

# Resilience Matters

• 2016 •

*Sustainable, Equitable  
Solutions*

Introduction by

Laurie Mazur



# ABOUT THE URBAN RESILIENCE PROJECT

Over the last three decades, Island Press has published seminal works on resilience, ecosystems, and sustainable urban design. As our cities confront turbulent times, much depends on how resilience is defined and implemented. Seeing an opportunity to shape that outcome, Island Press launched the Urban Resilience Project in 2013, with the support of The JPB Foundation and The Kresge Foundation.

The project's goal is to advance a holistic, transformative approach to thinking and action on urban resilience in the era of climate change, an approach grounded in a commitment to sustainability and equity. We bring together leading thinkers with a broad range of expertise to generate and cross pollinate ideas. And we share those ideas in a variety of media—books, articles, interviews, webinars, and educational courses.

For more information, and to find out how you can get involved, visit [www.islandpress.org/URP](http://www.islandpress.org/URP)



# ABOUT THE KRESGE FOUNDATION

## AND ITS ENVIRONMENT PROGRAM

THE KRESGE FOUNDATION is a \$3.5 billion private, national foundation that works to expand opportunities in America's cities through grant making and investing in arts and culture, education, environment, health, human services, and community development in Detroit. Its Environment Program helps communities build environmental, economic, and social resilience in the face of climate change.

For Kresge, resilience is more than just withstanding stresses—it also includes the capacity to prosper under a wide range of climate-influenced circumstances. In the long term, resilience is possible only if society reduces greenhouse gas emissions and avoids the worst impacts of climate change. So, strengthening a community's resilience requires efforts to:

- Reduce the greenhouse gas emissions that contribute to climate change;
- Plan for the changes that already are under way or anticipated;
- Foster social cohesion and inclusion.

As a foundation committed to creating opportunity for low-income people and communities, Kresge is particularly concerned with the effect climate change has on people with limited economic resources. It works to engage people from historically underrepresented groups in efforts to build resilient communities and plan for climate change.

# ABOUT THE JPB FOUNDATION

## AND ITS ENVIRONMENT PROGRAM

THE JPB FOUNDATION'S mission is to enhance the quality of life in the United States through transformational initiatives that promote the health of our communities by creating opportunities for those in poverty, promoting pioneering medical research, and enriching and sustaining our environment.

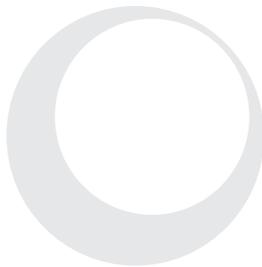
The JPB Environment Program's goal is to enable healthy and resilient communities by enriching and supporting the environment because JPB believes it measurably impacts the well being of our human and natural systems. A theme across all program areas is the intent to protect, enhance, and advance the human and civil rights of individuals.

## ABOUT ISLAND PRESS

Since 1984, the nonprofit organization Island Press has been stimulating, shaping, and communicating ideas that are essential for solving environmental problems worldwide. With more than 1,000 titles in print and some 30 new releases each year, we are the nation's leading publisher on environmental issues. We identify innovative thinkers and emerging trends in the environmental field. We work with world-renowned experts and authors to develop cross-disciplinary solutions to environmental challenges.

Island Press designs and executes educational campaigns in conjunction with our authors to communicate their critical messages in print, in person, and online using the latest technologies, innovative programs, and the media. Our goal is to reach targeted audiences—scientists, policymakers, environmental advocates, urban planners, the media, and concerned citizens—with information that can be used to create the framework for long-term ecological health and human well-being.

Island Press gratefully acknowledges the support of The JPB Foundation and The Kresge Foundation, without whose partnership this journal would not be possible.



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*Sustainable, Equitable Solutions*

*Introduction by*

**Laurie Mazur**

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# INTRODUCTION

# *Bounce Forward: Building Resilience for Dangerous Times*

LAURIE MAZUR

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When Superstorm Sandy came ashore in 2012, thousands of New Yorkers were plunged into what seemed like an earlier century. No lights. No heat. No refrigeration. No elevators. On the upper floors of high-rise apartment buildings, the taps went dry and toilets would not flush.

For the poorest New Yorkers, this went on for weeks. Less than a mile from the seat of global capitalism where stock traders were back at work soon after the storm, residents of public housing rifled through dumpsters full of discarded food looking for something to eat.<sup>1</sup>

Sandy was many things: a disaster that cost hundreds of lives and billions of dollars, a wake-up call on climate change, and a reminder of the fragility of the systems that hold our civilization together.

It is a reminder we would do well to heed. We live in a time of wrenching change and widening inequality; of growing vulnerability to disaster. The good news is that there is much we can do to make our communities stronger, fairer, and more resilient. That does not, however, mean “bouncing back” to the status quo that got us into this mess in the first place. Instead, it means bouncing forward to a world that is more sustainable and just.

## **The New Normal**

It's safe to say that we've never been here before. While change is a constant in natural and social history, the pace, scale, and impact of change today is utterly without precedent.

Part of that change is environmental, reflecting our wholesale transformation of the natural world. Over the last half century or so, human

beings have altered the planet's ecosystems more than in all of previous history combined—clearing forests, diverting rivers, replacing the riotous diversity of nature with uniform monocultures. Those changes have improved the lives of many, but they have weakened nature's ability to protect and sustain us in the long term.<sup>2-4</sup>

Most ominously, we are changing the climate. Through industry, agriculture, and the business of daily life, humans have increased the carbon dioxide in the atmosphere by 40 percent above pre-Industrial Era levels, trapping heat and warming the planet.<sup>5</sup> The impacts are increasingly visible: in monstrous storms and devastating droughts, in spiking food prices, and wrecked infrastructure. Climate-related disasters in North America have nearly quintupled since 1980.<sup>6</sup>

On our altered planet, the past is no longer a reliable guide to the future. Temperature records are broken on a regular basis and “hundred-year storms” arrive every few years. October 2015 was the warmest in recorded history by a wide margin—a record that may be broken again by the time you read this. And 2015 is shaping up to be the warmest year ever.<sup>7</sup>

As the planet warms and climate disasters multiply, there are more people in harm's way than ever before. The global population has tripled in the last hundred years, with most of that growth taking place in coastal areas that are exposed to rising sea-levels.<sup>8,9</sup>

At the same time, our world is rocked by enormous technological and social changes. More than any previous generation, we are connected by dense global networks of commerce and communication. Those networks can accelerate the spread of innovation, information, and opportunity, but they can also spread disaster. For example, the financial crisis that began in 2007 was triggered by risky mortgage lending in the United States, but in an interconnected global economy, its impacts continue to reverberate around the world. Other threats—from Ebola to terrorism—can easily hop a plane and go from local to global overnight.

The complex systems that keep our lights on and our refrigerators full would have dazzled our agrarian ancestors—but they are surprisingly vulnerable. For example, Big Food's globe-spanning supply chains are easily disrupted and its vast monocultures susceptible to drought and disease.<sup>10</sup> The electrical grid is ridiculously fragile. According to the Federal Energy

Regulatory Commission, if saboteurs or disaster were to destroy just nine substations and one transformer manufacturer, “the entire United States grid would be down for at least 18 months, probably longer.”<sup>11</sup> A massive solar storm, similar to one that occurred in 1859, could take down the grid and interfere with essential electronics—putting the world as we know it on indefinite hold.<sup>12</sup>

In the face of these new and sobering risks, all people are not equally vulnerable. That’s because we live in an era of stark and growing inequality. The richest one percent of the world’s population lays claim to 46 percent of the world’s wealth; the bottom half—some 3.5 billion people—together possess less than one percent of global assets.<sup>13</sup> Not surprisingly, the poor bear the brunt of climate and other disasters.<sup>14</sup> In this unequal world, the affluent seize opportunities and shield themselves from harm, while the poor face greater risks with fewer resources. These dynamics are self-reinforcing: the rich get richer while the poor fall farther behind.

### **Defining Resilience**

In these turbulent times, the concept of “resilience” has growing appeal. Lately it’s been the subject of serious books and breezy articles, of high-minded initiatives and countless conferences. After Sandy, it was triumphantly plastered on city buses, declaring storm-ravaged New Jersey “A State of Resilience.”

But what is resilience, exactly? Recently, Island Press—a nonprofit that provides ideas and information on environmental problems and solutions—set out to answer that question. To that end, we reviewed relevant literature in the natural and social sciences and interviewed dozens of scholars, activists, and practitioners. Based on that inquiry, we define resilience as “the capacity of a community to anticipate, plan for, and mitigate the risks—and seize the opportunities—associated with environmental and social change.”<sup>15</sup>

Resilience is an idea with potentially transformative power. The need to protect our communities from climate impacts and other threats asks us to rethink the systems that supply our basic needs. It asks us to live within planetary limits and to avoid further destabilizing natural systems. It asks us to eradicate the inequities that magnify vulnerability to disaster, and to distribute opportunities more fairly—so that all people have a chance to adapt and thrive in a fast-changing world.

But the transformative potential of resilience is far from assured. Too often, resilience is defined narrowly as a community's capacity to "bounce back" after a disaster. For example, the self-declared "State of Resilience" rebounded after Sandy by building even bigger houses on the Jersey Shore.<sup>16,17</sup> Bouncing back to a status quo that degrades the environment, increases greenhouse gases, and widens inequality will only make us more vulnerable in the longer term.

Here, we offer an alternative path—a framework for communities to consider as they endeavor to become more resilient to the shocks and surprises of the future. This framework is neither definitive nor universal; it is best seen as a jumping-off point for communities to begin their own conversation.

### **Ask–Analyze–Act**

The process of building resilience is not value-neutral; decisions about what to protect and strengthen reflect deeply entrenched values and power structures. Should public funds be used to build seawalls around Wall Street or to put solar panels on a housing project? The first step is to **ask** what in the community must be strengthened, against what threats or changes, and for whose benefit.

The next step is to **analyze** the systems that supply a community's needs. Resilient systems and communities have certain characteristics in common:

- **Diversity:** A system with diverse components will have a wide range of responses to change and is therefore unlikely to fail all at once. This is why a healthy, mixed forest is less vulnerable to fire or disease than a tree farm. Similarly, a city with a diverse economic base is less vulnerable to economic upheaval than one that relies on a single industry.
- **Redundancy:** A resilient system has multiple ways to perform basic functions, so that the failure of any one component does not cause the entire system to crash. For example, a multimodal transportation system that includes a variety of public transit options as well as opportunities for walking and bicycling will weather disruptions better than a system that relies wholly on automobiles.

- **Modularity:** Modular systems that can be self-sufficient when disconnected from larger networks will fare better in times of change. For example, people living in a city with a robust local food culture (nearby farms, a farmer's market) will be less likely to go hungry if there is a disruption in national or global supply chains. Modularity allows a community or system to manage its connectivity to larger regions and the world; it is a way to guard against "contagions" from a hyper-connected, globalized economy.
- **Tight feedbacks:** A resilient system has tight feedbacks, allowing it to quickly detect changes in its constituent parts and respond appropriately. If a reservoir is low, for example, water conservation measures may be put in place. But in today's globalized economy, consumers may be thousands of miles away from the source of resources on which they depend—so feedback loops go slack. Inequality also weakens feedbacks, as affluent communities routinely outsource production and pollution to poorer ones.
- **Social capital:** For an individual, social capital is about relationships with family, friends, and colleagues. In communities, social capital can be measured by levels of trust, cohesion of social networks and the quality of leadership. In a disaster, social capital can literally mean the difference between life and death.<sup>18</sup> Resilient communities build social capital with public spaces that encourage interaction and with traditions and institutions that enable neighbors to help one another.
- **Agency:** Resilient people have a sense of control over their destiny; resilient cities fully engage their citizens in decision making. Fundamentally, agency is about power: personal and political. Strategies to build agency include community organizing, education, public health and society initiatives, and civic engagement.
- **Equity:** Equity means that opportunities—and risks—are equally shared. It is a building block of social cohesion—the sense that "we're all in it together" that enables communities to cooperate in times of disaster. And equity improves performance

on a broad range of human development indicators—physical and mental health, public safety, social capital—that form the bedrock of individual and community resilience.<sup>19</sup>

- **Inclusiveness:** Inclusive social institutions—economic, political, and cultural—can strengthen resilience at every level, by increasing social capital, agency, and equity. In an inclusive society, power and opportunity are shared broadly, not concentrated in the hands of a few. Inclusive governance has practical benefits. For example, it tightens feedback loops so that problems are more readily detected, and it expands the depth and diversity of knowledge available for problem solving
- **Innovation:** A resilient system generates novel responses while learning and adapting to changing conditions. In nature, this is accomplished by evolution. In human society, it requires innovation—the ability and willingness to try new things. The capacity to innovate derives from the qualities described above. A diverse system generates more novelty than a monoculture; in social systems, innovation often comes from the margins. An inclusive society is better able to engage the agency and creativity of all of its citizens. And tight feedbacks provide timely and accurate information about changing conditions, which is essential for appropriate innovation.

Finally, communities must **act** by protecting, restoring, adapting—and, if necessary, transforming—the systems on which they depend. Building resilience in complex systems may require all of the above.

Take, for example, the electrical grid, which, as noted above, is staggeringly vulnerable to disruption. A more resilient grid requires persisting—urgent action to protect vulnerable links in the chain. It also requires adapting—measures to make the grid more redundant and modular, as some are doing now. For example, Co-Op City, a housing complex in the Bronx, kept their lights on during Superstorm Sandy with a microgrid that disconnected temporarily from the larger system.<sup>20</sup> But ultimately—given the limited supply and disastrous climate effects of fossil fuels—the existing electrical grid must be transformed to one that relies instead on a diverse array of renewable power sources.

Resilience requires a holistic view: focusing myopically on the system at a single scale, or managing for a single outcome, is likely to yield surprises from unanticipated feedbacks. So managing resilient communities begins with an understanding of systems and their functions at many scales, from many perspectives. And, it calls for a certain amount of humility; an admission of what we cannot know.<sup>21</sup>

To avoid a narrow focus, interventions to build resilience can try to solve more than one problem. For example, energy efficiency in affordable housing can help low-income people save money on utilities. It also makes homes more habitable during power outages, so that residents can shelter in place during a disaster. And it reduces energy usage, mitigating climate change and improving air quality and public health.

There are many other such win–win solutions. For example, the Evergreen Cooperatives of Cleveland are employee-owned, for-profit companies—laundry services, urban farms, and renewable energy—whose green jobs pay a living wage and enable workers to build equity. Because Evergreen is linked to the supply chains of the city’s anchor institutions, it helps keep financial resources in the community. Evergreen builds resilience by protecting workers from the vicissitudes of the global economy and also by protecting the ecosystems on which the city depends.<sup>18</sup>

### **Bounce Forward**

Facing an unknowable future, we can build resilience with win–win strategies like distributed, renewable energy; local food; and greater social equity. These strategies will help protect our communities from a broad range of disruptions, and help create a world that is more sustainable and just.

Resilience, in essence, is about strengthening our connections to the natural world and to one another. We may live in cities, divorced from nature, but we are not exempt from nature’s laws. To survive and thrive in these disruptive times, we need to reconnect to the values that enabled our species to overcome hard times through the millennia.

Those values were out in force after Superstorm Sandy, when “Occupy Sandy” mustered volunteers to provide food, clothing, transportation, generators, and other vital assistance to storm victims. One Occupy

supporter summed up the group's philosophy: "We're all in this together, so let's help each other out."<sup>19</sup>

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SECTION I

**CLIMATE CHANGE AND ADAPTATION**

# *This is How We Can Tackle Climate Change, Even With a Denier-in-Chief*

LAURIE MAZUR

*Originally published December 12, 2016 in The Nation*

President-elect Donald Trump doesn't believe the climate is changing. Alone among world leaders, he has called climate change a "hoax," perpetrated by the Chinese. Accordingly, he appointed a prominent climate-science denier to head the Environmental Protection Agency; fossil-fuel industry lobbyists are advising him on energy policy.

Here in the real world, of course, the climate is changing. We just experienced the warmest five-year period in recorded history, according to the World Meteorological Organization. Human-induced climate change is increasingly to blame for the extreme weather that wreaks havoc on American cities and towns—from Alaska's thawing permafrost to the flooded streets of Miami and Norfolk. Even as we work to cool the planet by reducing greenhouse gas emissions, there's an urgent need to adapt to the changes that are now unstoppable.

With Trump at the helm, the prospects for addressing climate change in the United States seem bleak. But in the absence of federal leadership, we may see an explosion of climate action at the local level. In fact, some communities are already stepping up and preparing for a warmer, wilder future.

According to a new study—the first in-depth assessment of climate adaptation in the US—communities are busily preparing for risks by moving people out of harm's way, reducing the vulnerability of vital systems, and building capacity to deal with disaster. The study, a two-year project conducted by environmental research firm Abt Associates with support from the Kresge Foundation, shows that communities are taking action in red states and blue states, in big coastal cities and small rural towns—even where the phrase "climate change" is rarely uttered

in public. All while avoiding the political polarization that has led to gridlock at the national level.

With a new administration predisposed to deny climate change, these local works-in-progress will become even more important to the safety and security of Americans.

### **Disaster Focuses the Mind**

Fighting climate change requires a wholesale rethinking of how we power our economy, grow our food, and move from place to place. Perhaps that's why it has taken the international community two decades to produce a non-binding climate agreement. So, how have cities and towns managed to move forward on an issue that has been so challenging for nations and the world?

In many cases, they were pushed into action by disaster. While some communities (including Miami, Seattle, and Oakland) developed forward-thinking plans informed by climate science, most received a wake-up call in the form of a flood, fire, or drought.

In Flagstaff, Arizona—a town that draws 5 million visitors a year—the 2010 Schultz fire was that wake-up call. Kindled by an abandoned campfire, the conflagration torched 15,000 acres of ponderosa pine forest. Like many recent wildfires in the west, the Schultz fire was accelerated by unusually dry conditions, which are likely to intensify in a changing climate. And, soon after the fire, exceptionally heavy rains (another climate impact) poured down the denuded mountain slopes, flooding the town and killing a 12 year-old girl. Those events spurred voters to pass a \$10 million bond measure that improves forest management and reduces the risk of catastrophic fires.

In the crimson-red city of Tulsa, Oklahoma, decades of flooding along the Arkansas River and its tributaries made many Tulsans question the wisdom of building in the floodplain. A citizen-led effort to limit construction was met with serious pushback from development interests, especially during the years that climate denier James Inhofe served as Tulsa's Mayor. But the naysayers were largely silenced after a calamitous flood killed 14 people and damaged 6,800 homes. Ultimately, the city bought up over 1,000 repeatedly-flooded properties, converting them to public parkland.

And in the college town of Fort Collins, Colorado, threats to the beer supply galvanized action. A series of droughts raised fears about water shortages—an existential threat to local breweries that collectively suck up more than a billion gallons of water each year. In response, the town’s 16 breweries adopted—and championed—voluntary water conservation strategies that reduced water use by 25 percent over the last decade, even as the population grew.

### **One Size Does Not Fit All**

The Abt study profiled 17 communities and found their adaptation strategies are as varied as the places that employ them. “Climate adaptation is not a paint-by-numbers exercise,” says Garrett Fitzgerald, strategic partnerships advisor for the Urban Sustainability Directors’ Network, who served as an advisor to the study. But three general approaches are widely used.

First, a community can—in adaptation-speak—reduce exposure. That means removing people and property from paths of destruction. Tulsa’s flood-prevention strategy falls into this category. The seaside town of Avalon, New Jersey used this tactic, too: repeated Nor’easters and hurricanes prompted the town to buy up storm-damaged homes, restore sand dunes, and block development in vulnerable shoreline areas. Exposure reduction is especially useful in coastal communities facing inundation—at least those that are not doubling down on denial.

Second, communities can reduce sensitivity. Essentially, this means recognizing that bad things will happen, and working to limit the damage. In Norfolk, Virginia, where rising seas now send water streaming into the streets on sunny days, the city changed a zoning ordinance to raise new construction at least three feet above the anticipated flood level. And Chula Vista, California is dealing with soaring temperatures by planting shade trees and requiring new housing to be built with light-colored “cool roofs” that reduce the urban heat island effect.

Finally, communities can enhance adaptive capacity. This is about supporting the hard-to-measure qualities that enable people to cope in challenging times—like strong social ties, good health, economic well-being, and a general sense of empowerment and engagement. Not surprisingly, poverty and marginalization eat away at adaptive capacity; that’s why low-income communities and communities of color often bear the brunt of climate disaster.

Building adaptive capacity starts with the most vulnerable, but not by parachuting into disadvantaged communities with a ready-made plan. “You need to actually work with the real-life people who will be affected,” says Fitzgerald, who partnered with community groups in Oakland to develop that city’s forward-thinking Energy and Climate Action Plan.

In Baltimore, the City’s Office of Sustainability has cultivated the art of engaging at-risk communities in adaptation planning. One secret, says Climate and Resilience Planner Kristin Baja, is to make it easy for residents to attend meetings by providing free transportation, food, and childcare. And at those meetings, city staff do more listening than talking: “PowerPoints are banned,” says Baja.

Some of the most innovative adaptation projects result from vulnerable communities taking the lead on adaptation planning. For example, in Cleveland, Ohio—where one in three residents live in poverty—local community development groups helped start the Bridgeport Café, a gathering place in the struggling Kinsman neighborhood. “A corner café might not seem like a top priority for climate adaptation,” says Missy Stults, another project researcher for the report, “but this is the kind of place that brings people together and strengthens communities.”

Strong communities literally save lives in times of disaster, according to sociologist Eric Klinenberg. Klinenberg studied a devastating 1995 heat wave in Chicago, which killed nearly 800 people. He found disproportionately high mortality rates in low-income, African-American neighborhoods where many lacked air conditioning, but there were telling exceptions to this rule. Auburn Gresham, a poor, black neighborhood on the city’s south side, reported fewer deaths than in many affluent communities. What made the difference, Klinenberg found, was the neighborhood’s strong social fabric. It was the “sidewalks, stores, restaurants, and community organizations that bring people into contact with friends and neighbors” that mattered, nurturing a community where residents checked on the elderly, sick, and vulnerable.

### **Good Signs and Next Steps**

The Abt investigation found that communities are, in fact, reducing their vulnerability to climate impacts. In Tulsa, no one was hurt—and no homes were destroyed—during recent severe flooding. And Avalon,

New Jersey was largely spared the devastation of Hurricane Sandy, while neighboring communities got hammered.

Importantly, many of the actions they are taking to adapt—restoring ecosystems, strengthening neighborhoods, conserving resources—are improving people’s quality of life right now. In Oakland, for example, community groups are rolling out an adaptation plan that calls for affordable, renewable energy; healthy, locally grown food; and emergency preparedness. “Every one of those actions is justified even without considering climate change,” says Joel Smith, a researcher for the study.

Despite such successes, it’s not enough. While some communities, like Oakland, are preparing for future climate impacts, others are simply seeking to prevent the recurrence of a previous disaster. But a changing climate means the future will not look like the past—so preparing for a disaster like the last one may mean under-preparing for the future.

There are limits, also, to what communities can do on their own. Many of the local actions profiled in the study had significant help from the feds. Flagstaff worked with the US Forest Service on its plan to save local forests; Tulsa got funding from FEMA to buy up properties in the floodplain; Cleveland’s Bridgeport Café won financial support from the US Department of Health and Human Services. And FEMA and the National Oceanic and Atmospheric Administration provide communities with essential information about climate hazards. But adaptation assistance rarely—if ever—comes in the form of a “climate change” program or project; instead it comes as community development block grants, disaster recovery funds, and forestry initiatives. So, even if the Trump Administration dismantles his predecessors’ work climate, continued federal funding of various kinds could support local adaptation efforts.

Even in the worst-case scenario, a lack of federal leadership on climate could create a vacuum, which localities—understanding the urgency of action on both mitigation and adaptation—may rush to fill. In fact, it is exactly what we saw during the George W. Bush Administration. In 2005, Seattle Mayor Greg Nickels launched the U.S. Conference of Mayors Climate Protection Agreement, which secured pledges from 1,060 mayors to reduce their city’s emissions by 7 percent below 1990 levels, in line with the never-ratified Kyoto Protocol goal for the United States.

It was also during the Bush Administration that nine northeastern states signed an agreement to form the first (and only) regional greenhouse gas cap-and-trade-system in the United States—the Regional Greenhouse Gas Initiative. Emissions in the RGGI states have declined by 45 percent since 2005, while state economies have grown by 8 percent, proving that economic growth need not be sacrificed in pursuit of clean power.

“There is a silver lining to the possibility that climate change may be a low priority under a Trump presidency,” says Jason Vogel, a lead author of the Abt study. “Our research shows that mayors, county commissioners, grassroots activists, and municipal staff are already taking action to reduce climate vulnerability while pursuing other important goals.”

### **Do It. Do It Now.**

This is the central message of the adaptation study: if your community has not begun to plan for a changing climate, now is the time to start. And although the Abt study is focused on adaptation, it carries a powerful (if unstated) message about mitigation and the need to slow climate change. If emissions are not curbed and the worst-case scenarios come to pass, some of the adaptation strategies recounted here could be rendered useless. Those raised buildings in Norfolk? They could be under water by the end of the century if current trends continue. Same for Avalon, NJ, with its carefully restored beaches and sand dunes. If climate change brings a mega-drought to the American west, even state-of-the-art management may not save Flagstaff’s ponderosa pine forests—and beer could be the least of the worries for people in Fort Collins.

Still, there is hope. In communities of every description, people are working across political, social, and economic divides to build resilience to a changing climate. There is much we can accomplish, even in Trump’s America, if we join forces to protect the places we call home.

# *The Bipartisan Climate Solution: A Tax Swap*

KEITH KOZLOFF AND EMIL FRANKEL

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You wouldn't know it from today's polarized politics, but protecting the environment used to be a bipartisan effort. There were, of course, the path-breaking conservation achievements of Theodore Roosevelt, a Republican. And, in the 1970s through the 1990s major federal environmental legislation—the National Environmental Policy Act, the establishment of the Environmental Protection Agency and the Council on Environmental Quality, the Clean Air Act and Clean Water Act—occurred under Republican administrations in cooperation with Democratic Congressional leadership.

Even climate change was once a concern of Republicans and Democrats alike. In the late 1980s, President George H.W. Bush and his cabinet recognized the need for leadership and coordinated international action against a threat seen as “the most far reaching environmental issue of our time.”

Regrettably, that century-old tradition of bipartisanship has broken down, with wide differences between the two parties over climate science and policy. But one solution could rally support on both sides of the aisle: a tax swap that lowers corporate income taxes while placing a tax on carbon.

Discussions about a swap could begin this year. House Ways and Means Chairman Kevin Brady recently pledged to introduce a tax reform package that would lower the corporate income tax rate. Brady and others note that the 35 percent marginal statutory rate in the U.S. is significantly higher than among other OECD countries, which average about 25 percent. However, reducing the U.S. rate to 25 percent could lead to an estimated revenue loss of \$1.2 trillion over ten years. Democrats are unlikely to support tax reform without new revenues to make up this shortfall.

A tax on carbon—which levies a fee on fossil fuels—is an appropriate way to make up this revenue loss. A carbon tax would create incentives to limit greenhouse gas emissions and stimulate investment in low-carbon energy. It is a market-based approach, similar to those used under Presidents Reagan and George H.W. Bush to control acid rain and to phase out ozone-depleting chemicals. In those cases, environmental goals were achieved at lower costs than initially predicted. Carbon taxes are just as effective: in British Columbia, a revenue-neutral carbon tax reduced fossil-fuel use by 16% while spurring brisk economic growth.

A carbon tax would make markets more rational. When production or consumption imposes a social cost that is not reflected in the market price of goods or services, economic decisions become distorted. That is one reason that major energy companies are calling governments to put a price on carbon; Exxon Mobil has come out in favor of a revenue-neutral carbon tax.

A legislative package that adopts a carbon tax while reducing the statutory corporate tax rate would address concerns raised in the anti-carbon tax resolution recently passed in Congress. It would support:

**Economic growth:** Setting a carbon price would unleash American ingenuity and investment, just as energy market fluctuations and trends have always done. Most of our primary global competitors face energy prices much higher than those paid in the U.S. Separate research projects find the reduction in economic activity resulting from a carbon tax could be offset by recycling the revenue to reduce corporate income taxes, even without considering benefits from climate stabilization and pollution reduction. And phasing in a carbon tax would provide time for business and industry to adjust to higher fossil fuel prices.

**Environmental integrity:** The carbon price can be adjusted over time to achieve a specific environmental objective, including those related to U.S. commitments under the 2015 Paris Agreement. By demonstrating leadership in fulfilling its commitments, the U.S. will have more leverage in asking other countries to fulfill theirs.

**Fiscal responsibility:** By maintaining revenue neutrality, the tax swap package would neither grow nor shrink the federal budget. Administrative costs will be modest because the tax would be collected from less

than three thousand fossil fuel producers, and passed down to utilities, businesses, and households.

**Economic fairness:** The status quo—allowing carbon pollution at no cost—is unfair. Climate change-related costs fall hardest on the poor, the elderly and those on fixed incomes. These groups are most vulnerable to elevated heat levels, disease, and other climate-related impacts. They have the least ability to move to safer locations or otherwise adapt. Some carbon revenues could be used to prevent the tax from burdening low income households, as well as to address the economic dislocation that coal regions are now experiencing from market forces. A tax swap would serve intergenerational fairness because we would no longer shift the costs of climate disruption onto our childrens' children.

And finally, a tax swap sidesteps endless debates around climate science. Many Republicans are unwilling to pay for carbon reductions, because they believe the science around climate change remains unsettled. But a tax swap means that we can achieve substantial greenhouse gas reductions at minimal cost. Think of it as low-cost insurance against the future risks of a disrupted climate.

It's a prudent approach that could work on both sides of aisle. As then-Secretary of State James Baker III declared back in 1989, "We cannot wait until all the uncertainties have been resolved before we act to limit greenhouse gas emissions and to prepare for whatever climate change we are already committed to." We've waited long enough.

# *Getting Real About Resilience in South Brooklyn*

SABINE ARONOWSKY AND LAURIE MAZUR

*Originally published April 21, 2016 on CityLimits*

**B**everly Corbin is disabled; she navigates the courtyard at Wyckoff Gardens—the South Brooklyn public housing complex where she lives—on a scooter. But that didn't stop her from mobilizing to help her neighbors when Superstorm Sandy hit in 2012. "I took hot meals to the building on my scooter," she said in an interview. "People would grab the meals and run up the stairs with them. I carried water on the front of my scooter."

Corbin's response to Sandy says a lot about the prospects for resilience in a changing climate. The challenges, of course, are huge. Corbin's neighborhood, like many low-income urban areas, is dealing with climate impacts layered on top of other, long-standing problems—poverty, industrial pollution, the legacy of racist housing policies. A map that charts geographic and social vulnerability shows that much of South Brooklyn is at serious risk for a Katrina-like disaster.

But Corbin shows us what the maps can't capture.

For one, her neighborhood has a tradition of community self-help, which was a lifeline after Sandy. When a 14-foot storm surge inundated South Brooklyn, some public housing residents went without water, heat, and electricity for more than two weeks. Corbin and her neighbors rallied to provide food, clothing and shelter to those in greatest need.

"It was an amazing community effort," says Karen Blondel, who lives in a Red Hook public housing complex. Blondel could have evacuated before the storm, but chose to tough it out so she could look after her elderly neighbors. "I just couldn't leave them," she said.

Nor do the maps show that South Brooklyn is home to some powerful organizers, like Corbin and Blondel, who are using the post-Sandy rebuilding process to make transformative changes in their neighborhoods. As public and private money flowed in after the storm, organizers launched an initiative called “Turning the Tide” to make sure that low-income public housing residents have a say in how that money is spent.

“People try to come in and tell us what we need, and what we think,” said Blondel, “but we’re the experts.”

Led by the Fifth Avenue Committee, Turning the Tide is a collaboration of the Red Hook Initiative, Families United for Racial and Economic Equality, and the Southwest Brooklyn Industrial Development Corporation, in partnership with New York City Housing Authority (NYCHA). Its goal is to amplify the voices of low-income South Brooklyn public housing residents in implementation and policy decisions about environmental cleanup and climate adaptation.

Turning the Tide is working, first, to make sure that South Brooklyn’s public housing residents weather the next storm. That means making needed changes to buildings—like moving mechanical equipment out of flood-prone basements and fixing leaky roofs. Importantly, it means ensuring that NYCHA’s resilience and sustainability plans squarely address public housing residents’ needs.

And the collaborative has taken on neighborhood-wide measures like an integrated flood-prevention plan that includes greenways and parks, deployable flood walls, elevated streets, improved drainage and more. It’s also working to deal with the combined sewer overflows and former industrial sites that have long spilled raw sewage and coal tar waste into the Gowanus Canal during heavy rains.

But Turning the Tide recognizes that real resilience is not just about infrastructure and buildings; it’s about people.

While the people of South Brooklyn drew on deep reserves of strength during Sandy, it’s also true that poverty increases vulnerability to climate disaster. To reduce that vulnerability, Turning the Tide is working to lift South Brooklyn’s public housing residents from poverty—by leveraging some \$500 million in rebuilding for local workforce development and job creation.

For Karen Blondel, that means focusing on HUD Section 3, which requires that recipients of federal housing dollars (including NYCHA) draw 30 percent of new hires from the low-income communities they serve. Today, it's a rule that's mostly honored in the breach; contractors working on public housing projects get around the rule by simply not making any new hires. "Thirty percent of zero is zero," Blondel observes drily.

So Blondel and other activists pushed for a rule change that requires thirty percent of wages paid to go to local folks—and other measures to make sure public housing residents benefit from recovery spending. They found a champion in Rep. Nydia M. Velázquez (D-NY), who took their concerns to Congress—and continues to press for change.

While they are doing everything they can to fight poverty and build resilience, Corbin, Blondel and their neighbors know that adaptation has its limits. If greenhouse gas emissions are not curbed, and sea levels rise by more than six feet, much of South Brooklyn will be under water. So, Turning the Tide is also working to hold NYCHA—New York City's single largest landlord—accountable to mitigate climate change by reducing the carbon footprint of New York City's public housing, as part of a larger effort to reduce the City's emissions by 80 percent by 2050.

This includes plans to generate power with a "microgrid" that offers mitigation and adaptation benefits. Because it is powered by solar and other renewable energy sources, the microgrid will substantially reduce carbon emissions. And the microgrid can detach from the larger grid in a crisis: that's how Co-op City, a housing complex in the Bronx, kept the lights on during Superstorm Sandy.

Turning the Tide is helping public housing residents prepare for the next storm—while also making climate disaster less likely. "Sandy laid bare the vulnerabilities that we all knew were present in our communities," says Michelle de la Uz, Executive Director of the Fifth Avenue Committee. But it also offers opportunities to transform those communities for the better. "By addressing our vulnerabilities collectively," says de la Uz, "we can 'turn the tide and create a more just, equitable, sustainable and resilient future for all.'"

# *A Community Approach to Climate Resilience*

REBECCA WODDER

*Originally published July 2016 in Water Innovations*

**I**n New Orleans, a devastated neighborhood seeks to revive their community after Hurricane Katrina. They begin by regaining access to a bayou where earlier generations hunted and fished.

*In Toledo, Ohio, 400,000 people go without drinking water for two days, due to a toxic algal bloom brought on by water pollution and high temperatures. In response, low-income residents work together on green infrastructure projects that can reduce polluted runoff while improving property values.*

*In Fredericksburg, Virginia, an historic community comes together to protect their river from development and pollution. Working collaboratively with builders, a low-impact development ordinance is unanimously adopted and a new riverside trail becomes a place where residents connect with each other and with nature.*

*In Portland, Oregon, a watershed association unites urban, suburban and rural neighbors in support of creek restoration projects that reduce frequent episodes of flooding and restore salmon habitat.*

As these examples show, water is a ready source of common cause. Neighbors come together to defend against floods, droughts and water pollution, and to obtain the quality-of-life benefits of being near, on, or in clean, sparkling water. There is a vital lesson here for freshwater organizations and agencies. Projects to build natural capital in the form of protected or restored rivers, wetlands, watersheds and green infrastructure that mimics the natural water cycle can also build social capital, in the form of trust, collaborative skills and shared values. In return, social capital can strengthen and sustain freshwater natural capital.

The synergistic role of freshwater in building natural and social capital becomes increasingly important in a changing climate. Since most of the ways in which Americans experience climate change are connected to the hydrological cycle, freshwater organizations and agencies can make important contributions to help communities and regions become more resilient to extreme weather events.

Yet too often, freshwater conservation strategies focus solely on protecting, restoring and replicating natural hydrological functions. But, social capital is also extremely important to community resilience. A recent report finds that “promoting social cohesion—in which a society’s members cooperate to achieve shared well-being—in communities is an additional and overlooked tool for strengthening climate resilience, with particularly good outcomes in low-income communities.”<sup>1</sup>

### **Restorative Power**

Social capital improves freshwater plans and projects, thanks to the knowledge and support provided by engaged local residents. The resulting freshwater assets can then be monitored and maintained by involved neighbors whose collective efforts to rescue a local stream or protect a watershed reinforce social capital by delivering results that people can see, touch and feel. Shared success builds community pride and reinforces the value of learning to work together.

In his classic book, *Bowling Alone: The Collapse and Revival of American Community*, Robert Putnam details four features of social capital that enable people to work together on a common cause. First, “social capital allows citizens to resolve collective problems more easily.” Second, it “greases the wheels that allow communities to advance smoothly.” Third, it “widen[s] our awareness of many ways in which our fates are linked.” And, fourth, social networks act “as conduits for the flow of helpful information to achieve common goals.”<sup>2</sup> Experts distinguish between two types of social capital, bonding and bridging. Bonding social capital exists within a homogeneous community, while bridging develops between dissimilar communities. Putnam puts it memorably, “Bonding social capital constitutes a kind of sociological superglue, whereas bridging social capital provides a sociological WD-40.”<sup>3</sup>

Communities that invest in both bonding and bridging social capital are better at solving large, complex problems like climate change.<sup>4</sup>

Successful collective efforts require trust, shared values and norms and social networks. Trust is most important and depends on equity and fairness.<sup>5</sup> But, social capital is undermined by poverty, inequality and environmental injustice.

Freshwater initiatives to benefit the most vulnerable communities should be especially careful to prioritize both natural and social capital in their design and execution. Freshwater non-profit and government agencies are well-equipped to do so. These organizations are trusted because of their public service mission to protect and restore the shared water resources of their community. They are also respected, thanks to technical knowledge they possess about how to sustain the hydrological commons in the face of climate change and other challenges.

Furthermore, their freshwater protection and restoration plans and projects can create engagement opportunities to bring people together across cultural divides. And these projects often deliver rapid, tangible and comprehensible results that reinforce the good feelings that come from accomplishing something together.

### **Shelter From The Storm**

Freshwater groups also have much to gain from engaging their community in efforts to enhance climate resilience. As community members begin to see the many economic, ecological and social advantages of protecting and restoring their freshwater, they will be more likely to turn out for volunteer work days, support local ordinances for low impact development, and be less likely to waste or intentionally pollute water. Small-scale, distributed green infrastructure alternatives to large, single-purpose storm water or wastewater treatment plants are easier to build and maintain with the support of engaged neighborhoods and informed residents.

The positive feedback loop between freshwater-related natural and social capital can produce economic, technological, and social benefits for communities and regions.

Economically, ecosystem services provided by healthy hydrologic features and green infrastructure can reduce energy consumption, diminish flood damage, improve public health and save money on treating water-borne illnesses and lost productivity, as well as reduce the construction and

operating costs of water-related infrastructure.<sup>6</sup> This leaves more money for other community priorities—and in people’s pockets.

Technologically, green infrastructure depends upon and supports social capital. These nature-mimicking infrastructure projects are generally smaller and more localized than traditional water infrastructure projects. They offer multiple benefits to their community versus serving a single, and often unseen, purpose. As Milwaukee Mayor Tom Barrett testified to Congress regarding the social benefits of natural storm water infrastructure, “You can’t hold picnic or a tailgate party on a Deep Tunnel.”<sup>7</sup> Green infrastructure is flexible and adaptive versus fixed and prescriptive, enabling projects to be adapted to a community’s particular needs. And, these small scale, widely distributed projects offer ongoing opportunities for involvement in establishment, maintenance and monitoring.

Socially, time spent in nature makes us feel happier and more connected. Neurological research reveals a linkage between human well-being and natural environments, especially those with water elements. “In study after study, those who choose to spend time in nature speak about its ability to make us feel more connected to something outside of ourselves—something bigger, more transcendent, and universal... In another study, people who viewed nature scenes and imagined themselves fully immersed in nature were more concerned with prosocial goals and more willing to give to others.”<sup>8</sup>

Rivers and lakes provide attractive, close-to-home spaces where people can gather and relax. And freshwater restoration projects are especially valuable for building a community’s social cohesion. “Designing experiences where people come to know each other, where they can expect to encounter one another repeatedly, and where the quality of life is increased for all if each individual thinks of himself as a steward” increases trust and collaborative skills.<sup>9</sup>

That is why environmental justice activists are turning to their freshwater assets as a means of creating positive changes in their communities.<sup>10</sup> For example, in Toledo, Ohio, a task force “is exploring ways to bring green infrastructure to disadvantaged areas...to help reduce threats and damage from flooding and water pollution and build home equity. These projects help address other community priorities, including reducing crime by

turning vacant lots into community gardens, beautifying neighborhoods, and improving access to waterways. Community members work together to maintain green infrastructure, which supports local project ownership and community.”<sup>11</sup>

The city of Philadelphia’s response to a problem plaguing cities across America—combined sewer overflows—illustrates the economic, technological and social benefits of tapping natural capital. Rainstorms regularly overwhelmed the capacity of combined storm and sanitary sewers and resulted in raw sewage being discharged to the Schuylkill River. A study done for the city detailed the “triple bottom line benefits”—ecological, economic, and social—of green versus traditional infrastructure solutions to the problem. Ecological benefits included water quality improvements and wetland creation. Economically, green infrastructure was cheaper to build and maintain and contributed to poverty reduction by providing local green jobs and energy savings. And, Philadelphians benefited from improvements in recreation opportunities, livability, heat stress reduction, and air quality.<sup>12</sup>

A key challenge for freshwater organizing efforts is that “smaller is better” for tapping and building social capital, while freshwater problems generally require larger-scope solutions. A watershed approach can resolve this “dilemma of size and scope.”<sup>13</sup> Because every piece of land—whether urban, suburban or rural—resides in a particular watershed and because a watershed is made up of nested drainage basins of smaller rivers and streams, the connectivity and scalability of freshwater hydrology can be used to link the concerns of communities up and downstream.

Another dilemma facing freshwater stewards is how to achieve social cohesion while prioritizing diversity and inclusivity. Ties that link dissimilar groups are harder to build, but ultimately more valuable. “Crafting cross-cutting identities is a powerful way to enable connection across perceived diversity.”<sup>14</sup> The common identity of living in the same watershed and depending on the same water resources and hydrological functions offers important opportunities for building bridges between different groups.

Freshwater organizations are well aware of upstream-downstream conflicts and the value of creating common cause to resolve them. As some have observed, “What they call an ‘unfunded mandate’ upstream looks

like raw sewage downstream.”<sup>15</sup> Similar upstream-downstream conflicts can arise when there is too much or too little water. Increased awareness of impacts on trusted and valued neighbors downstream is an important benefit of strengthened social capital.

### Five Takeaways

Whether the challenge is pollution, flooding or drought, engaging and working effectively with diverse populations within a watershed requires the ability to recognize, tap, build and sustain the social capital that binds people together in a common cause. Five basic principles can guide collective efforts to protect and restore freshwater resources and build a community’s climate resilience:

- **Work with the most trusted members of a community.** Learn and honor their history and knowledge. Identify mutual concerns and shared values. Ensure equitable opportunities for community engagement and shared decision-making. Share resources and credit.
- **Prioritize diversity and inclusiveness.** An inclusive approach can increase the depth and range of knowledge available for problem-solving. To be successful in engaging diverse participants requires attention to chronic environmental justice concerns and other community problems that compete for time and attention.
- **Identify existing strengths and adaptive mechanisms for climate resilience, in both natural and social capital.** Especially for the most vulnerable neighborhoods in a community, these resources have been tested and refined over years of serving as their own “first responders” to natural and man-made disasters.<sup>16</sup>
- **Build cohesion among the social networks that make up your community.** Focus on bridging diverse interests and finding common cause. Take small, tangible steps framed in terms of a larger vision, so that success will breed success. Ensure that participants are empowered to make choices and see them enacted in their communities.

- **Support visionary leaders.** Collective efforts require a special type of leader—one who has the ability to see the larger system and build a shared understanding of complex problems, to encourage reflective group dynamics that lead to appreciating each other’s reality, and to shift the group’s focus from reactive problem-solving to jointly creating a common future.<sup>17</sup>

Finally, recognize that building climate resilience requires an integrated approach for both people and nature. Avoid focusing on a single scale or single outcome. Instead, think and act at multiple scales and aim for win-win-win outcomes. Watersheds are well-suited to nested, connected solutions. Healthy freshwater ecosystems and green infrastructure are good at improving economic, ecological, social and political outcomes. And, freshwater organizations are most successful when they tap the synergy that flows between water-related natural and social capital to help communities become more resilient to climate shocks and stresses.

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# *Why Current Disaster Planning Doesn't Cut It, and What We Can Do Instead*

ED THOMAS AND LAURIE MAZUR

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The flood waters have receded in southeastern Louisiana, revealing a landscape etched by loss. The torrential rains that began on Aug 11 cost 13 people their lives, and damaged some 160,000 buildings—many irreparably. In the hardest-hit areas, such as Livingston Parish, three quarters of homes are considered a “total loss”

Worse, many of those who lost their homes did not have flood insurance. Even in the parts of Louisiana at highest risk of flooding, only 42 percent of homeowners are insured. But the floods of August deluged so-called low- and moderate-risk areas, where only 12.5% carry insurance.

Why were the people of Louisiana so woefully unprepared? First, in Louisiana and elsewhere, many people simply don't know they are at risk. Only homes in designated “special flood hazard areas” are required to carry flood insurance—and then only if they have a federally supported mortgage. But the FEMA maps that designate flood risk are flawed in several ways. Notably, they are based on what happened in the past. In the era of climate change, the past is no longer a reliable guide to the future.

Of course, it is difficult to tie the Louisiana floods—or any other single weather event—to climate change. But what we are seeing today is consistent with a highly uncertain, variable climate, indeed a changing climate. It is getting hotter, and a warmer atmosphere carries more moisture—which means heavier rains and flooding. The Louisiana flood was widely called a “500-year storm”—meaning that there is just a one-in-500 chance of it occurring in any given year. Given the paucity of accurate weather records, it is debatable whether we were ever able to

calculate such odds. But in a changing climate, it is clearly impossible. Hence, the Louisiana flood was the eighth 500-year flood we've had in the U.S. since May of last year.

We have entered an era in which our former assumptions about risk no longer apply. Flood planning must reflect this new reality. There has been encouraging movement in this direction: spurred by an Executive Order from President Obama, FEMA recently proposed rules requiring that structures in the floodplain be built to higher standards. While they only apply to buildings financed with federal funds, these rules have the potential for much broader impact. Indeed, there is a strong legal argument to be made that the President's Executive Order represents a new standard of care, which engineers, architects and others in the development community ignore at their peril.

Still, that leaves plenty of folks at greater risk than they know. When disaster strikes, as it did in Louisiana, the uninsured can face catastrophic losses. Flood victims may be eligible for various kinds of assistance (as described in the Natural Hazard Mitigation Association's guide, *A Living Mosaic*). However, this disaster relief process—while well intentioned—is incredibly complex and convoluted.

It is also costly, especially for U.S. taxpayers. While insurance companies, state and local governments, individuals and charities all contribute to disaster relief, the federal government pays a huge—and growing—share of the expense. Indeed, the share of disaster relief paid by the feds has grown from about 25 percent before Hurricane Katrina to nearly 70 percent today. U.S. taxpayers have shelled out approximately \$1 trillion in disaster relief since 1980. That's money we won't have to invest in our nation tomorrow.

So how can we help flood victims, while protecting our shared future?

One possible part of the solution—as suggested by John Romano in the *Tampa Bay Times*, and others—is to require flood protection as a standard part of homeowners insurance. Right now, the only people who must buy flood insurance are those at greatest risk. It's as if the only people who bought health insurance were those with terminal cancer. Predictably, that makes flood insurance prohibitively expensive for both homeowners and private insurers. It also helps explain why the National

Flood Insurance Program—the insurer of last resort—was \$23 billion in debt before the Louisiana floods.

Requiring flood insurance of all—with higher rates for those in the most risky areas—would spread the burden more fairly. It would also reflect the changing landscape of risk. Such an effort would need to be developed very carefully to avoid unintended consequences. For example, we need to make sure that affluent homeowners who build houses in coastal areas do not “externalize” the risk to everyone else. At the same time, it is crucial to build in protections for low-income people in flood-prone areas, to prevent what Virginia Eubanks, writing in *The Nation*, calls “climate redlining.”

Any solution to our current disastrous spiral will stir backlash. Some will decry unwarranted government mandates; others will worry about costs for homeowners. Still others will deny that the climate is changing, and claim there is no need to adjust to a new reality.

But resisting change is costly, too. Today, we are lurching from crisis to crisis, with no end in sight. Floods and other disasters devastate the most vulnerable among us, while taxpayers and survivors pay for endless cycles of destruction and rebuilding.

Instead, we can snap out of our collective denial, and accept that the future will not be like the past. Only then can we protect ourselves from the floods (and the tornadoes, droughts, wildfires, heatwaves, and storm surges) to come—and build a resilient future for all.

# *Four Ways to Address Climate Change Now*

KEITH KOZLOFF

*Originally published June 13, 2016 in Governing*

Even in this famously gridlocked Congress, there are signs of progress on climate change. There's a new, aisle-crossing "Climate Solutions Caucus," and there are rumors of Republican-sponsored climate bills to be introduced next year. There is even hope for a revenue-neutral deal that levies a carbon tax while reducing other taxes (such as the levy on corporate income) or offering rebates to the American people.

In this unsettled election year, it's hard to say whether these developments will lead to a bipartisan "grand bargain" on climate change. But here's the good news: Congress and the president could act now to reduce climate-related risks and the associated costs—both human and financial—in ways that would benefit our communities and our states immeasurably. These four measures could be implemented today through a combination of executive action and limited legislation. What's more, they are both fair and fiscally prudent:

1. **Eliminate subsidies for fossil fuel production and consumption.** Public subsidies for producing fossil fuels (such as the percentage depletion allowance for oil and gas wells) distort the energy market and hide the full cost of carbon-based fuels. Removing those subsidies would help level the playing field for renewable energy sources. On the consumption side, having drivers pay for at least part of the actual costs of maintaining highways, lighting and other driving-related services through higher fuel taxes would nudge household and business decisions toward greater carbon efficiency. Doing so would also promote fairness by discouraging individual behaviors that impose climate-related costs on society as a whole.

2. **Redirect government subsidies for climate-risky behavior.** In general, we are more likely to take risks if we know that someone will bail us out. Indeed, people and businesses continue to locate where climate-related risks (sea-level rise, flooding, wildfires) are growing because the federal government continues to provide bailouts in the form of federally subsidized flood insurance, coastal zone protection and wildfire fighting on federal lands. To reduce those risks, existing programs could be modified to incentivize climate-resilient behavior by households, developers and businesses. We already do this to some extent: When property owners receive financial assistance from the federal government following a presidentially declared disaster, for example, they may be required to purchase flood insurance coverage. Similar requirements could be established for other climate-related risks. For example, Australia requires homeowners building in wildfire-prone areas to use landscape design features that make their properties less combustible.
3. **Incorporate “carbon shadow pricing” into federal expenditures.** The Obama administration’s Clean Power Plan (CPP), an ambitious effort to reduce carbon emissions, will be tied up in the courts for years. The uncertainty over whether and how the CPP will be implemented complicates decisions by the private sector, which craves regulatory certainty to make long-term capital investments. To address this problem, the federal government could implement carbon shadow pricing—that is, making investments and other internal decisions as if there were already a price on carbon. By using carbon shadow pricing while purchasing goods and services and investing in infrastructure, the federal government could serve as a model to the private sector and the public; avoid locking in emission levels in long-lived infrastructure; and reduce the costs of adjusting to a future price on carbon.
4. **Incorporate climate-risk analysis in designing public infrastructure.** The lifespans of new transportation systems, ports, buildings and other infrastructure could be compromised if they are not designed to be resilient to climate-related risks. Federal agencies have begun to address this challenge. For example, the 2014 Department of Transportation Climate Ad-

adaptation Plan calls for incorporating projected climate changes into infrastructure planning and design processes. However, six years after issuing draft guidance on including climate risks in formal environmental reviews, the federal government has yet to finalize this guidance. But there is no need to wait: Federal infrastructure investments can still be designed with sensitivity to potential climate risks.

If these measures are not taken, the federal government's traditional roles in disaster relief and as insurer of last resort are likely to exacerbate budget deficits as the climate warms. State and local governments (which also have responsibilities for public health, firefighting, protecting coastal property, and flood control) will feel the pinch as well. There is no time to waste. Fortunately, we need not reach a grand bargain on climate before taking meaningful actions

# *Protecting Communities from Climate Change (Hint: It's Not Just About Seawalls)*

JENI MILLER

*Originally published April 25, 2016 in CoLab Radio*

Climate change is here, and it is already affecting our health and wellbeing. That's the conclusion of the National Climate and Health Assessment, released last week by the prestigious U.S. Global Change Research Program. Fortunately, it is possible to make even our most vulnerable communities more climate-resilient. In fact, it's already happening—but not in the way you might expect.

To make our communities more resilient, we first have to understand the threats we face, and the factors that make us vulnerable. The National Climate and Health Assessment details a litany of threats: heat waves; poorer air quality; food and water shortages; and mental stress. The Assessment also shows that, while climate change affects us all, some are more vulnerable than others.

Of course, geography and weather patterns determine our communities' exposure to risk. But social factors shape our vulnerability, and our ability to bounce back after disaster.

Children and the elderly are among the most vulnerable to climate-change impacts, as are the one in four Americans who live in high-poverty areas. As we saw during Katrina, communities of color are often hit hard, as are immigrants, Indigenous peoples, and those with limited English. And anyone with an existing health condition—heart disease, asthma, diabetes—is especially at risk.

Climate change takes its greatest toll in low-income neighborhoods that concentrate many kinds of vulnerability. These neighborhoods are

dealing with multiple challenges: poverty, unemployment, failing schools, crime, crumbling infrastructure and poor quality housing. Many also face environmental problems like lead-tainted water, polluted air, and contaminated soil. And too often, these neighborhoods lack clinics and grocery stores, much less trees and parks.

Not surprisingly, many residents in these neighborhoods already suffer from poor physical and mental health. In some cities, the difference in life expectancy between neighborhoods just a few miles apart is as much as 25-30 years. As the health impacts of climate change increase, those disparities will only widen—unless we can build resilience in our most troubled neighborhoods.

Those efforts are already under way. And the most innovative resilience-building strategies are not just about building seawalls and levees; they seek to address the factors that make some people more vulnerable than others. That means thinking holistically about what makes a healthy community, and working to create high quality housing, access to healthy foods, good education, cleaner environments, and economic development.

Case in point: the Villages of East Lake in Atlanta, Georgia—a whole-neighborhood revitalization of what had been the most troubled and violent public housing project in the Atlanta area.

Working closely with residents of public housing, the East Lake Foundation corralled public and private investments to build a neighborhood with opportunity for all. In addition to new, mixed-income townhouses, East Lake now boasts a top-notch charter school; a grocery store; a YMCA; and a public golf course that anchors both youth development and community events—all in a leafy, appealing, walkable neighborhood.

The benefits for the residents of East Lake are stunning. Since the revitalization began in 1995, educational outcomes have risen to among the best in the Atlanta school system, and violent crime is down by 95 percent. In East Lake's subsidized housing, only five percent of healthy working-age adults receive welfare. More than three fourths of the teens involved in the local afterschool academic support program in 2012 went on to college.

Other neighborhoods are building resilience by tackling threats to public health. For example, Little Village, a Mexican-American neighborhood in southwest Chicago, was just a mile from two of the oldest and dirtiest coal power plants in the U.S. As a result, residents faced high rates of asthma and respiratory diseases. A Harvard study found that pollution from these two plants was causing 40 premature deaths, 550 ER visits, and 2,800 asthma attacks per year. So the community organized, and in 2012, pushed the plants to shut down.

The people of East Lake and Little Village may not know it, but they are reducing vulnerability and building resilience to a changing climate. Their efforts are not focused on climate change, per se, though they do include “green” elements. Perhaps that’s the point: much of what we must do to adapt to climate change are things we should be doing anyway, to make our communities healthier, more equitable, and more sustainable. East Lake and Little Village show us that it can be done.

# *NASA Scientists: Do You See Change? If So, Share It*

LORETTA WILLIAMS

*Originally published July 19, 2016 in EcoWatch*

**I**n January, Judy Donnelly noticed that maple syrup collection was starting much earlier than usual near her Connecticut home. “I’ve noticed tubing being strung to collect maple sap in neighboring towns,” she wrote. “This doesn’t usually happen until mid-February.”

Like others who post observations to [iSeeChange.org](http://iSeeChange.org), Donnelly is aware of changes in the weather and climate in her area. “I’ve lived in eastern Connecticut for 40 years and have noticed changes in the blooming time for plants; for example dogwoods are blooming about two weeks earlier than they did in the late 70’s. My daughter mentioned the website to me and I thought it was a good way to track what I see.”

Seeing the bigger picture of climate change in the details of daily life is why Julia Kumari Drapkin started [iSeeChange](http://iSeeChange.org) as a public media project in 2012. Drapkin had recently moved from Washington, DC, where she was a science reporter, to work at the local radio station in the tiny rural community of Paonia, Colorado. She realized that journalists were coming at climate change reporting all wrong. If the public was to ever get engaged on the subject, someone should be listening—not just to scientists—but to regular people who had valuable knowledge and experience of how their local weather patterns might be changing.

She started by asking farmers, ranchers and gardeners to send her their questions about weather and climate. And it was a weird year for both: the U.S. experienced its earliest spring ever and the front range of Colorado was hit hard by drought. People sold their cattle because there wasn’t enough hay to feed them. Wildfires broke out so early that the local fire teams were putting them out in the snow.

Citizens would send in their questions and Drapkin would find scientists to answer them on the air. “Sometimes the answer wasn’t what anyone wanted to hear,” said Drapkin. “Climate change is a touchy subject for many people, especially in communities like the North Fork Valley of Colorado that depend on both ranching and coal mining.” The key was to find a balance between what people noticed and a useful explanation of what was going on with the weather. “Not every weird weather event is connected to climate change, Drapkin noted, “but every change sighting helps us create a baseline for knowing when there is something significant. The goal has always been to give scientific context to people’s questions and add to their own knowledge of the area.”

As the questions rolled in, Drapkin hit upon the idea of an online community almanac to keep track of what was happening, especially as people started bringing out their own journals, noting weather conditions going back decades.

“People are experts in their own backyards,” said Drapkin. “I started to see that it was possible to investigate climate and weather issues on a bigger scale if all these individual observations could be gathered in one place.”

Fast-forward to 2016. Today, iSeeChange fields observations and questions from around the country and as far away as Africa. Molly Peterson, an environmental reporter based in Los Angeles, comments on posts and writes stories and a biweekly newsletter for the website.

Even in the absence of extreme events, people have questions about the weather. “My favorite question so far is from Robin White in Oakland, California, who runs a landscape crew,” said Peterson. He thought he noticed that it seems to rain more on the weekend and wanted to know if that was true. Peterson looked at a few studies and discovered that White’s question has an interesting answer. “Scientists know that ozone can induce rain formation and in the San Francisco area ozone can be as much as 25 percent higher on weekends,” said Peterson. “But it’s tricky, because it’s impossible to say whether there’s enough ozone buildup to cause rain on any particular weekend. There are so many other factors involved. The short answer to Robin is, ‘probably, but it depends.’”

To sort out the differences between weather shifts and climate change, iSeeChange has partnered with the National Aeronautics and

Space Administration's (NASA) Orbiting Carbon Observatory mission, which tracks changes in carbon dioxide from satellites in space. The two organizations recently collaborated on a mobile app—the iSeeChange Tracker—that can help NASA scientists compare satellite data to what people are seeing on the ground. “We are asking the public to help us look into specific issues such as heat islands or help count urban trees.” said Drapkin. “The effects of heat and the quantity and health of trees have a direct relationship to carbon dioxide and the people’s health. The more people flag what’s happening, the better we’ll be able to adapt our policies and infrastructure to deal with it.” Drapkin said.

As for Judy Donnelly’s observation that maple tree sap seemed to be rising early? She was right. Given the mild winter that wasn’t too surprising, said Peterson. But when Peterson put in a few calls to maple syrup producers she found out something few of us stop to consider. “Apparently changes in the weather can affect the taste, quality or quantity of maple syrup, but that’s not obvious until the maple syrup producers are finished bottling and canning for the season.”

This is the kind of insight that comes from looking for changes in the environment. We learn that what we see one day can resonate months, even years, later. Now researchers are studying the timing of sap rise, to determine whether maple trees will eventually only be able to thrive in higher latitudes.

So the next time you pour maple syrup on your pancakes, think about this: Did you pay more for that bottle of syrup this year? When you lift the fork to your mouth, ask yourself: was it a good year or a bad year for those who make their living tapping trees?

We don’t yet know what our changing climate might do to sugar maples and many other things that are part of our daily lives, but we can all keep an eye out for change.



SECTION II

**HEALTH, FOOD, AND WATER**

# *Reflections on Water Wrongs*

REBECCA WODDER

*Originally published August 22, 2016 in Center for Humans & Nature*

**G**roundwater contaminated by nitrates sickens California farm workers. Michigan children are exposed to high levels of lead in their drinking water. Gulf Coast communities are poisoned by cancer-causing industrial chemicals. Inadequate sanitation infects children in Alabama with hookworm. Flammable tap water plagues homes near natural gas fracking operations in Pennsylvania. Water is shut off to tens of thousands of households in Detroit and other American cities, risking loss not only of their homes but also of their children. During a moderate hurricane, poorly built levees fail, which destroys a New Orleans' neighborhood and a survivable natural disaster becomes a deadly man-made debacle.

These headlines underscore our failure to meet water-related moral and civic responsibilities to each other and to America's priceless freshwater heritage. Clean water is a fundamental human right, directly connected to our health, welfare, and quality of life. Our nation's waters are in bad shape partly because America's decision-makers have disregarded the rights and needs of impoverished, disenfranchised people to clean, affordable drinking water and sanitation, protection from floods and droughts, and access to blue-green places to live, work, and play. Instead, water-related inequities and injustices have been allowed to prevail and persist.

To build resilience to twenty-first century challenges, a transformational water ethic must not only respect the water rights of nature, but also the water rights of people, especially the most vulnerable among us. For too long, American environmentalists have focused on being the voice for rivers, trees, and wildlife. But to advance an American water ethic, we must begin by recognizing and addressing environmental inequities experienced by vulnerable communities.

In the view of environmental advocates Gus Speth and Phil Thompson, "a radical alliance of black and green [activism] could save the

world,” by restructuring society and the economy to affirm and sustain life.<sup>1</sup> Because water is essential to life, we must begin by righting water wrongs—water quality injustices, inequities in water affordability and accessibility, exclusion from crucial water-related decisions—suffered in low-income neighborhoods, most often, by communities of color. And we must approach this work in partnership and with respect for the knowledge, networks, and values of those who have been ignored and wronged. These communities have much to contribute: They demonstrate higher levels of support for strong protections for water than society as a whole; they hold on-the-ground knowledge of the condition of local waters and watersheds; and they bring strong social cohesion born from the experience of being their own first responders in troubled times.

Communities such as these, supported by caring partners, can revive a responsible water ethic. Wilma Subra is one such partner. I met Wilma at a river rally in Mobile, Alabama. A soft-spoken, grandmotherly chemist and microbiologist, known as “the people’s scientist,” Wilma has spent fifty years helping hundreds of poor communities defend themselves from toxic chemicals in their water, air, and soil. Wilma teaches community members to gather water and soil samples, understand the results of toxicity tests, attend legislative hearings and demand the right to speak on behalf of their community. These empowered communities produce grassroots leaders who “pay it forward” by helping other communities suffering from environmental poisoning advocate for justice. According to Robert Bullard, father of the environmental justice movement, “What separates Wilma from other scientists is she’s taking it to the next step, allowing communities to have a voice. She makes real change on the ground.”<sup>2</sup>

Change will come from the bottom up, not the top down. Opportunities abound in every community to work together to protect and restore the natural water elements that sustain people and nature. Communities that build bonds and bridges among and between their constituent groups are better at solving large, complex problems like climate change.<sup>3</sup> Successful collective efforts require trust, shared values and norms, and strong social networks. Trust is critical and depends on equity and fairness.<sup>4</sup> Social cohesion is undermined by poverty, environmental injustice, and exclusion.

Only by working together, can we build the conditions for moral and civic progress to solve water-related problems, disproportionately

impacting marginalized groups. As journalist Naomi Klein argues, “Having the ability to defend one’s community’s water source from danger seems to a great many people like the very essence of self-determination. What is democracy if it doesn’t encompass the capacity to decide, collectively, to protect something that no one can live without?”<sup>5</sup> Water is a ready source of common cause around which people can coalesce. Community projects to restore waterways deliver timely, tangible results that encourage continued collective efforts. Taking a watershed approach, cooperatively and adaptively managing the land and water within a drainage basin, increases public understanding of how our actions impact neighbors upstream and downstream.<sup>6</sup>

More than sixty-five years ago, Aldo Leopold conceived of a land ethic which “enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.”<sup>7</sup> A transformational water ethic must begin by enlarging the boundaries of the community to include disenfranchised and vulnerable people who have a right to clean, affordable water. And as Aldo’s son, hydrologist Luna Leopold, recognized, “The health of our waters is the best measure of how we live on the land.”<sup>8</sup> The health of our waters is also a good measure of how we live with each other, how inclusive, fair, and just we are in correcting water wrongs and ensuring clean water rights for all.

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# *Climate Change is Making Us Sick*

PRAVEEN BUDDIGA AND KATRINA PETERS

*Originally published April 21, 2016 in The San Diego Union-Tribune*

Climate change is hurting our health—right here and right now. As practicing physicians, we see the impacts on our patients.

Allergy season is more intense, and arrives earlier than ever.

The five-year drought has left thousands in the Central Valley without clean water that is essential for good health.

Heat waves threaten the lives of patients with diabetes, heart and respiratory disease.

Floods and other extreme weather forces patients to leave their homes, disrupting medical care.

We are not alone: Surveys show that a majority of physicians across the country are now seeing the health impacts of climate change. A major new report released last week by the White House examines those impacts, and frankly, it's frightening.

Heat has the greatest impact: heat waves have killed tens of thousands of people in recent decades—including more than 70,000 in Europe in 2003. Here in California, the 2006 heat wave caused 650 excess deaths in just two weeks and emergency room visits increased by over 16,000. By 2100, we could see tens of thousands more premature deaths each summer. While extreme heat is especially deadly, even small increases in average temperatures can have devastating impacts on people in poor health.

Rising temperatures also cause more ozone and smog, which leads to more asthma and heart disease. California is home to five of the nation's 10 most ozone-polluted metro areas. In one of our practices, asthma is already the leading cause of school absence and hospitalizations in

children. Unless we act now, climate-driven increases in ozone will cause thousands of additional premature deaths, hospital visits and respiratory illnesses each year.

There's more. Disease-carrying mosquitoes are spreading into new regions, bringing with them the risk of Dengue and Zika virus (linked to microcephaly, a severe birth defect). Flooding increases the risk of waterborne illness, and leaves asthma-inducing mold in its wake. Food production is threatened as heat and extreme weather reduce crop yields, kill livestock and impede transport. Warming and acidification make fisheries less productive. This year, California's crab season was significantly reduced by harmful algal blooms that thrive in warmer-than-usual waters.

Not surprisingly, climate change is also harmful to mental health—in part because it disrupts the physical, economic and social stability of individuals and communities. Even those who are not directly affected may be stressed by news coverage of climate threats.

Fortunately, there are many “no-regrets” actions we can take to reduce these risks. For example, shifting from dirty coal to clean energy sources like solar and wind will clean our air and prevent thousands of cases of asthma, respiratory problems, heart disease and premature death.

We're proud that Californians are already adopting clean, renewable energy. But it's shameful that there are plans for a coal export terminal in West Oakland, where asthma rates are already too high. We also need to prevent immediate risks from fossil fuel use—such as the methane leak in Aliso Canyon.

Another no-regrets strategy is to encourage more walking, biking, and public transit. Diabetes and obesity are two of our biggest health problems—and physical activity is an effective remedy. Investment in active transportation infrastructure can make it safe for people to get out of their cars—a win-win for health, clean air and lower carbon emissions.

We need to make our cities more heat resilient—with trees, shade and community gardens. Trees provide many other benefits: cleaning the air, replenishing ground-water aquifers, and making our neighborhoods more beautiful.

We also know that poor nutrition contributes to many chronic diseases and that our current food system is a big source of greenhouse gas emissions. By making it easier for people to purchase local fruits and vegetables, we can improve health and reduce emissions. Eating less red meat would help, too, since meat production is a major source of methane. And reducing food waste would remove 33 million tons of methane-producing garbage from landfills.

Today, we face a double threat: climate change increases the severity of existing health issues and introduces new ones. If we want to protect our patients and keep a lid on health care costs, climate action is a medical necessity now.

# *Bee Bans and More: How Food Laws Sting Producers*

BAYLEN LINNEKIN

*Originally published September 29, 2016 in The Des Moines Register*

Clare Heinrich, a senior at Dowling Catholic High School in Urbandale who's studied beekeeping, received her first shipment of bees in April. Not long after setting up the hives in her back yard, Heinrich quickly became a celebrated honey producer, winning three ribbons at the Iowa State Fair. But, as the Register reported this month, Urbandale officials soon told Heinrich that the city considers bees to be illegal livestock, and ordered Heinrich to remove the hives or face thousands of dollars in fines.

While this bizarre case may sound like some sort of outlier, as I detail in my new book, "Biting the Hands that Feed Us: How Fewer, Smarter Laws Would Make our Food System More Sustainable," laws like those in Urbandale that handcuff sustainable food producers are as commonplace as they are outrageous and senseless. Just last month, for example, a judge in South Florida ruled that a city could prohibit a couple from growing vegetables in their front yard based solely on "aesthetic" reasons.

Though many cities around the country have similar laws against beekeeping and gardening at home, laws like these are just the tip of the iceberg when it comes to federal, state and local rules that hinder those who value and practice sustainability: a set of practices that aspire to maximize the benefits of the food system while minimizing its negative impacts. These obstacles, in turn, make our cities and towns less resilient, meaning they are less able to address unexpected shocks to the food system, such as drought or other unanticipated production obstacles.

Needlessly rigid food-safety rules are another type of barrier to sustainability and resilience. It's hardly a stretch to suggest that we should be making it easier for local farmers to connect with eager consumers. And yet rules so often do the opposite. Many rules that govern farmers markets

require small farmers to follow costly food-safety processes that are fit only for large producers. That causes many small farmers to stay home.

One such example: rules that require a farmer to use a refrigerated vehicle to transport perishable food. That may sound sensible to a farmer who has enough food to fill up her truck. But to a small farmer who can chill all of the food he wants to bring to market safely and effectively in a large ice cooler, a refrigerated-vehicle requirement is both senseless and, likely, also prohibitively expensive. Smarter rules—and they do exist in places—are ones that require farmers of all sizes to meet certain mandatory food-safety outcomes, and that leave the processes (the means of chilling food) up to the farmer.

If we truly want to address issues like food safety, a person's right to raise bees or grow their own food, and food waste, we must rethink our food system. But to address many of the root problems that plague the system, we must do so in such a way that includes a wholesale reassessment of rules—like those in Urbandale—that hinder sustainability and handcuff resilience.

# *Building Climate Resilience at the Water's Edge*

REBECCA WODDER

*Originally published March 7, 2016 in Climate Access*

We live in challenging times. The shocks and stresses of global warming affect every community in one form or another. Rising seas and storm surges swamp coastal communities. Floods and droughts of biblical proportions are visited on city dwellers and farmers alike. Forest fires and landslides follow in the wake of dying trees and barren hillsides. Unfamiliar viruses travel northward with pests whose ranges expand with warmer temperatures.

To survive and thrive in the face of these complex and multiplying challenges, we need to build the capacity to work together within our communities and across watersheds. And we need to work with nature and natural processes, rather than fruitlessly trying to control nature and bend it to our will.

These two elements, the capacity to work together and the capacity to work with nature, are key to climate resilience. Trust, collaboration, and developing shared values and norms create social capital that can be invested in strategies and solutions to climate challenges. Natural capital, in the form of ecosystem services and blue-green infrastructure, is more flexible, adaptable and cost-effective than inflexible, single-purpose engineering solutions.

Natural and social capital are in short supply because they have been undervalued, especially when compared to other forms of capital, and eroded by unsustainable and inequitable choices and behaviors. A community's ability to avoid or recover from climate disasters depends on having adequate supplies of both. The story of Johnson Creek, in Portland, Oregon, is a case in point.

In his classic book, *Bowling Alone: The Collapse and Revival of American Community*,<sup>1</sup> Robert Putnam documents the decline of social capital in America over the past fifty years. In a subsequent search for places where trust and a spirit of cooperation were increasing community resilience and wellbeing, Putnam pointed to Portland, Oregon, and specifically, a place called Johnson Creek.<sup>2</sup> Decades of devastating flooding had made the creek a recurring nightmare for residents. Nevertheless, nearly fifty government-generated flood control plans over a fifty year period were rejected by those living along the creek.

In the 1990s, the top-down approach was finally replaced with a process that engaged people from throughout the 54-square mile watershed, bringing together the interests of farmers, suburban communities, and high, medium and low-income urban neighborhoods. The result was an action plan, thousands of engaged volunteers and, most importantly, a supporting organization to sustain community cooperation over time, the Johnson Creek Watershed Council. Twenty years later, the creek has been transformed from a problem to an asset, natural approaches to flood protection are being implemented successfully, water quality is improving and salmon habitat is being restored in Johnson Creek and its tributaries. By working together, the people of the Johnson Creek watershed have added substantially to the social and natural capital that they will need to face greater climate extremes and resource limitations in the coming years.

Climate resilience is a vitally important issue for all of us. Every community in America has water resources such as rivers, wetlands, watersheds and aquifers that can deliver harm or offer protection from climate events such as floods and droughts. The economic cost of climate disasters is quickly becoming a major public and private expense. Growing demands on finite resources are outstripping the planet's ability to provide for the needs of people and nature. Even in wealthy countries like the United States, aging infrastructure, inequitable economic opportunities and environmental injustices undermine progress at every turn, as we have seen most recently and tragically in Flint, Michigan.

According to River Network, one of the fastest growing conservation movements in the United States, with more than 2,000 non-profit organizations nationwide, has freshwater protection as its primary mission. I believe that local, state and regional river and watershed groups, like

the Johnson Creek Watershed Council, can play a key role in helping the communities they serve build resilience against future climate catastrophes.

These organizations are well-versed in how the current condition of America's water resources, ravaged by pollution, overuse, and ill-considered efforts to control waterways through dams, levees and channelization, undermines community well-being. They understand that healthy water resources are priceless natural capital. And, they know a lot about how to protect, restore, and even replicate the role of naturally functioning water resources to build climate resilience. They have been restoring and protecting rivers and watersheds and conserving freshwater resources for decades, long before public awareness of climate impacts raised the stakes of having reliable water supplies, valuable ecological services and blue-green infrastructure.

Local and regional freshwater conservation efforts are also a widespread and effective means of building social capital. America's rivers and watersheds provide benefits that are broadly valued by people from all walks of life, including water supply and outdoor recreation. And, rivers can be restored by local citizens working together, creating a tangible measure of collective accomplishment and, in the process, building trust, collaboration, and shared values.

Especially, when river groups work hand-in-hand with the leaders of disadvantaged communities to protect and restore water resources, they can make a big difference. These communities may not have the same access to financial or physical capital that wealthier places do, but they often have equal (and perhaps more) capacity for increasing stocks of social and natural capital. And, these communities are in greatest need of climate resilience. They are least able to prepare for or avoid climate impacts. They are least able to get out of the way of a climate catastrophe. And, they walk the hardest and longest path to recovery.

Why should conservation organizations and agencies prioritize the cultivation of social capital in the process of restoring freshwater assets? Arguably, forging ahead with water-related projects that are planned, designed, and implemented by government agencies allied with narrowly focused environmental organizations can be faster and easier.

But, not necessarily more effective at increasing resilience, equity or sustainability. Instead, by emphasizing social capital creation across and among diverse communities, the local knowledge and support that are gained will lead to better and more lasting solutions to pressing freshwater challenges.

Further, communities that are more resilient to climate challenges will make better long-term stewards of their freshwater resources. And ultimately, the transformational path to embracing a new way of living with water, rather than damming, draining, diverting, or piping water—begins with experiencing the human and natural benefits that arise from collaboratively restoring a river.

The river and watershed conservation movement is in a strong position to lead or support local efforts to build natural and social capital so that American communities can survive climate impacts, get on the path to a sustainable future, and create a water ethic for 21st century. Just as Aldo Leopold's land ethic transformed society's view of what is right or wrong in our treatment of non-human members of the community of life, we are now challenged to consider what is right (or wrong) in our relationship with water, the source of all life.

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# *Nine Questions on Climate Change and Health Every Candidate Should Answer*

KATHY DERVIN AND LINDA RUDOLPH

*Originally published October 5, 2016 on Medium*

We haven't heard much about climate change and health this election season—even though health organizations and experts around the world have recognized that a changing climate is the greatest health challenge of this century. Health professionals can play an important role in bringing this crucial issue forward by asking the candidates nine simple questions:

1. **What steps will you take to ensure that the U.S. meets its international commitments to reduce its greenhouse gas emissions?** The concentration of CO<sub>2</sub> in the atmosphere is now higher than at any time in the last 800,000 years. The impacts of this rapid buildup of greenhouse gas (GHG) emissions can be seen in record-breaking temperatures, drought, rising sea level, and extreme precipitation across the globe. These changes are causing unprecedented risks to human health and safety, including direct impacts such as heat illness and deaths, displacement, reduced access to clean drinking water, food and water contamination, increased exposures to vector borne diseases, and rising food insecurity.

In fact, without rapid reductions in GHG emissions and fossil fuel use, we risk crossing into more rapid, irreversible, and dangerous climate change. That's why health organizations representing 13 million health care professionals joined together last December in Paris to urge the nations of the world to sign a strong international agreement to limit GHG emissions. 195 countries agreed to voluntary emissions reductions intended to keep average global temperature increases to below 20 Celsius. Last week, the US and China formally committed to the Paris

Agreement. But that doesn't mean your local officials are off the hook. Indeed, much of the action required to meet US commitments will be taken at the state and local level.

2. **Do you support the Clean Power Plan, and what will you do to ensure that it is implemented?** In 2014, the US EPA released the Clean Power Plan, which will reduce emissions from power plants by 25% by 2030. The energy sector produces about a third of US GHG emissions, and while the use of coal is declining, coal accounts for a third of U.S. electricity generation. Coal kills: it causes devastating and costly health impacts at every stage of its lifecycle—from mining, to shipping, to combustion and waste products. Coal-fired power plants have a disproportionate impact on the health of people of color and low-income communities; over three quarters of African-Americans live within 30 miles of one of these polluting plants.

According to the EPA, the Clean Power Plan will cut hundreds of millions of tons of carbon pollution, along with harmful particle pollution, sulfur dioxide and nitrogen oxides. These reductions will lead to climate and health benefits worth an estimated \$55 billion to \$93 billion per year in 2030, including avoiding up to 6,600 premature deaths and 150,000 asthma attacks in children. That's why the American Lung Association, the American Thoracic Society and the American Medical Association, the American Public Health Association and many other health experts strongly support the CPP.

But 24 states have sued EPA to halt the CPP—with the support of the coal industry—and it is now stayed by the Supreme Court. State and federal implementation of the CPP is critical to a clean energy future. The rule provides considerable flexibility for states in developing their own implementation plans to reduce carbon and harmful air pollution from power plants. And the worst offenders have the most to gain: states with greater reliance on coal-burning power plants are likely to see the greatest health benefits from implementing the CPP.

3. **How will you promote energy efficiency and a rapid transition to a clean energy economy?** Opportunities for “de-

carbonizing” the economy are growing as clean and healthy renewable energy becomes more affordable. In fact, solar and wind energy are gaining price competitiveness with fossil fuels, and jobs in the clean energy sector are being created faster than in the oil or coal industry. Many policies can hasten transition to a low-carbon future, including: Renewable Energy Portfolio Standards; ending fossil fuel subsidies; and support for distributed electricity generation. Improving energy efficiency through building and appliance standards or home weatherization can lower energy use and save money.

We can also reduce our reliance on fossil fuels in other sectors. For example, fuel economy standards have already reduced per-vehicle emissions; incentives and infrastructure for zero emission vehicles (ZEV) will move us toward a clean and carbon-free transportation system.

4. **What steps will you take to increase funding for public transit and walking and bicycling infrastructure?** Transportation produces one third of all US GHG emissions, and our current transportation system is also associated with a grim array of health effects. Air pollution from motor vehicles is a major contributor to respiratory and cardiovascular disease. Motor vehicle crashes cause thousands of injuries and fatalities each year. Traffic creates noise pollution that causes stress and cardiovascular disease. And our auto-centric transportation system is a primary contributor to sedentary lifestyles and physical inactivity that leads to chronic diseases including obesity, diabetes, heart disease, and osteoporosis.

The good news: strategies for reducing emissions from transportation—fuel efficiency standards, ZEV, low-carbon fuels, and reducing vehicle miles traveled—will all reduce air pollution and reap significant health benefits.

But only active transportation—walking, biking, and using public transit—integrates physical activity into daily life. That’s why the health co-benefits of active transportation are potentially huge. Feasible increases in active transportation would yield very substantial reductions in leading causes of death and

disability—for example, reducing the burden of cardiovascular disease and diabetes by 14%. Transportation systems with good active transportation options are also more affordable, and improve access to jobs, education, and services for everyone.

To achieve more balanced transportation systems, we need funding for complete streets that provide safe places for walking and bicycling, and for transit. Federal funding for active transportation is currently woefully inadequate. Some local and regional governments are also raising money for active transportation and transit through bonds and sales tax measures. It's very important that equitable active transportation investments and policies benefit all communities, not just a wealthy few.

5. **How will you promote climate-resilient cities?** Climate change is already increasing the frequency and severity of extreme heat and weather events. July 2016 was the planet's hottest month ever recorded, and 2015 the warmest year since record-keeping began in 1880. Climate change has also increased the likelihood of torrential downpours, such as those that caused record-breaking flooding last month in Louisiana.

Extreme heat caused nearly 8,000 deaths from 1999–2009, and that toll is expected to rise along with temperatures. Urban “heat islands” exacerbate the risks of heat illness and death, especially for the aged, people with chronic illness, and those without air conditioning. People of color and low-income families are more likely to live in areas with fewer trees and green spaces and in neighborhoods with aging or inadequate infrastructure, and are thus more likely to be exposed to flood and heat risks.

There are many strategies that reduce risks and create healthier communities. Urban greening brings parks, gardens, agriculture, forests, and other natural features to urban areas. Green infrastructure uses trees, rain gardens, permeable pavements and other strategies to better manage storm water. And new building technologies such as cool roofs can significantly lower city temperatures. These strategies also improve health—by cleaning the air and water, providing green spaces for physical

activity, and enhancing well-being. Local and state planning, public works, and building agencies can encourage, and fund the use of these strategies to reduce climate vulnerability, especially in disadvantaged communities.

6. **What steps will you take to promote more healthy, equitable, and sustainable food systems?** Our food and agriculture systems both contribute to and are adversely impacted by climate change. Industrialized agriculture uses large amounts of herbicides and pesticides that contribute to illness and water contamination. Over-use of nitrogen fertilizer and concentrated animal feeding operations produce methane and nitrous oxide, potent short-lived climate pollutants. More than a third of the food we produce is wasted, leading to more methane from landfills. And the global supply chains of modern food systems are extraordinarily vulnerable to natural and human-made disasters.

Local, sustainable food systems and healthier diets offer important health, climate, and environmental benefits, including: greater access to fresh fruits and vegetables; reduced water, pesticide, and fertilizer use; topsoil protection; and resilience in times of crisis. Reducing food waste can also reduce food insecurity. Eating less meat reduces the risk of heart disease and cancer, and can also reduce methane emissions, water contamination, and antibiotic resistance.

7. **What will you do to work for climate justice and a just transition to an equitable and sustainable economy?** People of color and low-income communities currently bear a disproportionate burden from the impacts of climate change. For example, people living near ports or busy roadways are more vulnerable to increased ozone levels due to rising temperatures. Outdoor workers, such as farm laborers, are at higher risk from heat illness. People with chronic illnesses such as asthma, heart disease, and kidney disease are more vulnerable to the effects of wildfire smoke or extreme heat; people of color and with lower incomes are more likely to suffer from these chronic diseases. Low-income families are less likely to have insurance or financial resources to rebuild their lives after a severe weather event,

and less able to cope with rising food prices due to climate impacts on agriculture. And low-income communities and communities of color are often historically disenfranchised, lacking the political and economic power and voice to ensure that their perspectives, needs, and ideas are taken fully into account by decision makers.

While many climate solutions have important health co-benefits, some can exacerbate existing inequities. For example, market mechanisms such as cap and trade can allow the continued pollution of front-line communities if polluting industries like refineries can buy credits rather than reducing emissions. We need climate mitigation and resilience strategies that also promote health, equity, and climate justice, such as investments in disadvantaged communities. That will require that all impacted communities have a real and meaningful voice in determining how we address climate change, and that we consciously consider the impacts on health and equity of all climate policies.

- 8. What would you do to strengthen our public health systems to address the challenge of climate change?** Few resources have gone into building the capacity of local, state, and federal agencies to protect and promote public health in the era of climate change. The CDC's Climate Ready Cities and States program provides limited funding to 16 states and two large city health departments—but that leaves 34 state and over 3,000 local health departments (as well as territorial and tribal health departments) without any formal support and little guidance for addressing climate change as a critical public health threat.

The current Zika outbreak underscores the importance of monitoring emerging health threats and having the capacity to respond. For example, resources are needed to: enhance domestic and global tracking capacity for infectious disease and climate and health indicators; build public health workforce capacity; develop and implement climate and health strategies; and educate the public on important health risks.

- 9. What will you do to strengthen the resilience of the health care system in an era of climate change?** We've learned the

hard way that extreme weather events can paralyze the hospitals and health care facilities we depend on most in an emergency. Hurricane Katrina and Superstorm Sandy both revealed the deep vulnerabilities of our health care infrastructure in the face of increasing extreme weather. During Sandy, some of New York's leading hospitals sustained major damage and required evacuation of patients and employees; several were shut down for months.

After the devastating effects of Sandy, the US Department of Health and Human Services launched a national partnership with hospitals and health care organizations—the Climate Resilient Health Care Facilities Initiative to ensure that essential health services remain available to communities during and immediately following extreme weather events. Federal and state elected officials must work with the health care sector, hospital associations, health professional organizations and regulatory agencies to address climate risks in siting, building and operating these essential facilities.

# *Tear Down That Fence: A Tale of Urban Farms and the Barriers in Their Way*

DWANE JONES

*Originally published December 20, 2016 in The Afro*

When applied to scenic farms nestled in quiet rural country-sides, the maxim “good fences make good neighbors” might ring true.

But that’s not always the case when you’re trying to build an urban farm. As essential as they can be, we actually find more than a few barriers in their way.

I’ve been thinking quite a bit about fences and barriers in my role as Director of the University of the District of Columbia’s Center for Sustainable Development & Resilience inside the Columbia College of Agriculture, Urban Sustainability, and Environmental Sciences. We call it “CAUSES” for short. In that role, I work on introducing urban agriculture to some of Washington, D.C.’s most disadvantaged neighborhoods.

Given the large amount of vacant properties and unused space in many underserved urban areas (cities like Baltimore and Detroit come to mind), it may sound easy. But it’s not. Case in point: In 2015, CAUSES leased three acres of vacant property directly across the street from a Metro stop in D.C.’s struggling Ward 7 to construct the East Capitol Urban Farm. A partnership between several agencies and organizations, East Capitol Urban Farm is the District’s largest-scale urban agriculture and aquaponics facility. It’s an ambitious effort to bring healthy produce to an underserved area of the District.

We began planning the project in early 2015. During the University’s initial site visit, the first order of business was to determine how we would actually walk the vacant parcel—considering the 8-foot high chain link

fence surrounding it. Residential properties surround the site on the south and west. The Capitol Heights Metro stop is on the east and a vacant parcel is to the north.

That parcel, incidentally, was under construction at the time for use by Wal-Mart. That project was shelved at the lot stayed empty.

What seemed like a straightforward walk through the site became much more complicated since we didn't have a key to the gate. Searching for a way in, the team eventually climbed over a wall and through a small opening to access the site. But the physical barrier of the fence and our valiant attempts at scaling it led to much deeper questions. What social implications did such a fence have in Ward 7? What was the purpose of erecting it? How was it interpreted or perceived by the community?

We came to realize that the chain link fence, while probably erected as a safety measure, sent a powerful message of exclusion to people in the neighborhood. It's a message that echoes the larger story of access and food security in places like Ward 7. For a long time, society has sent a message (intentional or not) to underrepresented populations that fresh, local produce, as well as access to community-oriented landscapes, is out of reach—or, at best, a real challenge to access. The nature of fencing, in this case, may play a role in how the urban farm is perceived and utilized.

So, in our first major site planning for East Capitol Urban Farm, when someone asked “Where do we start?” I couldn't help but recall those now-famous words from former President Ronald Reagan's 1987 speech to West Berliners: “Tear down that wall!” I quickly responded: “Let's tear down the fence. It sends the message to keep out or stay away.

“That's the very opposite of what we intend.”

Rather than continue limiting community access, we eventually erected a 4-ft. high wrought iron fence to encompass a portion of the farm which set a boundary around the different zones contained within the space. Since then, the gates are always unlocked and the community has access to the farm from sunrise to sunset, seven days a week.

East Capitol Urban Farm is now embraced, supported, and operated by its community. Removing barriers has afforded Ward 7 residents the

opportunity to: plant over 3,600 produce plants; operate 70 garden spaces; engage over 300 D.C. Public School Students in over 2,500 hours of trade learning; launch a Farmers Market; and employ (part-time) three residents and three UDC students.

As an urban planner and designer, I've always had a certain fascination with neighborhoods and communities, and the boundaries that surround and define them. I particularly remember those early years of my undergraduate program in Urban Planning at East Carolina University in Greenville, NC, where we dissected scholarly articles on the pros and cons of “gated communities”—surrounded by fences that act as barriers to the larger world. In the case of East Capitol Urban Farm, the fence merely delineates a boundary, a line that outlines the zones of each portion of the farm. It does not represent limitations on a better quality of life. For the people of Ward 7, this is a very crucial and important distinction that removes one barrier at a time.

# *Resilient Las Vegas?*

JOHN FLECK

*Originally published December 8, 2016 in The Urbanist*

Las Vegas has often been viewed as an urbanist's nightmare, a sprawling offence to nature. From a population of just 16,000 in 1940, it has grown to over 2 million people today, a more than hundred-fold growth in the driest major metropolitan area in the United States.

Fake waterfalls and lush foliage around the casinos of Las Vegas's famed gambling strip mask a desert heart.

In the early 1990s, Las Vegas seemed headed for a crash, with some 50,000 new residents arriving each year and a water supply that appeared about to run out. But in the decades since, the Nevada metropolitan area has remade its water management institutions and reframed the community's attitudes toward the scarce resource in a way that offers lessons for cities facing the challenges of resilience in the 21st century.

Resilience, as Brian Walker and David Salt describe it in their book *Resilience Thinking*, is the ability of a system to absorb a shock and retain its basic structure and function—to retain its core identity. For an ecosystem like a coral reef, the shock could be rising ocean temperatures. Once they pass a threshold, the reef can rapidly die. For Nevada, the identity was a growth-based economy rooted in gambling and tourism, and the threshold was water scarcity. Past a certain point, the available water supply would no longer support a growing population.

As it faced down this problem in the early 1990s, the Las Vegas metropolitan area had a serious handicap. What we call "Las Vegas" is not one city with a common government, but a collection of smaller cities—Las Vegas itself, plus Henderson, North Las Vegas, and large areas of unincorporated Clark County. A total of seven local water agencies often fussed and feuded rather than cooperating to deal with what was clearly a regional problem, not a local one.

The ability to band together to take collective action for the common good is a key to resilience in human systems. In Las Vegas, the first step was the 1991 formation of the Southern Nevada Water Authority, turning a competition among separate municipal water agencies into a regional collaboration. They pooled their water rights and agreed that when water became scarce, shortages would be shared. Moving beyond a “tragedy of the commons” to share a common pool resources is a key step toward resilience in the face of scarcity.

The Southern Nevada Water Authority created a regional framework for the pursuit of conservation, and pursue it Las Vegas did. With publicity campaigns, restrictions on landscaping in new construction, and policies like lawn buy-back programs, Las Vegas residents’ water use began to drop. From 1994 to 2014, per capita water use declined by 36 percent. Conservation soon outstripped population growth, such that total water use peaked in 2002 and has been declining ever since.

Where Las Vegas three decades ago looked like it was on the verge of outstripping its water supplies, this year it is using just 81 percent of its allotment from Lake Mead, its primary source of water. Over much of the last decade, it has been stashing surplus water in underground storage to provide a buffer against future shocks as drought and climate change loom over the region’s long-term water future.

Conservation is not the only benefit that came from the creation of the Southern Nevada Water Authority. Using local money, the Authority is building a new intake system to increase the reliability of the Lake Mead supply. And the agency has become a leader in the pursuit of regional water governance across the nine states (seven in the United States and two in Mexico) that must share the Colorado River’s water. Just as regional governance at the metropolitan level improved Las Vegas’s resilience, better water governance across the Colorado River Basin is increasing resilience at larger scales.

Las Vegas’s critics make an important point. A resilient future would be far easier for a smaller city. It is possible that the city’s water conservation measures, which allow Las Vegas to continue growing, will put more people at greater risk in a water-scarce future. But Las Vegas—like all communities—has chosen its own path. Perhaps its experience offers useful lessons for others.

SECTION III

**URBAN DEVELOPMENT  
AND INFRASTRUCTURE**

# *Malign Neglect? What Will Urban Policy Look Like Under a Trump Presidency*

ALAN MALLACH

*Originally published December 6, 2016 in CityMetric*

As Niels Bohr, or maybe Yogi Berra, said: predicting is difficult, especially when it's about the future. Perhaps even more so when considering Trump's stance on urban policy—one of many issues the president-elect has never disclosed his position on, or even shown any particular interest in.

Actually, that might make prediction easier, not harder.

Why? It seems pretty clear that Trump doesn't have much policy bandwidth; in fact, he may be the least policy-minded person to serve as president since Warren Gamaliel Harding.

What that means, I believe, is that when it comes to issues that don't engage him on a gut level—and are not red meat to his base—he's not likely to push any policy ideas of his own. Instead, he's more likely to leave those issues to the Republicans in Congress, along with whichever right-wing apparatchik or mortgage lender becomes housing and urban development secretary.

That means that there's not going to be much urban policy, period. The Republican party leadership doesn't care much about cities, which are full of Democrats, minorities and poor people.

Programs with broad constituencies, like Community Development Block Grants and the HOME Investment Partnerships Program, will probably remain but shrink further; Low-Income Housing Tax Credits may stay under the radar and survive. After all, they're good business.

Modest Obama initiatives like Promise Zones will disappear, and nothing will replace them. Cities have become used to getting relatively little help from the federal government to address their social and economic problems, and they will soon get even less.

Changes to housing policy are potentially more serious. The big issue is less about affordable housing—though if Congress decides to significantly reduce the number of vouchers in circulation, it could spell disaster for hundreds of thousands of struggling families—but rather with the nation’s mortgage system.

For the last decade, that system has been a makeshift hybrid of public and private actors, held together with the fiscal equivalent of duct tape. Everyone agrees that it needs to be changed. But with major policy differences separating the administration, different factions in Congress, lenders and advocates, nothing was done.

Now, that may change. Congress and the Trump administration could work together to privatise the mortgage industry, deregulate financial markets and declaw the Consumer Financial Protection Bureau. Those actions could further starve cities of the capital they need, reducing mortgage access for low- and middle-income urban households, and in low-price neighborhoods. A less likely but possible alternative could be a return to the worst excesses of the subprime mortgage scandal.

On the big issues that will affect cities’ futures, we shouldn’t expect much. If you start with the premise that climate change is a hoax, you’re not likely to see much point helping low-lying cities like Miami or Norfolk adapt to something that doesn’t exist.

There is, however, encouraging evidence that cities are already taking action on adaptation—even in red states where the phrase “climate change” cannot be spoken in public. Another positive sign is strong Republican interest in major infrastructure investment: Trump has called for spending \$1 trillion on infrastructure over the next 10 years. Unfortunately, Trump believes that money will come from private sources incentivised with “revenue-neutral” tax credits—a strategy that is highly unlikely to succeed. Infrastructure spending may help some cities, but if it favors projects that can draw private financing, a lot more money will end up in fast-growing urban areas like Houston or Denver than in the Midwest or Northeast.

Trump talked a lot about manufacturing jobs during the campaign, which may have swung a lot of rustbelt voters to his side. Certainly, a revival of manufacturing, and thousands of new, well-paying factory jobs, would be a great boon for the cities.

The problem is—as many of the people who voted for him may sooner or later realise—it’s all smoke and mirrors. (Interestingly, a wildly unscientific poll on atn.com has 91 per cent saying no to the question “do you think Donald Trump will restore manufacturing jobs?”) Sadly, those jobs are largely gone, for many and complicated reasons. Starting a trade war with China won’t bring them back.

The neglect part is pretty clear. What about the malign part? This is harder to predict, but there are some tea leaves to read. There’s an ominous line buried in the Republican platform that reads, “We expect Congress to assert, by whatever means necessary, its constitutional prerogatives regarding the District.” It goes on to say that Congress should pass a law “allowing law-abiding Washingtonians to own and carry firearms,” even though the citizens of the District of Columbia have voted for strict gun controls.

This is not an outlier. Other Republican-controlled statehouses—including those in Wisconsin, Michigan and North Carolina—have sought to impose their preferences on cities and cut back municipal powers.

A good example came from North Carolina this past spring. Buried in the bill that mandated same (biological) sex bathrooms, which got the headlines, the legislature added a zinger with huge policy implications: a law that supersedes any local effort to regulate “wage levels of employees, hours of labor, payment of earned wages, benefits, leave, or well-being of minors in the workforce”. Goodbye to city ordinances setting minimum wage, or mandating parental leave or health benefits.

I suspect we will see more of this sort of thing at the federal level. Since Congress’ ability to directly dictate city ordinances is limited (at least, outside the District of Columbia), these provisions are likely to show up as conditions of federal funding, either at the city or state level. You want federal transportation funds? Legalise concealed carry. You want federal education funds? Require same-biological-sex bathrooms, etc.

History has shown that all the talk about “less government intrusion” and “the best government is closest to the people” quickly goes out the window—one might say is trumped—by any policy agenda that stirs the passions of the Republican base.

It’s likely to be a long four years.

# *Canada is Looking Better and Better (The Regent Park Story)*

ALAN MALLACH

*Originally published March 24, 2016 in Rooflines*

High-density public housing may seem like an idea whose time has come and gone, buried along with the ruins of notorious projects like St. Louis' Pruitt-Igoe and Chicago's Cabrini-Green. Since the 1990s, HUD's Hope VI program has demolished hundreds of public housing projects, usually replacing them with lower-density developments that house far fewer people. But is the issue really about density? A remarkable project currently underway in Toronto suggests that sometimes higher, rather than lower, density may be the best way to go.

By the 1990s, Regent Park, a public housing project built in Toronto in the late 1940s, was showing many of the same problems that had prompted the Hope VI program in the United States. With over 2,000 housing units on 69 acres, located less than a mile from booming downtown Toronto, Regent Park had become Canada's own poster child for distressed public housing.

In 2005, Toronto Community Housing, a city-owned nonprofit social housing provider, partnered with local developer, The Daniels Corporation, to execute a revitalization plan for the entire complex. Although far from complete, Regent Park's transformation is well underway, and was recently featured in *The New York Times*.

Although the appetite for large-scale revitalization seems to be modest in the United States these days, looking at how Toronto is rebuilding Regent Park offers some intriguing lessons for the federal government, as well as for states and cities that are grappling with the challenges of remaking distressed public housing projects.

**Don't be afraid of density.** When it's completed, the new Regent Park will contain over 7,500 housing units—more than 100 units per acre.

The site also includes extensive commercial space, public open space and community facilities. The increase in density means that the new community is walkable and compact, and that it can support major stores like supermarkets, along with restaurants and smaller stores, as well as actively use the recreational space provided. It also means that a source of internal subsidy is created—Toronto’s hot housing market helps—to underwrite much of the cost of the affordable housing. Most Hope VI projects, by contrast, keep the same or lower density; many end up with semi-suburban landscapes that, for all their New Urbanist rhetoric, are neither particularly walkable nor urban.

**Replace the low-income units.** All of them. When it’s completed, the new Regent Park will contain more affordable housing units—with rent geared to income, as the Canadians say—than were there before. Not only are all of the former public housing tenants given the right to return to the development, but lower income earning families are given an opportunity to become homeowners in Regent Park through a program that covers 35 percent of the purchase price, as long as they can afford to carry a mortgage on the remaining 65 percent. By comparison, most Hope VI projects replace only a limited number of low income units; most former tenants receive Section 8 vouchers so they can move elsewhere.

**Create high quality amenities.** Regent Park offers some of the best recreational amenities available in Toronto. The development includes a six acre park; nearly three acres of athletic grounds with a hockey rink, basketball court, soccer/cricket pitch and a running track; the Daniels Spectrum, an arts and cultural center with event, performance and exhibition spaces; and the Regent Park Aquatic Center, a multi-purpose swimming pool complex in an architecturally spectacular facility that the project architects describe as capturing “a feeling of transparency and connection to the outdoors.”

These facilities not only meet the recreational needs of the residents, but do two additional things: they draw people to Regent Park from outside the area, and they provide a common ground where people from the various backgrounds and income levels represented in the community can mix and meet.

**Be responsive to the community.** Toronto is one of the world’s most ethnically and culturally diverse communities, and Regent Park is a

microcosm of that diversity. According to one source, 57 different languages are spoken in the neighborhood. The planners of the new Regent Park have engaged the community in the planning from day one, and made a real effort to be responsive to this diverse community, particularly in meeting the cultural and religious needs of the area's large Muslim community. The sensitivity of the planners to the needs of immigrant communities reflects a strong Canadian ethos, which is currently being seen in the country's welcome for Syrian refugees. Canada, with 10 percent of the population of the US, has already admitted over 25,000 Syrian refugees, a number that is likely to double over the course of 2016. The Regent Park project includes a variety of educational youth programs and activities, as well as a large number of job-generating businesses, projected to create 1,100 new jobs, with neighborhood residents given priority for the jobs being created. Few Hope VI projects contain much if anything in the way of job-generating facilities, although to be fair, few are even close to the scale of Regent Park.

The program has not been without its problems, particularly with respect to relocation. With most of the city's public housing stock located in outlying parts of the city, many residents have been forced to move—even if temporarily—to unfamiliar areas where they may feel isolated and uncomfortable. It's not clear how many of the displaced tenants will in the end move back to Regent Park after being relocated. Still, even though it is still a long way from completion, it is an amazing achievement; and perhaps most important is the prediction of University of Toronto professor David Hulchanski, dean of Canadian housing scholars: "as time passes, people won't know where Regent Park begins and ends."

# *Terrorism is Americans' No. 1 Concern. We Have Bigger Problems*

DENISE FAIRCHILD

*Originally published January 14, 2016 in Salon*

Tuesday night—in his final State of the Union address—President Obama asked us to face the future with hope, not fear.

He spoke to a nation that has grown increasingly fearful: Since Obama's last address, terrorism has emerged as Americans' No. 1 concern, edging out perennial worries about the economy and jobs.

It's not surprising that we are afraid, in the wake of attacks in San Bernardino, Paris and Boston. And yet, as the president said last night, fear stifles our innovation and saps our strength. Worse, we worry too much about the wrong things. And the remedies on offer—particularly those served up by Donald Trump and others hoping to capitalize on Americans' fear—will not make us any safer.

First, we need a clear-eyed understanding of the dangers we face. We are justifiably afraid of violent attacks, as evidenced by the growing police presence at public events. But we are less focused on threats to the systems that meet our basic needs, such as food, water and power. Those systems are extraordinarily vulnerable—not just to terrorism, but also to extreme weather events and other disruptions.

Part of the problem is that our highly centralized and automated systems are “too big to fail.” Take food, for example. Large farms with over \$1 million in sales account for only 4 percent of all farms, but two-thirds of all production. That means the failure of those mega-farms would have an outsize impact on our food system. And the globe-spanning supply chains that bring food to our table can be readily disrupted—intentionally or otherwise.

Or consider water, which we truly cannot live without. America's nearly 1 million miles of water distribution lines rely largely on automated technologies to track and manage the transport and treatment of water. Those lines are highly vulnerable to sabotage, cyber or otherwise, says Michael Deane, executive director of the National Association of Water Companies. If the taps go dry—or the water is contaminated—our communities could face massive financial losses and—most important—threats to public health and safety.

And then there is our sprawling power grid. We have learned the hard way about the grid's vulnerability to everything from extreme weather to squirrels. Former Department of Homeland Security Secretary Janet Napolitano has said that a major cyberattack on the grid is a matter of "when," not "if." Taking down the grid would be perhaps the quickest way to cripple the American economy and decrease the effectiveness of the United States military.

Given these challenges, we need to make sure the systems we rely on are resilient. But what does that mean, exactly?

Resilient systems tend to be decentralized, with networked units that can stand on their own in a crisis. For example, local "microgrids"—powered by renewable energy, such as solar and wind—can keep the lights on when the larger grid goes down. This is the "energy of the future" that President Obama referenced last night. There's more: on-site water systems, urban agriculture and farmers' markets can supply food and water when national and global supply chains are broken. With American ingenuity and investment, we can lead the world in developing technologies and systems to make our communities sustainable and resilient.

Investments in community resilience will make us safer and stronger in the face of terrorist attacks, climate change and other threats. And they would generate other benefits, too: These are the same solutions needed to reduce greenhouse gas emissions, put people back to work, reduce poverty and create a better, stronger economy.

Of course, in addition to strong political leadership, this will require a substantial financial investment. But, keep in mind that the U.S. has spent \$6.7 million every hour on homeland security since 9/11. Strategic investments in resilience could advance national security at less cost.

In these fearful times, demagogues offer simplistic proposals: a wall on our southern border; a plan to bar Muslims from the country. Some of these plans are morally abhorrent; others would be ruinously expensive. None would help us weather the shocks and surprises of the future.

So let's address Americans' fears—as the president said, not by “turning inward as a nation, and turning against each other as a people.” Instead, let's choose hope by making our country stronger, safer and more resilient.

# *From Singapore to Scranton: What Does Economic Resilience Really Look Like?*

ALAN MALLACH

*Originally published May 20, 2016 in CityMetric*

Urban resilience is the ability to respond to physical, social and economic challenges; not only shocks, such as hurricanes or earthquakes, but to the stresses that weaken a city's fabric, such as high unemployment or endemic violence.

In an increasingly uncertain global economic environment, economic resilience has become increasingly important. But, as cities become increasingly polarized—spatially, economically and racially—I fear that this is not only impeding their ability to respond to their challenges, but has become in itself a challenge to future urban economic resilience. In this article, I will try to lay out a framework for looking at this issue, and in the next one, I will try to drill down and assess what it means for American cities.

I'll start with two economic resilience stories, one fairly well known and one less so.

In 1965, Singapore split off from the newly established nation of Malaysia to become an independent nation. At the time, its prospects did not look inviting. It had no natural resources, little industry and no domestic market, it was, in fact, little more than a sleepy port widely seen as in decline from its days as a bastion of the British Empire. At that time, as one writer has since written, it was “poverty-stricken, disease-riddled little entrepôt.”

Within a few decades, though, it had been transformed into a model of growth and prosperity—the smallest, and in some respects the most consistently successful, of the so-called “Asian Tigers”.

The second is closer to home. In the late 19th century, Scranton, Pennsylvania was a major center of iron and steelmaking, with its economy dominated by the massive Lackawanna Steel Works. To the city's shock, in 1902 Lackawanna announced that it would move its entire operation to Buffalo, New York. The city barely skipped a beat. The population kept growing, fuelled by new industries and the steady demand for the region's anthracite coal. In many respects, the years between 1900 and 1950 were the high point of Scranton's history.

### **How cities bounce back**

While the sometimes quasi-authoritarian rule of Singapore's long-serving former president Lee Kwan Yew has legitimately been criticised, that should not detract from the remarkable nature of his and his nation's achievement. While their economic strategies were brilliantly opportunistic, the two critical underlying themes that drove Singapore's growth were first, a determination to provide honest, transparent and competent government based on the rule of law; and second, an intense focus on education, to maximise the value of the nation's human capital.

The fact that Singapore was a relatively cohesive society, in which its leaders operated with a high level of legitimacy, was important—but that would have mattered little without those leaders' systematic, long-term, laser-like focus on those two themes.

Scranton's task was easier. Coal mining helped propel its economic revival, while local entrepreneurs did the rest. A local button maker realized that his equipment could be adapted to make the newfangled phonograph records, and went on to become one of the nation's premier suppliers to that growing industry. Human capital and transparency were less of an issue in the early 1900s, as government by elites was little questioned, and a steady flow of immigrants provided the brawn for the mines, factories and workshops.

Both Singapore and Scranton offer useful lessons. What Singapore shows is that, in the absence of natural resources, the principal resources a city, region or country can bring to bear for economic growth are its human capital, the competence and transparency of its government, and a determined focus to maximise the value of whatever locational or institutional assets it may possess. These are assets that should withstand future economic shocks. Despite the many differences between Singapore

and cities in the United States, the lessons are equally relevant in today's American context.

While Scranton's strengths enabled it to be resilient in its particular early 20th century context, those strengths were—unlike Singapore's—limited to that context. When coal mining declined and deindustrialisation spread after World War II, Scranton had little to fall back on, and entered into a long-term economic and demographic decline.

### **Gentrification and resilience**

When we look at the revival of American cities since the 1990s, that story too can be told as one of resilience: cities like Pittsburgh or Baltimore, thrown by the loss of the manufacturing industry that fuelled their growth, roaring back to become post-industrial cities, driven by world-class medical centres and universities.

Today, neither city has much of an industrial base; roughly one out of every six Pittsburgh residents is a college student, and the University of Pittsburgh Medical Center is the largest employer in the state of Pennsylvania. More than one of every three jobs in both cities is either in education, health care or social services; if you plug in a reasonable multiplier, one can estimate that two thirds or more of the local economy in both Pittsburgh and Baltimore is driven by education and health care, including the billions in medical research dollars that flow to places like Johns Hopkins and UPMC.

Crime is down in most parts of these cities, and thousands of highly-educated millennials are flocking to them, turning areas like Baltimore's Hampden into hip destinations.

But is this resilience, or something else? Large parts of these cities are still impoverished and disinvested, and many neighborhoods that were vital 10 or 20 years ago are losing ground. These cities are becoming more and more polarised, spatially, economically and racially.

The new jobs are mostly filled by suburban commuters; fewer and fewer city residents have jobs, and most of them commute long distances to the suburbs. Baltimore's unemployment rate in 2014 was 12 percent, and 16 percent for the city's African-American population. Crime may be down in the Inner Harbor, but is still endemic in many parts of the city.

Are Baltimore—or Pittsburgh, St. Louis or Seattle—resilient cities? Or are they simply riding a wave of economic and demographic change, fuelled by the pure dumb luck of having institutions like Johns Hopkins and Carnegie-Mellon, or entrepreneurs like Bill Gates and Paul Allen, in their midst?

I suspect it's the latter. In the next installment, I'll look more closely at why these cities' growing polarisation and their failure to address critical issues of governance and human capital are actually making them less resilient, and less likely to respond effectively if and when they no longer find themselves at the crest of the economic wave.

# *Rebuilding Baltimore: How Can U.S. Cities Become More Economically Resilient?*

ALAN MALLACH

*Originally published May 24, 2016 in CityMetric*

The convulsions in Baltimore during the spring of 2015, which followed the death of Freddie Gray in police custody, illuminated the fragile underpinnings of today's urban revival.

Of the nation's older industrial cities, few have "turned around" more dramatically than Baltimore in the past 10 or 20 years. Large parts of the city have been revived, while the number of college-educated millennials in the city has more than doubled since 2000. Jobs are increasing, household income growth since 2000 has outpaced the national trend, and the city is nationally known among urban policy wonks for its creative housing and redevelopment strategies.

Yet, within a few hours, all of that was called into question by a single episode that made painfully clear that the city's success, although real, was only part of the picture. There was a second Baltimore out there: a city of poor, struggling people victimised both by crime and by an out of control police force.

While last spring's damage is being repaired and the city is trying to move on, the experience raises a powerful question. If a single tragic moment can so thoroughly shake the foundations of a seemingly successful city, how resilient could one expect Baltimore—or any similar city, because Baltimore is actually doing better than most—to be in the event of a truly major economic, social or natural shock?

The short answer, I fear, is not very. Resilience, ultimately, is grounded in the existence of a social compact, implicit or explicit. The polarisation

of these cities, and the sense of disenfranchisement and powerlessness felt by the large part—probably a majority—of their populations has undone that social compact.

Increasingly, American cities are made up of tribes living in parallel universes, with little engagement with or understanding of one another. They have equally little engagement with their city government, whom they typically distrust deeply at the same time as they count on it somehow to make things work.

More often than not, the disengagement is a two-way street. Far too many city governments are neither particularly open nor competent, despite intermittent efforts and promises of community outreach and greater professionalisation.

Departments operate in their separate silos, in many cases—police and schools being the prime examples—dominated by insular cultures that reject meaningful integration into larger comprehensive strategies, or any meaningful communication with the communities they serve. The short-term political calculus driven by the frequent turnover of elected officials discourages the reflection or continuity that is needed to truly build competence and resourcefulness, and to construct robust systems of governance.

### **Building Resilience**

Looking forward, building a structure of true economic resilience in America's older cities is going to depend on three pillars.

1. **Rethink municipal governance.** Fragmented, insular and often poorly performing local government is a poor basis for resilience, yet few mayors, school superintendents or other senior officials think seriously about how to break out of this silos and create systems that are more integrated, more competent, and more responsive to the communities they serve.

Competence and the ability to address community needs effectively is critical. But without building open, responsive government—a value that embodies transparency, outreach and a willingness to share power with citizens—it is never enough. Cities will not be able to rebuild their social compacts unless

their citizens feel they have a stake in a city government which they believe is acting in their interests.

2. **Build human capital.** Cities are not short of jobs: Baltimore has almost 100,000 more jobs inside the city than there are jobholders living in the city.

But less than one out of three jobs in the city is held by a city resident. The city is growing jobs, yet unemployment in lower income neighborhoods is astronomical, and one out of four residents live below the poverty level. Less than half of the city's high school seniors pass the High School Assessment, and large numbers fail to graduate, although the numbers are starting to inch slowly upward.

Creating a system by which all of the city's residents, youth and adults, can gain the education, the skills, and the access to opportunity they need to live economically-productive, satisfying lives is the single most powerful thing that can be done to reduce the city's polarisation and build the city's resilience. That, in turn, cannot be done by any one agency or institution, but will require local government, schools, colleges and universities, NGOs, as well as the local business and institutional community to come together and build a truly seamless and cooperative system.

3. **Think long term.** This is the crux of the problem. We like to talk about how fixing the problems of 50 years or more will not happen overnight, but we rarely if ever acknowledge that it not only takes time, but takes a consistent, strategic use of time.

Neither of the two pillars I've described above can be addressed except through a consistent, long-term commitment to change. We need to recognise that, if we put in place a carefully thought out, well-designed comprehensive strategy to build human capital tomorrow, it may take five, 10 years or more before it shows significant results.

It's not that people in Baltimore, or any other American city, don't know that governance and human capital are problems.

Instead of recognising that they can only be dealt with through long-term change, though, mayors and corporate executives tend to go for the quick fixes and sound bites, and are then disappointed when nothing ever really seems to change. Yes, there's a place for short-term measures and interim steps—but if they're not part of a long-term effort, they're ultimately meaningless.

Cities cannot count on a steadily increasing flow of millennials, or the continued proliferation of “eds and meds” jobs to build resilient economies. The future growth of both higher education and health care is uncertain, while Dowell Myers, a respected demographer, has already suggested, based on the gradually smaller size of future age cohorts, that cities have already reached what he calls “peak millennial”.

Building true economic resilience is going to take hard work—not simply riding a momentary wave.



SECTION IV

**ENVIRONMENTAL AND SOCIAL JUSTICE**

# *Frontline Communities Will Lead the Fight for Environmental and Climate Justice Under Trump*

AMY VANDERWARKER

*Originally published December 22, 2016 in Grist*

No matter who's been president, low-income communities and communities of color have always been disproportionately impacted by pollution. But during Donald Trump's presidency, the scale of attack will be bigger and the few backstops we've had will be gone. Environmental justice or "EJ" communities are likely to be hit first and worst by rollbacks under the Trump administration—but they will also be at the forefront of the fight for environmental and climate justice.

Under President Obama, the needs of EJ communities were on the policy agenda, through initiatives like the Federal Interagency Working Group on Environmental Justice. While those efforts had mixed success in improving health and environmental outcomes, they helped to institutionalize an understanding of race, class, and pollution in federal agencies and created important points of leverage for communities. In this way, they fed into a set of political and social conditions that allowed our movements to grow.

These points of leverage will most likely be eviscerated under a Trump administration. Trump and his cabinet nominees have promised to weaken environmental regulations under the Clean Air Act, Clean Water Act, and other laws. If Trump succeeds in appointing ExxonMobil CEO Rex Tillerson as secretary of state, Big Oil will have a whole new kind of foothold in American policy. And with Scott Pruitt as head of the Environmental Protection Agency and Ryan Zinke at the helm of the Department of Interior, we can expect a retreat from federal action on climate change and a full-throttle expansion of fossil fuel development.

Oil and gas infrastructure like drilling sites, pipelines, and refineries are typically located in low-income communities and communities of color. Here in California, fracking happens in the rural fields of Kern County—a predominately Latino area. California’s refineries, from Richmond to Long Beach, are located next to diverse, low-income communities. These are the areas where drilling will expand and new pipelines will be built.

For low-income communities and communities of color, the disproportionate burden of pollution will only increase. That means more “code red” air quality days, more trips to the ER for asthma sufferers, more cancer and respiratory disease.

As climate change worsens, it will be low-income people who lack the means to evacuate before major storms, and don’t have money for air-conditioning when heat waves roll through. We’ll see Superstorm Sandy and Katrina on repeat. And climate change will be layered on top of other threats—from increased deportations to the loss of health care if the Affordable Care Act is repealed.

But as we have seen in the inspiring protest at Standing Rock, frontline communities also offer the most hope for resistance over the next four years. Our communities—as always—will be the battlegrounds, and we are prepared to fight.

We have a stronger movement than ever before. From the People’s Climate March, which was led by communities of color, to intersectional alliance-building with groups working on immigrant rights, gender justice, and more, we are linking our efforts together. We are demonstrating that climate and environmental policy must go hand in hand with justice for people of color.

And, even in Trump’s America, there are real possibilities for gains at the city, state, and regional levels. In California, we have opportunities to both protect what we have won and push even further. Our task in California and other progressive areas is to dream big and show that a different path is possible.

As we gear up for this critical work, it is more important than ever to invest in the leadership of people of color and indigenous communities. Climate solutions must come from the most impacted communities,

and we must look to the leaders of those communities, who are crafting campaigns of resistance and vision. This has always been a key message of the environmental and climate justice movement. Now, under Trump, there is simply no other way to succeed.

# *What Can the Abolitionists Teach Us About Climate Change?*

DENISE FAIRCHILD

*Originally published August 30, 2016 in Trim Tab*

**A**t the Paris climate conference (COP21) late last year, 195 countries adopted the first-ever universal, legally binding global climate accord. It is a big deal that world leaders have finally acknowledged the climate crisis and committed to do something about it. But let's not kid ourselves. As Bill McKibben, founder of 350.org put it, "This agreement didn't save the planet, but it may have saved the chance of saving the planet."

To actually save the planet—and ourselves—we need to get beyond the scientific and technological solutions that comprise the Paris Accord. Indeed, we must transform the cultural, economic and political conditions at the heart of the climate crisis. It sounds impossible, but history offers a model for this kind of transformative change: the dismantling of the slave economy in the 19th century. Understanding the centuries-long abolitionist movement offers insight into the vision, the structural changes, the personal commitments, the political struggles, and the global movement required to stave off catastrophic climate change.

## **Too Weak and Too Late**

The changes called for in the Paris Accord are meager in relation to the global climate crisis. The strategies outlined are not specific enough, nor are they likely to be quick, deep, or distributive enough to change the status quo. The agreement's carbon targets are too weak and too late to stem the negative effects of climate change on our environment, food, water, air, and overall quality of life. A Paris Accord with teeth would have demanded the elimination of fossil fuel combustion as an uncompromising solution.

It's time to get serious about our climate crisis. And, in fact, a host of actors—governments, corporations, nonprofits and consumers—are

advancing a range of climate mitigation and adaptation initiatives. We are greening our buildings to increase energy and water efficiency. We are decarbonizing our transportation systems with mass transit solutions. And, even though the EPA's Clean Power Plan is held up in litigation, many states are moving forward with plans to decarbonize the power sector. Solar and wind farms are harvesting renewable energy. Distributed energy, food, and water systems are answering the call to mitigate and adapt to a changing climate.

These efforts are necessary but not sufficient for tackling global climate change. Many are transactional, not transformative. They operate at the edges of substantive issues of property, profit, power and privilege. They do not get at the root cause: a globalized fossil fuel economy committed to extraction and exploitation of our natural and human resources, without regard for short- or long-term consequences of diminished biodiversity, resource depletion, income inequalities, and toxic communities.

Moreover, climate change is narrowly framed as an “environmental issue,” when in fact it is tightly interwoven with the crucial economic and social issues of our time, like inequality and structural racism. To say that climate change is about the environment is like saying that slavery was about farming practices.

Going deep on climate change means disrupting the status quo. The climate goals and challenges we face today are existential in nature, requiring re-examination of our cultural values and the workings of our industrial economy. We need a movement that is the vanguard of all other movements, one that seeks to make the way we live not only more sustainable and resilient, but also socially and economically just.

But for the most part, this is not the change we seek or even envision. Even the most radical and transformative vision of Buckminster Fuller—to “make the world work, for 100% of humanity, in the shortest possible time, through spontaneous cooperation, without ecological offense or the disadvantage of anyone”—while squarely addressing interrelated issues of environment, economy and equity—assumes that change can come without struggle, that it will be “spontaneous and cooperative.”

If we are serious about climate change, we need to dismantle the fossil fuel economy and replace it with a moral economy that values ecosystems,

sufficiency, distributive justice, and real democracy. And that kind of transformation will not come without struggle. The only precedent that comes close in scope is the movement to dismantle the slave economy: the abolitionist movement.

### **Parallels Between the Slave and Fossil Fuel Economies**

The abolitionist movement offers a playbook for advocates working for climate, economic, and social justice. That movement challenged the very foundation of the global slave economy by dismantling the pillars that supported it: **property rights, profits, privilege, and power.**

**Property Rights.** The abolitionists successfully challenged the idea that some people were property to be bought, sold and owned. Building a sustainable and just economy requires a similar shift in thinking about nature.

The bedrock of climate change is an industrial economy rooted in exploiting and commercializing the environment. The earth's natural resources—water, minerals, forests, the atmosphere—are enslaved to the global market economy in a way that is analogous to Africans under the slave economy. Like human slaves, our natural resources are devalued and chained to private interests by legal protections.

Just as slaves were denied agency and self-determination, we now prevent nature from regenerating—with consequences that are both immediate and intergenerational. We have, for example, diminished the quality and supply of our freshwater resources—rivers, lakes, ponds, aquifers—denying their capacity to nourish the coral reefs, and the fish, animal, and human species dependent upon them.

And yet, the right to extract our water supplies (and other natural resources) is fiercely protected by private property laws and public indifference to their mistreatment. Advocates for water are losing the battle against private property rights in the US courts. Twenty-seven states are currently suing EPA's latest effort to define and protect the Waters of the United States (WOTUS). Opponents of the EPA ruling charge that it is "unconstitutional," "communism," and a "land grab."

The Abolitionists faced a similar challenge. Dismantling the slave economy required a long, global struggle to outlaw the right to own,

control and exploit African labor for commercial gain. Whether or not the US Constitution directly sanctioned and defined slaves as property is debated. What is clear, however, is that three clauses in the Constitution clearly permitted exploiting African slaves for their commercial value: the three-fifths compromise; the slave trade clause (Article I, Section 9.); and the fugitive-slave law (Article IV, Section 2). But those “rights” fell to a constitutional challenge, and ultimately to the thirteenth amendment, which outlaws the right to own slaves.

Similarly, dismantling the fossil fuel economy requires challenging the right to own, extract, and exploit the environment as personal property. These rights are scattered throughout the Constitution, with private property protections supported by “due process,” the “takings” clause and “contracts,” found in the fifth and fourteenth amendments and in Article 1 of the Constitution’s main text.

A constitutional challenge and an amendment to the US Constitution are essential for protecting our environment. A credible climate change movement must integrate with the efforts of the global south and the Global Alliance for the Rights of Nature, which argues that “there is no justice as long as nature is property in law.” This movement is a worldwide effort to challenge constitutional rights to hold nature as property and to acknowledge “that nature and all its life forms has the right to exist, persist, maintain and regenerate its vital cycles.” The Alliance’s eco-centered approach balances the needs of humans and other species without exploiting one to the detriment of the other.

**Profit.** Profit generation is a fundamental, but hidden, driver of climate change. Massive accumulation and maldistribution of wealth in the slave and fossil fuel economies occur from exploiting and controlling the engines (sources of energy) that drive production. Three hundred years of free slave labor fueled the growth of the agricultural and domestic economies, only to be replaced by fossil fuels as the fuel of choice in the industrial economy.

In the antebellum South, slaves—and wealth—were concentrated in the hands of an estimated 3,000 owners of large plantations, creating considerable political and economic power where “cotton was king.” Many northern industrialists supported the abolition of slavery in order to shift political power and wealth from the South to the emerging class

of industrial robber barons. For those industrialists, coal [and other fossil fuels] was king for fueling factories, trains, ships, and more.

Dismantling the slave economy—while partly religious and humanitarian in intent—was, in the main, a fierce struggle for power and control over the means of production and the wealth it generated. There is a lesson here for climate change advocates: As we transition our economy once again to a new source/form of energy, we must be mindful of the economic consequences and struggles behind our decisions.

This is likely to be a long-term struggle. Notwithstanding the moral, environmental, and other costs of fossil fuels, they have made a small group of people very rich. In the fossil fuel industry, wealth is concentrated in the top five oil companies, which made [a total of] \$93 billion in profits in 2013; forty percent of those profits were used to repurchase stock to increase the wealth of shareholders. The CEOs of the top five oil companies were paid \$96 million in that same year (not including bonuses), which was 400 times the US median family income.

The fight for sustainability, therefore, is also a fight for economic justice. The base struggle is over fossil fuels vs. renewables, as it means the demise of a legacy industry and the emergence of a new one. Beyond that, however, is the ethical question of who will own and control the new industry—the harvesting of the sun, wind and other renewable energy sources. And at a deeper level is the question of who controls the engines of the economy. But economic issues of profit and wealth distribution get lost when climate discourse is focused on incremental solutions like living buildings, greening the economy, or winning a university divestment.

The structural changes in the transition to a clean energy economy could be as profound as those that accompanied the transitions from the agricultural to the industrial and digital economies. We need to widen the lens and take a holistic view of what's at stake. A growing number of climate justice advocates have framed these changes as a “just transition,” seeking to create a sustainable economy that is fair and inclusive for everyone. For example, a Just Transition could include a shift from energy monopolies to “energy democracy,” community-owned renewable energy that is treated as a public “commons.”

**Power and Privilege.** Finally, the transition to a sustainable future requires grappling with questions of power and privilege—who has it, how it is used, and how it is distributed and controlled.

The slave economy created a society of haves and have-nots separated by race, class, gender and privilege. The US Constitution, for example, counted African slaves as three-fifths of a person. Notwithstanding the larger premise that all men are created equal, the slave economy baked structural inequalities into all aspects of society. The Constitution, laws and informal sanctions denied African Americans access to citizenship, voting rights, education, health, family life, quality housing, food, clothing, language, religion, culture and more. These denials were essential to maintaining power and control over property and profits.

Dismantling the slave economy was the earliest effort to eradicate such privilege and inequities. The ratification of the 14th Amendment to the Constitution, in 1868, granted citizenship to “all persons born or naturalized in the United States.” Unfortunately, the vestiges of inequality persisted post-slavery and adapted to support the power and privilege of the fossil fuel economy. Dismantling the fossil fuel economy should entail another effort to contest all the ways that our institutions support inequalities. Again, there are parallels between slavery and the fossil fuel economy:

- Religious institutions once ordained dominion over slaves as divine providence; similar doctrines sanction human dominion over nature.
- Pseudoscience is used to justify privilege: Just as slaves were deemed inhuman and intellectually inferior, pseudo-science now claims climate change is a hoax
- Educational institutions institutionalize power and privilege through textbooks that transfer culturally biased “knowledge and values” in favor of privileged groups.
- Laws and legal institutions are used to protect property rights and discriminatory practices that serve the affluent.
- Financing institutions are used to grow power and privilege through preferential lending.

**Building a Transformative Movement**

If the abolitionist movement teaches us anything about how to save ourselves from climate change, it is this: We need a movement for transformative societal change. It won't be easy. In some ways, we are all slaves to the fossil fuel economy. It is embedded in all aspects of our economy and lives and entails a deeply entrenched culture and mindset. "Abolition" of climate change requires changing norms, values, and strongly held beliefs about property, profit, power, and privilege. But, while the challenges are great, we don't have an option.

# *Want to Win on Climate? Put Justice at the Center*

LAURIE MAZUR

*Originally published October 28, 2016 in Pacific Standard*

In a season of grim climate news, California (once again) offers a ray of sunshine. In its 2016 legislative session, the state passed no fewer than six groundbreaking climate bills: setting historic targets for greenhouse gas reductions, helping disadvantaged communities build climate resilience, and more.

These bills can serve as models for progressive climate legislation at the state and federal levels. But the real story here—and the lesson for climate activists everywhere—is in how the bills came to pass.

As recently as last year, the prospects for new California climate laws seemed dim. Big Oil spent a record \$22 million lobbying the California state legislature in 2015, and it paid off. A bill to set tough emissions reduction targets—SB-32, introduced by Senator Fran Pavley (Democrat-Agoura Hills)—was shot down in the Assembly by “moderate” Democrats with ties to fossil-fuel interests. Early in 2016, Governor Jerry Brown met with oil companies in closed-door talks, trying to craft a compromise bill that industry would accept.

That’s when Assemblyman Eduardo Garcia (D-Coachella) stepped up to the plate. Garcia, who represents a predominantly low-income district, was in some ways an unlikely champion. “I don’t consider myself a climate change activist,” Garcia told the Los Angeles Times in September. “I consider myself an advocate for my community.”

So, Garcia helped craft a climate bill (AB-197) that puts the interests of his community at the center. Drafted in consultation with the Asian Pacific Environmental Network (APEN), the California Environmental Justice Alliance (CEJA), and other grassroots groups, Garcia’s bill will

curb carbon emissions and air pollution in low-income communities of color—where the dirtiest factories, refineries, and power plants are located. This is important because some climate strategies—notably cap and trade—have actually increased pollution in those communities. The bill will also make the California Air Resources Board more transparent and accountable.

Pavley and Garcia then teamed up to push the two bills forward as a package. This was crucial: by tying environmental justice issues to greenhouse gas reductions, the legislators were able to build a broad coalition of environmental groups, labor, and citizens from impacted communities. That enabled them to secure key votes from assembly members who had not supported the standalone emissions bill in 2015.

That success—and the coalition that made it happen—paved the way for other victories. The California State Legislature then went on to pass AB-1550, which increases the set-aside of climate investments going to vulnerable communities; and AB-2722, which creates the Transformative Climate Communities program, providing \$140 million to fund planning and implementation of community-driven climate plans in disadvantaged areas.

There are important lessons to be learned from these victories. First, there's more to good climate policy than lowering emissions targets. "Not all climate policy is good policy," says Parin Shah, senior strategist at APEN. "In Richmond, California, the town's residents—low-income Asian immigrants and refugees—have endured pollution from the Chevron refinery for decades; and while the state's emissions have gone down, our members continue to breathe dirty air and live in fear of another refinery explosion."

"To grow the climate movement," Shah adds, "we must prioritize reducing pollution at the source. And, if we price carbon pollution, we must set an equitable price on it, one that takes in the full range of health and economic costs absorbed by cities and residents that live next to hotspots like Richmond. Assembly Member Garcia's leadership with AB-197 started us in this direction, and there is still more to do."

Second, these legislative victories spotlight a new political reality for climate policy. "To win on climate," says Strela Cervas, co-director of

CEJA, “we’ve got to include the issues communities of color care about. We need climate solutions that work for the communities that have been or will be hit first and worst by climate change and related pollution.”

What does that mean, exactly? According to Cervas, “It does not mean simply adding on some equity language, or using the potential benefits to communities of color as a talking point.” Instead, it is the people who are most affected by pollution and climate change who must identify solutions and strategies. “We must be part of the decision-making process—not brought in at the end, but part of the strategy conversations from the first step,” Cervas adds. Communities of color are strong leaders in the fight against climate change, but only if policies and the process genuinely reflects their voice and vision.

These lessons are clearly important in a majority-minority state like California. But they have resonance for climate activists everywhere. Too often, the environmental issues that communities of color care about are pushed to the side. Policymakers—and even advocates—think it is pragmatic to draft legislation in closed-door sessions, and support proposals that fail to tackle the health and quality of life issues of struggling communities. Those proposals, however, predictably fail to generate public support. By working with affected communities to address their real and immediate needs, it is possible to build broad, enthusiastic coalitions—and win.

“Together, we are stronger than Big Oil,” Cervas says.

So, not selling out to corporate interests is the right thing to do, and it is also the strategic thing to do. That’s a lesson that all lawmakers—including future presidents—should keep in mind.

# *We Understand Struggle: NAACP Finds Common Ground with Standing Rock Sioux*

JACQUELINE PATTERSON

*Originally published November 17, 2016 in The Huffington Post*

As police in riot gear closed in on the peaceful protesters at Standing Rock, NAACP Illinois State Conference President Teresa Haley felt called to investigate. The issue felt very close to home. First, the scene was painfully familiar to anyone who lived through the civil rights movement. And second, the Dakota Access Pipeline—which the protesters were fighting against—will pass through her home state of Illinois.

Haley spoke with many of her constituents, including people who worked on the pipeline in Illinois. “I might have my opinion,” said Haley, “but I can’t just step out there without representing what my constituents want. So I had to get out there and find out.” What she heard were varying views of the pipeline—as well as empathy and solidarity with the protesters.

From the workers, she heard that the work was steady and the pay was very good. Haley reported that, “In these times when work can be scarce and even the jobs that are available are often low paying, the work on the pipeline was a very welcome opportunity!”

However, from the same workers she heard reflections of compassion for the Standing Rock Sioux who were impacted by the building of the Dakota Access Pipeline. “We felt sorry for those people,” said one of the pipeline workers Haley spoke with. “It wasn’t right. They were dumping people’s stuff. Their feathers and traditional clothing that were important to them that they had for generations went missing. It was terrible. And from what we heard, their sacred burial grounds are being uprooted, though we never participated in disturbing any burial grounds.”

The Standing Rock Sioux are concerned that the pipeline will rupture or leak, contaminating their water supply. But the pipeline workers defended their work by describing the safety measures that were put in place: “The pipeline is 8 to 10 feet below the water line,” said one. “If the inspectors found anything done incorrectly, the inspectors could and would shut down the operations and have the welders and other workers re-do it.”

That being said, Haley says the workers implied that these safety measures were put in place so that the operation would be above reproach by the authorities, rather than out of concern for local people and land. Indeed, the pipeline company treated its workers in the same way it treated the communities whose land and property were being defiled.

“We were working long hours; sometimes all day and all night,” said one of the workers. “One of the guys got killed on the pipeline. When we went back to work the next day, there was a moment of silence. That’s all. Then they demanded that we get back to work and nothing else was said. The contractors were all about putting pipes in the ground and making money. They don’t value life. They don’t care.”

Haley acknowledges the complexities in this situation. “We must have ample good jobs, with good pay so that people can sustain themselves and their families.” She says. “At the same time, we can and we must do this in a way that upholds workers’ rights, land rights, water rights, and human rights.”

On behalf of the NAACP Illinois State Conference, Haley expresses unyielding solidarity with the protesters at Standing Rock. “We are opposed to what’s happening to the Standing Rock Sioux. We can connect to what’s going on in so many ways. We can relate to the struggle. We’ve had our land and our stuff taken. We have been shot with rubber bullets. We’ve been laid low by water hoses. We have been arrested time and time again for just trying to defend our rights as human beings. Our struggles may not be the same, but they are indisputably linked. We are all seeking liberation.”

In conclusion, Haley said, “The Illinois NAACP supports the Standing Rock Sioux and we uphold their right to peaceful protest and we want them to stay safe while doing it. The NAACP has a lot of experience with peaceful protest after our own decades of struggle so we should help with that at a minimum.” She adds, “Black folks have been displaced all of our lives. So we understand the struggle.”

# *Our Poisonous Economic System Needs a Grassroots Intervention*

TAJ JAMES

*Originally published November 2, 2016 in The Leap*

Last month, nearly two hundred nations signed on to a legally-binding global climate deal seeking to phase out the greenhouse gases known as HFCs. And this Friday, the non-binding Paris Agreement will officially enter into force for seventy-six nations, which have made voluntary pledges to keep global temperature rise below 2 degrees Celsius and if possible, below 1.5°C.

These agreements are important, but they are not enough to save us. That is because admitting a problem is only the first step. To move forward, we must also properly diagnose and get to the root of the problem.

Right now, the problem that the Earth and the people on it are facing is a potentially terminal case of fossil fuel poisoning. We have a very short time window to stop the injection of the poison into our collective body and repair the harm done over previous decades. If we do not seize this moment, the future for humanity will be relatively short and extremely painful.

While national governments are finally admitting there is a problem, they have failed to diagnose the disease accurately. As a result, they are proposing solutions that will be fatal for the patient.

Their approach is like going to tobacco companies and asking them to handle the problem of lung cancer by coming up with a new tobacco product to cure it.

Our governments are opting for false solutions: they are looking to oil companies and market-based approaches to fix a problem that oil companies and market-based approaches created. They seem to believe that

banks and the fossil fuel industry are the only players powerful enough and smart enough to address this crisis.

Thankfully, people all over the world are rising up to release their governments from the grip of corporations and demand that politicians serve the future of the people and the planet. Most importantly, communities are not waiting for national governments to act. They know what the real solutions are, and they are coming together to implement them in their towns, cities, and states. We've seen grassroots movements stop the Keystone pipeline and bring international pressure to bear on the Dakota Access pipeline, end fracking in New York State, and put Hawaii and other states on the path to 100% clean energy.

The fight for democracy, peace, and climate justice is accelerating. It is time to join the chorus of voices insisting that national governments do their part.

We have the power to divest from climate chaos and reinvest in local democracy and flourishing. We can build the next regenerative economy and repair the harm of the current system by restoring wealth back to the communities and countries that produced it. Such efforts include The Reinvest Network, which is moving money into a democratically-governed cooperative that invests in projects owned and operated by frontline communities, in order to build economic democracy rooted in ecological integrity; the Black Land and Liberation Initiative, a trans-local, Black-led land reclamation and reparations leadership network; and support for internally displaced climate refugees that recognizes present and historical structures of racial injustice. Projects such as these are crucial for eliminating the inequality on which our extractive economy thrives.

This is not a climate movement—it's a movement for the future of humanity.

It will take all of us to accelerate the solutions already in our hands.

# *What Happens When an NAACP Leader Becomes a Climate Activist?*

LAURIE MAZUR

*Originally published February 6, 2016 in Grist*

**K**athy Eglan was one of the first black students to desegregate her high school in Hattiesburg, Miss., in 1967. As a child and young adult, she marched for the right to vote and against segregated buses and drinking fountains. Now she's fighting for the right to a clean, safe environment, serving as chair of the NAACP National Board's committee on environmental and climate justice.

Eglan has a long history of concern for environmental justice. Growing up in the shadow of a chemical plant, she and her family suffered from the unbearable smell—and also from asthma, headaches, and nosebleeds. As an adult, Eglan moved to Gulfport, Miss., where she again faced environmental hazards—this time from a toxin-spewing, coal-fired power plant. Thanks to activism by Eglan and others—and a path-breaking partnership between the NAACP and the Sierra Club—that plant stopped burning coal in April 2015.

But what really turned Eglan into an environmental justice activist was Hurricane Katrina, as she explains in this interview.

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**Q. How did you connect the dots between civil rights, environmental justice, and climate change?**

A. I always felt that I was environmentally conscious—doing my part with recycling and being aware. But Hurricane Katrina was a revelation. It made it something more. It made it one of my life's priorities.

**Q. Now it's personal.**

A. Yes, very much so. Because in the back of my mind, I knew it was going to happen, but I always thought it was going to be somewhere else. It never dawned on me that it would literally happen right here in my community. So that made it real. It took what was more of a casual awareness to a whole new level for me.

**Q. Your city—Gulfport, Miss.—was devastated by Hurricane Katrina. And of course, those impacts were layered on top of the other challenges you've been fighting for years, like inequality and poverty.**

A. I saw firsthand the inequities during the relief efforts. There was absolutely no sensitivity around having relief centers or distribution centers accessible to the people who didn't have the transportation or who didn't have money for gas. The Salvation Army would drive around in the food truck, but they weren't going in the neighborhoods where people didn't have cars.

Of course, people say disasters don't discriminate. "Well, we all suffer." Yes, but we all have different levels of how we're able to recover. It is certainly income-based, which is usually racially based because if you look at the demographics here and you look at the people who are living in poverty, it's a disproportionate number of minorities.

**Q. What have you been able to do to prepare for the next one, to help reduce some of that vulnerability?**

A. We at the NAACP called out the relief agencies, and they realized that they were not serving all of the communities. So we were able to get distribution centers set up in areas where they would be accessible to those who needed them most.

We have also been trying to raise awareness about climate change and sea-level rise. Everyone in this area has a heightened awareness of hurricanes, but what a lot of people did not understand until now is, when it floods in places where it hadn't flooded before, that is due to sea-level rise.

We worked with NOAA and Climate Central to co-host a training on sea-level rise. We learned how to use Climate Central's Surging Seas Risk Finder, an interactive tool that lets us map the vulnerability of our neighborhoods. People who attended were so interested that everybody signed up for a follow-up training.

Once you have that knowledge and you're empowered by that knowledge, you want more knowledge, you want more empowerment. I always tell people you have to have a seat at the table where the decisions are being made, because if you're not at the table, you might end up on the menu. But, when you get a seat at the table, you have to have the information.

**Q. So, understanding the risks of sea-level rise is drawing new attention to climate change?**

A. Yes. These intense storms and droughts and wildfires are going to increase unless we address global warming globally. But we also have a lot of work to do here at home. So we talk about energy savings, practical things we can do to reduce energy consumption. We have worked with the local energy company, doing weatherization in low-income and minority communities.

And we've been working to increase access to healthy, fresh food. If people are receiving food assistance and they don't have access to grocery stores where they can purchase things more cheaply, then they're going to the convenience stores because they're more accessible. Before they know it, they've used up their allowance on their food stamp cards. This affects people's ability to prepare for emergencies, too: If you've spent your food allowance, you don't have the money to purchase emergency food supplies during a storm or you don't have the money to evacuate. Because Hurricane Katrina hit at the end of the month, people had no money left on their EBT cards to go out and buy canned foods and water.

So if you have more access to healthier foods and fresh foods, then that will allow you some savings and you'll be able to maximize the benefits that you get from food assistance. That's

why we've been talking to our mayor and city manager about assistance with irrigation to create some community gardens.

**Q. You had a huge victory a little more than a year ago—getting the Mississippi Power Company to stop burning coal at the Jack Watson power plant. How did you make that happen?**

A. Well, after the release of the NAACP Coal Blooded report—which gave the Jack Watson plant a D- grade on an environmental justice scale—we had a full-day training session because people just didn't know what our community was being exposed to.

Of course, we were going up against the local power company, which was saying we were against jobs—that we were working with environmental groups who cared more about trees than jobs. So we had to debunk that.

We had a series of town hall meetings with community members—clergy, businesspeople, health professionals, elected officials. We had the state epidemiologist come in. We had a representative from an energy company. We had the Mississippi Department of Environmental Quality (MDEQ).

The MDEQ told us that the Jack Watson plant was safe. They kept saying that, and we said, “All these reports can't be wrong. You're supposed to be here to protect us, and it does not look like you're protecting us; it looks like you're protecting the power company.”

Another thing is that the two agencies charged with making the decision about the power plant—the MDEQ and the Public Service Commission—did not reflect the racial makeup of our state, which is 48 percent African-American. I went online and saw the pictures of the commissioners. No one in those photos looked like me.

So we had a letter-writing campaign to the governor. At our town hall meetings, we would have these postcards that people would sign. We sent them to the governor, and we also passed a

resolution at the NAACP state convention. It worked: They did finally appoint an African-American MDEQ commissioner.

And we kept the pressure on, calling for the plant to be cleaned up or shut down. We worked closely with the Sierra Club, which ultimately won a settlement agreement that led to the plant's closure. The Sierra Club recognized and credited the NAACP's voices and involvement as a contributing factor in the company's agreement to cease burning coal.

The Sierra Club attorney, Robert Wiygul, and the Mississippi State Sierra Club Director, Louie Miller, actually called us in before their announcement was made public. I will never forget that day. It's like how you knew where you were when you heard the news that President Kennedy had been killed. We didn't know what we were going there for, and they asked us to sit down. Then they started telling us about the settlement.

I sat there in disbelief. "OK. Where are the cameras? You're joking, right?" They told us, "We're calling you here because without your advocacy, without you pushing this as well, we probably wouldn't have gotten to this point."

**Q. As part of the Sierra Club settlement, you also got Mississippi Power to drop its opposition to "net metering," which lets solar-powered households sell their surplus energy back to the grid. Tell me about that.**

A. Energy companies said that net metering was a subsidy for the rich at the expense of the poor. They said, "If you have net metering, the rich people will be able to afford solar. You will not, and you will be paying higher energy costs. They won't be paying any. You'll be paying their energy costs because you can't afford solar."

We have been able to explain to people that solar, like everything else, will be in everyone's reach. I have a PowerPoint that I have shown, with pictures of a computer and a cell phone and a flat-screen television. I ask, "Did you own one of these 10 years ago or 15 years ago?" Nobody's hand raises. Then I ask,

“Do you own one now?” and everyone’s hand is raised. That will be the case with solar.

**Q. This is not a traditional issue for NAACP. Did you have trouble making the case that this was a civil rights issue?**

A. A lot of trouble. This issue is a lot different than someone being shot by a police officer. But it’s getting easier.

We were actually invited to a dinner meeting with local power company officials in early 2013, before our Coal Blooded campaign and training. They started off with, “I sure hope you all aren’t working with that Sierra Club. They don’t care anything at all about black people. They’re using you.”

I just totally went off. I told them, “First and foremost, the NAACP has its own environmental and climate justice department. We did our own research. We definitely agree with the Sierra Club on some issues, but this has nothing to do with the Sierra Club.”

Some of the residents were very upset with us. Some feared that people were going to lose jobs if they stopped burning coal here. But not a single job was lost when Jack Watson stopped burning coal.

Now people are convinced, because they see that a lot of things they told us in those town hall meetings were simply not true.

**Q. You’ve been fighting these battles for a while now with success. What advice would you give to others who are just starting out?**

A. Don’t give up. Get as much knowledge as you can. Share as much knowledge as you can. They told us that the plant would never close; that we were fighting a losing battle; that we were going against a powerful industry; that we were wasting our time. But we didn’t give up, and we won.

I did a presentation at the U.N. Center, when I was in the People's Climate March in 2014. When I looked out at the young people in that march, they reminded me of me. I was their age when I marched with Dr. King. I started thinking, "What would Dr. King say?" I said, "I know. I bet you he would say, 'Fossil-free at last. Fossil-free at last. One day we're going to be fossil-free at last.'"

# *Congressional Black Caucus Week: Black People Are Hurt by Climate Change, But It's Not on the Agenda*

DENISE FAIRCHILD

*Originally published September 15, 2016 in The Root*

**I**t's no secret: The climate is changing, and black communities are on the front lines. From the Lower 9th Ward in New Orleans to the Rockaways in New York City and westward to San Francisco's East Bay, African Americans are bearing the brunt of climate impacts.

Black people contribute much less to the problem than others—in fact, our households emit 20 percent less greenhouse gases than whites'. Still, we are among the most severely affected in the United States. Low-income African Americans are more vulnerable to catastrophic losses in a natural disaster, and nearly twice as likely as white people to die in heat waves.

Yet, as the Congressional Black Caucus Foundation's Annual Legislative Conference gets underway, there is not one mention of the phrase "climate change" on the agenda. Although there is limited focus on "environmental justice" in a few small panel discussions, climate change—the giant of all environmental issues—is glaringly absent from the agenda. Nor does it appear that the conference features a large contingent of black leaders from a growing climate-justice movement.

One must ask: What's that all about? How does the largest gathering of influential black politicians and leaders in the country not insert itself into the largest global-policy conversation taking place today?

The absence of climate change reveals a glaring disconnect with the theme of this year's legislative conference, "Defining the Moment, Building the Movement." Climate change is, arguably, the defining issue for human civilization, particularly communities of color. As a

result, the CBCF fails to fully define the moment and leverage the power of its annual convening to build the movement we need on climate change.

Certainly, the CBC Foundation's annual conference is one of the nation's largest, most important national meetings of black influencers and power-brokers. Every fall, some of our best and brightest—the political, economic and social “Talented Tenth”—gather in Washington, D.C., to collectively consider the state of black America. The breadth of stakeholders, assets and capacities represented there—coupled with several dozen black members of Congress as the conference's political backbone—can potentially shape and move any agenda. Appropriately, the conference addresses the most important issues of our time: criminal-justice reform, Black Lives Matter, voting rights, public health.

Climate change, however, has been left out.

Climate change is not just a “white people's” conversation. African Americans (along with the entire black Diaspora) have much to gain from the essential fight to reduce greenhouse gas emissions. The dirtiest carbon-spewing power plants are disproportionately located in our communities—which is one reason African-American children are 10 times more likely to die from asthma than their white counterparts. The commonsense replacement of fossil fuels with clean, renewable sources of energy could have far-reaching health and economic benefits for African Americans.

Perhaps that's why two-thirds of African Americans polled believe that climate change is a serious problem and want their elected officials to take action. Living with the impact of climate change in their communities, they can see that something is really wrong.

But you wouldn't know that from attending the CBCF's conference this year. With few exceptions, when environment and energy issues do show up on the agenda, they focus on building the science, technology, engineering and math skills of black people to work in the fossil fuel industry, as opposed to building a movement to achieve economic, social and environmental change.

Why? Well, it's no secret that coal, oil and gas interests have launched an elaborate campaign to woo black Americans. Most recently, the infamous

conservative Koch brothers launched a public relations assault called Fueling US Forward, which tells black people how badly they need fossil fuels.

Records show that the CBC enjoys warm relations with fossil fuel interests: In 2012, for example, the CBC Institute and the CBC Policy and Leadership Institute received a total of \$160,000 from the American Petroleum Institute. And the CBC Political Education and Leadership Institute's 21st Century Council includes several representatives from the fossil fuel industry, including API, Exxon Mobil and BP. And the CBC is not alone: The National Black Chamber of Commerce is so close to fossil fuel interests, its CEO considers them family. A cursory glance at the Center for Responsive Politics' database shows CBC members receiving substantial campaign contributions from API's political action committee, too.

These cozy financial arrangements set up an uncomfortable quid pro quo with African-American political leaders and prevent us from addressing one of the most important issues of our time. In 2009, for example, lobbyists and executives from these industries helped draft a report in the caucus's name stipulating that cost factors be considered in climate-mitigation policies—an echo of industry talking points.

We should be using the CBCF legislative conference, with its assemblage of our Talented Tenth, to address the impact of climate change on communities of color and build a policy platform for climate resilience. Considerable investments are being made in resilience planning and development. Why isn't the CBCF conference working to ensure that African Americans are at the planning tables—and benefiting from these investments?

The conference takes place one week before the opening of the Smithsonian's National Museum of African American History and Culture. That opening represents the fruition of a hundred-year struggle to honor the contributions and history of African Americans. It also displays the unparalleled and unheralded resilience in our community. This event should remind us of our unfinished history of struggle and survival. Let's hope it also serves as a call to action on a new threat to our community's survival: climate change.

# *Cap-and-Trade? Not So Great If You Are Black or Brown*

LAURIE MAZUR

*Originally published September 16, 2016 in Grist*

Environmental justice advocates have long warned that “cap-and-trade”—a market-based strategy to reduce climate-changing greenhouse gas emissions—could hurt low-income communities of color. A preliminary report on California’s cap-and-trade program shows they just might be right.

Cap-and-trade gives polluters leeway to decide where and how to reduce emissions—or to keep polluting, as long as emissions are offset by reductions elsewhere. Of course, the dirtiest factories, refineries, and power plants are already located in poor black and brown neighborhoods. EJ advocates have worried that cap-and-trade would enable polluters to maintain that status quo, while reducing emissions in more affluent areas. (Sort of like the medieval practice of paying cash indulgences to have one’s sins forgiven.) California EJ groups issued a declaration against cap-and-trade back in 2008.

The new report—by researchers at UC Berkeley, the University of Southern California, and two other California colleges—shows that those worries were prescient. “The [cap-and-trade] system is not delivering local emission reductions, public health, or air quality benefits to residents in low-income communities and communities of color,” said Amy Vanderwarker, co-director of the California Environmental Justice Alliance, in a press conference.

While overall greenhouse gas emissions in California have dropped from their peak in 2001, many industry sectors covered under cap-and-trade have actually increased localized in-state greenhouse gas emissions since the program came into effect in 2013. Those increases are concentrated in neighborhoods with higher proportions of disadvantaged residents.

And, while greenhouse gases, per se, do not cause immediate health problems, those gases are invariably served with a side of co-pollutants—such as particulate matter—that have devastating effects on public health. Indeed, the high level of particulate pollution in communities of color is one reason that African American children are 10 times more likely to die from asthma than their white counterparts.

And what of the “offsets” that were supposed to compensate for continued polluting? The report found that those offsets were primarily linked to projects—such as tree-planting efforts—outside California. “We are basically exporting climate benefits to other states,” said Vanderwarker.

The program is not an across-the-board failure: The Los Angeles Times and others have credited cap-and-trade for reducing greenhouse gases overall, despite snags. The program has held down energy costs for low-income Californians, according to the UCLA Luskin Center for Innovation. EJ advocates helped ensure that a substantial portion of the revenue generated by California’s cap-and-trade scheme will go to housing and public transit programs for poor and minority communities. And even more cap-and-trade money will be allocated to underserved populations going forward, thanks to two new bills signed this week by Gov. Jerry Brown.

But those benefits cannot erase the fact that, for many low-income black and brown Californians, cap-and-trade means more pollution where they live and work. “Policymakers talk about climate change in broad strokes,” said Manuel Pastor, professor of sociology at USC and director of USC’s Program for Environmental and Regional Equity, who coauthored the report. “But beneath those broad strokes, there are people’s lives and health.”

Still, the report’s authors believe it is possible to tweak the cap-and-trade program so that its benefits are more equitably distributed. The program could, for example, require deeper emissions reductions among larger polluters in disadvantaged communities. Better data collection would help, too, by giving decision makers the information they need to maximize public health benefits and environmental equity.

Fundamentally, it is important to remember that environmental problems—and policies—do not affect all communities equally. With cap-and-trade, as with all well-intentioned fixes, “the devil is in the details,” said Pastor.

SECTION V

**T**ransportation

# *If Roads Are Gridlocked in Rush Hour, What Happens When Disaster Strikes?*

LAURIE MAZUR

*Originally published January 8, 2016 in The Guardian*

I was late for an appointment, sitting in traffic on one of the major arteries out of Washington DC. It was miserable, barely moving traffic of the kind that makes you whimper with frustration as yet another green light turns yellow, then red, as you inch along.

Then I happened to notice a roadside sign that read: “Evacuation Route.” And I tried to imagine fleeing from a major crisis—a terrorist attack, say, or climate-change enhanced superstorm—on a road that can’t even handle the daily evacuation called “rush” hour.

Here in DC, we claim the worst traffic in the US. Non-apocalyptic events, such as the lighting of the National Christmas Tree or a couple of inches of snow, routinely induce gridlock. An ice storm or rare earthquake can mean commuters spending the night in their cars.

Washington may be an extreme case, but it is not alone. In many American cities, transportation systems are dysfunctional on a good day, much less in a crisis. In a world that is increasingly prone to extreme weather and other disruptions, our transportation systems may fail us when we need them most.

That’s what happened when Hurricane Katrina slammed the Gulf Coast in 2005. Millions fled by car before the storm, creating monumental traffic and fuel shortages. But a quarter of New Orleans’s residents, including many of the poorest and most vulnerable, did not have access to cars. More than 100,000 people were left in the city when the levees broke, creating a humanitarian disaster that took nearly 2,000 lives and displaced hundreds of thousands more.

Moreover, the sorry state of our nation's infrastructure (which has earned a grade of D+ from the American Society of Civil Engineers) means greater vulnerability to damage from climate and other disasters. When Superstorm Sandy came ashore in 2012, it flooded New York's subway system and submerged runways at La Guardia Airport. And the 2010 "superflood" in Tennessee and Kentucky destroyed highways and bridges; people drowned in their cars on the flooded interstate.

Our transportation systems are frustrating on a good day, and potentially deadly on a bad one. But what could a more resilient system look like? First, it wouldn't be all about cars.

"Dedicating all of our right-of-way to car movement leaves us in a very precarious position when there is a disaster," says Gabe Klein, author of *Start-Up City* and former transportation commissioner for DC and Chicago. A "multimodal" system, which includes trains, buses, bike paths and ferries in addition to cars, will fare better in times of crisis and upheaval—and is, of course, much more equitable.

Such a transportation system requires an upgrade of our crumbling infrastructure with an eye to the new climate reality. According to Emil Frankel, who served as assistant secretary for transportation policy at the US Department of Transportation, many highways, rail lines and airports on the East and Gulf Coasts are in danger of being inundated by sea-level rise. That means planners must deal with those challenges up front. "Anticipating sea-level rise will add costs to projects," says Frankel, "but it costs less to build a bridge higher and stronger than it does to replace it after it's destroyed."

As we upgrade our ageing infrastructure, however, it's important to remember that hi-tech solutions aren't always the answer. Gabe Klein recalls that when Superstorm Sandy hit, New York City had upgraded some trains to a sophisticated IT-based dispatch system. "When the tunnels flooded, guess what?" says Klein. "Those trains were the ones that didn't work. It fried all the systems. The old electro-mechanical systems that hadn't been switched over were the only trains that ran."

Klein also notes the importance of "redundancy" in electronic systems. "I'm not going to name them," he says, "but there are systems—signal systems, critical infrastructure and even entire transit systems—that are

completely unprepared and subject to one single point of failure. You have to have a lot of redundancy, so that all your information isn't subject to one massive server failure.”

Money, of course, is a challenge—especially when Washington's political gridlock is as bad as its traffic. Frankel is not optimistic about the prospects for proactive federal funding: “We have a shortfall of over \$2 trillion to bring the nation's infrastructure to a state of good repair—and that does not include the cost of also making it resilient.”

The federal government steps in only after a disaster, with FEMA emergency funds. But while regulations state that those funds must be used to “build it back to what it was”, in fact the feds “are now allowing states, localities and transportation authorities to rebuild to higher and more resilient standards with FEMA money,” Frankel says.

Still, with all the immediate needs facing cities today, it is difficult to muster funds to prepare for crises that may or may not occur. That's why we need a new way of thinking about resilient transportation, says Sue Zielinski, who runs SMART—a transportation think tank at the University of Michigan.

“Resilience is not just something we do in case something terrible happens,” Zielinski says. “It's about creating the kinds of places we want to live in that work for us in good times and bad.”

Many of the qualities that define a resilient transportation system—robust infrastructure, many ways to get around, access for all—would also make our cities better places to live. And by shifting the focus away from cars, we will also reduce our carbon emissions and slow the advance of climate change. The best way to weather a disaster is to make sure it doesn't happen in the first place.

# *London's Olympic Legacy*

BEN PLOWDEN

*Originally published July 1, 2016 in Planning*

Hosting the Olympic Games can make or break a city's reputation, either by leaving behind wildly expensive but mostly abandoned venues (this was Athens's problem after the 2004 Games) or failing to meet the infrastructure needs—particularly transportation—of the event itself, which is what happened in Atlanta in 1996.

Get these things wrong and you do so in full view of the media and billions of people. Get it right and you showcase the host city's planning and operational skills to the world. In so many ways, London got it right, and is still reaping the benefits of its careful planning.

The International Olympic Committee announcement on July 6, 2005, that London would host the 2012 Olympics was greeted with jubilation, tempered by terrorist attacks on the transportation system the very next day. Then came the sober realization of the challenge ahead.

Transport for London—which manages the day-to-day operation of the city's public transport and roads—had only been in existence since 2000. The Games would be a major test of the organization's planning and operational abilities—and its wider resilience.

Over the six weeks of the Olympic and Paralympic Games, the city's transport system needed to ensure the timely travels of some 22,000 athletes and team members; 6,000 officials; 26,000 members of the media; and nearly 10 million ticketed spectators, while the people living and working in London carried on with everyday life. A key first step was using detailed analysis to identify hotspots in the system for each day of the Games and the capacity increases that were needed.

Since the Atlanta Games, the IOC has required host cities to provide an Olympic Route Network on the city's streets so that the athletes, officials,

and the media can get to venues within guaranteed journey times, often within dedicated Games Lanes by car, van, or bus. Otherwise, apart from spectators with mobility impairments, the 2012 Olympics were meant to be car-free.

Indeed, the 2012 Olympics created significant extra demand on London's public transport system, with ridership up by more than 50 percent on some modes. Substantial capacity increases were made at the multi-modal stations next to the Olympic Park, and TfL doubled the capacity on Overground services running into Stratford, where Olympic Park is. On the Jubilee Line of the underground, capacity was increased by a third, and on the DLR (Docklands Light Railway) it went up by half.

A key planning insight was the critical role of walking as part of the transport system's overall resilience. Distances are relatively short in central London, and slightly longer walks would allow people to avoid the most crowded stations and lines. Millions of detailed walking maps were handed out.

The "Get Ahead of the Games" campaign on TfL's website showed the stations and roads that would be busiest in half-hour slots. Briefings went out twice daily, and real-time communication flew over Twitter and text. A comprehensive wayfinding system and thousands of volunteers kept things moving and made visitors feel welcome.

### **Gold Medals All Around**

The London 2012 Olympics and Paralympics were, according to most observers, a huge success. The transport system worked successfully and smoothly. While busy, public transit was so reliable that a number of Olympic athletes used it to travel to and from their events. About 30 percent of Londoners changed their normal travel behavior—thanks to an 18-month travel demand management campaign launched before the Games—and a fifth of freight deliveries took place in a different way.

The Games taught us some important lessons about how to improve the resilience of London's transportation system:

- **Plan Ahead!** Long-term planning, now an integral part of TfL's processes, helps to meet the challenges of continued population and employment growth—and potential extreme weather events.

- **Support sustainable transport.** To relieve congestion, cut emissions, and improve health, major investment continues in London, including new rail capacity, London Underground upgrades, growth in the bus network, more walkable public spaces, and \$1 billion in cycling infrastructure spending.
- **Optimize road use.** The \$6 billion Roads Modernization Plan gets the best possible use out of the existing network with state-of-the-art traffic signaling technology, real-time traffic management, and enhanced incident response capability.
- **Integrate all modes of transport.** Services are planned and operated as a single system, giving customers a consistent level of service. “Soft” assets, such as behavioral campaigns and two-way communication with users, complement the hard infrastructure.
- **Communicate.** The TfL website now has 10 million hits a month and over two million Twitter followers. Valuable input comes from customer tweets, cameras on the road network, ticketing activities, and real-time traffic data.
- **Support freight and logistics.** TfL works closely with freight and logistics operators on a wide range of issues including casualty reduction, nonpeak hour deliveries, consolidation, and adoption of low-emission vehicles.

The 2012 Summer Olympics gave a great boost to the city's reputation. The successful operation of the transport system was a key part of that achievement, and the result is a resilient transportation system able to meet the challenges of the future.

# *Eight Ways China is ‘Winning’ on Transportation*

CC HUANG AND HALLIE KENNAN

*Originally published July 14, 2016 on Medium*

**A**s Donald Trump likes to say, “China is beating us on everything.” While that’s a debatable proposition, there is one area where China is far ahead of the United States, and that’s in resilient transportation systems.

This is a big deal: Transportation systems represent a huge portion of public and private spending—to the tune of \$1.2 to \$1.4 trillion globally each year. And, in an era rocked by climate change and other disruptions, those systems must be able to weather all kinds of shocks—from fuel shortages to flooding. They must be, in a word, resilient.

What does a resilient transportation system look like? First, it offers a diverse range of choices: If the train isn’t running, there are easily-available alternatives, like biking or taking a bus. Resilient transportation can be fueled by multiple energy sources, for the same reason: If oil prices spike, the system can run on electricity powered by the sun or the wind. Resilient transportation systems use fossil fuels sparingly, which helps mitigate climate change, reducing the likelihood of future disasters that may threaten transportation infrastructure or fuel sources. Finally, the most resilient systems are seamlessly connected to one another—offering maximum mobility at every scale, and for every mile of the journey.

So, here are eight ways China is taking the lead on resilient transportation:

1. **Electric cars.** China’s Five-Year Plan calls for five million electric and hybrid cars on the road by 2020. In 2015, the Chinese bought 188,000 electric vehicles (EVs) or plug-in hybrids, comprising just under one percent of the country’s car sales that year. While this sounds low, it’s a 223 percent

increase from the previous year. China's EV market is growing faster than in other countries. For comparison, EV sales in the U.S. declined from 2014 to 2015—from 122,000 to 116,000, likely due to cheap gas prices which make gas-fueled vehicles comparatively more affordable.

Beijing in particular has been pushing for adoption of electric vehicles, requiring 30 percent of municipal vehicles to be powered by battery or fuel cell by 2016. Beijing and other cities offer preferential treatment to electric vehicles in their license plate lottery system, and exempt EVs from alternate-day driving restrictions.

2. **Electric buses.** With China's push toward public transit in large, congested cities, electric buses are on the rise. Converting buses to electric power reduces particulate matter in the dirtiest and most populated regions, providing health benefits to millions.

More than 100,000 electric buses—one-fifth of the nation's total—are on China's roads today. At this adoption rate, China's entire bus fleet could be electric by 2025. China is ahead of the game on the bus technology too—with new models that can charge in just 10 seconds and run for 5 km on a single charge.

3. **Bus Rapid Transit.** Bus Rapid Transit (BRT) is much cheaper to construct than light rail or metro rail, and can offer the same level of service. The most successful BRT systems use designated, center lanes so buses can move efficiently from station to station without having to compete with automobile traffic.

In China, BRT systems now move over 4.3 million people every day—compared to less than 500,000 in the U.S. (Though it's worth noting the U.S. population is less than a quarter the size of China's.) In Changzhou, 25 percent of commuters use BRT. The Guangzhou BRT system includes elevated platforms for boarding, and is integrated with the city's metro system and bike-sharing program.

4. **Bike-sharing programs.** Bike-sharing programs are inexpensive, promote health, and reduce dependence on fossil fuels. The Chinese government wants 18 percent of commuters to use bikes by 2020, and bike-sharing programs are key to this effort.

Of the 20 biggest bike-sharing programs in the world, 16 are in China. Hangzhou's program is the most successful: more than 30 percent of its commuters rely on bike-sharing. In Beijing, bike-sharing has been central to its efforts in reducing pollution.

5. **Electric bikes.** In the 1990s, there were just a few thousand electric bikes (or e-bikes) in China; now, there are over 200 million. Electric bikes are especially resilient because even if the whole grid goes down, they can be powered by old-fashioned human energy (i.e. pedaling).

Today, China's e-bike market is becoming more sophisticated, with high-end bikes and extended battery life. Lower prices—ranging from \$230 to \$600—make e-bikes accessible to all income levels.

6. **Underground metro systems.** China is home to nearly 30 metros—including four that are among the ten busiest systems in the world. Seven more metros are under construction, and 18 are in the planning stages. Shanghai and Beijing's metro systems, each spanning more than 500 km, are the longest and second-longest in the world. For comparison, New York City's subway, the largest in the U.S., is less than 400 km long.

China's metros provide affordable mobility to its citizens, strengthening economic resilience. Even with Beijing's recent metro fare increase, most rides only cost about three to eight yuan, or \$0.45 to \$1.45.

7. **High-speed rail.** In today's connected world, transportation between cities is equally as important as that within cities. High-speed rail (HSR) systems can help, by covering distances that are too great for city buses or metro lines, but too near to require the hassle of air travel. HSR additionally contributes to

urban resilience; in times of disaster, it can help people move quickly out of harm's way.

China currently has the world's largest HSR system, with more than 19,000 km of railways connecting 28 of China's 33 provinces. The system had 2.5 million daily riders in 2014, a ten-fold increase since 2007. The Shanghai Maglev line is the first commercial HSR to use "magnetic levitation," reaching speeds of more than 400 km/h.

8. **Integrated systems.** China has found a cost-effective way to improve mobility without spending more money—by designing integrated transit systems. China's high-speed rail network and its inter-city transit systems are connected in almost every city. Moreover, many Chinese cities use "smart-cards" that can be used interchangeably on the metro, bus, bike-share and taxi.

China provides great success stories on how to develop and scale resilient transportation systems. The U.S. can take inspiration from the examples above, and mobilize American ingenuity to build our own resilient transportation systems for the 21st century.



SECTION VI

**NATURE AND SUSTAINABILITY**

# *Parks: Not Just for Picnics*

MITCHELL SILVER

*Originally published November 17, 2016 in Public Square*

For generations, parks were viewed simply as an amenity, a way to beautify a city. Whether they were planned for gardens, sports, or picnicking, parks were rarely seen as central to public safety and health. But that is beginning to change.

As cities around the world continue their growth, the role of parks is shifting. Parks are no longer seen as something nice to have, but rather as a vital system within the city's overall network of infrastructure. These hard-working public spaces are probably the biggest untapped resource for cities in this century. Why? Livable, sustainable cities must balance density with open space for the health of their residents, their environments, and their economies.

From physical and mental health, to economic development, to resilience and sustainability, parks offer myriad tangible benefits. New York City's parks, which attract more than 130 million visits a year, model those benefits to the world. For example, our parks are crucial to the city's resiliency efforts: NYC's shoreline parks in the Rockaways and Coney Island are being rebuilt since Hurricane Sandy to withstand rising sea levels, storm surges, and to protect waterfront communities. And thanks to our collaboration with the NYC Department of Environmental Protection, our parks have become sites of crucial green infrastructure like rain gardens and storm water-collecting bioswales.

Alongside their environmental benefits, parks have demonstrated time and time again their ability to stabilize communities and drive economic development. According to the Trust for Public Land, well-maintained parks add 15 percent to the value of homes within 500 feet. Our experience in New York bears that out. For example, in under a decade the world-famous High Line has brought more than two billion dollars in new real estate investment to the surrounding community—an enormous

return on investment for a \$153 million park. An older but well-loved landmark can also drive value: Central Park generates \$1 billion dollars of economic benefits annually.

Now we're working to bring the benefits of well-maintained parks to all New Yorkers, with our \$285 million Community Parks Initiative, which will completely rebuild more than 60 historically underserved parks across the five boroughs.

New York is the city I know best, and I am proud of the progress we have made. But as I have traveled, I have seen many cities begin to take parks seriously as part of their urban infrastructure. Houston's Buffalo Bayou Park, for example, was created a century ago to control the flooding of local waterways and to provide a recreational area for the city. Now, it is one of the nation's finest urban parks—and a core element of Houston's water management infrastructure. On the other side of the globe, Singapore's spectacular Gardens by the Bay not only offer Singaporeans an awe-inspiring new public space, but they are built to clean and filter water and cultivate biodiversity of flora and fauna.

Lawmakers, designers, and planners the world over are learning that well-designed, well-maintained open spaces makes cities work. As our urban centers become more dense, let's make sure that our investments—and innovation—in city parks matches their importance in our lives.

*What's that Forest Worth?  
Disaster Assistance (Finally!)  
Takes Nature Into Account*

LAURIE MAZUR

*Originally published February 9, 2016 on Mongabay*

**I**f a tree falls in the forest, what does it cost?

From the perspective of federal disaster assistance, the answer traditionally has been “not much.” But now—thanks to improved number-crunching—the federal government is taking nature into account when it tallies the cost of disasters.

And, even more importantly, it is recognizing the value of nature—forests, wetlands, parks—in preventing or mitigating disasters.

Remember the Rim Fire, which incinerated a 400-square mile swath of California near Yosemite in 2013? When the state of California first asked the Federal Emergency Management Agency (FEMA) for a “major disaster” declaration, it was turned down. Why? Because most of the damage was inflicted on forests, rather than man-made structures—and there was no way to put a price-tag on that loss.

Just think: a backyard shed gets destroyed by fire, that's a \$2,000 loss.

But when 77,000 acres of Yosemite National Park are reduced to smoking embers? Nada.

Enter Earth Economics, an independent non-profit that helps decision makers assess the financial value of natural systems. The group's economists looked at the services the forest provided—filtering drinking water for the City of San Francisco, preventing floods, sequestering carbon, providing

recreational opportunities—and calculated the dollar value of what was destroyed by the fire.

Armed with those numbers, Governor Brown appealed FEMA's decision—and won.

Fast forward to 2016. The once-radical notion of valuing nature's services is now more widely accepted by the federal government. Recently, the U.S. Department of Housing and Urban Development (HUD) awarded \$1 billion to 13 communities through the National Disaster Resilience Competition (NDRC)—and actually required applicants to calculate the value of nature and other non-traditional benefits in their proposals.

The competition asked applicants to use a holistic benefit-cost analysis developed by Earth Economics with support from The Kresge Foundation, which incorporates natural ecosystems' value and services, long-term environmental sustainability, and community benefits such as health and employment. Earth Economics provided training, tools, and resources throughout the competition to help applicants calculate those values.

“The Earth Economics team helped us to capture the full range of benefits of the Community and Watershed Resilience Program, including the tremendous ecological benefits that it will provide not just to Tuolumne County, but to the State as a whole,” said Louise Bedsworth, Deputy Director of the California Governor's Office of Planning and Research.

The winning proposals all make use of natural systems to build resilience to climate change impacts and other disasters. For example:

- A California county that was devastated by the Rim Fire received an NDRC grant to restore the health of its forests and watershed, generate energy and support the rural community.
- Lower Manhattan, which was inundated by Superstorm Sandy, got funding to construct a coastal protection system that includes much-needed green space.
- In Hurricane Katrina-pummeled New Orleans, the Gentilly neighborhood won a grant to restore coastal wetlands and build water-absorbing parks and green streets.

Recognizing the value of nature and other overlooked social and economic benefits simply drives better decision making, according to David Batker of Earth Economics, who helped coach a number of the NDRC's winning applicants.

“Benefit-cost analysis that includes nature helps us make smarter investments at federal, state, and local levels,” said Batker. “We owe it to ourselves and future generations to use this tool to identify the best, most robust and resilient investments.”

Indeed, investing in nature produces a bigger bang for the buck. For example, on a good day, the Lower Manhattan greenway is a park and bike path; on a bad day, it protects the city by absorbing potentially deadly storm surges. That is more than you can say for most single-purpose “gray” infrastructure, such as concrete levees.

Investing in natural infrastructure is a good way to get the most from taxpayers' money, says Harriet Tregoning, Principal Deputy Assistant Secretary for HUD's Office of Community Planning and Development.

“We are learning together about how to encourage a broader range of benefits from every federal dollar that gets expended,” Tregoning said during an announcement of the NDRC winners.

Valuing nature may seem like a no-brainer to many; the majestic forests of Yosemite obviously have tremendous value. But, too often, our public policies are structured by rules developed back when natural resources seemed inexhaustible. As the economists say, “you get what you measure.”

When we fail to measure the economic value of nature, we treat it as expendable. That is why the United States—one of the most resource-rich countries in the world—is now running an ecological deficit, according to the Global Footprint Network.

So, nature counts for more than pretty postcards and vacations. New tools to measure the dollars-and-cents impact of nature help planners, officials and taxpayers make the wisest choices for both the planet's people and the natural systems that support them.

# *Bridging a Gap on the Bronx River*

VERONICA VANTERPOOL AND JOAN BYRON

*Originally published October 14, 2016 in CoLab Radio*

When the Bronx River Greenway was first proposed in 1999, David Shuffler was a teenager living in West Farms. On breaks from school, he carried canoes from NYCHA's Bronx River Houses to the River, where he and other members of Youth Ministries for Peace and Justice paddled out to mark the dumped cars that National Guard troops would haul out with heavy equipment.

This week David was on hand to break ground for “Starlight Park Phase 2,” a key segment in what will be an 8-mile ribbon of parkland where New Yorkers can walk, run, bike, skate—and just enjoy—a section of the Bronx River that’s been virtually inaccessible for decades.

The river itself is making an astonishing comeback. As far back as the 1800s, the Bronx River was used as a domestic and industrial sewer; then it was barricaded from the surrounding communities by Robert Moses’ ill-conceived Sheridan Expressway. The Master Builder’s other works, the Cross Bronx and Bruckner Expressways, dismembered nearby neighborhoods and made it all but impossible to walk anywhere—to subways, stores, churches, schools, neighbors—while diesel fumes drove asthma rates off the charts.

Generations of local activists have worked to clean up the River and green its banks. In 2001, the Bronx River Alliance formalized partnerships between scores of grassroots organizations like Youth Ministries and the NYC Parks Department into a people-powered conservancy. The Alliance drafted audacious plans, then brought those plans to life, one hard-won project at a time.

Residents marched to demand that an abandoned concrete plant be pulled from a City auction and handed over to Parks, which painted the now-iconic silos pink, and added paths, plantings, and a boat launch.

Home-grown green infrastructure projects and dogged advocacy through the City's long-term planning processes have improved water quality to a point where a fish ladder is now needed to let alewife herring migrate over the 180th Street dam. Herons, egrets, and osprey chow down while volunteers row into the estuary to check on oyster reefs. And the River's most famous resident, Jose the Beaver, is the namesake of Congressman Serrano, who reeled in federal funds for conservation and construction projects.

Over 1500 people now canoe the River each year. High school students and their teachers practice citizen science, uploading data to a dedicated website. Members of the original Bronx River Conservation Crew are training a new generation, and visitors from around the world, in the emerging discipline of urban river management.

Progress has been slow, and not always steady. The cleanup of a buried coal gas plant delayed Phase 1 of Starlight Park for six years. Responsibility for design and construction shuffled between agencies, costs escalated, and projects were scaled back and chopped into phases. An impasse with Amtrak, whose Northeast Corridor line cuts the River off from the neighborhoods to the east, sidetracked the quest for a key Greenway goal—connecting communities to each other, to emerging parklands, and to the River.

The Alliance persevered, patching together the money and the needed agreements to bridge the gap. Local elected officials have championed the work, and the Parks Department, first under Henry Stern, then Adrian Benepe, and now Commissioner Mitchell Silver, is committed to making the Bronx River Greenway a jewel in a parks system that fully serves all New Yorkers.

The project now breaking ground is challenging—two bridges over the River, another over Amtrak, remediation and re-naturalization of two former industrial sites—and plenty of work remains to be done. The River House, also planned for a over decade and now set to open in 2017, will anchor the Alliance's canoeing and educational programs—but the Greenway path segments that will complete the link to the new facility are not yet funded. Other Greenway nodes, like Concrete Plant Park, still lack bathrooms—important amenities for users, and essential to stationing full-time staff on each site.

Last week's groundbreaking marks a milestone worth celebrating, but it also points to the need to move more swiftly and surely to finish the job. Our elected leaders need to work together to find the \$20 million needed to close the remaining Greenway gap. And our agencies must ensure that this vital link doesn't fall prey to the delays that too often plague public sector construction.

David Shuffler, now Youth Ministries' Executive Director and father of 8-month old Liam won't give up.

"The Bronx River Greenway is a central element of our community's vision of a socially and environmentally just future for the South Bronx; I look forward to seeing my child enjoying everything that we've struggled to build."

# *If It Doesn't Have a Bench, Is It Still a Park?*

PETER HARNIK AND ALEXANDRA HIPLE

*Originally published September 2016 in Parks & Recreation*

In 2013, the city of Norfolk, Virginia, removed almost 70 benches from three small city parks. The benches weren't in disrepair and they weren't in a bad neighborhood. In fact, they were located in the revitalizing historic community of Ghent, and, if anything, were incredibly popular. Unfortunately, it was the wrong kind of popularity. Judged negatively by some neighbors as a milieu for loitering, drinking, fighting and even prostitution, the benches of Stone Park and Stockley and Botetourt Gardens were deemed *facilitas non grata*.

The decision, made after several years of study, was controversial. Some homeowners near Stockley Gardens say it is now quieter and more peaceful, but one Ghent resident, Bruce Ebert, lamented, "Now, we have a park that's nice to look at but totally useless."

When asked if he considered the removal a success, Jason Baines, a park department landscape architect, was cautiously tight-lipped about the painful battle. "The citizens were satisfied," he said. But, not all of them. In an open letter to the Norfolk City Council, published by local news source *AltDaily*, Norfolk landscape architect Bill Speidel wrote, "It tells the public that we are not welcome to use that park; that it should be an empty void." In his letter, he suggested other possible courses of action, such as making simple design modifications to the benches.

Norfolk isn't alone. In recent years Pittsburgh has taken benches out of Allegheny Commons, Roanoke has removed them from Elmwood Park, and Sarasota has done the same in Selby Five Points Park (although the city is now reconsidering). In New York City, a number of park benches were purposely removed in the 1980s, although that is no longer a standard practice. Philadelphia's famous Fairmount Park is such a

bench-free environment that nearby residents drag portable chairs across busy Parkside Avenue to have a place to sit and automobile visitors can be seen taking folding chairs out of the trunks of their cars.

Other than trees, it's hard to find something as intrinsic to people's concept of an urban park. "The bench is really a symbol of parks," says Mark McHenry, Kansas City parks director. The prominent advocacy organization New Yorkers for Parks even chose a park bench for its logo.

In fact, is a park without benches even a park?

George Dusenbury doesn't think so. The former director of the Atlanta Department of Parks and Recreation suggested using the criterion, "Does it have a bench?," to distinguish his city's 300-or-so "parks" from its scores of what he calls "just grassy traffic islands." (That definition, however, was dropped in favor of legal ownership.) The question neatly illustrates just how important benches really can be, but it doesn't get to the heart of the controversy over taking out existing seating. This often manifests as conflict over the perceived "proper" uses of a bench, and ultimately over how society expects people to behave in a public space.

The bench—or lack of one—can clearly signal the purpose of a park: Whether one should "linger longer" or "you've got to move" (see table). The latter approach smacks more of the corporate plaza, a space designed to deliver an impressive message of architectural beauty without the hassle of dealing with users. At the very least, a benchless park becomes just an empty plot of land. Sure, kids may run around on it and some nimble-bodied few may flop down on the grass if it's dry, but this isn't a park for everyone. Wordlessly, it turns people away.

Even in the days of Frederick Law Olmsted, who consciously designed to promote promenading through carefully arranged landscapes, benches were integral to the experience. Historic photographs reveal benches in early Central Park, according to Olmsted Papers Scholar Charles Beveridge.

Olmsted gave his park-goers places to sit and people-watch and also to appreciate a particularly fine view or landscape, much as museums place seating in important exhibits.

Certainly, a benchless park will get less loitering, but it will also get less lolling, dawdling, idling and lounging. For many park lovers, hanging out is the whole point, and park professionals spend much time and effort trying to get people to spend more time in nature. Certainly, a bench can't be vandalized if it isn't there, but it also cannot provide service for all kinds of people who need to take a load off—seniors, the tired, the injured, the pregnant, mothers with children, readers, people eating lunch. Basically, everyone.

Unfortunately, some cities have opted to jettison the benefits for a quick fix when a few citizens voice complaints. But bench misuse is a symptom, not a cause. The more deeply-rooted issues—poverty, substance abuse and homelessness—require amelioration and solution from other city social service facilities. In the meantime, park benches should be allowed to remain and serve as the workhorses of park safety, convenience and enjoyment.

### **To Bench or Not to Bench**

In the 1980s and 90s, when Baltimore's Patterson Park faced the problem of inappropriate use of benches, they were steadily removed until none were left. This supposed fix didn't actually meet park users' needs—to the contrary, when users were asked in a 1995 survey what would make a "big improvement" in the park, 56 percent said more benches. Now, with the revived park getting much more visitation, the benches are gradually being brought back. The benefits, according to Jennifer Robinson, director of Friends of Patterson Park, are striking. Patrons spend more time in the park, she says, and some are even putting the benches to use for strength-building. (That idea isn't unusual—there is even an exercise book on the topic, "101 Things to Do on a Park Bench.") Not only did removing benches fail to fix the park's problems, it actually did the exact opposite. Robinson feels strongly that the new benches were a factor in the park's comeback.

But simply adding more benches isn't enough.

"Benches have to be located thoughtfully," Robinson says. "They have to make sense with the flow of the park." This means in areas of high activity (such as near playgrounds or sports fields), along pathways and just inside park entrances. Putting them in well-trafficked areas helps ensure that they are used properly. There are now about 30 benches in Patterson Park—not enough, but an improvement.

Kansas City's McHenry is even more explicit when he thinks about users' needs. "Any feature that is traditionally put in a park, you're going to want a bench to go with it." In particular, he cites the need at dog parks (for owners to socialize), playgrounds (ditto, not to mention the quick snack or diaper change) and sports fields or game courts.

No one is anti-bench per se. The debate, says McHenry, is between those who see them more as an asset or a liability. Naturally, if there is a problem, remediation is preferable to removal, but the low cost of simply taking them out is often a lure for financially strapped park departments.

In Pittsburgh's Allegheny Commons, benches were removed from the central promenade because the community took issue with the noise and commotion that seemed to always hover around them. But, the problem may have been more due to layout. With the benches directly facing each other across the pathway, groups often gathered on each side, talking loudly across the distance and making walkers feel threatened and uncomfortable. But the loss from the removal was keenly felt and a new master plan calls for their restoration—this time in a new, staggered configuration that hopefully addresses the problem.

In the case of Norfolk, the city first thinned the surrounding landscape, hoping that would solve the problem. Other places, in order to prevent sleeping, purchase (or retrofit) benches with obtrusive armrests at appropriate intervals. Both approaches can help, although the only true fix comes from a culture of heavy use, proper utilization and the awareness that there are eyes on the park—including, every now and then, the eyes of rule-enforcing authority.

On the other hand, there are those who flat-out reject the idea that anything is wrong with lying on benches. Galen Craz, a professor of architecture at the University of California, Berkeley, and a founding member of the Association for Body Conscious Design, has published thoughtfully on both seating and on urban parks. She calls purposefully uncomfortable bench arm designs "really nasty," in part because she suffers from a back injury and primarily uses benches lying down. What she refers to as "healthy sitting" means no right angles—she herself finds it beneficial to stretch her spine in a supine position.

Beyond sleepers, benches face another nemesis: skateboarders.

“Oh yeah, skateboarding is an issue,” says McHenry. He feels the best defense is to provide official skate parks (which can even include bench-like shapes for aficionados). Kansas City has two; other places have many more—11 in Las Vegas, 13 in Sacramento. But skate parks are not inexpensive, plus some rebellious boarders will always attack benches because they’re convenient and they’re there. In Cincinnati the problem is compounded by the city’s many granite benches—the sharp edges are attractive to skaters and disastrous for the stone. Many cities, rather than removing the benches entirely, respond by installing iron studs on the seat edges, as Roanoke did in Elmswood Park.

### **Financial Bench Warmers**

Naturally, a lot of the struggle comes down to economics. While benches are cheaper than almost any other piece of park apparatus (including even trees), the cost of purchase, installation and maintenance still adds up. Steve Schuckman, superintendent of planning, design and facilities with the Cincinnati Park Board, says that buying and installing a practical, aesthetically pleasing and durable bench costs between \$1,500 and \$2,000, assuming it will last about 10 years. In Kansas City the standard design comes to about \$900. The 2002 master plan for Pittsburgh’s Allegheny Commons put the cost of modest benches at \$1,200 each.

And the price of the bench itself may be just a portion of the cost. Kansas City’s McHenry said his city has benefited greatly from installing lighting and sometimes even security cameras in parks. While expensive, he feels these measures have done a great deal to reduce bench misuse and ensure public safety.

One way to cover expenses is through an adopt-a-bench program. Flourishing in many cities across the United States, sponsorships take the shape of a small memorial plaque in return for the purchase, installation and maintenance of a bench. (Many park agencies or conservancies stipulate that the memorial lasts for either the lifetime of the bench or for a certain number of years, whichever ends first). The cost varies by city and by park, but is generally around \$2,000. In Austin, Texas, 11 of the city’s parks have already reached their bench donation limit. In New York’s Central Park, the Central Park Conservancy’s program (at

\$10,000 per bench) has yielded benefactors for more than 4,100 of the park's more than 9,000 benches.

Because of the popularity, some programs have had to institute rules. The Pittsburgh Park Conservancy gives wording guidelines, has a character count, and does not allow logos. "This program is a nice way to honor loved ones," says the conservancy's Susan Rademacher, "but if we have too many memorial benches, it may detract from the feeling that the park is a common space meant for everyone."

Some of the country's most famous park benches—even featured in the movie "Harry and Tonto,"—are located along the miles of greenery along the center malls on Broadway in Manhattan. Maintained by the Broadway Mall Association, their prominent location combined with "eyes on the street" have warded off unwanted behavior and made them particularly beloved in the community. For Kate O'Brien, development associate for the association, seeking bench sponsorships is a joy of her job. "Donors," she says, "always have a great story about their connection to the park. Something like, 'I've lived here for 40 years and always drink my coffee on this bench.'" The benches may have an association with an important moment or a special person, and O'Brien calls the program "a really good source of revenue." Of the 340 benches from 70th Street to 168th Street, 39 are adopted.

### **Bench Bottom Line**

So, what is to be done? Are park agencies simply doomed to be pummeled by anti-bench complainers and to then be criticized by outraged bench-lovers and park-lingerers when they remove the problem? Some cities have succeeded in saving their benches and maintaining parks that are safe and enjoyable for all, but it certainly requires creativity and resourcefulness, and of course no two cases are alike. Maybe Adrian Benepe, senior vice president of The Trust for Public Land and former commissioner of parks for New York City, is correct when he says, "It's like everything else—you don't know what you've got until it's gone." Or, maybe it's more alarming, as put by Tampa Parks Director Greg Bayor: "If you start removing benches then you're on the way to removing everything else too."



**SECTION VII**

**ENERGY**

# *People Power: How Residents of Northern Manhattan are Creating an Energy Revolution*

AURASH KHAWARZAD

*Originally published November 21, 2016 in Meeting of the Minds*

**T**he heat is on: This past July was the hottest month on record; the summer of 2016 was one of the five hottest the world has ever experienced. These trends have led President Obama to declare climate change a “terrifying” threat for humankind.

But, even as leaders take action, they have not done enough to address the issues of social inequality that make climate change a much more dangerous threat for the poor and working class.

Consider this: After Hurricane Sandy, residents of Battery Park City—where the average household income is over \$100,000—kept the lights on, thanks to their microturbines, solar panels, and combined heat and power systems. But those across Lower Manhattan in Chinatown and the Lower East Side—predominantly Asian-American and Latino neighborhoods where the average income is less than \$30,000—lost power for weeks. For people in those neighborhoods, climate disasters make the daily struggle to find work, transportation and quality healthcare even more challenging.

The disproportionate impact on low-income communities of color means that climate change is as much a political and economic challenge as it is an environmental one. That is why the people of Northern Manhattan—an area with a long history of environmental injustice—launched the Northern Manhattan Climate Action Plan (NMCA) in 2015.

Created in partnership with WE ACT for Environmental Justice, a local non-profit organization that works to empower residents to improve

their environmental conditions, the NMCA began with an intensive community-based planning process. That process produced a plan to help prevent climate change while building resilience to its impacts and addressing systemic inequality. The NMCA seeks to reduce energy costs and pollution from fossil fuels; protect communities from blackouts; and create economic opportunities for the underemployed.

At the core of the NMCA is the concept of “energy democracy,” which puts hard-hit communities at the center of the transition to renewable energy. Energy democracy encourages the development of locally-owned renewable power, which can reverse decades of underinvestment in low-income communities by helping retain energy-related investments and expenditures.

As WE ACT member Shaun Williams recently observed at a retreat of the New York State Energy Democracy Alliance, “energy is an intersectional issue that has an impact on the local economy and environment. The more that residents can be included in the process of planning and developing energy infrastructure, the more capital we can keep in the community and the faster we can implement environmental improvements.”

Energy democracy also enables residents to manage their own infrastructure and shape local environmental conditions. It invites residents to participate in making decisions that are best for their community—including identifying at-risk buildings and populations, and tapping into local talent and skills.

One of the NMCA’s key energy democracy initiatives is the construction of solar energy throughout Northern Manhattan. The potential is huge: In New York City, two thirds of buildings have roof space suitable for solar panels. According to one study, those panels could supply nearly half of current daytime peak demand, and 14% of the city’s total annual electricity use. Moreover, New York is one of the few states with a shared solar law, which allows renters and others living in apartments without roof access to generate their electricity from off-site solar installations.

The NMCA puts a priority on helping renters and public housing residents get access to solar power. To that end, community members are engaging in participatory research and developing their own enterprises to usher a new era of clean infrastructure for NYC. This includes

pooling their resources—such as rooftop space and funding—to build solar installations for at-risk populations.

By coming together to discuss their energy needs, residents of Northern Manhattan have developed a rich understanding of where energy democracy is needed most and how it can help transform neighborhoods. As a result, WE ACT is working with tenants to identify areas that are likely to flood and lose power during extreme weather, and initiating solar projects in those areas to lower costs and reduce dependence on the main energy grid.

WE ACT has conducted spatial analysis to help determine where investments can reap maximum environmental and social benefit. The images below show the vulnerable areas of Northern Manhattan. Areas such as East Harlem, West Harlem Waterfront, and parts of Inwood are exposed to sea-level rise, have a higher urban heat island (UHI) effect, and include higher numbers of people with low incomes who are dependent on public assistance.

And WE ACT is also working to expand access to job opportunities in the growing solar market. In 2005, there were only five solar installers operating in New York; last year there were 55, employing 2,700 workers. Those job opportunities could be made available for local residents if they had the skills and knowledge of the industry. By forming partnerships with organizations in NYC that provide education on solar engineering and installation, such as Solar One, WE ACT is building the capacity of residents to implement their vision of community resilience.

“Since the sun is free, it means we can cut out the middle-man and retake control of our energy system,” said Tina Johnson, a WE ACT member. “By making our energy system more democratic we can begin to deal with all the pollution we have had to experience over the years, and young people will have a career opportunity in a growing field that can make New York’s future brighter for everyone.”

Thanks to the work of WE ACT members and other community advocates, the first community-led solar installations in Northern Manhattan are being developed. It’s a first but important step towards power that is truly for the people. It also shows that communities can transform their energy systems, and take the lead in fighting climate change.

# *How to Get Solar Panels Onto More Affordable Apartment Buildings*

LAURIE MAZUR

*Originally published May 25, 2016 in Grist*

Solar power seems like the ultimate no-brainer. Free energy from the sun! And the cost of installing solar panels—like other renewables—has plummeted in recent years. Still, solar power has not yet penetrated one of the markets that needs it the most: affordable multifamily housing.

That could change, thanks to the advent of solar photovoltaic systems with backup battery storage (solar + storage). A new report, “Closing the California Clean Energy Divide,” shows how solar + storage can overcome technical and financial problems that discourage owners of affordable apartments from embracing solar. Coauthored by the California Housing Partnership, Center for Sustainable Energy, and Clean Energy Group, the report says solar + storage systems could nearly eliminate electric bills for owners of affordable apartment buildings in California. And those savings could—with the right policies and strategies—be passed on to tenants.

The first problem solved by solar + storage is the bane of all solar energy systems: night. We expect our electric meters to keep spinning along, even when the sun doesn’t shine. (This is the dreaded “intermittency” that challenges other renewable energy sources as well.) Solar + storage handily defeats this problem, by banking excess energy generated in the daytime to be used after the sun goes down.

In this way, solar + storage tackles another insidious problem: utility demand charges. These are fees that utilities charge commercial customers based on their highest peak power use during a billing period, and such fees can make up half of the electric bill for some apartment buildings. A stand-alone solar system without battery storage might not be able to shrink peak demand—because, for example, demand could still be high on a cloudy day. But solar + storage can reduce overall demand for grid

power and lower peak use, thereby helping some building owners avoid demand charges. And adding storage to a solar system isn't prohibitively expensive; it adds only about a third on top of the cost of stand-alone solar.

These cost savings also can hedge against future electricity price increases, which are poised to become a real problem. As solar gets big enough to threaten their bottom line, utilities are trying to roll back incentives like “net metering,” which lets solar-powered households sell their surplus energy back to the grid for a profit. Without those incentives, affordable housing owners who invest in stand-alone solar systems will see higher electric bills. But solar + storage can make the economics work better and bring more financial benefits to developers and tenants. “Installing solar without batteries is leaving money on the table,” says Lewis Milford, president of the Clean Energy Group and a senior fellow at the Brookings Institution.

There are other benefits, too. Solar + storage can make affordable housing more resilient. When the larger grid goes down, a solar system with battery backup can power life-saving services like water pumps, fire alarms, heating, and cooling. That means apartment dwellers can “shelter in place” during an emergency—which can be a lifeline for low-income residents, the disabled, and others who are vulnerable in times of disaster. And, of course, by reducing carbon emissions, solar power helps mitigate climate change, making disasters less likely for everyone.

So, is solar + storage the game changer that finally brings clean energy to the masses?

It certainly could be in California, where owners of affordable housing have many reasons to go solar. The state legislature recently established a groundbreaking Multifamily Affordable Housing Solar Roofs Program and earmarked up to \$1 billion in cap-and-trade funding over 10 years to incentivize solar installations on such buildings. But even in states with a less favorable regulatory climate, the benefits of battery storage may tip the scales in favor of solar for many building owners.

Still, if owners of affordable housing adopt solar en masse, will the cost savings get passed on to tenants? While the answers to that question are beyond the scope of “Closing the California Clean Energy Divide,” its authors suggest a few ways to make that happen—including a shared

savings model that ensures tenants get a portion of demand charge savings. The authors are planning a series of papers that will explore how additional benefits could be delivered to tenants.

“There are lots of ways to make sure that tenants benefit from solar in affordable multifamily housing,” says Milford. “But first, you have to make sure that the owners and developers want to install solar.” As this report makes clear, there has never been a better time to do so.

# *Oakland Rejects Coal Terminal, Sets Example on Climate Change*

LINDA RUDOLPH AND KEANAN MCGONIGLE

*Originally published July 11, 2016 in The Sacramento Bee*

Two weeks ago, the Oakland City Council unanimously voted to ban the handling and storage of coal in the city, quashing a proposal to build what could have been the largest coal export facility in California.

It was a remarkable display of leadership and foresight: Council members put the health and safety of their residents above the arguments of coal proponents and developers eager to profit from its export.

Council members saw through the argument that we must choose between good jobs and a healthy environment, an argument often used in poor, minority communities. “It is outrageous to me that when we start talking about jobs for African Americans, for low-wage workers, they’re the dirtiest jobs, the most risky jobs, the jobs that we have to pay for with our bodies and shortened lives,” said council President Lynette Gibson McElhaney.

Other council members spoke of the already high levels of asthma and heart disease in the disadvantaged West Oakland neighborhood that would have suffered the most ill effects of coal dust from the export terminal.

But they did not base their decision solely on local health impacts. Critically, they acknowledged the impact of coal exports on global climate change.

Whether it is burned in the U.S. or China, coal is the largest global source of carbon emissions. Climate change is causing heat deaths, asthma and heart disease from increased air pollution; displacement from flooding and sea level rise; rising food prices and food insecurity; water shortages; and conflict.

Emissions from the 9 million tons of coal a year that would have shipped from Oakland would have surpassed emissions from all five Bay Area oil refineries and constituted 0.6 percent of the world’s “carbon budget”—the amount of carbon pollution that can be released without causing catastrophic warming.

As Oakland has demonstrated, it’s time to take responsibility for the climate impacts of U.S. fossil-fuel exports. According to the federal Energy Information Administration, our nation exported 74 million short tons of coal in all of 2015, plus 4.75 million barrels of petroleum products daily.

A “not in my backyard” mentality has allowed us to persist in thinking that we do not have culpability for what happens when coal and oil exports are burned in China or Vietnam. But the reality of climate change is that regardless of where greenhouse gas emissions occur, the impacts are felt in our backyard.

Others must now follow Oakland’s lead. Every time local and state policymakers decide whether to allow the extraction, processing, transport or shipment of fossil fuels for use abroad, they must consider the climate change implications, both abroad and at home. Some communities will need help transitioning away from fossil fuel extraction and processing. But that is not a reason to forgo responsible decision-making to protect our health from the devastating risks of climate change.

# *Heat or Eat? New York Tackles Energy Costs and Climate Change*

JENI MILLER

*Originally published June 22, 2016 in The Energy Collective*

**H**eat or eat: that's the stark choice faced by many low-income families during cold New York winters, according to Scott Oliver of PathStone, a non-profit group in upstate New York. But that could change. In January, New York State Governor Andrew Cuomo launched a new \$5 billion Clean Energy Fund that will sharply reduce the state's greenhouse gas emissions while also lowering energy costs for low-income families.

Energy costs are a heavy burden for many: poor households spend more than three times as much of their income on energy as their wealthier neighbors, according to the American Council for an Energy-Efficient Economy. A home's energy efficiency—particularly in climates with extremes of very cold winters or very hot summers—is a key factor in energy costs.

Those costs weigh heavily on every aspect of life. Paying more for heat or cooling means less ability to buy healthy foods, pay for doctor visits, or cover other life necessities. Under-heated homes in winter can increase circulatory and respiratory problems, and produce anxiety and depression. Hot weather is no better, leaving people who can't afford air conditioning—particularly the elderly—vulnerable during increasingly frequent heat waves.

In New York State, a number of programs are now in place to reduce energy burdens for low-income renters and homeowners. There are programs that provide payment assistance with high energy bills, for example, and home weatherization programs. But currently, need far outstrips the supply. PathStone, for example, knits together grants and subsidies to

renovate homes for low income homeowners, often enabling people to stay in homes that might otherwise be condemned or uninsurable. But Oliver says, “The need is so huge. [We’re] doing 10 houses a year here, 10 houses a year there. There are 90,000 houses in the city of Rochester. Even if we only had to work on a quarter of them that’s over 20,000 houses.”

To address these problems, the Clean Energy Fund seeks to unleash a wave of innovation and cross-sector collaboration. A design competition will mobilize ingenuity in the manufacturing and construction sectors to bring down the cost of “deep energy retrofits” (energy use reduction of roughly 70%) for multi-family affordable housing. With 1.7 million units of such housing across the state, the size of the market should create a business opportunity for manufacturers and contractors.

Financial incentives are important. That’s why the Fund is developing new mechanisms for property owners to receive a return on their investment in energy retrofits, while low income residents benefit from lowered electric bills. Also in the works: financial and insurance instruments to help low- and middle-income homeowners pay for energy retrofits and renewable energy projects, and mechanisms that give utilities a stake in promoting energy efficiency.

New York is exploring how the health sector can get involved, given the health benefits of improved housing and reduced energy burdens. Collaboration among affordable housing providers, community developers, utilities and low income service providers will also be key.

The Fund’s energy efficiency measures will reduce greenhouse gas emissions by lowering demand for energy in New York State. And the Fund targets the energy supply as well, with financing and incentives that seek to shift half of the state’s production to renewable energy sources—including solar and wind— by 2030.

New York’s Clean Energy Fund was inspired by the EPA’s Clean Power Plan (CPP), which requires states to reduce greenhouse gas emissions from the energy sector to mitigate climate change. While the federal law is tied up in litigation and some states have put implementation on hold, New York is among a handful of states that are moving decisively ahead to reduce carbon emissions.

New York is showing that cutting carbon emissions doesn't have to hurt. In fact, by improving energy efficiency and lightening the energy burden for low-income families, these measures can substantially improve the lives of the most vulnerable people. "Heat or eat" is a choice no one should ever have to make.



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