborhoods-tools-for-community-and-economic-development/>.

## Research Question

This research project explores a question that is assuming greater importance as more cities and utilities plan investments to increase urban resilience to mounting climate risks and consider the ways that plans might affect low-income neighborhoods and residents:

***How can municipal utilities/city governments design their investments in increasing climate resilience to generate economic benefits for low-income neighborhoods and residents?***

The question lives in a broader climate- and affordability-emergency context. It is focused uniquely on climate resilience investments, which are related to adapting infrastructure and systems for a climate-constrained future. The question can also apply to city investments in carbon reduction, such as renewable-energy generation or electric-vehicle charging infrastructure, not just in resilience strengthening. The question can be applied to non-economic or “intangible” benefits, such as improvements in biodiversity, health outcomes and air quality, or access to open space, not just economic benefits. The challenge may not be bounded by a neighborhood’s geography, instead concerning a group of people classified by race, ethnicity, religion, or class. Finally, potential inequities in climate actions exist in the context of systemic racism and unjust policies that have governed inequitable allocation of other investments, provision of services, and use of regulations.

This project, however, focused mainly on the question of the resilience-building potential for economic benefits for low-income neighborhoods. Moreover, it used data from a specific case—resilience building investment by Seattle Public Utilities and other city entities for the South Park neighborhood of Seattle—to test ideas that emerged.

### South Park & Seattle Public Utilities

South Park is a 685-acre residential, commercial, and industrial neighborhood, a part of the Duwamish Valley area on the south side of Seattle with about 4,100 residents, 70% of them people of color, 40% immigrants. Median household income is 40% below the Seattle average, a third of residents live below 200% of the poverty income level, and 83% of school students are eligible for government-funded lunches. Only a small number of South Park residents are employed by businesses in the industrial section. Life expectancy in the neighborhood is 13 years lower than the average in more affluent Seattle neighborhoods. South Park is a place that, the City of Seattle acknowledged, has “experienced documented inequities for years,” with many “stressors” including disparities in air and water quality, noise, and lack of healthy food options, and “less investment of City services and projects.”<sup>3</sup> Half of the neighborhood residents spend more than 30% of their income on housing. Personal crime is higher than the citywide average. The neighborhood has half the citywide average of parkland, limited retail food access, and limited transportation services. Community members have long contended that the city consistently fails to address known and potential negative impact.

South Park lies along the Duwamish River, a mostly armored channel and 5.5-mile hazardous-contamination Superfund site, and beside Elliott Bay just south of the Port of Seattle. Some of the area is subject to flooding and it is estimated that a 50” sea level rise would inundate much of South Park.

<sup>3</sup> City of Seattle, “Duwamish Valley Action Plan,” 5, and Seattle Public Utilities, “Seattle Public Utilities Investments As a Catalyst for Healthier and More Equitable Community – South Park Water Management Collaboration,” application for Connect Capital Phase 2. For additional information about South Park see Urban Land Institute, “Seattle Washington: Strategic Advice for Urban Resilience on the Lower Duwamish River,” June 21-26, 2015, a ULI Advisory Services Panel Report, and “Duwamish Valley Cumulative Health Impacts Analysis.”

Seattle Public Utilities (SPU) anticipates investing \$100+ million for capital improvements in South Park to address stormwater flooding and sediment contamination, including drainage and conveyance infrastructure, a pump station, and water treatment facility. A US Army Corps of Engineers flood-risk management study of tidal flooding risks for a 100-acre, mostly industrial, section of South Park found that no additional action could leave as much as 63 acres flooded by 2070 and that contamination would be released from some flooded properties. It recommended construction of 15-foot high levees and floodwalls and grading of low spots, with a total estimated price tag of about \$29 million.<sup>4</sup> In addition, the Superfund cleanup of the Duwamish Waterway is estimated to cost as much as \$350 million, to be paid for mostly by the city and King County.

SPU bills South Park businesses and residences roughly \$6.4 million annually for water and waste services, about half of the charges going to residential customers. An estimated \$750,000-\$800,000 of the billed amount is paid to the city's Utilities Tax, which goes to the city's general fund.<sup>5</sup>

<sup>4</sup> US Army Corps of Engineers, "Preliminary Flood Risk Management Study for the Duwamish River at South Park," October 2017.

<sup>5</sup> Total annual SPU billing in South Park, from SPU data. The City Utility Tax is about 15%.

## Summary of Research Findings

The research project generated four findings about climate-resilience investment and low-income neighborhoods, summarized here:

- 1. *Direct economic benefits generated by climate-resilience investments will not typically flow to low-income neighborhoods.*** A city's climate-resilience investments in protection, adaptation, and relocation of the built environment generate a range of benefits. Some, but not all, of these benefits have been quantified, valued economically, and monetized to produce increases in income, asset value, and investment returns, or reductions in projected costs of households, governments, insurers, and other entities. However, monetization mechanisms—for resilience and other benefits—tend to reward people and organizations (businesses, government entities, non-profits) with property assets and purchasing power. This sidelines low-income individuals and households and also rules out neighborhoods.
- 2. *Equity-driven public policies are needed to shape and protect economic benefits resulting from climate-resilience investments for low-income neighborhoods.*** Low-income neighborhoods and residents are not likely to obtain the economic benefits of climate-resilience investment unless a set of equity-based public policies intentionally direct the benefits to them. But a city's resilience-based equity policies have to go beyond traditional economic and community development approaches; they require a comprehensive, across-the-silos effort—including housing and land use policies—that is out of the reach of a solo government agency or municipal utility.
- 3. *Community capacities are needed to capture and use climate-resilience benefits for low-income neighborhoods.*** Low-income neighborhoods need institutionalized collective capacities to perform several critical functions for developing, controlling, and managing economic and non-economic benefits from climate-resilience investments. They must have the capacity to engage with city government planning and decision-making processes to influence the development of equity-based policies for the neighborhood. They must have the capacity to capture and manage a range of economic benefits from resilience investments to generate business income, develop residential and commercial property, and influence the use and preservation of land, especially green spaces, in the neighborhood. Ultimately, this requires a system of neighborhood-driven entities that work in close alignment with local agencies and private entities.
- 4. *Monetizing non-economic benefits could generate economic benefits from climate-resilience investments to support low-income neighborhoods.*** New ways to quantify and monetize climate-resilience benefits that are currently “non-economic” could produce financial flows for low-income neighborhoods and residents. The economic value of several resilience-based benefits—risk reduction, environmental improvement, health improvement, and neighborhood livability improvement—are not yet being fully tapped. If these could be monetized, then equity-based policies could help steer the economic benefits to institutionalize capacities of low-income neighborhoods.

## Background to Research Question

### Climate-Resilience Investment

The climate crisis is driving enormous amounts of public and private investment in decarbonization and resilience and generating economic activity worldwide. For instance, more than \$2.5 trillion was invested in new renewable energy production capacity worldwide between 2010 and 2019.<sup>6</sup> The 2016 “Adaptation Finance Gap Report,” produced by UN Environment, projected that the *annual* global cost of climate adaptation by 2030 could range from \$140 billion to \$300 billion, and up to \$500 billion a year by 2050. A large portion of the climate-action investment comes from city governments and occurs in cities, which contain most of the world’s population and economic activity.

Local governments take four general approaches to build climate resilience or to decarbonize urban systems. They **make public investments**, especially in public infrastructure and government facilities. They **encourage voluntary action** by, for instance, providing information and educating property owners. They **send price signals** by incentivizing or taxing business and individual actions. And they **mandate/regulate decisions and behaviors**, for instance in land uses and the design and construction of buildings.<sup>7</sup>

Urban public investment in resilience aims mainly to strengthen the physical resilience of the city against climate risks. This primarily involves funding actions that **protect, adapt, or relocate** those parts of the public or private built environment that are exposed to climate hazards. Some resilience investments also address a city’s social, environmental, and health vulnerabilities to a changing climate.

Different cities face different climate risks and, therefore, they plan different resilience actions, some of which require much more investment than others. A 2019 study of eight US cities by the Innovation Network for Communities, “Playbook 1.0: How Cities Are Paying for Climate Resilience,” found that most of the cities relied heavily on new local revenue from property tax increases and utility rate increases to pay for their short-term stormwater and sea-level rise resilience actions.<sup>8</sup>

### Low-Income Neighborhoods

Low-income areas of cities may be particularly vulnerable to climate hazards on three counts:

- **Location**—they are likely to be located in what were perceived to be less-desirable parts of a city, such as flood-prone areas and industrial- or highway-adjacent areas, and therefore may face greater climate risks than other parts of the city.
- **Condition**—they are more likely to have been developed in ways that are less resilient. A 2017 study of segregation and environmental injustice in Baltimore found, for instance, that “patterns and procedures in the city’s early history of formal and informal segregation, followed by ‘redlining’ in the 1930s, have left indelible patterns of social and environmental inequalities. These patterns are manifest in the distribution of environmental disamenities

<sup>6</sup> IISD, “Renewable Energy Investment to Surpass USD 2.5 Trillion for 2010-2019, UNEP Report Finds,” September 10, 2019, <https://sdg.iisd.org/news/renewable-energy-investment-to-surpass-usd-2-5-trillion-for-2010-2019-unep-report-finds/>.

<sup>7</sup> For details on the four approaches applied to carbon reduction by cities, see <https://carbonneutralcities.org/wp-content/uploads/2018/04/CNCA-Framework-for-Long-Term-Deep-Carbon-Reduction-Planning.pdf>.

<sup>8</sup> <http://lifeaftercarbon.net/wp-content/uploads/2019/07/Playbook-1.0-How-Cities-Are-Paying-for-Climate-Resilience-July-2019.pdf>.

such as polluting industries, urban heat islands, and vulnerability to flooding, and they are also evident in the distribution of environmental amenities such as parks and trees.”<sup>9</sup>

- **Economic resilience**—their residents are not likely to have sufficient financial means and other assets to withstand and recover from a period of significant climate stress, such as a hurricane.
- **Priority**—they may not compete well politically for the city’s resilience-building resources and therefore are likely to receive less investment than needed for adequate protection from and adaptation to climate risks.

Note, too, that all low-income neighborhoods are not the same. They may differ in ways, such as home ownership rates, that have implications for resilience-building strategies and how resilience-based economic benefits may be generated and captured. RW Ventures and Living Cities used numerous databases to develop a taxonomy of urban neighborhoods that identifies nine different types and many subtypes, ranging from Truly Disadvantaged and Transient Underdeveloped neighborhoods at the lower-income end to Close, Cool, Commercial and Fortune 100 neighborhoods at the higher-income end.<sup>10</sup>

A Stable Low-Income neighborhood (#3 in the chart below) has the following characteristics and may reflect some of South Park’s conditions:

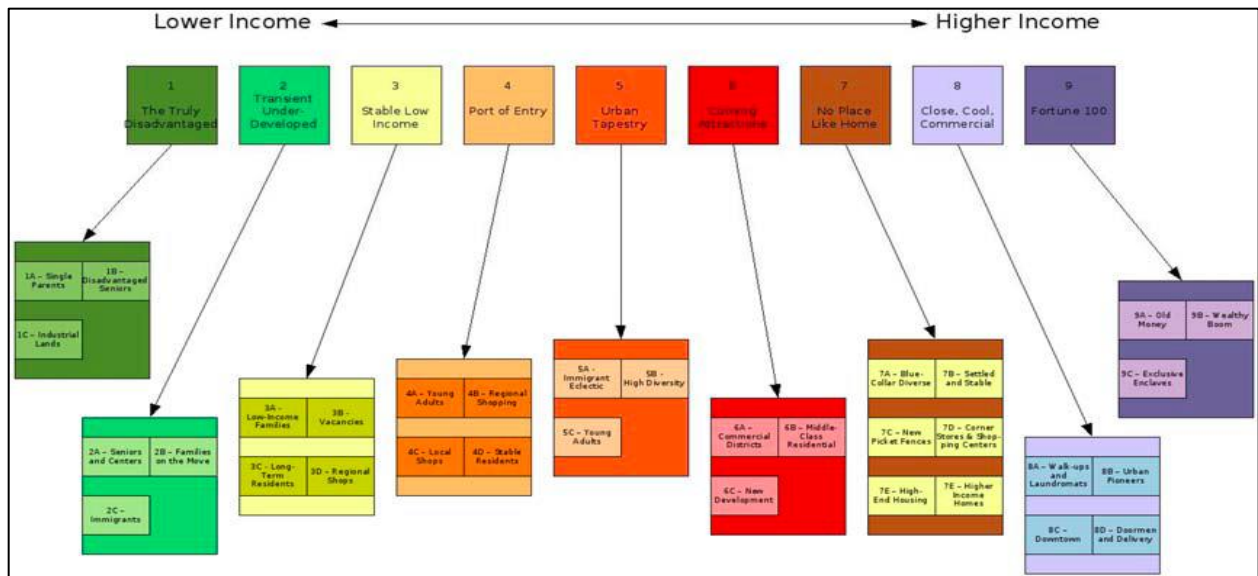
- Modest single-family homes w/relatively high ownership rate
- Well-worn city blocks
- High unemployment rate
- Mostly service sector jobs
- Lack of business and service amenities
- Resident stability (½ present more than 10 years)
- Many single-parent households
- High % of young adults
- High crime and foreclosure rates

In different types of neighborhoods there are different actions to improve the neighborhood, according to the taxonomy report. For instance, actions to improve a stable, low-income neighborhood without triggering displacement of residents include better access to transit; reduction in unemployment over time; resident retention based on maintaining home ownership; and a little large-scale redevelopment with slow growth in housing stock.

<sup>9</sup> Morgan Grove, Laura Ogden, et. al., “The Legacy Effect: Understanding How Segregation and Environmental Injustice Unfold over Time in Baltimore,” *Annals of the American Association of Geographers*, 108(2) 2018, pp. 524–537.

<sup>10</sup> RW Ventures & Living Cities, “Dynamic Neighborhoods: New Tools for Community and Economic Development,” 2009, <http://rw-ventures.com/dynamic-neighborhoods-tools-for-community-and-economic-development/>





## Economic Benefits Generating Sequence

It takes a sequence of general steps for investments in climate resilience (or anything else) to produce economic benefits.



The four-step sequence begins with a city deciding (1) **resilience actions** it will invest in. This typically emerges from a planning process, but it is also a point at which the needs and interests of low-income neighborhoods may be lessened or elevated in the plan.

Next, when a city's resilience actions are implemented, they generate (2) **benefits** for different types of **beneficiaries**.

Then the measurable resilience benefits have to be (3) **monetized**, converted into financial revenue—for businesses (owners, investors), workers, government, or nonprofit organizations. Monetization depends on there being ways to quantify the measurable benefits, value them in financial terms, and monetize them using one of three mechanisms:

- A **market** in which there is an agreed-upon metric for converting the benefit into financial terms that will be used to purchase/trade the benefit. This invites buyers and sellers into the market and enables them to exchange value for money. Examples include markets that establish the price of housing, labor, and other services and products; the price or financial value of property and other assets; the cost of insurance against potential risks such as property damage or business disruption; a “cap and trade” pollution market created by government regulation.
- A **cost-benefit or social return-on-investment (ROI) analysis** that establishes “on paper” the potential financial value versus the cost of public investment in particular actions. This allows public entities to make the case for investing financially in projects that are non-market in

nature (including investment in utility monopolies). US Army Corps project proposals are required to establish a cost-benefit analysis. The Corps' recommendation for protecting South Park estimated the economic benefit-cost of each of three recommended actions, with a range of 2.5 to 9.1 ratios. A growing number of studies have assessed the economic benefits of resilience investments, with various findings about positive benefit-to-cost ratios.<sup>11</sup>

- **Potential financial savings for projected costs/budgets** for future investments and actions that will be taken by governments or private sector entities. Investing in flood prevention, for instance, should reduce future emergency-and-rebuild expenditures by insurers, property owners, and local governments. This allows entities to dedicate potential financial savings to purposes such as incentivizing resilience-strengthening actions.

Finally, the monetized revenue has to be (4) **captured** by an entity and subsequently **distributed** to beneficiaries. An entity could be a business that makes sales and distributes its revenue to employees, investors, and owners. It could be a property owner whose property value increases and, upon a sale, is captured. It could be a local government that captures revenue by taxing property value, income, or other revenue flows. It could also be captured by a community-based entity, a set of which will be described below.

### Monetizing the Benefits of Green Infrastructure —Earth Economics

Green or natural infrastructure provides a number of direct benefits that support utility service delivery, as well as broader community benefits. Benefits can include reducing water treatment needs, improving water quality, reducing flooding, increasing groundwater recharge, reducing energy use, improving air quality, reducing the urban heat island effect, providing recreational opportunities, and providing wildlife habitat.<sup>12</sup> Many of the benefits—such as mitigation of extreme heat and rainfall events—are compounded by a changing climate. The particular benefits that a utility or community values will receive vary significantly, but in almost all cases green infrastructure provides multiple benefits that extend beyond the borders of the utility and its mission.

Most agencies require economic analysis to show the business case for significant infrastructure investments. In the past, methods, requirements, and common practice for economic analysis have been narrowly focused on built infrastructure such as pipes, pumps, and bridges, with little regard for the broader environmental and social costs and benefits. However, economics has evolved over the past decades, and methods and data are now increasingly available for quantifying and valuing the co-benefits of natural infrastructure. For example, the economic analysis for a riparian wetland built for flood control can now quantify the many ecosystem benefits (flood protection, habitat, recreation, carbon sequestration, etc.) as well as local benefits to the economy via jobs and improved health for neighboring residents. This more comprehensive

<sup>11</sup> For instance, the US Federal Emergency Management Administration has stated that resilience investments can generate a 6: 1 benefit-cost ratio in avoided damages to property. Focusing on new infrastructure, a recent report says that building resilience into new infrastructure adds an average of 3% to the capital investment needed, but generates \$4 of economic value for every \$1 of investment; see <https://www.weforum.org/agenda/2019/09/why-it-s-time-to-invest-in-climate-resilient-infrastructure/>. Another report estimates that investment in early warning systems, climate-resilient infrastructure and water resources, dryland agriculture and mangrove protection can generate returns of 2: 1 to 10: 1; see Valerie Volcovici, “Investing in climate adaptation can spur trillions in benefits: report,” Reuters, September 9, 2019, <https://www.reuters.com/article/us-un-climatechange/investing-in-climate-adaptation-can-spur-trillions-in-benefits-report-idUSKCN1VV0A0>

<sup>12</sup> The Value of Green Infrastructure: A Guide to Recognizing Its Economic, Environmental and Social Benefits. 2010. The Center for Neighborhood Technology and American Rivers. Accessed at <http://www.cnt.org/repository/gi-values-guide.pdf>

view allows decision-makers to compare built and green infrastructure options in an “apples-to-apples” manner and strike the best balance of investment in each.

Making the economic case for natural infrastructure requires *quantifying* the services provided by these natural assets, *valuing* the services in monetary terms, and, when possible, *monetizing* these services to directly benefits the community.

The benefits of natural infrastructure can by *quantified* by the ecosystem services that they provide. Natural infrastructure provides flood control, improves water quality, provides habitat for flora and fauna, mitigates urban heat islands, and sequesters carbon—in addition to a variety of other benefits to users and community members.<sup>13</sup>

*Valuing* the identified benefits in economic terms allows decision-makers to accurately the consider the benefits and costs of natural infrastructure projects. Many established economic valuation methods can be applied to natural infrastructure. For example, the flood control and water quality improvement of natural infrastructure can be valued at the avoided cost of constructing or expanding grey infrastructure to the same performance standards. Not all the benefits provided by natural infrastructure can be valued. For example, demonstrable improvements in social cohesion and mental health<sup>14</sup> and reductions in crime rate<sup>15</sup> are challenging to value. Thus, natural infrastructure valuations can be considered an underestimate of the true value provided by the assets.

Only a subset of the quantified benefits of natural infrastructure can be valued, and only a subset of those valued benefits can be *monetized*. Monetizing these benefits—through increased property taxes, environmental markets, reduced insurance premiums or a variety of other sources can drive investment in natural infrastructure.

Many, in fact *most*, of the benefits of natural infrastructure are challenging to directly monetize, however these benefits still provide real, tangible impacts within the community. Natural infrastructure—from urban trees and public green space to wetland buffers and retention basins—can improve the health and wellbeing of communities above and beyond the stream of revenue that can be generated through monetization. Considering the full scope of economic, social, and environmental benefits provided by natural infrastructure helps to make the case for investments in climate resiliency.

<sup>13</sup> Demuzere, M., Orru, K., Heidrich, O., Olazabal, E., Geneletti, D., Orru, H., ... & Faehnle, M. (2014). Mitigating and adapting to climate change: Multi-functional and multi-scale assessment of green urban infrastructure. *Journal of environmental management*, 146, 107-115.

<sup>14</sup> Schwartz, A. J., Dodds, P. S., O'Neil-Dunne, J. P., Danforth, C. M., & Ricketts, T. H. (2018). Exposure to urban parks improves affect and reduces negativity on Twitter. *arXiv preprint arXiv: 1807.07982*.

<sup>15</sup> “Philadelphia wanted to expand green infrastructure to reduce stormwater pollution. They did not expect that it would also decrease crime rates” (n.d.) Vibrant Cities Lab.

## Findings

### 1. Direct economic benefits generated by climate-resilience investments will not typically flow to low-income neighborhoods

A city’s climate-resilience investments in protection, adaptation, and relocation of the built environment generate a range of benefits. For instance, a C40 Cities study of co-benefits generated by climate adaptation and resilience identified numerous economic, social, environmental, health, and mobility benefits.<sup>16</sup> The economic co-benefits included:

- Cost savings from reduced climate damage
- Short-term job creation from upgrading infrastructure
- Business revenue generation/job creation (from urban agriculture)
- Reduced direct health costs
- Increased labor productivity and economic production (due to reduced heat stress)
- Increased property values (from proximity to green spaces, green branding, efficiency)
- Reduced traffic congestion and travel disruptions
- Improved livability (through green and blue infrastructure)
- Innovation firm growth in resilience-technology sectors
- New real estate development

Some, but not all, of these benefits have been quantified, valued economically, and monetized to produce increases in income, asset value, and investment returns, or reductions in projected costs of households, governments, insurers, and other entities. However, monetization mechanisms—for resilience and other benefits—tend to reward people and organizations (businesses, government entities, non-profits) that have property assets and purchasing power. This sidelines low-income individuals and households and also rules out neighborhoods.

This research project limited the set of climate-resilience actions to those being considered for South Park:<sup>17</sup>

- Improvement in stormwater drainage, including use of green infrastructure
- Physical defenses against sea level rise

The table below identifies six benefits that could be generated from potential Seattle Public Utilities investments in these resilience-building actions.

|                                |   |
|--------------------------------|---|
| <b>Risk Reduction</b>          | Reduced risk of financial costs (for insurance purchasers and providers and government disaster-recovery programs) due to climate-caused property damage, injury, loss of life, business disruption |
| <b>Property Value Increase</b> | Increased financial value of <i>new</i> real estate development & increased financial value of <i>existing</i> property   |

<sup>16</sup> C40 Cities & LSE Cities, “Co-benefits of urban climate action: a framework for cities,” September 2016, <https://www.c40.org/researches/c40-lse-cobenefits>.

<sup>17</sup> Several benefits could also be generated by carbon-reduction strategies of a water and waste utility, including reduced methane production due to organic material in landfills and reduced use of virgin materials due to increased recycling and reuse and consumption reduction. In addition, the development of a distributed wastewater treatment system, replacing large centralized treatment facilities, could be considered to be a climate-resilience action.

|  |   |
|--|---|
| <b>Business and Jobs Increase</b>          | Increased economic activity (business/revenue expansion, job and income creation, workforce development) due to infrastructure construction and maintenance   |
| <b>Environmental Improvement</b>           | Improved environmental quality (reduced water pollution; increased environmental services, biodiversity, and connection to nature) due to reduced flooding and use of green infrastructure solutions                |
| <b>Health Improvement</b>                  | Improved physical health and mental health outcomes due to reduced flooding and climate stress  |
| <b>Livability Improvement<sup>18</sup></b> | Improved neighborhood livability and stability with avoided costs (for households and government) due to displacement because of flooding or retreat from location, such as relocation, commuting, and homelessness |

Different benefits provide value to different types of beneficiaries, including:

- Homeowners
- Renters
- Non-resident property owners
- Real estate developers (commercial and residential)
- Business owners
- Local employees
- Insurers (private and public)
- Health care providers
- Local government departments

Then the research project examined whether monetization mechanisms—markets, cost-benefit or social ROI analyses, or potential financial savings—existed for these benefits.

| <b>Benefit</b>            | <b>Monetizing Mechanisms</b>   |
|---------------------------|--|
| Risk Reduction            | <ul style="list-style-type: none"> <li>• Insurance markets—premiums</li> <li>• Savings through avoided cost of future emergency relief, repairs, insurance claims</li> </ul>   |
| Property Value Increase   | <ul style="list-style-type: none"> <li>• Property markets—sales</li> <li>• Property rental markets—rentals</li> </ul>  |
| Business & Jobs Increase  | <ul style="list-style-type: none"> <li>• Labor and equipment markets—wages, contracts, purchases</li> </ul>  |
| Environmental Improvement | <ul style="list-style-type: none"> <li>• Social ROI of environmental services and biodiversity</li> <li>• Savings through avoided cost of environmental restoration</li> </ul> |
| Health Improvement        | <ul style="list-style-type: none"> <li>• Health insurance markets—premiums</li> <li>• Savings through avoided cost in public health/mental health budgets</li> </ul>           |
| Livability Improvement    | <ul style="list-style-type: none"> <li>• Savings through avoided costs of resident displacement, etc.</li> </ul>   |

Although quite a few relevant monetization mechanisms exist, they pose two challenges for low-income neighborhoods. First, they tend not to produce financial benefits for low-income households.

<sup>18</sup> See Earth Economics, “Magic City Innovation District: A Snapshot of Potential Environmental and Social Costs of the Proposed Little Haiti Development,” 2019, for a groundbreaking analysis of the potential costs of large-scale relocation of low-income residents, [https://static1.squarespace.com/static/561dc6e4b039470e9afc00/t/5d02759f1e38b30001a4c9d4/1560442275234/CJP-LittleHaiti\\_FactSheet\\_0619-2.pdf](https://static1.squarespace.com/static/561dc6e4b039470e9afc00/t/5d02759f1e38b30001a4c9d4/1560442275234/CJP-LittleHaiti_FactSheet_0619-2.pdf). From the report: “The costs of displacement are measurable and should be taken into consideration when weighing the costs and benefits of new development projects.” In the Miami example, displacement of low-income households would produce relocation, commuting, and flooding-related costs, as well as the potential loss of urban vegetation, increased traffic congestion, and homelessness.

The market mechanisms benefit property owners, business owners, and insurers. The savings from avoided costs mostly benefit governments (through reduced program costs in the future), although the avoided costs of displacement include costs that low-income households might bear. In other words, monetization favors beneficiaries with property assets and/or current and future purchasing power—not low-income households and neighborhoods. Second, the entities that can capture these economic benefits—businesses, governments, property owners, even nonprofit organizations—do not include neighborhoods.

It seems safe, then, to conclude that the financial benefits of the climate actions discussed are likely to maintain or exacerbate existing economic disparities in cities—unless they are designed to generate more equitable benefits for households and neighborhoods with low incomes.

## 2. Equity-driven public policies are needed to shape and protect economic benefits resulting from climate-resilience investments for low-income neighborhoods

Low-income neighborhoods and residents are not likely to obtain the economic benefits of climate-resilience investment unless a set of equity-based public policies intentionally direct the benefits to them. But a city's resilience-based equity policies have to go beyond traditional economic development approaches that tend to focus on economic activity for individuals and businesses—providing job training programs, business-cost subsidies, and public infrastructure.<sup>19</sup> What's required is a comprehensive, across-the-silos effort—including housing and land use policies—that is mostly out of the control of solo government agencies or municipal utilities. Otherwise, some of the most significant resilience-driven economic opportunities—property value increases, insurance savings, and government budget savings—will be out of reach of low-income neighborhoods. Worse, resilience investments could trigger housing dynamics that displace low-income residents and businesses.

The US Water Alliance's briefing paper, "An Equitable Water Future," noted this tension between economic opportunity and resident displacement when it comes to water utility investments. It identified neighborhood revitalization as a potential benefit of water infrastructure investment—when, for instance, green infrastructure provides green streets, open space, public parks, reduced heat-island effects, improved air quality, and health benefits. But the Alliance cautioned that "whether investment is spurring new economic development or expanding green space in disinvested places, it has the potential to contribute to gentrification and displacement."<sup>20</sup>

Cities and other governments may use various policies, to a greater or lesser extent, to direct economic benefits and opportunities to low-income individuals and neighborhoods. They may subsidize utility, housing, and transportation costs with, for instance, reduced service fees and rebates, tax relief, and low-cost investments and grants. They may allocate certain public revenues for use in low-income areas. For instance, the \$285 million-a-year proposal that Los Angeles County voters approved in 2018 for water systems and green, livable communities designated funding for green infrastructure projects in communities that are economically disadvantaged.<sup>21</sup> Government policies may incentivize private investment and also charge impact fees for new development. They

<sup>19</sup> Even more recent urban economic development initiatives, such as the creation of innovation districts or the provision of support for targeted business clusters, such as clean-energy companies, tend to ignore the needs of low-income neighborhoods. In 2019, the [New Growth Innovation Network](#) formed to develop and promote policies and practices for "inclusive economic growth" that enable "those who historically have been left out – to own and drive the enormous wealth creation emerging in today's economy."

<sup>20</sup> US Water Alliance, "An Equitable Water Future: A National Briefing Paper," 12, 40, <http://uswateralliance.org/initiatives/water-equity>.

<sup>21</sup> Manal Aboelata and Elva Yañez, "Stormwater Management is an Equity Issue," [https://meetingoftheminds.org/stormwater-management-is-an-equity-issue-33258?mc\\_cid=1f07292f0d&mc\\_cid=ch375934cd](https://meetingoftheminds.org/stormwater-management-is-an-equity-issue-33258?mc_cid=1f07292f0d&mc_cid=ch375934cd).

may allow property owners in a selected geography to capture a portion of tax revenue from increased property value and invest it in the area's improvement. However, a city's authority to act in these ways usually depends on which powers the state government has given to municipalities, and these vary across the nation. To date, few of these equity-oriented policies have been applied to the economic benefits of climate-resilience investments and actions, especially for low-income neighborhoods.

The need for a broad policy and program equity-based framework was highlighted when Seattle issued its "Duwamish Valley Action Plan," which covered the South Park neighborhood. Mayor Jenny Durkan noted the effort "constitutes a combined environmental justice, equitable development, and anti-displacement strategy" and was the beginning of coordinating city action "to create stronger economic pathways and opportunity."<sup>22</sup>

A resilience-based equity framework for low-income neighborhoods has several elements beyond what economic benefit can be obtained from resilience investments, including:

- **Affordability and anti-displacement policies.** City adopts goals, plans, and actions for the neighborhood's equitable development as well as anti-displacement efforts such as community land trusts—mixed use and income with a substantial portion of sustainable affordable housing—and for resilience strengthening while preventing displacement of residents. (At the same time, the neighborhood can be designed and supported for long-term evolution toward becoming a low-carbon, higher-density area.)
- **Equitable public investment and services.** City adopts and implements investment and service standards—for transportation, law enforcement, flood protection, and more—that correct past discriminatory practices and ensure necessary resilience investments will occur. The city also initiates government-wide coordination and accountability for investment and services for the neighborhood.
- **Traditional economic and community development initiatives.** City provides job training programs, business-cost subsidies, public infrastructure, affordable-housing investments, and other programs, including support for local nonprofit organizations, worker cooperatives, etc., focused on providing economic opportunities for residents and businesses in low-income neighborhoods.
- **Anchor institutions.** City agencies can establish anchor relationships with low-income neighborhoods, much as hospitals and universities have been doing. Anchor institutions "have the ability to engage in long-term planning in a manner that aligns their institutional interests with those of their local communities," explained the "Anchor Mission Playbook" of Rush University Medical Center.<sup>23</sup> "In recent years, many anchor institutions have shifted their strategies to both advance their nonprofit missions and to reduce health and wealth disparities in their surrounding communities." Anchor institutions typically undertake a set of initiatives that leverage their assets for neighborhood revitalization:
  - **Human Resources:** create pipelines from outside the institution to into it and then upward internally for local and diverse residents.
  - **Procurement & Supply Chain:** Meet procurement needs via inclusive, local businesses.

<sup>22</sup> City of Seattle, Office of Sustainability & Environment, "Duwamish Valley Action Plan," 1, <https://www.seattle.gov/environment/equity-and-environment/duwamish-valley-program>.

<sup>23</sup> <https://www.rush.edu/sites/default/files/anchor-mission-playbook.pdf>.

- **Capital Projects:** Partner with inclusive, local vendors and hire diverse, local residents on capital projects.
- **Treasury & Finance:** Leverage cash-on-hand and long-term investments to invest in inclusive and sustainable community projects. Use grants or impact investments to support the development of affordable housing.

City government could embrace a policy of organizing its departments/agencies to embrace their potential anchor missions in low-income neighborhoods. It could also help to organize other anchor institution presence in the neighborhood, partnering with nonprofit organizations and business to, for instance, increase health-care services and food retailing in the area.

- **Community capacity.** This element addresses the neighborhood’s collective capacity to engage with and influence city systems and to own and manage community assets in the neighborhood. This element is addressed in the next finding.

### 3. Community capacities are needed to capture and use climate-resilience benefits for low-income neighborhoods

Low-income neighborhoods need institutionalized collective capacities to perform several critical functions for developing, controlling, and managing economic and non-economic benefits from climate-resilience investments. They must have the capacity to engage with city government planning and decision-making processes to strongly influence the development of equity-based policies for the neighborhood. They must have the capacity to capture and manage a range of economic benefits from resilience investments to generate business income, develop residential and commercial property, and influence the use and preservation of land, especially green spaces, in the neighborhood. As Seattle’s “Duwamish Valley Action Plan” summarized: “In addition to ensuring that community members guide the path forward, an important aspect of improving community capacity is preserving and securing neighborhoods’ community-controlled spaces and distinct cultural anchors . . . to ensure that communities have continued ability to shape their futures.”<sup>24</sup>

Ultimately, developing and maintaining these capacities requires a system of neighborhood-driven entities that work in close alignment with local public agencies and private entities. This community capacity could be linked into a broader “resilience district” approach that includes government-based entities, such as special financing and governance districts and other public revenue-generating mechanisms (such as for open-space acquisition), and/or coordinated city agencies. Such arrangements may enable a broader capture for low-income neighborhoods of the multiple value created by resilience investments.<sup>25</sup> And they may support the development of a more comprehensive and long-term relationship between neighborhoods and city systems.

Few low-income neighborhoods have developed the full set of capacities that allow them to capture and manage economic flows and exercise collective influence and control over urban systems that affect their residents’ economic capabilities and opportunities. These gaps are mostly due to historical disinvestment in these areas’ social, built, and economic opportunities, under-employment

<sup>24</sup> “Duwamish Valley Action Plan,” 41.

<sup>25</sup> Government entities, like community-based entities, are siloed into special purposes that don’t usually address a comprehensive, holistic approach. Research by SPU, as part of the Connect Capital initiative of the Center for Community Investment, identified a number of special-purpose districts at the city or county level (for flood control, transportation, and other purposes), as well as public development authorities, and community renewal areas for blighted areas. The narrowness of each entity’s purpose limits their use for achieving broad goals and capturing a range of resilience benefits for a neighborhood.



which drives residents to work multiple jobs to make ends meet, lack of health care services and access to capital to start small businesses and nonprofit enterprises. If the neighborhoods have any organized capacity, it is more likely to be an informal group of volunteers concerned about neighborhood well-being, or a formal, but under-resourced neighborhood association that may engage with city government and undertake betterment projects, or one or several community-based organizations providing services and performing other functions.

There are many different types of community-based entities and instruments serving multiple purposes, as described in the sidebar by The Democracy Collaborative.

### **A Framework for Community Wealth Building**

*–The Democracy Collaborative*

The Democracy Collaborative puts forward a framework of “community wealth building” that focuses on a systems-based approach to economic development that seeks to create an inclusive, sustainable economy built on locally rooted and broadly held ownership. This provides alternatives to traditional economic development strategies that have historically not trickled down to local communities, and in some cases has lowered their community capacity. In the case of climate resilience, investing in institutions that build community wealth could be a clear way to intentionally orient resilience investments towards historically disinvested or low-income communities.

Community wealth building institutions and instruments range in construction and sector, but have underlying principles that include redistributing wealth, undoing inequities, and distributing ownership over the economy.<sup>26</sup> Below we describe a few examples of institutions that could be utilized within the context of capturing resilience benefits for low-income neighborhoods. In particular, these sorts of investments in institutions and instruments could be key drivers of community capacity:

**Housing and Land:** Ownership over housing and land are major determinants of investment and displacement, including in a context of climate investments. By providing and investing in vehicles for community control of land and housing, it can ensure affordability as well as access to the resiliency investments. Community ownership could also increase agency in investing in climate investments (See Appendix for more extensive descriptions.)

- Community Land Trusts
- Public Housing
- Limited Equity Cooperatives
- Land Banks

**Enterprise:** Local enterprise, particularly that which values labor and democratic decision-making over capital and revenues, like worker cooperatives and social enterprise, can be major ways to help capture the benefit of resiliency investments. For instance, the local government or anchor institutions (described below) can leverage contracts for green infrastructure with these sorts of community-based enterprises, building a jobs infrastructure for local workers.

- Locally owned business
- Worker or consumer cooperatives
- Social enterprise

<sup>26</sup> <https://democracycollaborative.org/learn/blogpost/community-wealth-building-eight-basic-principles>

**Anchor Institutions:** These mission-driven institutions are often major economic forces in their communities, both in terms of capital and jobs. Anchors can be keys to “sticky capital” since they’re unlikely to relocate because they’re committed to place by their mission. Anchor institutions can leverage that economic power, such as their purchasing, hiring, and capital investments, to help end health and wealth disparities within the communities where they operate.

- Community Development Corporations
- “Eds and Meds” – Higher education institutions and health systems
- Community Foundations
- Local Government

In addition to institutions, there are also instruments for community wealth building to create community engagement, capacity, and investment. This includes practices like Community Benefits Agreements, in the event of new real estate developments or companies coming to communities, or Participatory Budgeting that provide communities to have a say in the types of action taken on their behalf by local government.

All of these institutions and instruments can be integral pieces of the puzzle to serve equitable resilience investments but cannot operate as a single answer to a community’s complex needs, particularly in the face of climate change. What’s needed, then, is a system of community wealth building institutions that are focused on serving low-income neighborhoods. According to The Democracy Collaborative, the key elements of such a multi-entity system, which are customized to the local conditions, include:

- A “backbone” organization that brings together and coordinates multiple stakeholders, including city government, in the neighborhood’s future.
- A combination of investment, business/work, housing, and land use strategies for the neighborhood’s future.
- Capacity building and training for neighborhood residents and others involved with the community entities in the system.
- Weaving together/collaboration of multiple models for control and influence of assets and opportunities.

#### Examples of Development of Multiple-Entity Local Community-Based Systems

- **Bronx Cooperative Development Initiative**, in Bronx, NY, which contains the Bronx Fund, Civic Action Hub, Economic Democracy Learning Center, Bronx Innovation Factory, BronXchange, and the Planning and Policy Lab.<sup>27</sup>
- **Living Cully – Sugar Shack Redevelopment** in Portland, OR, which contains the Native American Youth and Family Center, Hacienda Community Development Corporation, Verde, and Habitat for Humanity.<sup>28</sup>

<sup>27</sup> See <https://bcdi.nyc>.

<sup>28</sup> See <http://www.livingcully.org>.

#### 4. Monetizing non-economic benefits could generate economic benefits from climate-resilience investments to support low-income neighborhoods

New ways to quantify and monetize climate-resilience benefits that are currently “non-economic” could produce financial flows for low-income neighborhoods and residents. The economic value of several resilience-based benefits—risk reduction, environmental improvement, health improvement, and neighborhood livability improvement—are not yet being fully tapped. If they were, then equity-based policies could help steer the economic benefits to institutional capacities of low-income neighborhoods.

A portfolio of experiments to produce this economic value might include the following:

- **Resource efficiency.** Converting low-income consumers into producers of resource efficiency, such as the use of onsite stormwater capture and reuse, which reduces rainwater runoff and flooding risks. Production of resource efficiency could help utilities save money by reducing demand for stormwater infrastructure, and a portion of the savings could be used to pay for the efficiency.
- **Environmental services & biodiversity.** Paying residents of low-income neighborhoods for measurable improvement of local environmental services and biodiversity. This would allow monetization of “hidden value.”
- **Land use/development.** Gaining control/ownership over land use & development and capturing financial investment and gains and tax revenue
- **Climate-resilience businesses.** Locating in low-income neighborhoods innovative climate-resilience businesses (green infrastructure construction and maintenance, circular economies for organic waste and demolition debris) that can provide services for their community, local government, or even anchor institutions.
- **Environmental & health performance-based outcomes.** Pay low-income residents for environmental and health performance improvements in the neighborhood (avoided future costs of government)
- **Risk-reduction dividends.** Distribute risk-adjusted resilience dividends based on improved climate protection and adaptation (e.g., from avoided costs for insurance claims and emergency response, from future property value creation).

## Conclusion

There are few opportunities for a city's climate-resilience investments and actions to economically benefit low-income neighborhoods, unless local governments establish a set of equity-based policies and support the development of the neighborhoods' collective capacities. In the absence of these efforts, economic benefits of resilience are most likely to flow to more affluent households and businesses in other neighborhoods, as well as government agencies—and will likely exacerbate economic disparities within the city. And this will occur even as many low-income areas prove to be more vulnerable than other urban areas to climate hazards such as flooding and extreme heat. As the “Minneapolis Green Zones Workgroup Final Report<sup>29</sup>” put it: “Each choice made by government officials, business leaders, and developers to promote economic development—whether it is funding, permit approval, public investment, policy adoption, etc.—assigns value to and prioritizes one community or stakeholder group's interests over another's.”

Few cities have acted sufficiently to change these prospects and produce different outcomes for low-income residents and neighborhoods. Interventions should include a set of comprehensive, equity-based policies and enhanced low-income neighborhood capacity to engage with city planners and decision-makers and to own and manage community-based enterprises and other entities. Cities could also pursue experiments in creating new economic benefits from climate-resilience investments that can support low-income neighborhoods and their residents.

The beginning of an era of massive public investment in urban climate resilience offers cities a new opportunity to support the economic inclusion and improvement of low-income neighborhoods without stimulating gentrification and displacement of residents. But it will require a sea change in the way city governments have engaged with low-income neighborhoods in the past and clarity about equitable goals for low-income neighborhoods.

<sup>29</sup> City of Minneapolis, “Minneapolis Green Zones Workgroup Final Report,” 2017, <http://www.minneapolismn.gov/sustainability/reports/WCMSP-201323>.

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# Appendix

## Types of Community Based Entities (from The Democracy Collaborative)

For land and housing:

| Model                                 | Elements   | Wealth Creation Mechanism   | Governance   | Community Benefits   |
|---------------------------------------|--|---|--|--|
| <b>Limited Equity Coop (LEC)</b>      | <ul style="list-style-type: none"> <li>• Nonprofit (under state law)</li> <li>• Owns property/housing (may be linked to Community Land Trust)</li> <li>• Needs financial subsidies</li> </ul>  | Members may accumulate limited equity in homes for resale—which maintains affordability of housing              | Members vote for coop board  | <ul style="list-style-type: none"> <li>• Bridge from renting to owning for low-income HHs</li> <li>• Preserves affordability for future residents</li> </ul> |
| <b>Resident Owned Community (ROC)</b> | <ul style="list-style-type: none"> <li>• Owns land in mobile home &amp; trailer parks</li> <li>• Charges rent to residents, sets rules, oversees conditions</li> <li>• Can be structured as LEC</li> <li>• May be market rate</li> </ul>   | Enables residents to access better financing and realize higher property values—while maintaining affordability | Residents elect board  | Reduces risk of displacement if land is sold or rent is raised   |
| <b>Community Land Trust (CLT)</b>     | <ul style="list-style-type: none"> <li>• Owns/stewards land for <u>permanent</u> benefit of low-income community (de-commodifies land)</li> <li>• Residents/commercial tenants own buildings and businesses on land through ground leases</li> <li>• May also get into food production, recreation, commercial centers</li> <li>• Taps public and philanthropic funding</li> </ul> | Maintaining affordability supports HH disposable income   | Typically has board of CLT lessees, managers, and community stakeholders | <ul style="list-style-type: none"> <li>• Serves low- and middle-income HHS</li> <li>• Can create mixed-use space in community</li> </ul>                     |
| <b>Land Bank</b>                      | <ul style="list-style-type: none"> <li>• Government or nonprofit</li> <li>• Acquires abandoned property and prepares for use (selling or leasing)</li> <li>• Can link to CLT</li> <li>• Funded by government (including revenue from settlements) and earned income</li> </ul>   | Can use land acquired in many ways—including affordability and wealth creation opportunities                    | May be nonprofit board, government officials, or combination of both     | <ul style="list-style-type: none"> <li>• Allows community participation in decisions about abandoned land</li> </ul>   |

|  |  |  |  |  |
|--|--|--|--|--|
| <b>Community Benefits Agreements (CBA)</b> | <ul style="list-style-type: none"> <li>• Legally enforceable contracts between developer and community groups, in conjunction with development project</li> <li>• Engages diverse, multi-issue community coalitions</li> <li>• Detroit adopted a community benefits ordinance that requires certain size development projects to set up a CBA</li> </ul> | <ul style="list-style-type: none"> <li>• CBA can result in funding and implementation of other wealth creation mechanisms + community support and renewal resources</li> </ul> | <ul style="list-style-type: none"> <li>• Community coalition negotiates CBA; implementation and enforcement by contract parties</li> </ul> | <ul style="list-style-type: none"> <li>• Generates resources for community ownership of land and resources</li> <li>• Benefits of agreement tied to community needs</li> <li>• Developer accountability</li> </ul> |
|--|--|--|--|--|