

RIVER VOICES

CLIMATE CHANGE

Building Resilience at the Water's Edge

July 2016 Issue

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MISSION, VISION, AND FOCUS

River Network empowers and unites people and communities to protect and restore rivers and other waters that sustain all life. We envision a future of clean and ample water for people and nature, where local caretakers are well-equipped, effective and courageous champions for our rivers. Our three strategies for focused investment are strong champions, clean water, and ample water.

IN THIS ISSUE

Earlier this year, an entire community began the process of relocating as a result of climate change. Touted as our nation's first climate refugees by the [New York Times](#) and others, members of southeastern Louisiana's Native American tribes will no longer be able to call the Isle de Jean Charles home. Their land will soon be under water.

The term 'climate refugees' has been used by the press and the international community for over ten years to denote the loss of islands and sometimes entire island nations to sea level rise. The reality is that climate change has already brought not only sea level rise but also harsher droughts, larger floods, stronger storms, and reduced freshwater supplies with greater regularity to people and communities around the world and across our country.

Aren't those who lost their homes as a result of Hurricanes Katrina and Sandy or those with poor drinking water due to groundwater withdrawals in California's Central Valley also climate refugees? And the impacts of these events are disproportionately experienced by those who are most vulnerable. We encourage you to examine this reality carefully.

As we face a future with more extreme events, we can expect more people to become climate refugees. What are we going to do to prepare our communities, to help reduce the risk to the most vulnerable, and build back into our ecosystems the ability to absorb the impact of these changes? Can we have both healthy rivers and resilient communities? The articles in this quarter's *River Voices* explore these challenges from a variety of different perspectives. Imagine what might be possible where you work and live, and dive into the references listed to learn more.

A FEW OTHER ANNOUNCEMENTS FROM YOUR FRIENDS AT RIVER NETWORK:

- Check out our new [science module](#) about water security and environmental flows
- Submit a workshop proposal for [River Rally 2017](#) starting July 18, 2016
- Get your [local event listed](#) on our website
- Support our work by [donating](#) and [becoming a member](#) of River Network

Nicole Silk, President
River Network

BUILDING CLIMATE RESILIENCE AT THE WATER'S EDGE

by Rebecca Wodder, River Network Vice Chairman of the Board and Former President of American Rivers

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](#), Robert Putnam documents the decline of social capital in America over the past 50 years. In a subsequent search for places where trust

and a spirit of cooperation were increasing community resilience and wellbeing, Putnam pointed to Portland, OR, and specifically, a place called Johnson Creek. Decades of devastating flooding had made the creek a recurring nightmare for residents. Nevertheless, nearly 50 government-generated flood control plans over a 50-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 U.S., aging infrastructure, inequitable

economic opportunities and environmental injustices undermine progress at every turn, as we have seen most recently and tragically in Flint, MI.

With freshwater protection as its primary mission, River Network assists the 2,000 plus nonprofit organizations working on water issues in the U.S., many of whom are working on the water-climate interface. 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. Though they are in greatest need of climate resilience, they are least able to prepare for or avoid climate impacts — or even a climate catastrophe. These communities 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.

This article was produced as part of the Island Press Urban Resilience Project, with support from The Kresge Foundation, and originally posted online on [Water Online's website](#) on March 23, 2016. Reprinted with permission.

LEARN MORE:

- [A Community Approach to Climate Resilience](#) by Rebecca Wodder
- [Social Cohesion: The Secret Weapon in the Fight for Equitable Climate Resilience](#) by Center for American Progress
- [Resilient Midwestern Cities: Improving Equity in a Changing Climate](#) by Center for American Progress
- [Bounce Forward: Urban Resilience in the Era Of Climate Change](#) by Island Press and The Kresge Foundation



FRESHWATER PROTECTION

Factoring Climate Change Volatility into Your Work
by Lois DeBacker, The Kresge Foundation

Melting glaciers, submerged coastal towns and raging Western forest fires may be the poster children for climate change, but the implications for public health, social justice, the economy, and fresh water ecosystems are equally grave.

Dedicated defenders of our nation’s rivers and lakes recognize that these systems are facing – and will increasingly face – new stressors and pressures as the planet grows hotter. Those impacts already are altering natural systems that protect, enhance, and restore freshwater resources. That’s a disturbing problem, as fresh water is critical for healthy communities, thriving economies and, ultimately, life on Earth itself.

WHAT’S AT STAKE

Consider for a moment that **only 3 percent of the planet’s water is fresh water** and most of that is inaccessible. More than 68 percent is locked in icecaps and glaciers and 30 percent is groundwater. Only about 0.3 percent of our fresh water is at the surface, primarily in wetlands, lakes and rivers.

That tiny percentage is under constant assault. Massive, toxic algal blooms in Lake Erie have fouled beaches and forced shutdowns of drinking water systems. Invasive plant and animal species are wreaking havoc on aquatic ecosystems throughout the country. Sedimentation from urban and rural runoff has degraded streams and rivers.

THE THREAT MULTIPLIER

Now, add climate change to this mix. It serves as a “threat multiplier” – essentially a force that turbocharges the rate and impact of harmful stressors that are already affecting our lakes, rivers and streams. Climate change will worsen the frequency and intensity of:

- Combined sewer overflows
- Nutrient pollution
- Surges in flow during downpours
- Withdrawals due to drought
- Risks from unstable dams and other structures
- Erosion and shoreline damage
- Flooding

Properly stewarding freshwater resources in this era of climate change requires understanding and preparing for the anticipated effects on the resources you’re working to conserve and restore. The old method of relying on historic data to predict the variability of precipitation, temperature and flow is no longer valid. The range of future conditions has become more volatile and hard to predict. But we can make some educated assumptions and take responsible, common-sense steps to anticipate and respond to these impacts.

Perhaps ironically, the need to prepare for the impacts of climate change has become another compelling argument for river protection work. Healthy rivers and the wetlands and floodplains associated with them become even more important in a climate-changed world where their capacity to absorb and store water and provide protection from storm hazards will be increasingly in demand.

So how should organizations incorporate climate change into their freshwater-ecosystem protection work?

CLIMATE CHANGE AS A LENS FOR YOUR WORK

Rather than view climate adaptation as an entirely new line of work, view it as an

additional lens to apply to your programs and initiatives. That is, begin to mainstream consideration of climate change into each program and initiative within your organization.

Many, if not all, river protection groups base their work on sound science. What does the science say about the anticipated impacts of climate change in your region or ecosystem? What do those data suggest needs to be approached differently to keep a river system healthy and improve its resilience as climate change progresses? The answers may be elusive or complex. Look for help – partner with other groups or individuals who may already have done work or research that is useful. Consider reaching out to peers in the River Network community who have incorporated climate change into their work. Those include American Rivers, Freshwater Future, the Huron River Watershed Association, and The Nature Conservancy, among others.

You'll never have all the facts, but don't let "the perfect" be the enemy of "the good". The important thing is to get started if you have not already – to begin to systematically understand how conservation efforts are likely to be affected by climate change and how your work can contribute to both climate preparedness and climate change mitigation.

THE CLIMATE QUESTION

At The Kresge Foundation we call that "asking the climate question." At this point in time, climate change mitigation and adaptation are both critical. Kresge encourages people to examine how their proposed efforts affect both mitigation and adaptation. The two-part climate question involves asking:

- First, are the greenhouse gas implications of my proposed project or action positive or negative; that is, do they contribute to making climate change better or worse? How could my proposed project be designed to be more climate beneficial?
- Second, how will climate change affect the viability or durability of my proposed project or action? Has it been designed with the future impacts of climate change in mind? Also, how might its design or implementation contribute to beneficial climate change adaptation?

Incorporating queries like these into freshwater work will help plant the climate change flag into each project or proposal early in the game, and allow advocates to more effectively shape strategies to contribute to climate adaptation and mitigation.

FUNDING YOUR CLIMATE WORK

While few foundations at this time have climate adaptation as an explicit part of their guidelines, funders are increasingly seeing the relevance of climate change to their work. As you seek funding for your work, consider building into your requests activities that allow you to explore the climate change implications of your projects. Given climate change is part of the context for your work, applying that lens may be well received.

Use of green infrastructure for stormwater management – as one example – is a topic of increasing interest among funders across the nation, and most of them understand the relevance of climate change to that work. Consider the appeal a municipal green infrastructure project that simultaneously reduces the heat island effect, includes a publicly accessible park to fulfil recreational needs and creates local maintenance and upkeep jobs for low-income residents in that community. Factoring climate change into the design of such projects is an increasingly effective strategy, as is using green infrastructure to solve for multiple problems.

GET STARTED

Make no mistake, climate change is a massive, global challenge. It can be daunting for nonprofits and other organizations to determine how to best incorporate climate change strategies into their work. But there is no time to wait. Get started. Get moving. Get going!

LEARN MORE:

- [Climate Adaptation Knowledge Exchange](#) by EcoAdapt
- [Georgetown Climate Center](#) by Georgetown Law
- [National Adaptation Forum](#) by EcoAdapt



CLIMATE CHANGE ACTION

Lifting Up Solutions

by Jainey Bavishi, White House Council on Environmental Quality

Princeville, North Carolina, is a town where history and a changing climate converge to create major issues of inequity. At the end of the Civil War, freed slaves purchased low-lying plots of land in the Tar River floodplain and Princeville became the first municipality in America fully incorporated by former slaves. Due to the geography of the land, the small town of Princeville, North Carolina, which is 95% African American and has a per capita income that is less than half of the national average, has historically experienced one devastating flood after another, displacing families and wreaking havoc on homes. In fact, in 1999, Hurricane Floyd dumped 20 inches of rain onto Princeville, leaving the town under water for 11 days.

Tragically, Princeville's story is all too familiar. The images of Princeville in 1999 look eerily similar to those of New Orleans in 2005 in the wake of Hurricane Katrina, where historically, poor communities and communities of color have settled in the least desirable areas, such as swamps and marshes in the lowest-lying areas of deltas, which are now at the highest risk in the face of climate change.

It is clear that climate change is already impacting our rivers and river communities. Prolonged droughts, increased storms, floods, and waterborne diseases threaten communities located on the banks, but as we have seen across the U.S., these impacts are not equally shared. Study after study confirms that without proactive action, the impacts of climate change will continue to wreak havoc on historically disadvantaged or vulnerable communities.

TAKING ACTION

Under President Obama's leadership, this Administration has taken unprecedented action

to better prepare communities across the country for the increasingly destructive impacts of climate change and we are committed to continuing to respond in a way that makes equity a priority. By working hand-in-hand with local leaders, we can lift up solutions that work and learn from communities on the front lines.

As called for in the President's Climate Action Plan, in 2013, the Administration established the State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience to develop concrete actions that the Federal government can take to support communities nationwide. One of the things the Task Force consistently prioritized is the need to modernize our existing programs to consider climate impacts.

In response, the Department of Housing and Urban Development (HUD) developed the National Disaster Resilience Competition to invest in innovative local solutions. In January, the competition awarded 13 states, counties and cities a combined \$1 billion to support resilience activities in low- and moderate-income communities, including coastal protection, storm water management, relocation assistance for the most distressed communities, and job creation through adaptation.

FEDERAL SUPPORT FOR RESILIENCE

One of the winners is Minot, North Dakota. Located on the banks of the Souris River, Minot experienced severe flooding in 2011 due to heavy snowmelt and precipitation, damaging close to a third of the area's homes and resulting in major losses of crops and cattle. With two-thirds of the city making less than the national median income, Minot is using the grant from the National Disaster

Resilience Competition to take action to prepare for future flooding with a series of integrated approaches that will enhance the community's environmental, economic and social resilience. For example, Minot's plan includes strategies such as open space restoration, buyouts, and family evacuation shelters.

Minot is also among the first ten cities across the country to host members of the Resilience AmeriCorps program, another recommendation of the Task Force, to boost capacity and provide technical assistance to advance climate preparedness in communities that are most in need. Through their work, the Resilience AmeriCorps members will create long-lasting networks of citizen volunteers to manage new parks and greenways that may be created as part of their ongoing flood mitigation strategy.

While these efforts are important steps in the right direction, we know that the Federal government can't do it alone. We must work together across different levels of government and across sectors to advance climate equity, and river groups are important partners due to the risk that rivers pose to vulnerable populations.

WHAT YOU CAN DO

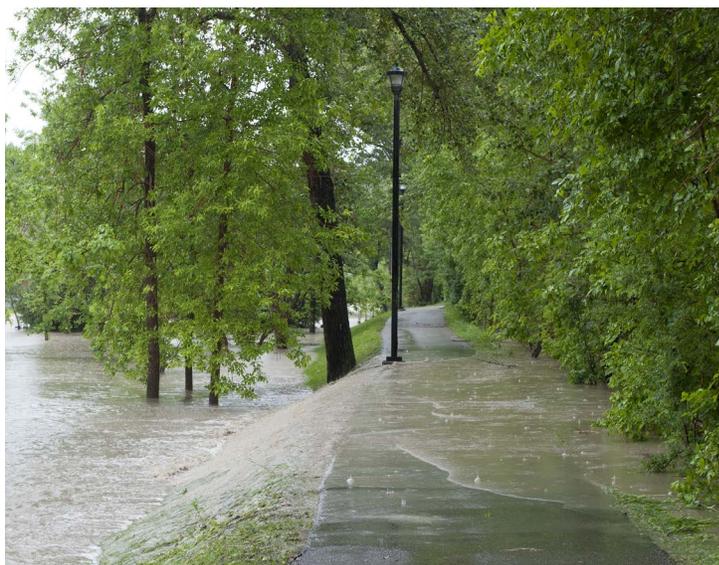
River groups can help vulnerable communities understand their risks and prepare through training and information. Your organizations can play an important role in connecting with local governments, emergency managers, and residents to communicate the vulnerabilities your communities face, not just related to floods but also droughts – including how these risks may be exacerbated by climate change. One Federal resource for this type of engagement is through Federal Emergency Management Agency's PrepareAthon program, an excellent resource for learning about risks and making a preparedness plan. You can either host a preparedness event in your community or plug into existing community events, such as city council meetings, faith-based events, or school events.

Another way river groups can contribute is by engaging and empowering vulnerable communities in all aspects of your existing work. River groups recognize the important benefits that riparian ecosystems provide to water quality and the overall health of river systems, but these areas also play a critical role to downstream, low-lying communities, for example, by slowing the flow of water after a storm. As your organizations tackle projects on ecosystem restoration, engage vulnerable communities, understand their needs, and embed their input into the project design. It is also critical to realize the important co-benefits of our environmental protection and conservation actions to enhance the resilience of our communities and economies.

River Network provides an important venue to share and lift up solutions that are working and connect with other partners. With focused effort, we can work to stop the devastation of the floods in Princeville, New Orleans or Minot from happening again – anywhere.

LEARN MORE

- [America's PrepareAthon](#) by the Federal Emergency Management Agency
- [State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience](#) by the White House Council for Environmental Quality



GENTILLY RESILIENCE DISTRICT

Thriving in a Changing Environment
by Charles Allen, City of New Orleans

New Orleans is seeing exciting progress toward a more climate resilient future. The City of New Orleans recently participated in the U.S. Department of Housing and Urban Development's (HUD) National Disaster Resilience Competition (NDRC) and was awarded a grant earlier this year to create the city's first comprehensive resilience district. The result, the Gentilly Resilience District (GRD), is a combination of efforts across the city's Gentilly neighborhood to reduce flood risk, slow land subsidence, and encourage neighborhood revitalization.

The city's first ever Resilience District was created in part to leverage existing projects and investments already underway in the area to create even greater neighborhood benefits. Some of the already successfully piloted projects are funded by sources such as the FEMA Hazard Mitigation Grant Program (HMGP) and HUD Community Development Block Grants (CDBG). Future GRD projects will use these projects as a launching platform and will employ innovative and creative approaches to water and land management so that people, culture, and infrastructure can thrive.

RESILIENCE GOALS

The projects of the GRD will seek to provide multiple solutions and address complex issues such as crumbling streets, overburdened drainage systems, and sinking soils. For this reason, GRD projects will take place in streets, in neutral grounds (median/right of way), in parks, on schoolyards, on open lots, and even at individual homes. The projects are designed to reduce risk from flooding and subsidence by creating spaces to capture rainwater in the urban landscape. They are designed to beautify neighborhoods, improve health, and provide opportunities for recreation.

The City is working with numerous partners such as the New Orleans Redevelopment Authority (NORA) and Sewerage & Water Board of New Orleans (SWBNO) to leverage existing investments in Gentilly and build on the experience of relevant pilot projects—from rain gardens to education programs—throughout the city. For example, in the Pontilly and Pontchartrain Park neighborhoods, a project is being designed to combine improvements to a depressed land area known as the Dwyer Canal. A network of water management interventions will be implemented along streets, in alleyways and within vacant lots to slow and store stormwater. These strategies are designed to reduce the burden on the traditional underground drainage system, reduce land subsidence and improve water quality while also beautifying the overall neighborhood.

Historically, the Dwyer Canal represented a dividing line between the white neighborhood of Gentilly Woods and the African-American neighborhood of Pontchartrain Park.



Pilot Rain Garden in Gentilly. Photo source: City of New Orleans

Going forward, a land area that once represented division between neighborhoods will serve to unite the neighborhoods in a very meaningful way. The project will also provide opportunities for community education and enhanced recreational activities. When all the elements of a neighborhood are working together to reduce risk and enhance development potential, they are adapting to thrive.

FUNDING AND PARTNERSHIPS

New Orleans was awarded more than \$141 million through NDRC to implement elements of the GRD project proposal. New Orleans is one of only 13 out of 67 eligible applicants to be awarded funding and the award is the second largest nationally. The exact project designs and budgets are yet to be determined and are subject to the City's negotiation with HUD, but each project within the GRD will have its own timeline, with overall construction and implementation scheduled for 2017-2022.

THE FUTURE: LIVING WITH WATER

The GRD project represents a shift in thought and practice in terms of what we do and how we live relative to water management. The project further represents the critical lessons learned since Hurricane Katrina. The overall shift in thought is best summarized by the overall descriptive of living with water. The various project ideas and elements of the GRD will have positive replicable implications for what can and should be done throughout all of New Orleans, across the region, and across the country to adapt to thrive in a changing environment.

LEARN MORE

- [Resilient New Orleans Strategy](#)
by City of New Orleans
- [National Disaster Resilience Competition](#)
Press Release by City of New Orleans
- [Green Infrastructure in New Orleans](#)
Video by Resilient NOLA

CLIMATE CHANGE IMPLICATIONS FOR ENVIRONMENTAL POLICY

by Katherine Baer, River Network

With predictions of more intense storms and droughts, sea level rise and increased pollution concentrations in different parts of the country at different times, what does it mean for how we implement the **Clean Water Act** and other environmental laws? A discharge permit is based on certain assumptions about historic average low flows; wetland permitting is based on where wetlands are today (and that will change); and Total Maximum Daily Load cleanup plans are based on assumptions about rainfall, runoff and flow as well. Given the uncertainty associated with the effects of climate change, how should climate change be incorporated into permits, infrastructure investments and other programs?

In addition to the efforts underway to address planning for community resilience described in other articles here, there are similar efforts to factor climate into environmental policy. EPA's Office of Water published a Climate Adaptation Plan in 2014 that highlights a number of priority actions including integrating climate into water program planning and working with utilities at risk of inundation from storm surge. In the Pacific Northwest, EPA worked with partners to determine how climate change should be considered in a Total Maximum Daily Load cleanup plan for temperature to protect salmon in the [Nooksack River](#).

Legal action under the Clean Water Act is also forcing consideration of climate change in some waters like in Vermont's Lake Champlain. There, the Conservation Law Foundation successfully made the case that climate-driven changes in precipitation had to be considered as part of the model for how much nutrient pollution will reach the lake to more accurately create an effective cleanup plan. Under Endangered Species Act litigation to protect [Snake and Columbia River salmon](#), a federal court recently ruled that the agencies restoration plan was a failure, in part because it failed to take climate into account when considering options for managing or removing a series of dams. Already, many [water utilities](#) are considering climate in their planning.

Climate impacts are not easy to model at a very local level, but given the uncertainty and changing baselines with rainfall, streamflow, drought and sea level rise, the climate adaptation question must also include how our policies and regulatory programs need to adapt.

LEARN MORE

- [Understanding Climate Impacts on Water Resources](#) by EPA
- [Climate Adaptation Plan](#) by EPA Office of Water
- [Using Legal Tools to Protect Lakes and Rivers from Climate Impacts](#) by Freshwater Future
- [Climate Ready Water Utilities](#) by EPA

COMMUNITY RESILIENCE BUILDING

An Inclusive Approach

by Adam Whelchel, *The Nature Conservancy*



Over the last 25 years I have undergone a very fundamental professional transformation. When I emerged from a community ecology academic track, I traveled to great lengths to work with ecosystems unencumbered by the pressures of humanity. My work took me to far away rocks in the ocean to study seabird-fisheries interactions; to unspoiled grasslands and vernal pool complexes in hopes of unraveling the intricacies of pollination biology; and to isolated stream networks where unfettered flow and connectivity were givens. It wasn't until I was embedded with the Green Belt Movement in Kenya in hopes of establishing an integrated watershed management program, that this focus began to unravel.

THE BALANCE BETWEEN NATURE AND PEOPLE

No matter how far I traveled or what system I studied, the conservation strategies ultimately became all about people. My experiences overseas in developing countries as well as working on community resilience building in the U.S. awoke within me an absolute truth: conservation is very much about single species management; that would be us, as human beings. It is now clear to me that it is not just about watershed connectivity and flow regimes; it is also about abundant and clean water sources for resilient, vibrant, and sustainable communities of people.

This clarity highlights the fact that natural resources are not equally distributed. There exists less than equitable access to critical needs such as clean water, not only in the developing world but right here at home in the U.S. My focus has now become about the balance between nature and people.

WHY RESILIENCE?

This transformation has been reinforced through diverse community resilience building efforts. A decade ago, I began working with coastal and inland groups within and across watersheds on community resilience building. At the time, the topic of sustainability was much more widespread than resilience. The world, it would appear, is now waking up to the reality of today and the implication for tomorrow, resulting in a palpable desire to become more resilient. Resilience as defined here is the notion of becoming better able to respond to and grow from routine and extreme weather events as well as climate change.

The ultimate gain for this conservation shift is greater awareness and respect amongst communities for the protective services and co-benefits of intact and viable natural systems that, yes, provide habitat and a nice place to paddle but, more importantly, serve to protect people, property, and places.

CHALLENGES AND RISKS

I have had the distinct privilege to work with more than 35 communities on reducing risk and improving resilience. Through this work, I have found that in all communities (big and small) there are shared challenges and risks when considering routine and extreme weather events and the longer term implication of climate:

- Critical infrastructure and resources (water, waste, transportation)
- Housing stocks and tax base
- Health and safety of residents

- Public amenities like parks and open space, natural infrastructure (floodplain forests, beaches/dunes, wetlands, etc.)
- Business continuity
- Economic growth and development
- Cultural identity

Often the most underappreciated risks are cultural losses that can disrupt the very social connectivity and flow (i.e., fabric) that make a community what it is and shape what it will become. All of these elements of risk for communities are of course inter-related and require a “systems within systems” thinking – which is quite a natural mindset for ecologists and watershed practitioners. [The Community Resilience Building](#) system can be used to comprehensively reduce risk and improve resiliency across these connected challenges and risks for all hazards at multiple scales.

WHY IT WORKS

Thirty-five communities use the Community Resilience Building system, which allows community members to develop a prioritized resilience action plan in a collaborative and inclusive manner. It is not about following a menu or living up to some other group’s script, it is about communities building and implementing what works for them. The most powerful aspect of the Community Resilience Building system is that it captures

a comprehensive perspective on strengths and vulnerability and provides all those present a voice in shaping their community’s future; including the marginalized or disadvantaged groups within a community.

OBSTACLES

One of the concerns when addressing community resilience is that the challenges within a community are not really shared – there is often an equity divide that requires sensitivity, respect, as well as directness during both planning and action. Typical emergency planning and responses are effective at considering ways to distribute critical resources to all people in need; however, very few communities are currently considering resilience in ways that incorporate distinctions between equality and equity. Consequently, expectations about a community’s ability to cope and grow from even routine events (heat waves, torrential downpours, wildfire) are often unrealistic. Without the recognition that resilience requires a process to capture and empower the “whole” community, informed by “all” voices, the vision of true community resilience building will not be obtained.

The Community Resilience Building system allows for the recognition that there are pre-determined and static attributes of marginalized groups (i.e., age, gender, race, etc.) that must be incorporated as well as flexible or non-static conditions (i.e., environmental quality,



(L) Teaching Integrated Watershed Management in Kenya. (R) Community Resilience Building Workshop Dialogue. Photo source: Adam Whelchel

wellbeing, health and safety, culture, etc.) that must be advanced. Ultimately, community resilience building is about creating irresistible and sustained momentum through collaborative and routine action over time with the “whole” community represented by “all” people.

TRANSITIONING TO COMMUNITY RESILIENCE

If you choose to transition to community resilience builders, there is a need to recognize these distinctions and broaden stakeholder lists so as to elevate the disadvantaged and marginalized groups within your community and across your watershed. Resilient communities of people will make for more resilient watersheds that respect the protective services and outstanding co-benefits of natural places like floodplain forest and wetlands.

The tough part for most natural resource managers and watershed practitioners is recognizing that the real concern for many communities is often not habitat, but rather the protection provided to people, property, and the cultural fabric of a community. By leading with notions of protection and safety, natural resources transform into “natural infrastructure” and ultimately stand a much better chance of being mainstreamed as legitimate community assets that need to be supported, expanded and maintained.

Disadvantaged and marginalized peoples are often concentrated in low lying, flood-prone areas and in many cases stand to benefit the most from the recognition of natural infrastructure as a cost effective means to obtaining community resilience.

For further inspiration look no further than River Network’s 2016 Trends Report where the following words summarize the need: “... with focus, determination, and humility, together we can do more to support a future of clean and ample water for all people, led by all people.” Come on in, the waters of inclusion are resilient and rewarding!

LEARN MORE

- [Community Resilience Building](#)
- [Coastal Resilience](#) by The Nature Conservancy
- [Equity in Resilience Building for Climate Adaptation Planning Report](#) by NAACP
- [Equity in Resilience Building for Climate Adaptation Planning Blog](#) by NAACP
- [2016 Trends Report “Our Water, Our Future: State of River and Watershed Protection”](#) by River Network



Community Resilience Building Workshop. Photo source: Adam Whelchel



MISSION, VISION, AND FOCUS

River Network empowers and unites people and communities to protect and restore rivers and other waters that sustain all life. We envision a future of clean and ample water for people and nature, where local caretakers are well-equipped, effective and courageous champions for our rivers. Our three strategies for focused investment are strong champions, clean water, and ample water.

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