



**Great Cities
Institute**

**Climate Justice
Meets Global Health
in the Time
of COVID-19**

Published May 2021

**THE
UNIVERSITY OF
ILLINOIS
AT
CHICAGO**



Great Cities Institute

Land Acknowledgment

The University of Illinois at Chicago resides on the traditional territories of the Three Fires people—the Ojibwe, the Odawa, and the Potawatomi—purchased after two and a half years of open warfare, decades of violent encroachment, and the defeat of a pan-American Indian movement to keep settlers out of the Great Lakes region at the Treaty of Chicago in 1821. They received their final payment before moving westward in 1835. The area was also a site of trade, gathering, and healing for more than a dozen other native tribes. The State of Illinois is currently home to more than seventy-five thousand tribal members, and the Chicagoland area is currently home to one of the largest and most diverse urban native communities in the United States. Illinois is also the territory of Menominee, Ho-Chunk and the Miami, and their descendants. By making a land acknowledgment, we recognize that indigenous peoples are the traditional stewards of the land that we now occupy. They lived here long before Chicago was a city and still thrive here today. As we work, live, and play on these territories, we must ask what we can do to right the historical wrongs of colonization and state violence and to support indigenous communities in their struggles for self-determination and sovereignty.

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Climate Justice Meets Global Health in the Time of COVID-19

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Online Webinar:

Climate Justice meets Global Health

in the time of COVID-19

THE UNIVERSITY OF
ILLINOIS
AT CHICAGO



Monday
May 4
2020
1 p.m.
to
3 p.m.

Zoom Webinar
Please RSVP at
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to receive the link
to participate.

Convened by
UIC Great Cities Institute
UIC Center for Global Health

Generously supported by
The Sawyer Seminars fund
of The Andrew W. Mellon
Foundation and the
Warren Lavey Family
Charitable Fund

This forum will bring together stakeholders that focus on the climate justice dimensions of climate change (environmental and economic justice with an ethical/political dimensions) and global public health (health conditions related to injury, non-communicable disease, communicable diseases) and identify intersections as they relate to issues of equity, justice, risk reduction and making cities resilient. The forum will tackle the following issues:

1. The health impacts of climate change with an emphasis on disparities in the burdens for disadvantaged populations - the climate justice aspect. While much of current discourse has been focused on the sea level rise, this forum will broaden the conversation to highlight issues of heat and drought, forced migration and associated public health impacts. The forum will pay particular attention to COVID-19 and how the spread of the viral pandemics, including this one, is related to climate change.
2. What this means for public health organizations and services in areas that are directly impacted by these events. This issue is compounded by the lack of resources in the parts of the globe where the problems are most severe.
3. What are the global impacts because of climate migration, or the demand for regional or national resources to meet needs related to climate impacts?
4. What this means for participatory processes, be it for public health planning or broader democratic processes, in identifying priorities, appropriate representation and national sovereignty issues. What is the role, for example, of advanced nations and other stakeholders, including environmental justice organizations, in shaping public policies to address these issues?
5. With climate change induced drought and increasing pressures on fresh potable water, the importance of the Chicago region requires public policy preparation. What role do we all have in bringing attention to these critical issues? What might UIC, as the major research public university in the largest city in a clean water rich area, be doing to drive research and the discourse on action related to the intersection of climate justice and global health, particularly given its current prominence in the area of global health.

Keynote Speaker

Jonathan Patz, MD, MPH
climate change health scientist
Director, Global Health Institute
University of Wisconsin-Madison

Panelists

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environmental and social justice policy organizer
Policy Director,
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Director of Health Systems Development,
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Teresa Córdova, PhD
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Introduction

Finding Solutions: Urgent Intersections of Climate Justice and Global Health in Times of COVID-19

Teresa Córdova, PhD, and Janet Lin, MD, MPH, MBA

The discussion of the intersection of climate justice and global health is an urgent one, all the more so in the time of COVID-19. In May 2020, the UIC Great Cities Institute and the Center for Global Health convened a panel of experts, including academics, practitioners, and activists across fields and geographies to shed light on the circumstances of COVID-19 and to present solutions for a better, just world after the pandemic. Crises also create windows of opportunity, and as we move forward in a world with or without COVID-19, we must seize any and all opportunities to create the future that we want to live and have, moving past previous constraints.

So many of us in this past year, since the first reports in January of the emergence of a virus in Wuhan, China, have experienced time in surprising ways. As COVID-19 traveled across the globe and arrived in our communities and homes, time has moved both at light speed and at a snail's pace. In May 2020, many Americans had just received \$1,200 stimulus checks from the federal government. For many low-income families, those checks were not enough. Many working families in the United States, particularly immigrant families, did not qualify to receive them. Also in May 2020, the federal government announced Operation Warp Speed, a public-private initiative with the sole focus of COVID-19 vaccine development and distribution.¹ In May 2020 we had just adjusted perhaps to our new vocabulary of *quarantine* and *shutdown*, *flattening the curve*, *social distancing*, and *masking*. At the time of this conversation, more than 74,000 people in the United States had died of COVID-19, and 255,000 people worldwide.

When this report is being put together in May 2021, more than 582,037 people had died of COVID-19 in the United States, and more than 3.3 million people worldwide.² Doctors, nurses, and hospital staff were among the first to have been vaccinated starting in January, as well as many people in long-term care facilities, and seniors and front-line essential workers—teachers, caregivers, delivery people—were eligible as well. Since then, many more in the population have been vaccinated. Despite vaccine advances, COVID-19 is still in our midst. Various strains of the virus have emerged in the past months, ones that are more contagious and possibly more devastating. COVID-19 is likely to be with us far into the foreseeable future.³ So even though scientists around the world have come together to make such impressive advances, we still find ourselves in very difficult, very tough times.

In mid-2019, Dr. Janet Lin, an emergency physician by training, on faculty at the University of Illinois at Chicago's School of Public Health and College of Medicine and part of the Center for Global Health at UIC, organized a panel on global disaster risk reduction and the public health aspects of disaster response.⁴ The panel tackled several questions: How can people in the field of public health recognize existing vulnerabilities and identify strategies to overcome them? How can they also engage specific communities and the broader population around potential solutions to and awareness about those vulnerabilities? The panelists discussed components of disaster risk reduction, and its intersections with other disciplines and with the private sector. Janet Lin and Teresa Córdova, Professor of Urban Planning and Policy in the College of Urban Planning and Public Affairs and Director of the Great Cities Institute, sought to continue the conversation by exploring how global health and health care intersect with climate change and climate justice, environmental impacts, and industry. The emergence of the global pandemic made it very clear that this discussion needed to also incorporate the COVID-19 response into its focus on climate justice and global health.

1 By late 2020, when vaccines became available, a distribution plan was still not in place.

2 Numbers of COVID-19 deaths in the United States and around the world are from the online database Our World in Data, available at <https://ourworldindata.org>.

3 Emily DeCiccio, "New Covid Strains 'May Even Escape the Immune Response,' Says Biden Covid Advisor," CNBC, February 4, 2021, https://www.cnbc.com/2021/02/04/biden-covid-advisor-new-covid-strains-may-escape-immune-response-.html?__twitter_impression=true&recirc=taboolainternal.

4 "A Global Perspective of Disaster Risk Reduction (DRR) to Promote Community Resilience," with Janet Lin (Professor of Emergency Medicine and Community Health, UIC), Thomas D. Kirsch (Professor and Director, National Center for Disaster Medicine and Public Health), and Mohammed Zaher Sahloul (Associate Clinical Professor, UIC) and Teresa Córdova (Professor of Urban Planning and Public Policy), 10th Annual Consortium of Universities for Global Health (CUGH) Global Health Conference, "Translation and Implementation for Impact in Global Health," Hilton Hotel, Chicago, March 8–10, 2019.

When Great Cities Institute and Janet Lin convened the panel, “Climate Justice Meets Global Health in the Time of COVID-19” in May 2020, they very intentionally invited a diversity of experts and experiences. In exploring the intersections of the global public health and climate justice in the time of COVID-19, we heard about the healthcare workforce and other essential workers, about water and climate justice from front-line and fence-line organizations, about local resilience and local economies, and about the need to address fair and just solutions to systemic issues that embrace interdependence—the only way that we will ensure that we move forward together without leaving any single person behind.

This interconnectedness, this interdependence, was expressed across solutions proposed by our panelists. According to keynote speaker Jonathan Patz, director of the Global Health Institute at the University of Wisconsin-Madison, “This pandemic completely reminds us of the interdependence between the natural world and society. . . . [I]t is a perfect time for big opportunities. But if the solutions are not fair or just, they’re not going to work and they’re not going to last. We need brilliant, encompassing, strategic solution generation that embraces interdependence. You can’t have a healthy population on a sick planet.”

But if the solutions are not fair or just, they’re not going to work and they’re not going to last. We need brilliant, encompassing, strategic solution generation that embraces interdependence. You can’t have a healthy population on a sick planet.

Michele Roberts, of the Environmental Justice and Health Alliance for Chemical Policy Reform, and Dallas Goldtooth, of the Indigenous Environmental Network, urged us that in any search for solutions, we must always address systemic issues. As Roberts stated so effectively: “We must really address racism, the systemic issues and impacts of racism. . . . In the very end, environmental justice is climate justice and climate justice is environmental justice. When we do this [work] in love, we end racism.” For Goldtooth, “We need to always see the bigger scope of how this is all connected—it’s absolutely essential that as we talk about revitalizing an economy or economies, we think about the greater impacts on communities of color and impacted communities.”

Building on that economic lens, José Bravo, of the Just Transition Alliance, emphasized that, given the effects of COVID-19 on the national economy, “Now is the perfect opportunity to force accountability.” In the event that industries or mass transit or receive bailout funds, “we should make sure that 80 percent of what they produce is nonpolluting, no emissions.” Bravo discussed the imperative that future decisions and policies take into consideration full product life-cycle assessments. Rachel Havrelock, cofounder of the UIC Freshwater Lab, extended the life-cycle assessment discussion to emphasize the need to “reclaim value out of what extractive capitalism for 100 years has called waste.” She elaborated: “If we live with everything that is produced, then we have to have a say in what gets produced, in who is paid to produce it, and that waste is no more, an illegitimate category.”

From a policy and legal perspective, GCI’s Dr. Teresa Córdova noted that “so many of the environmental laws and regulations that movements helped create 30 or 40 years ago are under attack.” In response, Warren Lavey, who teaches environmental law and policy at University of Illinois, suggested that we also consider lawyers and students as on the front lines of the intersection of COVID-19 and climate justice. “If we don’t get the laws right on wildlife and natural protected areas, we’re going to have more spillover. If we don’t get the laws right on occupational health, on insurance, on programs for economic recovery, then we’re going to have more environmental disasters and also more inequity. Students, help us get the right policies in place. Let’s make sure that lawyers and all professionals understand the risks of these communicable diseases and climate change and what we all need to do to make them better.”

And Juliana Pino, bringing things full circle, emphasized that any solutions must always consider first those who are most impacted: “The sharper we all are about the things that do not need to exist in opposition to each other [will help us] work together to serve the folks who are the most impacted as decision makers, as beneficiaries. To limit the external consequences, we must do that.”

The pages that follow present this discussion on global health, interconnectedness and integration, COVID-19, and solutions for the future. Each contributor contextualizes for us from their own expertise and experience how we got to May 2020, where we were at that time, and where we were going in terms of climate justice and public health. Many advances have occurred since, such as the release of multiple COVID-19 vaccines, and some of the ideas presented here in some ways have less urgency than they did at the time of the panel. For example, we now widely recognize the origin story of the virus in a market in Wuhan, China. Even so, in the aftermath of the Trump administration and a wave of conspiracy-based racist violence and unrest in the United States, the issue of public trust and the importance of communication around science in the area of public health remain more critical than ever. Communities that are most impacted by COVID-19 are those that may also be the most affected by false information and misunderstandings about the vaccine. Those communities are more likely to be home to low-income families, to be Black, Brown, and Indigenous families, to have less access to health care, to be most affected by COVID's effects on unemployment and the economy, and on and on. "The story goes on," as Michelle Roberts commented. What has not changed since May 2020 is our search for solutions, all of which must be inclusive and truly equitable: "We cannot go back to what we were. We are at a point where we could possibly get it right."

The contributions that follow have been adapted for presentation in this published report; most notably, the discussion and responses from the webinar's Q&A section have been incorporated into each contributor's section here. To view the full presentation in its entirety, visit the web page "Climate Justice Meets Global Health in the Time of COVID-19" at the Great Cities Institute website (<https://greatcities.uic.edu/2020/05/04/climate-justice-meets-global-health-in-the-time-of-covid-19/>).



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Pam Tau Lee



Dallas Goldtooth



Jerry A. Krishnan, MD, PhD



José Bravo



Michele Roberts



“We now vividly realize that our own health is inextricably linked to the health of ecosystems.”

**–Jonathan Patz, MD, MPH
Keynote Speaker**

Keynote

Preventing the Next Pandemic: Addressing Inequities and the Environment

Jonathan Patz, MD, MPH

Jonathan Patz, MD, MPH, is director of the Global Health Institute at the University of Wisconsin–Madison. He is a professor and the John P. Holton Chair of Health and the Environment with appointments in the Nelson Institute for Environmental Studies and the Department of Population Health Sciences. For 15 years, Patz served as a lead author for the United Nations Intergovernmental Panel on Climate Change (or IPCC)—the organization that shared the 2007 Nobel Peace Prize with Al Gore. He also cochaired the health expert panel of the US National Assessment on Climate Change, a report mandated by the US Congress.

Proximate Socioecological Determinants of Current Pandemic

Let's begin by looking at some of the proximate socioecological determinants of the current pandemic and how they led to the emergence of this novel coronavirus (SARS-CoV-2, or COVID-19). First, I'll explain the Chinese live market or "wet market." These food markets are the result of a law established in China several decades ago, the country's 1989 Wildlife Protection Law. At the time there was mass starvation across China, and the Chinese government implemented this law promoting the domestication of wildlife and the consideration of wildlife as a natural resource. The main beneficiaries of the law were poor peasant farmers in China, as the idea was that peasant farmers could make an income and have things to eat as well.⁵ With wildlife, and other types of animals, if you can breed them and make them fatter, then maybe you can survive off of them. For example, breeding animals such as rats has been considered central to alleviating poverty in many rural areas. This is the principle the Chinese markets adopted to provide income for the poor.

The legal category of wildlife as a natural resource, then, has led to an industry of domesticated wildlife especially geared toward small-scale and peasant farmers. Farmers bring their animals for sale to market, and at these markets we see the sale of legal, government-sanctioned domestic wildlife and we see the illegal wildlife trade. The market is where we have a serious problem of pathogens spilling over from one species to another because, of course, when you stack these different animals on top of each other—in crates and boxes—the result is an unnatural environment that makes it easy for pathogens to "spill over" from one species to another.

That spillover has been cause for a lot of discussion, especially in the Trump administration, about trying to lay blame for this pandemic, particularly *where* the virus came from. There is very high certainty that this virus was not engineered by humans, as suggested by conspiracy theorists and by the Trump administration. In reality, bats are the primary animal reservoir for many of the SARS-like coronaviruses we know today.⁶ So the question is, Was this a natural mutation that spilled over from one species to another? A recent study published in *Nature* showed very complex genetic mutations of this novel coronavirus (SARS-CoV-2) that has caused the COVID-19 pandemic. There have been very descriptive studies in *Nature*, and in *Science*, that show that this type of spillover can be expected in the natural evolution of wildlife and that this virus does not look at all like it was manipulated in a laboratory.



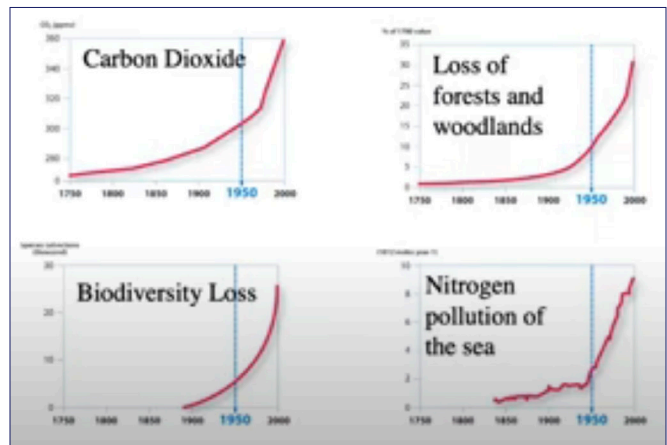
Wildlife markets and the domestication of wildlife, developed in response to rural poverty, present serious problems of pathogens spilling over between species.

5 "How Wildlife Trade Is Linked to Coronavirus," YouTube video, posted by Vox, March 6, 2020, <https://www.youtube.com/watch?v=TPpoJ-GYIW54>.

6 Li et al., "Bats Are Natural Reservoirs of SARS-Like Coronaviruses," *Science* (2005): 628–629, <https://doi.org/10.1126/science.1118391>; Andersen et al., *Nature* (April 2020) (showing novel coronavirus was definitely not human engineered).

The closest relative to the current virus causing the COVID-19 pandemic is a coronavirus in pangolins. Pangolins are an endangered species, widely sold in wet markets. The scales of these beautiful little animals are purported to have medicinal use—which has never been shown to be true—and so pangolins are slaughtered and sold for their scales. This is a very unfortunate situation, and some have said that perhaps this pandemic is the pangolin's revenge.

So we have illegal wildlife trading inside of wet markets. In this case, our ground zero is the Wuhan Huanan Haixian Pifa Shichang, a seafood market in Wuhan, China. This is a wet market that, along with wildlife and livestock, specializes in fish and seafood. The virus spilled over in that wet market from an animal to a person. When we consider a week's worth of international flights leaving Wuhan—a city home to 11 million people and a manufacturing and industrial hub for all of China and the world—well, we all know the rest of the story. The virus traveled around the globe. In the case of the United States, the genetic markers on the current virus [as of May 2020] show that most of the introduction of COVID-19 came from Europe, not directly from China to the US West Coast.



Poor air quality is associated with the equity issues that have come to the forefront during the COVID-19 pandemic, as exposure to air pollution is more likely among communities already experiencing COVID-19 comorbidities.

It's important to note that the wildlife trade in China is an issue of poverty. Remember, domestication and consumption of wildlife were promoted to solve a crisis of poverty and hunger. So we see clearly that policy directed to solve that crisis of poverty has partly led us to this situation of the pandemic. When thinking about COVID-19, though, we find inequality elsewhere as well. For example, a Harvard University study published in April 2020 in the *New England Journal of Medicine* compared exposure to air pollution in the United States with mortality rates from COVID-19.⁷ The study looked at county-level 17-year averages of fine particle concentrations, called $PM_{2.5}$ (2000–2016), in the United States (g/m³) and county-level COVID-19 deaths per 1 million population up to and including April 4, 2020.⁸ This study was extremely well conducted, controlling for population density, for economics, for all sorts of key confounding factors. The study reported the following results: “An increase of just one mg/m³ [microgram per cubic meter] in $PM_{2.5}$ is associated with a 15% increase in the COVID-19 death rate.” That is a very strong increase. So here are equity issues about exposure to air pollution. We also already know about another COVID-19-related equity issue: COVID-19 comorbidities, such as hypertension and diabetes, which are more prevalent in African Americans. In short, we find inequity thoroughly interwoven into all levels of the COVID-19 pandemic.

Upstream Causal Factors: Human Incursion into Nature

What does the coronavirus pandemic tell us about our relationship with nature?⁹ We all know that our population has been disrupting Earth's systems all over the planet, which has given name to the era we are living in: the Anthropocene. Especially since the 1950s, we have seen increasing atmospheric carbon dioxide levels and oceanic nitrogen pollution, as well as dramatically decreasing biodiversity and forest and woodland acreage. The disruption to these natural systems has been really ramping up.

The first human-nature interaction to consider is land use change. Land use change is the foremost and probably the biggest cause for disease emergence. Land use change is a threat to conservation. Land use changes drive climate change because deforestation reduces the very important carbon sink, which absorbs carbon dioxide. They also drive economic growth, but at a cost—diseases like malaria, Ebola, and now COVID-19. It is also important to think about how habitat disruption plays into this pandemic. This, though, is not news. Sixteen years ago my colleagues and I published a paper on unhealthy landscapes and the fact that disrupting an ecosystem—that is, taking it out of balance and changing its biodiversity—involves the risk of pathogenic diseases taking off.¹⁰ But there has not been much progress in slowing down humans' disruption of nature.

⁷ Xiao Wu et al., “Exposure to Air Pollution and COVID-19 Mortality in the United States: A Nationwide Cross-Sectional Study,” *New England Journal of Medicine* (April 2020): <https://doi.org/10.1101/2020.04.05.20054502>.

⁸ The US Environmental Protection Agency defines $PM_{2.5}$ as particulate matter contributing to particle pollution, specifically “fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.” See “Particulate Matter (PM) Pollution,” at <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics>.

⁹ This section is inspired by Emma Gilchrist, “What the Coronavirus Pandemic Tells Us about Our Relationship with the Natural World,” *The Narwhal*, March 30, 2020, <https://thenarwhal.ca/what-coronavirus-covid-19-pandemic-tells-us-about-relationship-natural-world/>.

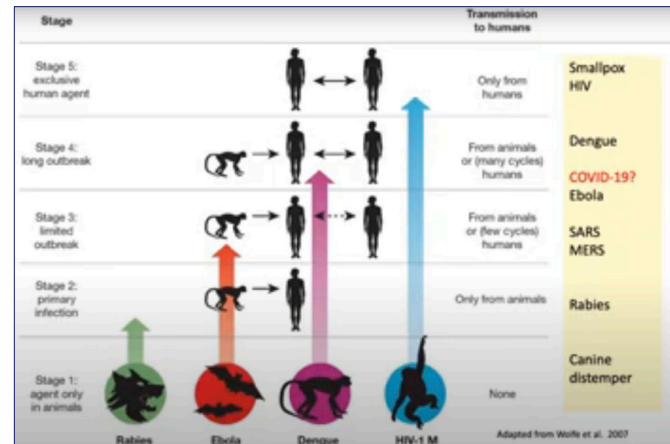
¹⁰ Jonathan A. Patz, Peter Daszak, Gary M. Tabor, et al., “Unhealthy Landscapes: Policy Recommendations on Land Use Change and Infectious Disease Emergence,” *Environmental Health Perspectives* 112, no. 10 (2004): 1092–1098, <https://doi.org/10.1289/ehp.6877>.

A second human-nature interaction is species-to-species spillover. People working in the veterinary sciences know that a majority of newly emerging diseases in humans come from animals—these are called zoonotic diseases. For example, some viruses from nonhuman primates are showing up in blood of African bushmeat hunters, as revealed in gel electrophoresis studies.¹¹ This is an example of spillover, of a pathogen—a virus—going from one animal to another (including from humans to wildlife).¹²

Every time we have spillover into a human, we need to look at distribution of the animals carrying that virus. If you cut up a forest into fragments, you'll force those animals to move, and maybe their density will change. Maybe with that density change, they'll transmit that disease back and forth.

This means that pathogen prevalence will go up, and the animals may be shedding more virus, exposing humans. Imagine humans going into a jungle to cut down rain forest: that is the human exposure. Many things need to line up for a spillover event to occur—they are rare, but not rare enough.

Today, when we disrupt natural systems, we make these rare events much more frequent. We have seen spillover events travel before—a rabid animal bites a person (a Phase 2 infection); or Ebola, with exchange from a non-human primate to a human, maybe a bushmeat hunter, who then transmits Ebola to somebody else. Most of the time this transmission may not go very far. But in Phase 3 and 4 infections we have more sustained human transmission and even complete human transmission, as happened with smallpox, or with HIV/AIDS from chimpanzees infecting humans. HIV/AIDS is now a human disease. So you can see how far these spillover events can go. And we may end up going into Phase 5.¹³ This is relevant today in the COVID-19 pandemic because this came from animals.



Five stages of animal-human transmission and different outbreaks.

There are also other ways that we are disrupting natural habitats that have led to disease emergence. Imagine the Amazon—a deforested area to which we add paved roads, unpaved roads, and fires. We did a study in the Peruvian Amazon on whether deforestation is changing malaria rates, as malaria was surging in the region. After controlling for human population density by looking at abandoned, deforested agricultural sites, we found that the bite rate of the dangerous *Anopheles* mosquito species increased in deforested areas.¹⁴ Another study by Sarah Olsen showed that for every 1 percent of deforestation, new malaria cases increased by 11 percent. This is another case of land use change and disease emergence, and it leads us to climate change.¹⁵

We know about many physical attributes of climate change: temperature rise, sea level rise, extremes in the water cycle such as flooding and drought that then result in fires.¹⁶ These attributes cut across many different exposure pathways, such as heat waves, air pollution, and infectious diseases. Each of those pathways has many climate-sensitive outcomes, including disease. Here I'll focus on infectious diseases, vector- and water-borne diseases.

According to the David Suzuki Foundation, the biggest threat of global warming may also be the smallest one: the

11 Louise H. Taylor, Sophia M. Latham, and Mark E. J. Woolhouse, "Risk Factors for Human Disease Emergence," *Philosophical Transactions of the Royal Society of London B* 356 (2001): 983–989, <https://doi.org/10.1098/rstb.2001.0888>; Nathan D. Wolfe et al., "Emergence of Unique Primate T-Lymphotropic Viruses among Central African Bushmeat Hunters," *Proceedings of the National Academy of Sciences of the USA* 102, no. 22 (2005): 7994–7999, <https://doi.org/10.1073/pnas.00501734102>.

12 Plowright et al., "Pathways to Zoonotic Spillover," *Nature Reviews Microbiology* 15 (2017): 502–510, <https://doi.org/10.1038/nrmicro.2017.45>.

13 The World Health Organization defines five phases of pandemic: Phase 1, no virus has caused infection in humans; Phase 2, an animal virus is known to have caused infection in humans; Phase 3, an animal or human-animal virus has caused clusters of disease with limited human-human transmission; Phase 4, an animal or human-animal virus has caused verified human-human transmission; Phase 5, verified human-human spread of the virus in two countries; and Phase 6, community-level outbreaks. For more detail on these definitions, see "The WHO Pandemic Phases," in *Pandemic Influenza Preparedness and Response: A WHO Guidance Document* (Geneva: World Health Organization, 2009), <https://www.ncbi.nlm.nih.gov/books/NBK143061/>.

14 Amy Vittor et al., "The Effect of Deforestation on the Human-Biting Rate of *Anopheles darlingi*, the Primary Vector of Falciparum Malaria in the Peruvian Amazon," *American Journal of Tropical Medicine and Hygiene* 74, no. 1 (2006): 3–11.

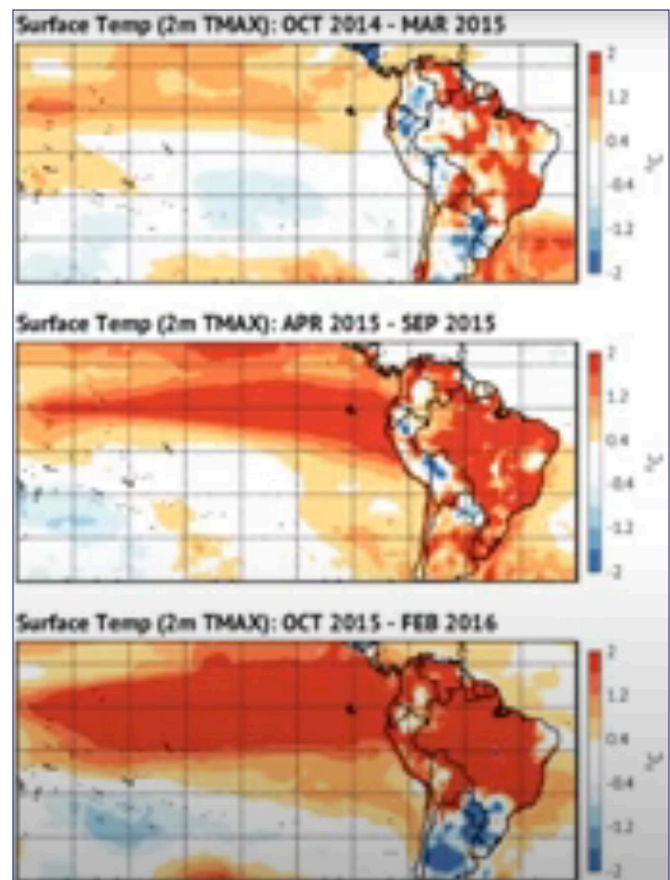
15 Sarah Olson et al., "Deforestation and Malaria in Mancio Lima County, Brazil," *Emerging Infectious Diseases* 16, no. 7 (2010): 1108–1115, <https://doi.org/10.3201/eid1607.091785>.

16 Jonathan Patz, W. J. Martens, D. A. Focks, and T. H. Jetten, "Dengue Fever Epidemic Potential as Projected by General Circulation Models of Global Climate Change," *Environmental Health Perspectives* 106, no. 3 (1998): 147–53, <https://doi.org/10.1289/ehp.98106147>.

mosquito. The mosquito is a cold-blooded organism, so its body temperature is the same as the surrounding air temperature. In mosquitoes that carry malaria parasites, the parasites' development is completely dependent on temperature: that is, temperature determines how many days it takes for infective sporozoites to appear in the salivary glands of the mosquito.

Another vector, the mosquito *Aedes aegypti*, carries viruses such as dengue fever, the most prevalent mosquito-borne virus in the world; yellow fever; and zika. Right before zika erupted in South and Central America, there was the climatic phenomenon of El Niño. The El Niño events of the winter of 2015 and into 2016 were the strongest El Niños in recent history. Temperature measurements during those El Niño events found that, across Brazil and Colombia, temperatures were more than two standard deviations above a constructed 60-year average temperature. So we need to look at the vectorial capacity, or ability to transmit virus, of the mosquito *Aedes aegypti*.

Right before zika erupted, there also was a huge dengue epidemic in South America.¹⁷ This means that the mosquito's vectorial capacity, which is influenced by temperature, was very high—the mosquito as vector had a very high ability to transmit the dengue virus. For zika, a recent laboratory study showed that the predicted thermal minimum for transmitting zika virus is five degrees warmer than for dengue.¹⁸ This is a complicated story—perhaps climate and warming did not absolutely cause the emergence of zika. And like any infectious disease, international travel was most likely part of the story. But, did unprecedented temperatures have something to do with zika virus becoming as widespread as it was during that period?



Global warming increases exposure to pathogens, such as dengue fever, carried by the mosquito *Aedes aegypti*.

Planetary Health Framework: Preventing the Next Pandemic

We now vividly realize that our own health is inextricably linked to the health of ecosystems. When we see changes, such as rapid deforestation in Brazil after the election of Jair Bolsonaro there in 2019, we have to ask, What is the risk of doing so much damage to the forest?

It is important to recognize that we have changed the world. The pandemic has shut down the global economy. We all have seen images of air quality in New Delhi before the pandemic and then after the shutdown. Who would have imagined that Indian megacities would have good air quality? It is clear that the differences there are mostly driven by fossil fuels. According to the World Health Organization, air pollution is responsible for 7 million premature deaths every year. Considering that together with the Harvard study on inequities in COVID-19 mortality—that fine particulate pollution increases your risk of dying—another story becomes clear. We know that air pollution is dangerous, and we can now see the difference in air quality from January 2020 to February 2020. We know pollution kills, we know it's dangerous, but now we see with our own eyes this incredible cleaning of the environment. With this we must realize how much a fossil fuel economy is harming our health. It's time to ask: Do we really want to let the conventional fossil fuel economy go on, or do we want a clean energy economy in which everyone prospers? This is a matter of equity.

According to a report by the Intergovernmental Panel on Climate Change after the Paris Agreement, in order to limit Earth's warming by just 1.5 degrees centigrade and prevent going far above that, we would have to reduce deforestation and cut fossil fuel emissions by 45 percent in the next ten years *and* also get to net zero emissions by 2050. That is very soon. To achieve that, will people fear the trade-offs of solving the global crisis of climate change? To solve the

¹⁷ Jonathan Patz, personal communication with Dan Vimont, Nelson Institute, Center for Climatic Research.

¹⁸ Blanka Tesla et al., "Temperature Drives Zika Virus Transmission: Evidence from Empirical and Mathematical Models," *Proceedings of the Royal Society of London B: Biological Sciences* (August 15, 2008): <https://doi.org/10.1098/rspb.2018.0795>.

COVID-19 pandemic, we shut down the global economy and people are suffering. Unlike COVID-19, though, combating climate change could be free. Solving the global climate crisis could be the greatest opportunity of our times.

Let's take one last look at an example: the cost of clean energy. Getting off of dirty coal and oil may require an investment cost, say, up to \$30 to avoid emitting one ton of carbon dioxide. When we burn coal and oil, we also emit $PM_{2.5}$ —sulfur dioxide and nitrogen dioxide, both of which are precursors of ozone, and also lead and mercury. For every ton of CO_2 that you avoid burning and producing, what would be the reduction in $PM_{2.5}$ and the health benefits? The reduction in $PM_{2.5}$ is striking: the health-related cost benefit from reduced morbidity and mortality and lost workdays would be, on average, \$200 for every ton of CO_2 you avoid emitting. We should ask policy makers which number is bigger: the \$30 investment or the \$200 health cost benefit.

The price of renewables has dropped through the floor—they are very cheap—and of course these cost benefits will be even larger in very polluted areas. So it is important that decision makers who say, “We want to invest in a technology,” hear that the price of renewables is low. In fact, according to the International Renewable Energy Agency, pre-COVID the cheapest way to generate electricity was renewables. Maybe that has changed during the pandemic, but *before* the pandemic, the cheapest electricity generation, without any subsidies whatsoever, was renewables. Batteries for the first time are cheaper than fossil fuels. We are not waiting for a solution; we may have one.

Some might wonder whether that forces us to trade one pollution source for another. For example, brake linings and tires are forms of particulates, but the overwhelming contribution is from burning fossil fuels, especially on a global level, diesel trucks in transportation. If we were to shift fully to electric vehicles, then in addition to a full life cycle assessment, we need to be looking at the trade-offs. One study about 10 years ago asked, Is it better to drive a hybrid, electric, or gasoline vehicle? If you're in California and enough of your electricity comes from renewable energy, then with a full life cycle assessment it makes sense to drive an electric car. But if you are in the Midwest, with corn-based ethanol as a power source and the effort that goes into growing the corn for fuel and all that pollution, it turns out that burning a gallon of ethanol would actually be dirtier. That's changed now, though. There is enough switchover now: electric vehicles are becoming economically more feasible, less polluting in terms of life cycle assessment. But the reality is that most air pollution is coming from burning fossil fuels. These other things we need to keep in mind, but let's go to where the big contributors are and solve those problems with a full life cycle assessment approach so we don't have unintended consequences.

According to an op-ed by Mary Robinson,¹⁹ former president of Ireland, we can't lose sight of climate change while dealing with COVID-19. Climate change is a crisis in itself. So maybe we should treat climate change like an infectious disease, as a global health emergency. In the middle of a global pandemic that stems from social inequity and environmental damages, we have a huge opportunity—the opportunity of our lifetime—to see and bring about transformative change. We need to build the future we want, not the one we had.

¹⁹ Mary Robinson and Daya Reddy, “Tackling Climate Change with COVID-19 Urgency,” *Project Syndicate*, April 1, 2020, <https://www.project-syndicate.org/commentary/tackling-climate-change-with-covid19-urgency-by-mary-robinson-and-daya-reddy-2020-04>.

Climate Injustice in Little Village, Chicago

Juliana Pino

Juliana Pino is the Policy Director at the Little Village Environmental Justice Organization (LVEJO). Born in Tuluá, Colombia, and raised in both Colombia and the United States, Juliana's personal life is transnational and her background is interdisciplinary. At LVEJO, Juliana analyzes, researches and advocates for environmental justice, climate justice, and economic justice in local, state, and federal environmental policy. LVEJO's campaigns cross many areas, including energy, food, water, air, land use, brownfields, toxics, transportation, workforce development, and others. Her work focuses on: advancing energy democracy and community self-determination in regulatory and policy arenas; creating just transition with meaningful collaborative and participatory management of shared environmental resources; and centering frontline community leaders as generators of transformative policy ideas and governance models.

Little Village Environmental Justice Organization (LVEJO) was founded in 1994 as a community-based frontline organization in Little Village, Chicago. Our mission centers on organizing with community to accomplish environmental justice and achieve self-determination of immigrant low-income and working-class families. We work on economic justice and social change from the belief that low-income, working-class, and people of color understand the root causes of our experiences and oppression. We have the power and agency to transform society. Everything we do at LVEJO centers expertise of the people who are most impacted.

Little Village is a majority Mexican American neighborhood. Forty percent of the population was born in Mexico. There are also lots of Central American, Black, and Indigenous community members. In short, Little Village is wonderful—a thriving, dense cultural tapestry. There's so much traditional practice and agricultural knowledge that folks brought here. There are histories and real innovation people want to hold on to and work on every day, even though we hear a lot about how awful industrial activity is here. Also, there are thriving practices that are as present and as important to remember as those of the past.

Some basic economic facts: Little Village's 26th Street small business corridor generates the second-highest sales tax income for the City of Chicago after Michigan Avenue. Little Village is right after that, and it's important to keep that in mind when we talk about what's going on in the neighborhood.

Little Village is the site of polluting industries. Polluting industries are disproportionately, massively at fault for climate change. Individuals and frontline communities most impacted by climate change cannot be expected to mitigate climate change consequences through behavior change. Instead, solutions must focus on this disproportionality, and we have to accept leadership from the most impacted, the vast majority of whom are Black, Brown, and Native people. We have to understand the locations of the most acute industrial impacts that drive climate change and who is burdened by public health emergencies and diseases as a consequence of pollution. We have to listen to communities about which policies and practices need to change.

In Chicago these places are Little Village, the Southeast Side, McKinley Park, Woodlawn, and also Waukegan, Cicero, Joliet—these communities experience regular,



Members of LVEJO rally in front of the former Crawford power plant which they successfully shut down in 2012.

“What is less understood is that polluting industry is actually highly detrimental to society because it has visible and invisible costs to the communities located next to it.”

-Juliana Pino

persistent industrial siting that contributes to climate change, siting that is often understood as beneficial to society because of manufacturing and production of goods. What is less understood is that polluting industry is actually highly detrimental to society because it has visible and invisible costs to the communities located next to it.

Key drivers of the Anthropocene age (an imperfect term) are colonialism, racial capitalism, and oppression. The exploitation of land and natural resources goes hand in hand with the exploitation of humans who steward the land and devaluing Black, Brown, and Indigenous bodies on that land. The fossil fuel economy and other industrial actors thrive only when nature and our bodies are continually exploited. Little Village is a microcosm of this reality. It's a historically important Native geography; later it was used for industrial agriculture where many Black and Brown people toiled; and it has been a site of migration, immigration, incarceration, and industrial pollution from dozens of facilities—the best known is the Crawford Generating Station. Chicago profits from Little Village, and the city, county, state, and federal government see Little Village as a site of extraction. We assess this through their policies and actions, not words. What they say is less important than what they do. This plays out through racial capitalism in Little Village, as industry continues to enact violence modeled by settler-colonial practices and dispossess community members of the ability to make comprehensive choices about the land they live on and how to live, and their rights to access clean air, water, land, and culturally specific practices and traditions.

Climate injustice is sites maintaining their exploitative character, perpetuating harm instead of moving through a community-led just transition. LVEJO worked with leaders across the city to shut down both the Crawford Plant in Little Village () and the Pilsen's Fisk Generating Station (2012). None of the plans, principles, or practices that emerged—including from city-supported processes—would have allowed for the site to be purchased by a multinational global industrial to develop a one-million-square-foot warehousing and distribution facility. For Little Village's Crawford plant, a toxic transportation industry warehouse will replace a toxic fossil fuel plant. Target, with its terrible labor practices, currently plans to be the tenant, but the community envisions training and indoor agriculture *mercados*. So, the site will move from a climate change and injustice driver in the power sector to one in the transportation sector. The Illinois transportation sector is the leading source of climate change, and Illinois transit hubs see one-third of all US-manufactured goods, the direct impact of which is concentrated in only a few communities.

Little Village recently experienced a high-profile environmental disaster at the hands of people who imploded the century-old Crawford coal plant stack. We found out a day in advance that the action had received city permits, and we tried desperately to stop it. Despite the efforts of many people, officials and the company failed to stop it. This reckless, potentially deadly event dispersed toxic dust over Little Village. The explosion shook all the lead service lines that deliver water into homes, so unclean drinking water was further compromised. This should never have happened in a place where pollution is already extremely bad, especially during a respiratory illness pandemic.

These environmental crises are regular events for Black, Brown, and Indigenous people. They are the norm, often upheld and permitted by this nation-state and its jurisdictions. The Crawford plant crisis was, in essence, a crisis on top of a persistent public health emergency attributable to polluting industries. This is the reality of climate change for communities experiencing these actions again and again at the hands of industries driving the consequences everyone will pay for.

Participatory Policy Making

Policy making involves trade-offs, but the people deciding about the trade-offs are generally appointed or elected officials, not communities. Sometimes they get input from frontline leaders, but at the very end of the process. In Illinois, we have been working on the Clean Energy Jobs Act, which is interesting in a few ways. One, it's really broad in scope. We're addressing the energy industry and transportation, and trying to decarbonize and use an equity and justice lens—who's getting the money, where is it coming from, how to balance state incentives against economic justice for people who can't pay their bills?

There is a lot of resistance to participatory policy making. We're dealing with archaic ways of thinking about decision making, and the decision makers are older white men. There are dynamics about who gets invited to the table. Generally, regulated entities in Illinois set the table, and trade-offs were discussed in that light.

In this case, a participatory process, we had over 100 community meetings around Illinois at which folks gave direct input on their problems, the trade-offs they are comfortable with, their economic and social realities, and how programs should be derived. The starting point was different, and not everybody gets everything they want in this big package, but it is a lot closer to the reality we want than anything we've attempted in the past. Moving from a place of principle and alignment and governance where community members say, "We can't fail to address the transportation sector because of

all these impacts we're seeing in our communities," or "We have to talk about semi-trucks, because those are the vehicles [that] we're seeing the impacts from," or "We can't forget the life cycle of solar panels." To incentive the creation of something new, we need to discuss what programs the state needs and think about all the associated consequences.

This kind of policy making is hard, but it means we're actually getting some transformation that we need to see, like in our energy and transportation industries. But we also need to think about what requires urgent responses: economic justice to keep the heat and lights on, and reducing costs so people are able to stay in their homes. How do we make sure that small Black and Brown companies and the formerly incarcerated folks they're hiring from our training programs keep their jobs and safely? How do we support communities in transformative asks about work conditions, economic justice, and environmental safety? How can we center those communities as policy decision makers as opposed to institutions with their own goals and ideas of the outcomes?

COVID-19

Little Village is one of the most impacted neighborhoods in Illinois and contains the zip code with the second-highest number of COVID-19 cases (as of May 2020). Little Village is also home to Cook County Jail, one of the largest single-site municipal jails in the country. Many of those incarcerated, largely Black and Brown people, are in pretrial detention—unable to pay bond. Cook County Jail has one of the severest COVID-19 jail outbreaks in the country. In this way COVID-19 reveals itself as an environmental and climate justice issue. So many community members, including incarcerated folks, live with chronic respiratory and other medical conditions as a result of the decades that they lived with dozens of industrial facilities in and around their community. These “underlying conditions”—the media’s term—combine with structural oppression to set up community members to be most at risk. We see that play out now with deadly consequences, and pollution plainly increases that risk.

We must acknowledge that the tragic COVID-19 outbreaks in Little Village and in Black and Brown and Native communities are the result of concentrated, severe injustice and dispossession. Communities are under-resourced, polluted, left to mitigate the consequences and—if they have access—navigate public health systems on their own. Our public health systems are already stretched thin, underutilized by community members because of language barriers, concerns about immigration, cultural misalignment, and other factors. (The Chicago public health department does not have a solid track record on environmental health and structural causes of health disparities, historically focusing on critiques of individual decision making and denying its own historical practices and policies that led to our current reality).

This is not just about exposure to pollution; the community is set up to fail when it comes to mitigating exposure. There is no system folks can access for resources to take care of themselves. Instead, the system is set up to blame them for their life outcomes and decision making, a very difficult context for introducing a respiratory pandemic. Individuals providing services are doing their best but don't have institutional support. That means folks are still staying home, not accessing the doctor when they need to, and sometimes denied medical care. This is very important to understanding the confluence of events in communities like Little Village.

Despite all this, Little Village is responding with strategies we have long used: sustained organizing, mutual aid, providing resources, redistributing funds, growing food, and distributing basic survival goods to support community members during this time. Folks need as much support as they can get from places that are not looking to capitalize on their distress or to profit further in the way that they have been profiting from the community overall.

Little Village is fighting back through land stewardship, self-determination, systems change, and visions and policies. Folks have a community vision for the land based on the ideas that folks know what they want, can enact independent governance, and have alternative systems, and those will promote being rooted and will fight against displacement. Folks push energy and climate policies, utility shutoffs, economic justice. They back up decarbonization and do complex, critical work to advance the climate change fight and address local solutions.

When we talk about climate injustice and when we talk about COVID-19, the impacts are concentrated, and it is from those places that the solutions have to be drawn.

“When we talk about climate injustice and when we talk about COVID-19, the impacts are concentrated, and it is from those places that the solutions have to be drawn.”

-Juliana Pino

1. Local resilience



LESSONS LEARNED

- Green recovery
- Local actions now
- Health matters



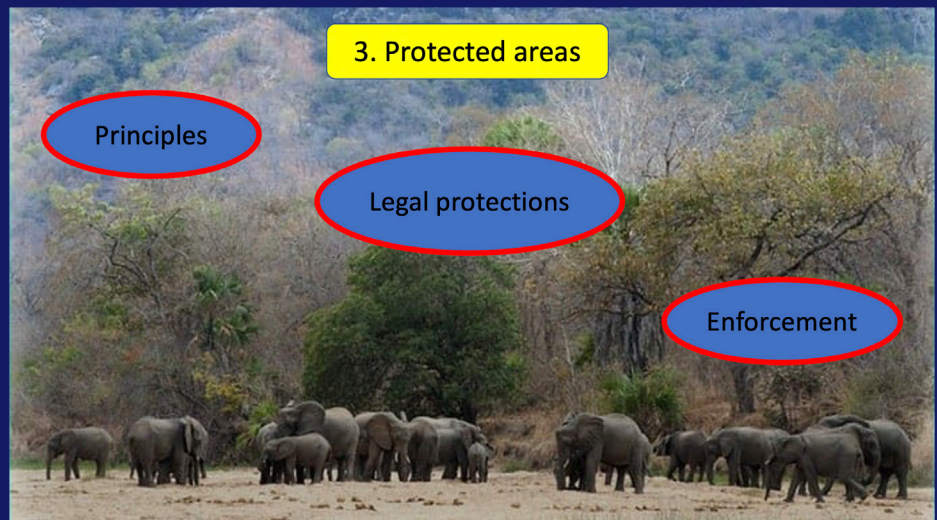
2. Capacity building



Climate Competency

Knowledge Integrated

3. Protected areas



Principles

Legal protections

Enforcement

Local Resilience, Local Actions

Warren Lavey

Warren Lavey is an adjunct professor at the University of Illinois, teaching environmental law and policy in the College of Law and Campus Honors Program in Champaign, and in the School of Public Health in Chicago. He trains health, law and other students on climate competencies and policy advocacy. After practicing law in the federal government and a global law firm for 30 years, he advises government agencies and nonprofit organizations on sustainability programs and policies. He earned undergraduate and graduate degrees in law and applied mathematics from Harvard University, and a graduate degree in economics from Cambridge University.

Local Resilience

We can take the pursuit of climate solutions while trying to recover from COVID-19 one step further by strengthening climate resilience as part of COVID-19 economic recovery programs. This takes planning and commitment throughout government programs, but there are some hopeful signs.

First, in late April 2020, eleven mayors who are leading the Global Mayors COVID-19 Recovery Task Force—including mayors of Los Angeles, New Orleans, and Seattle—announced: “Our efforts will define our cities for decades to come. As mayors, it is our responsibility to lay the foundation for the fair society and healthy planet our residents deserve. Cities will marshal all of our local resources to advance a robust global recovery, get people back to work, and accelerate action to address the climate crisis.”

These global mayors talked about measures ranging from huge retrofitting programs to make buildings more energy efficient, mass tree planting, and solar and wind investment. All this should sound familiar for people in Chicago and many other cities. We have these blueprints. In Chicago last year’s plan Resilient Chicago: A Plan for Inclusive Growth and a Connected City provides many actions to reduce greenhouse gases and adapt to climate change, with attention to job creation and disadvantaged communities. Smaller cities also have or should develop sustainability plans with specific targets, actions, and job training programs.

One example is New York State. On April 3, 2020, New York passed the Accelerated Renewable Energy Growth and Community Benefit Act, which includes “host communities” benefits providing tax incentives and utility discounts for siting renewable energy facilities in those cities. More broadly, green deals for COVID-19 recovery have strong support in France, Germany, Britain, South Korea, and from leading global investor groups.

Unfortunately for the United States, in 2020 Congress and the Trump administration refused to use massive recovery spending to fund climate resilience. The 2009 American Recovery and Reinvestment Act, though, does provide some guidance for cities and states. That act dedicated \$90 billion from the Great Recession recovery to promote clean energy in renewable energy generation, energy efficiency, clean transportation, and job training. There are a lot of options for creating jobs to get our economy moving again and promote climate resilience.

Second, local actions need to be undertaken now. Our communities have vulnerabilities to reasonably foreseeable disasters, including communicable diseases and climate change. This is a lesson from COVID-19. Preparing for these disasters saves lives and is much cheaper than dealing with them in the absence of plans and systems. State and local government should act now to identify their vulnerabilities and build results. For resilience—as shown with both COVID-19 and with climate change—the federal government should not be relied on to provide resources and leadership in preparing, managing the crisis, and supporting recovery. To give a local example, in June 2019, Mercy Health filed a lawsuit against the City of Rockford, Illinois, related to flooding at the hospital. The hospital cited the city’s inadequate sewer system as part of the reason that five inches of rain caused more than \$30 million in damages to the hospital. Four heavy rains within 12 years affected the hospital’s operations. But just last month Mercy announced that it would be this very flood-prone hospital that would be the focus of its care for the COVID-19 patients.

We need to learn from the COVID-19 experience and take local actions to strengthen our climate resilience, and the health sector should be leading efforts for climate resilience. Another example: it wasn’t until August 2019 that the Peo-

ria County Board of Health issued for the first time a position statement recognizing the need to address the environmental and health impacts of climate change through education, risk assessment, adaptation, policy development, and mitigation planning—and to include all populations, especially those that would have disproportionate negative effects.

The final point on local resilience is that health matters. Residents of all communities have been willing to make major personal sacrifices and bear high costs to reduce cases of COVID-19 illness. If communicated effectively as a health determinant, the same should be true, or at least to a significant extent, for mitigating and adapting to climate change.

In Illinois we have a very important piece of pending legislation, the Clean Energy Jobs Act, that will likely be delayed because of the focus on COVID-19. COVID-19 also is stalling renewable energy installations in the state and nationwide. It really should be public health and health care professionals and groups that step up and educate legislators and citizens on why we should move forward on these kinds of plans.

Capacity Building

Another lesson from COVID-19 is that community resilience requires capacity building to face clearly foreseeable, existential challenges. COVID-19 has revealed a lack of competency in systems and personnel training in all sectors of our society, whether health professionals, lawyers, financial professionals, manufacturers, food suppliers, and others. All these sectors need knowledge, skills, and capabilities in environmental and other threats, and we have to integrate this training throughout curricula. It is inadequate to train only a small group of specialists in infectious diseases or climate change law or stormwater management when a threat gets right at our very way of life. The American Medical Association, the American Bar Association, and others have urged greater training, but major universities are not providing adequate curricula to reach out and build competency throughout our communities.

Protected Areas

As Dr. Jonathan Patz pointed out, spillover comes about in part because of human incursion into wildlife areas. From the perspective of environmental policy and law, we get that. We also understand the science and have principles to support conservation and protection against spillover. We have legal protections at the international level and in national laws. But what we really need is to increase enforcement, political support, and justice. As Juliana Pino said, we have to look at local communities, and we have to secure livelihoods and benefits not just in urban areas but also in wildlife areas, making sure that the people in those areas do not have an incentive to take actions with wildlife that lead to greater spillover.

Conclusion

When thinking about how we determine whether something is good for society, there can seem to be a conflict between what is good for people and what is good for the economy. But this is not about a trade-off between climate and the economy. Climate actions can spur economic growth and bring about lower energy costs. In the same way, this is not about a trade-off between justice for disadvantaged communities and climate actions. For example, Illinois's Future Energy Jobs Act set aside \$30 million in job training for disadvantaged communities and people coming out of prisons to create a workforce of solar panel installers who can help us build out clean energy systems in the state. In the same way, cities and states are putting aside money for energy-efficiency projects at housing for low-income families, and these projects save tenants and owners money, create healthier living environments, and create jobs all while cutting greenhouse gas emissions. Programs like these take attention, and it is too easy to adopt something that ignores the needs of disadvantaged groups. But this is not a trade-off, we can do all of these things at once.

Watershed Scales: Shifting Our Conception of Global Climate Change

Rachel Havrelock, PhD

Rachel Havrelock is a Professor at the University of Illinois at Chicago where she directs the UIC Freshwater Lab. She is the author of *River Jordan: The Mythology of a Dividing Line* (University of Chicago Press, 2011) and *The Joshua Generation: Israeli Occupation and the Bible* (Princeton University Press, 2020). As part of the Freshwater Lab, Rachel has hosted two water summits and created the digital storytelling sites Freshwater Stories and The Backward River. Havrelock's current book project *The Water Belt* analyzes current scenarios of freshwater use and misuse and charts a way forward for the Great Lakes region amidst accelerated climate change.

The general tenor of my remarks here is to think about the important shift from our conception of global climate change to thinking about very local, regional, and—as I would call them—bioregional or watershed scales. One way to envision this is thinking about air quality and the concentration of poor air quality and susceptibility to COVID-19, as Dr. Jonathan Patz mentioned. Of course, our immediate question is, If the air is toxic, what does it mean for me and *my* body and those of the people I care about? How can we operate on that scale?

When we talk about decarbonization and getting off fossil fuels and fossil capital, when we address the negative externalities concentrated in low-income communities of color and even in communities of color with some wealth, this is part of an economic system. It is exactly that system that needs to be dismantled in conjunction with any kind of mitigation of the negative effects of climate change or any kind of resiliency or survival.

What is key—especially when thinking about post-pandemic reconstruction and economic plans—is that it is vital to shift the ownership structure. Decarbonization is also about moving the agglomeration of assets, which includes our public infrastructure and our natural resources. These are assets because they have been acquired by global capital. We cannot avoid diseases, we cannot do the necessary shift in climate change, if we do not engage in a deeply redistributive process of telling global multinational corporations very literally to go fund themselves and to get off the remaining publicly held assets. Today we are operating our water systems on infrastructure built in a moment of federal confidence. It was built to be large and unwieldy. So we are stuck with these systems that haven't adapted to climate, to population moves, to technology. There simply is no federal funding to maintain them, to change them, to update them.

In the federal money made available thus far (as of May 2020) in response to COVID-19, there's nothing for municipal water systems. This is of course during a pandemic in which access to water and washing your hands is the closest thing we have to a vaccine. We are experiencing this pandemic when a high percentage of residents and citizens are living without water and at a point when we are losing control even over the aging infrastructure that is supposed to sustain us. With no federal funding, with cities and municipalities facing increasing bankruptcy and low revenue, that private water corporations are likely to snatch these up. As Warren Lavey mentioned, the city of Peoria, Illinois, has been in a decades-long struggle to get its water system back from Illinois American, which because of House bills in the State of Illinois has been seizing municipal water systems, buying them up, and cutting costs—as private equity does, of course. The game is for a corporation to seize a public asset cheaply, then take out a huge loan, cut costs, cut back on labor to raise costs, and then have people pay more for worse service. There are many local and global examples of how private equity and multinational corporations dispossess, continue to extract, and absorb public funding to dispossess, to poison us, and to leave us jobless and at their mercy.

In short, we need to shift away from this notion of global climate change. Of course the pandemic is showing us our interconnection, but when we operate on a global level, we are paralyzed from reclaiming infrastructure and what private industry calls resources. Whether we conceive of this as reclaiming what is ours and an ownership scenario, whether we conceive of this as resource sovereignty, or whether we conceive of this, as guided by indigenous stewards, as an enduring relationship between people and other species, we simply have to get private equity out of our regions and quickly. This is most pressing when it comes to the North American Great Lakes.

In the Great Lakes basin, we still have a principle of public trust wherein the surface waters of the lakes and rivers belong to everyone who is resident in the watershed, to other species, and to future generations. We've got to hang on to this

public trust tightly right now. First of all, this is extremely important when it comes to regulation. We are in the midst of a massive federal project of deregulation when it comes to water. For example, the Clean Water Act has been completely disbanded. The Clean Air Scientific Advisory Committee was disbanded by Andrew Wheeler, the so-called head of the US Environmental Protection Agency. The committee reconvened itself to argue with federal EPA thresholds.

In this light, we need people of the Great Lakes basin to set up our own committee on water quality, on mitigating flooding. We need to create watershed regulation. We need councils to address things like water distribution and infrastructure. We need to do this quickly, and we need to build on the many decades of Great Lakes legislation. In conjunction with this, we need to address the historical racism, deindustrialization, and segregation in the Great Lakes basin. This is the place where the most impacted people need to lead, not only because this has to be a site of reparation and healing, but also because people on the front lines know in no uncertain terms what they and we are up against and they also know how to find solutions.

Our solutions must be at the regional scale because the assets become clear. In reclaiming our own assets, we need to, for example, chase Nestlé off Lake Michigan, Aquafina and Dasani off of the Detroit water supply, and we need *ourselves* locally to think about a beverage industry, biodegradable containers, delivery systems, and water reuse. When we ask, Where will money come from? Well, we have the money within. There are billions and billions of dollars for multinational water bottlers while at the same time 15 percent of people in Detroit, where that water is taken from, have no water.

In thinking about things like replacing the pipes, recycling our water, or having new industry, we have to remember two things. First, our tax dollars and our labor subsidize the privatization of what belongs to us and other species in the ecosystem. Second, these corporations secure massive loans in order to extract and emit. We need to use this language: The Great Lakes basin is ours as a region and this is reclaiming as part of rebuilding.

We have a unique chance in this part of the world to redress historical wrongs and violence, and also to really make a beautiful Great Lakes Republic that could maybe survive this era. The region could certainly absorb people not based on random thresholds like we see dreamt up by the Trump administration, but instead, and in fact, by who and how many people we're *able* to absorb.

In approaching this unique chance, and reclaiming what's ours, we also have to be sure to not go back to how things were. It's not as if the world before this was working for most people. There are people in different regions, of different backgrounds, political persuasions—but we can agree that no one likes to be had. And we are, with differential experiences and privileges, being *had*—to pay for these things, to enrich the grossly wealthy, to live in a dangerous cruel world where we really need love just to just to make it through and to remember that key humanity.

We need to celebrate the people who work, who struggle, who care, and really expose that. At the same time, we can reclaim that. We are a public even if we're behind our own doors right now. Let's reclaim what's ours—whether that's our money, our values, our water, our love—we need to bring it back in that beautiful way while never hesitating to expose exploitation and this really cruel late capital for what it is.

Together We Rise: Worker Protection and Reopening in the Time of COVID-19

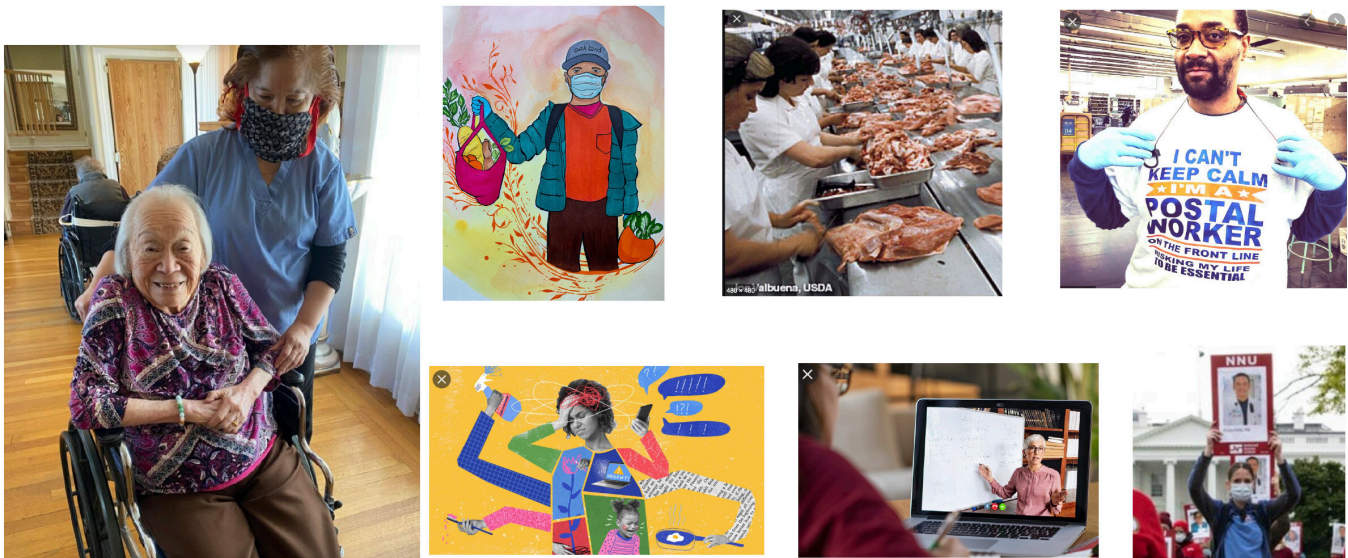
Pam Tau Lee

Pam Tau Lee is an Asian American elder activist and organizer, retired from the Center for Occupational and Environmental Health, University of California, Berkeley. She was a participant at the People of Color Environmental Leadership Summit in 1991 and a contributor to the Principles of Environmental Justice. She is a cofounder of the Just Transition Alliance, Asian Pacific Environmental Network, and Chinese Progressive Association, and a representative to the Grassroots Global Justice, Rising Majority, and current chairperson of the International Coalition for Human Rights in the Philippines.

It was recently my mom's 95th birthday. She lives in a nursing facility, and I had planned to throw her a really big party. My son recently was called back to his workplace. When I think about worker protections and reopening in the time of COVID-19, the safety of my son, of my mom, and of my mom's caregivers was heavy on my mind. This presentation focuses on the publication *Essential Worker Training Tool: Protecting Essential Workers from COVID-19 in the Workplace* (April 2020), by my colleagues at the National Institute of Environmental Health Sciences. This resource provides essential lessons to guide us as we address this issue of COVID-19 and the reopening of the economy.

First and foremost, essential workers are not expendable. There are caregivers, like those of my mom. They're worried not only about their situation as caregivers and their relationship to the disease but also about their family members, for example, in the Philippines and the violence that has escalated in the Philippines in the name of enforcing COVID-19 sheltering in place. For me, I'm a retired instructor, and I've been hearing from my peers and friends that they are all on the verge of a nervous breakdown right now preparing for their classes, learning long-distance techniques, and also managing their families—what it means to be sheltered in place. The postman told me he's worried about the privatization of the postal service. He has a mask that he wears more than once a day. We know about the lack of preparedness and the need for PPE for our front-line workers—nurses, transit drivers, and others.

The next period of reopening the economy is of tremendous concern for everybody. On the news they talk about meatpacking safety or food safety, but we also need to talk about protecting the health and safety of those workers. Industry, however, is focused on the economy right now. In Oregon, the agricultural industry pushed back on a temporary regulation to protect farmworkers that calls for physical distancing among them and the sanitation of high-contact areas. The industry is pushing back against worker protections, saying that they need to prioritize economic pressures and that the regulation is too soon and taking away from what they feel is needed for the country.



Essential workers are not expendable. They are worried about their own situation and their relationship to COVID-19, and about their own families. Left photo: The author's mother in April 2020 with one of her essential caregivers. A year later, her mother has passed away after contracting COVID-19 in her care facility amidst an outbreak affecting staff and residents. Top photo, second from left: Painting titled "Essential Work" by artist Vida Kuang.

Smithfield Foods also has requested flexibility on safety guidelines for its workers. This is just absolutely inappropriate. In public health, we need to continue to push for and demand rigorous practices that provide maximum health and safety to workers. We cannot let agencies compromise for the purpose of economics.

I want to go into the definition of essential workers that the NIEHS has provided. Technically these are workers who provide essential services and must report to the workplace during COVID-19. These are workers who cannot work at home and so are at risk of being exposed to the disease. The National Institute of Environmental Health Sciences is promoting a helpful definition of essential workers as those who provide services necessary to protect the health, safety, and welfare of the community.

In order to look at the disease exposures of these essential workers, we have data from 2008 that include very high rates of physical proximity to disease, face-to-face interactions. When we look at those same rates in 2020, we know they will jump significantly higher, by the hundreds or even thousands.

What are the current responsibilities, then, in terms of providing a safe, healthy workplace for essential workers? Employers and workers have responsibilities under the Occupational Safety Health Act, which requires that “employers provide a safe and healthy workplace free of recognized hazards and follow OSHA standards. Workers should participate in the development and implementation of the employer’s safety and health policies and help ensure that they are appropriate and implemented.”

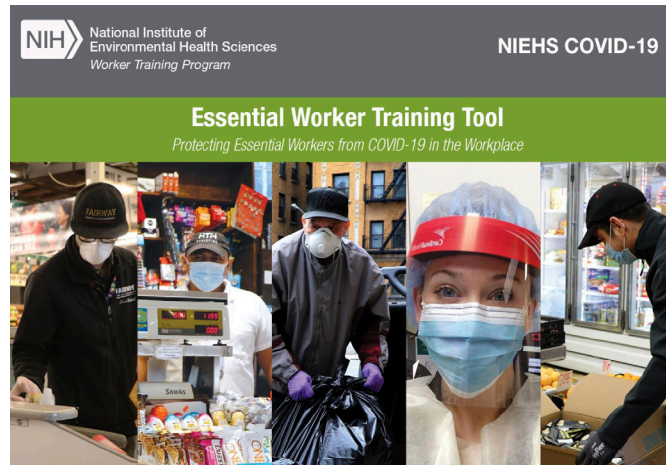
Most of us are very familiar with the first part—that the employer is supposed to provide a safe and healthy workplace—but we are less familiar with the idea that workers should be able to participate. In my interviews with workers, this is a very difficult situation: they have to choose between having a job and being able to speak up for decent work conditions, including health and safety and wages. They have to live with *unfair choices* between having a job or working in very challenging, difficult, and often deadly workplaces. Basically, those who are on the front lines need safe spaces to be able to speak up and to participate in the development and implementation of health and safety policies. What does that look like?

For starters, this looks like job hazard analysis, or analyzing workplace conditions and finding ways to control the situation and prevent hazards. These are four stages involving workers—identify risk, assess risk, control risk, evaluate. In this period of the reopening of the economy, the country will not, and should not, return to past ways of doing things. There has to be something else. We need to look at who should drive this change, and workers need to be at the front end of helping drive that change. It will begin in the workplace and then trickle out and expand on the basis of what they accomplish there. What does that analysis look like?

Everyone by now has probably gone into a grocery store lately and seen various safeguards in place, such as floor markers or signage that tells people to stay a safe distance apart from each other. This is mainly for customers. But when you go into a grocery store, think about not only your safety but the safety of workers—are these safeguards enough?

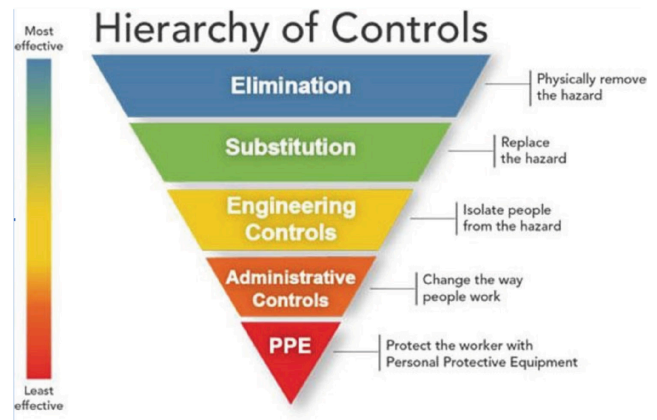
In the field of public health, we are into prevention, and making the workplace safe means that we look to control risk. There are often signs when you go into a workplace that say “be safe.” That is not enough. The NIEHS provides a color-coded hierarchy from most to least effective as follows: blue, elimination; green, substitution; yellow, engineering controls; orange, elimination controls; and red, PPE. So, a safe workplace must have a combination of methods. The hierarchy of controls needs to start with the most effective method for protecting workers. So to have a safe workplace in a grocery store, for example, we have to look at the risks: What controls physically remove the hazard? How can we replace the hazard? Are there policies or rules that can change the way people do the work? Finally, what is in place that protects the worker, usually with personal protective equipment?

When we apply this job hazard analysis framework to COVID-19, we can get some ideas that combine workplace and disease exposures with being able to protect Mother Earth and the environment. That hierarchy would be as follows:



The National Institute of Environmental Health Sciences created and recently published the Essential Worker Training Tool: Protecting Essential Workers from COVID-19 in the Workplace, focusing on personal protective equipment and other safety systems for essential workers.

- Blue: Learn to live in balance with Mother Nature; restore and protect clean water, air, and soil
- Green: Substitute dirty fuel-based economy with clean energy-based economy; when disinfecting hands, emphasize use of soap and hot water; replace toxic with nontoxic products
- Yellow: Everyone who can works from home; barriers in place to achieve physical distancing; break rooms and other common areas disinfected on a schedule
- Orange: Just Transition 4 Workers, community and environmental, economic, and environmental justice policies; safety over production; worker input and respect on the job; written exposure control program; training in languages and/or appropriate ways workers can understand; sick leave, mental health, workplace violence policies
- Red: Conduct assessment for PPE; provide PPE that is appropriate to the hazard at no cost; train employees on proper use, fit test, stockpile.

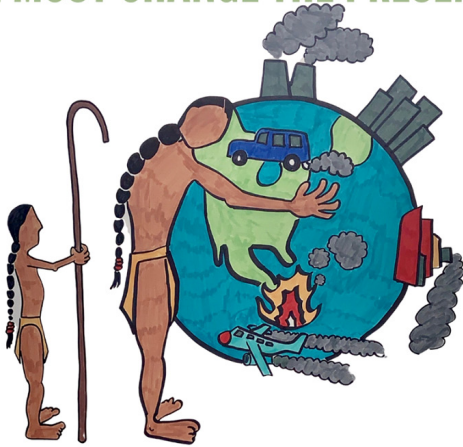


The NIEHS's manual presents this color-coded hierarchy of employer controls to keep essential workers safe.

With all the changes to our lives that have happened in these past months, there is the potential for some new norms. One of these is a new way of greeting each other: no more hugs, zero-contact car service at the mechanic, prioritizing mental health and anxiety relief. These are good, but this is not enough. So, what could something more look like?

We are all change makers, we all have potential, and as somebody already said, we have solutions now. I think of this as “Together we rise for a better world we can make possible.” This framework can capture not only workers being able to work and having a voice in making the workplace safe but also expanding that work into the community and being able to have an impact globally and locally. In learning to live in balance with Mother Nature, in supporting worker rights and unionizing, in making sure we know that essential workers have always been essential and uplifting their value and contributions, together we rise.

TO RECLAIM OUR FUTURE, WE MUST CHANGE THE PRESENT.



WWW.IENEARTH.ORG/JUSTTRANSITION



RESPONSIBILITY & RELATIONSHIP

WE MUST TRANSFORM OUR RELATIONSHIP WITH MOTHER EARTH & NATURE FROM A PROPERTY-BASED APPROACH TO RECOGNIZING HER AS A LEGAL RIGHTS-BEARING ENTITY.

AN INDIGENOUS JUST TRANSITION REJECTS COMMODIFYING NATURE.

WE CANNOT SEE MOTHER EARTH'S ABILITY TO CYCLE AND STORE CARBON AS PROPERTY TO BE BOUGHT, TRADED OR SOLD IN A GLOBAL MARKET.

THIS TRANSFORMATION WILL DEMAND US TO TAKE GREATER RESPONSIBILITY FOR HOW WE INTERACT WITH OUR ECOSYSTEMS.

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SOVEREIGNTY

OUR LANDS, WATERS AND TERRITORIES ARE AT THE CORE OF OUR EXISTENCE.

WE ARE THE LAND, WE ARE THE WATER AND THE LAND AND WATER IS US.

WE HAVE A DISTINCT SPIRITUAL AND MATERIAL RELATIONSHIP WITH OUR LANDS AND TERRITORIES, WATER, ECOSYSTEMS AND ALL LIFE; THEY ARE LINKED TO OUR SURVIVAL.

THIS INCLUDES TREATY LANDS AND UN-CEDED LANDS AND WATER, AND OCEAN TAKEN WITHOUT CONSENT.

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TRANSFORMATION FOR ACTION

AN INDIGENOUS JUST TRANSITION ENCOURAGES OUR PEOPLE TO ASSUME OUR ROLE IN SUPPORTING A TRANSITION AND TRANSFORMATION THAT INCLUDES:

- INDIGENOUS-BASED GREEN ECONOMIES
- NATIVE ENERGY JUSTICE AND DEMOCRACY
- CLEAN ENERGY AND ENERGY EFFICIENCY
- GREEN, AFFORDABLE, AND ENERGY EFFICIENT HOMES
- COMMUNITY-BASED HEALTH CARE AND HEALING CENTERS
- SUSTAINABLE COMMUNITY-BASED PLANNING
- ECOSYSTEM RESTORATION
- MEANINGFUL WORK AND LOCALIZED COMMUNITY-BUILDING JOBS

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The Indigenous Principles of Just Transition from Dallas Goldtooth's presentation, available at www.ienearth.org/justtransition.

The Indigenous Environmental Network is a part of different alliances that are working to prevent future catastrophes and develop principles of just transition toward a regenerative economy.

Building a Regenerative Economy: The Critical Voice of Communities

Dallas Goldtooth

Dallas Goldtooth (Mdewakanton Dakota and Dine) travels extensively across Turtle Island to help fossil fuel and hard rock mining impacted communities tell their stories thru social media, video, and other forms of communication. Dallas is an Indigenous Environmental Network (IEN) media team lead, working with IEN staff, board, and organizational partners from a diverse group of climate justice networks. Along with his many tasks and duties with IEN, he is also a Dakota cultural/language teacher, non-violent direct action trainer, and was one of the outstanding Water Protectors at Standing Rock/Oceti Sakowin Camp fighting the Dakota Access Pipeline. In addition, he is a co-founder of the Indigenous comedy group, The 1491s, a poet, journalist, traditional artist, powwow emcee, and comedian.

I'm coming to you from traditional Three Fires Competitor City territories, which is also so-called Chicago. I'm Dakota and Diné. I'm an organizer with the Indigenous Environmental Network. I'm so thankful to be a part of this conversation connecting the dots. For a lot of our communities who are part of the environmental justice movement, it's all a matter of connecting the dots. We realize that we're not just having a conversation about ecological preservation or conservation; we're actually talking about how we can build a world that's just, sustainable, and renewable, a world that is in line with our own local practices and traditional knowledge formats. This is no different from the current COVID-19 crisis.

From the perspective of a lot of Indigenous communities, any analysis of mitigation efforts, any approach to mitigate or address the issue not only for this current pandemic but for future pandemics, must account for settler colonialism. If it doesn't account for settler colonialism, then the analysis is faulty and will fall short of actually addressing the problem.

I've heard numerous times that we're seeing Black, Native, Latino communities with a higher COVID-19 infection rate than other communities. We need to challenge ourselves to see that this is not *because* these are people of color that they have a higher instance of being infected by the virus. Instead, it is the conditions of our community—conditions we have not had much control over and that the state has defined and dictated to us. We are at higher risk: we're closer to pollution, we're dealing with toxic waste in our backyards, we're dealing with a lot of environmental racism that's causing us to have higher instances of compromised immune systems.

Right now the major crisis in Indian Country is focused on the Navajo Nation, in the southwestern United States. Navajo Nation currently has over 2,300 identified cases of COVID-19 and 73 confirmed deaths (as of May 2020, now 209,675 identified cases, and 1,262 confirmed deaths as of April 2021). Navajo Nation is a sovereign nation with more than 200,000 citizens over 27,000 square miles; it is larger than the state of West Virginia. If Navajo Nation were a state, it would have the third-highest infection rate in the country, behind New York and New Jersey (as of May 2020). In West Virginia there are 163 grocery stores; in Navajo Nation, there are 13. West Virginia has 63 hospitals; Navajo Nation has 6. What this virus is doing is exposing the inherent inequities of extractive economies within our capitalist system and that our system is based on. This puts our people in the crosshairs of death and further issues when the system breaks down.

Over half of native communities live in urban areas, but the rest live in rural communities, which are already dealing with the lack of clean water or running water. Some communities, like the Navajo Nation, don't all have electricity, so communication is a real issue.

Another point—which has been on my mind because I've been challenged by some of my sisters: if our COVID-19 response awareness events or talking points don't include concerns about pandemic-related gender violence, then they are incomplete—especially when we're talking about impacts in Indian Country, where women and children are already experiencing higher rates of vulnerability. Domestic violence is a public health issue; sex trafficking is a public health issue. With this pandemic, there's genuine concern about the increased rates of those things as people are in unhealthy situations, locked in their home in unsafe scenarios. This is not an issue pertaining only to native communities. A lot of other communities have experienced this.

We have to really understand the long-lasting effects of this pandemic. That means, the conditions for how bad it is in our communities were there long before this pandemic even showed up *and* they are conditions not of our own creation. We live in a system that prioritizes the health and betterment of a select few to the detriment of the many. As we talk about addressing this current crisis with financial stimulus packages and aid, if we're not talking about changing the system itself, then we're just setting ourselves up for more failure, not only for us as humans but also for the entire planet. How do we get back into balance with ourselves but also with the land itself and with Mother Earth?

The Indigenous Environmental Network (IEN) is part of an effort called the People's Bailout, as well as part of the Climate Justice Alliance and the It Takes Roots Alliance. For the People's Bailout, we have five different asks. One of those is making a down payment on a regenerative economy to prevent future crises. There are numerous ideas and things we need to do to prevent future catastrophes, and we have to change the way we work. When we have discussions about the status quo and returning to the status quo, it's important to remember that for many impacted communities, the status quo was already killing us, so why would or should we return to that scenario?

The IEN has developed our own indigenous principles of just transition that lay out the path we see in looking to build a regenerative economy. A major part of that approach is reevaluating our responsibility and relationship to the land itself, rejecting the idea that we need to commodify nature in order to build sustainable economies. There's a strong focus on sovereignty and recognizing the inherent rights of indigenous peoples as a distinct way to protect the land, to protect our water and air. Also at the forefront of this fight are the different mechanisms people are using to take action, whether that's community-based health care and healing centers, sustainable community-based planning, energy justice, or democracy. None of those can be overlooked.

I have friends who live in remote Alaska, who live in the Amazon, who live on a Navajo reservation, who live in Chicago—we're all afraid not just of the pandemic and the COVID-19 virus but also of how this current economic system and oil and gas will try to move full steam ahead in response to this moment. We're afraid of what that will do to our communities, our lands, our air, and our bodies. We can't wait until this pandemic is over to take action; we need to take action now.

A challenge is that there's a lot we don't know. We are living in a moment that none of us, no one, has ever experienced to this degree. This is a worldwide event that not a single person on this planet has been through. We do have ideas and thoughts, and front-line communities across the globe have all been in crises for generations. They have developed tactics and strategies to get through that. Not only are frontline communities impacted first and strongest by the effects of climate change as well as by pandemics, but we also find a lot of solutions in those very same communities. So when we talk about just transition or recovery or mitigation, it's essential that we look to those communities who have had no one else to depend on. They couldn't depend on the federal government; they had to depend on themselves to come up with ways to mitigate issues. Theirs needs to be a critical voice as we move forward. We cannot overlook how we elevate local communities as they look to build from within, and prioritizing those localized economies is essential to that effort.

A Clinician's Perspective on the Healthcare Workforce

Jerry A. Krishnan, MD, PhD

Jerry A. Krishnan is Associate Vice Chancellor for Population Health Services of the University of Illinois Health system and Professor of Pulmonary Care at the University of Illinois at Chicago with expertise in the care of patients with asthma, chronic obstructive pulmonary disease and other lung disorders. He is a principal investigator of multiple clinical trials supported by grants from the National Institutes of Health and the Patient-Centered Outcomes Research Institute that focus on identifying the most effective treatments and educational and support programs to improve health outcomes for patients with pulmonary disorders. Krishnan was chairman of the Pulmonary-Allergy Drugs Advisory Committee for the U.S. Food and Drug Administration. He is a member of the National Committee for Quality Assurance Respiratory Measurement Advisory Panel, and the National Heart, Lung, and Blood Institute's Clinical Trials Review Committee.

I'm a pulmonologist, and in my field we've been thinking about climate change as a slow-moving problem, but one that will definitely happen. We're increasingly recognizing that we have a problem we can't get out of, and it's better to act now to mitigate the severity of the coming disaster. All of us here have recognized that it's very clear that human-kind is having an impact on climate. Some of the pictures from various parts of the world are pretty clear, no pun intended: before and after COVID, the skies are much clearer, cleaner. With less human activity we can actually see the air that we breathe, that the sky is blue. How is this related to what's happening with COVID-19?

There's a very famous picture that was taken by the Apollo 8 astronauts, *Earthrise*—a beautiful picture of the Earth as it rises over the horizon from the moon. Some people consider this the most influential environmental photograph ever taken because it demonstrates that we're all one. When you see it, you realize that all 6 billion of us living today in different states, different countries, different parts of the world—we are all living on one Earth, and we are entrusted with the health of this planet. No matter where we live we live on Earth, we're all consumed right now by COVID-19. But with an underlying phenomenon of climate change, we don't want to take our eye off the ball. There's only one planet like Earth anywhere. What are lessons from COVID that we can apply to make progress. As Dallas Goldtooth mentioned, we shouldn't wait until all of the attention from COVID is gone. The question is, then, How do we gear up for what almost certainly will be an increase in economic activity as the economy reopens and then returns to the way things were? How do we start to think about the urgency of now in planning and to raise awareness about what we are doing to the planet and how should we behave differently?



The world-famous photograph *Earthrise*, taken by the Apollo 8 astronauts.

With Steve Weine, Robin Wilson, and some others across the University of Illinois system, I have been thinking about the healthcare workforce, how it's been impacted by COVID-19, and how that portends the future. An important question is, How do we start to draw out lessons learned for the next pandemic or disaster? According to the emergency management cycle, there are several phases of response that we all go through in a disaster like a pandemic. We are currently in the response phase, addressing urgent needs while business and operations are not functioning normally. We're moving toward realign all our resources to address the crisis. At some point, the COVID-19 pandemic will ease, we will find new treatments, we will find a vaccine—all eventually will come on line. There will be enough herd immunity among those of us who have already been infected that eventually the brute force and some of the adverse consequences we're seeing at this point (in May 2020) will start to dissipate. We'll then move into a recovery

phase, when we start moving toward regular operations and activities. This is likely to be more protracted because we think that there will be multiple ebbs and flows of COVID-19 and its effects. As the regular influenza season starts, it may complicate matters, so I do not suspect it will be a nice, linear, smooth process from response to recovery. There is back and forth between these phases, but most of us believe this will eventually get better and we'll eventually move on to mitigation, or figuring out how to prevent or reduce the consequences of what just happened. Finally is preparedness. Now, though, we need to think about how to organize ourselves as we move into the recovery phase.

There are two lessons learned in this for climate change to take advantage of. One, we are working together as a planet at this point. All across the world, healthcare providers, industry, elements of our government are actually working in a coordinated fashion to address the COVID-19 response. In this way, how can we apply this approach to thinking about climate change and how we could respond to it in a more coordinated fashion?

As we move into the recovery phase of COVID-19, most people will be thinking about bringing the economy back on line, and we want to think about making sure that the climate change agenda is front and center as we move into recovery. Then we move on to the mitigation and preparedness phase: how do we start to prepare ourselves for climate change-related activities that are likely to become increasingly a problem? This particular timeline also recognizes that all of these phases have certain needs and certain impacts on people, information, processes, space, equipment, technology, and the physical or psychosocial human component of delivering care. Some of this framework is very relevant as we think about climate change.

In closing, the COVID-19 response has pulled together actors and individuals all throughout the world to work in a more coordinated fashion. I certainly believe that healthcare practitioners are learning from each other not only across the US but across the world, serving as a model for how we can potentially accelerate and work in a more coordinated fashion in order to protect this Earth that we live on.

Phase 1. Response (months, possibly to July 2020): Response occurs in the immediate aftermath of a disaster when business and other operations do not function normally. This phase consists of two sub-phases: response surge (acceleration in the number of new COVID-19 cases and its impact on the healthcare workforce) and response decline (deceleration of the number of new COVID-19 cases and its impact on the healthcare workforce).

Phase 2. Recovery (6 months, possibly July 2020 to December 2020): Recovery involves restoration efforts that occur concurrently with regular operations and activities.

Phase 3. Mitigation (6 months, possibly December 2020 to July 2021): Mitigation involves actions taken to prevent or reduce the cause, impact, and consequences of the COVID-19 pandemic. These activities should include evaluating the response, developing metrics, and formulating playbooks for responding to future pandemics.

Phase 4. Preparedness (on-going, possibly July 2021 onwards): Preparedness encompasses planning, training, and educational activities for events that cannot be mitigated. The COVID-19 pandemic is likely to have subsequent waves. There could also be other pandemics or disasters, such as tornadoes or floods. An infrastructure is needed to help healthcare workers to respond to subsequent pandemics or disasters.

Focusing Where the Need Is: Finding Solutions to 528 Years of Pandemic

José Bravo

José Bravo is the executive director for the Just Transition Alliance (JTA), where he works directly with Environmental Justice (EJ) Communities and Labor (organized and unorganized) to develop best practices and build meaningful and impactful alliances. José is also the National Campaign Coordinator of the Campaign for Healthier Solutions, a community driven campaign toward healthier discount stores. Bravo's work in social justice issues is rooted from his upbringing in the Southern California fields alongside both his parents. Bravo has also been doing work on immigrant rights issues since his days as a student organizer in the 1980s to the present. His participation in the EJ movement since 1990 has over the years gained him recognition as a national and international leader in the EJ movement and as founding member and national and international leader in the Just Transition Movement.

After Hurricane Katrina and Hurricane Maria we saw this thing called disaster capitalism. We're seeing disaster capitalism with COVID-19 as well. Things are hard to buy, hard to get a hold of. Testing for COVID-19 is much easier in white communities than in communities of color. Also related to disaster capitalism is these industries that are still causing harm even when their infrastructure is no longer in use, such as the imploding smokestack in Chicago that Juliana Pino mentioned. A lot of the conversations in our communities have been that these industries are there for us to have jobs. But this is economic extortion, economic blackmail. We should move, and we should have moved years back, to supplying jobs that don't put at risk workers' health or the communities' health.

When we talk about pandemic today, we're talking about natural pandemic, or even unnatural pandemic with the removal of a lot of green and forested areas, but we've had pandemics in our communities for 528 years. Some of them were brought to us, like smallpox; others were part of the natural order of things. But let's focus on the ones that were brought to us. When we see that more than just people of color and communities and indigenous communities are being affected, then it's called a pandemic; then it's something we should all take issue with. What, though, about the pandemic of lead contamination in our communities? Learning disability is almost a norm in Latino and African American communities. Cancer rates, diabetes, asthma—every one of us knows somebody with those. These are our pandemics. These are the pandemics that have been happening in our communities. Now that white, middle- and upper-class people are being impacted by COVID-19 it has become an urgent thing. But we've been going through this for 528 years, to be exact.

Right now the impacts of COVID-19 on the Navajo Nation aren't even making the news. Instead, it is some jerks at a state capitol who are weaponized and trying to get in. What happens in our communities usually goes unheard. Even the data that do come out, and even some of the data covered here, don't single out communities that are overimpacted by industrial use, by heat sinks, by a bunch of other factors that cause harm and cause our health to be in decline. As a result, if we don't start talking about some of these issues, then, as history has always proved to us, it will become a lifestyle issue. For example, people are getting sick in communities of color because of their lifestyle, because they don't want to wear masks, they don't want to do this or that, they don't want to protect themselves, they eat pork, they smoke, they drink. This is the common denominator when people talk about our health in our communities. It isn't that we had 90,000 parts (per million) of xylene in the water in Matamoros on the Mexico-US border. It's that we're really bad.

It's high time that we start thinking about solutions. People are talking about climate justice and the solution being renewable energy. When we talk about renewable energy, you need batteries, and when you need batteries, certain communities are looked at for recycling those batteries. Is that another pandemic in the making? Is that the foreseeable disaster that we'll be talking about next, or are we going to start using things that don't poison us, that contribute to our communities, to local economies, that are grown locally, that are manufactured locally not only with unionized labor but with labor cooperatives?

We've got to be careful what we ask for. How are we going to pay for the infrastructure that needs to be created in order for us to keep this momentum of lowering carbon emissions during this pandemic and beyond? It's high time that we go after the subsidies that all these corporations get. That's our money. Let's go after the subsidies and start building that infrastructure. If we don't, the banks are not going to loan us that money. Government's not going to

loan us that money. We need to take back our money that is locked up in the subsidies that these multibillion-dollar multinational corporations get to create that infrastructure.

Last, I want to mention farmworkers. My parents are farmworkers out here in California. Farmworkers are impacted, and everybody talks about how farmworkers are essential workers. Somebody said they've been essential workers since farming started. But the fact is that most of them don't even qualify for programs to get any kind of assistance today. Most of them do not go to the doctor like many people do. Ultimately, with the rise coming up in heat in the summer months, we're going to see more heat illness, more people getting infected with COVID-19 because of the ways that farming is done and farmworkers are treated.

In terms of solutions to climate change and COVID-19, we have to look at regional and local economies of scale. If we don't, then we will shift the burden somewhere else. For example, there was a craze around weatherizing homes with vinyl windows. Who didn't get vinyl windows first? Those communities supplying the vinyl, the chemicals, everything that goes into vinyl. Those communities were the last ones, or they probably still don't have them. Windows can be made from hemp products, not plastic.

We have to start thinking about how things are made and the impact at the point of extraction—usually indigenous land. We have to look at a product's life cycle from cradle to cradle: the point of extraction, where the chemicals are produced, where chemicals are put into products, where workers are working with those chemicals, where the chemicals go out into retail stores and are sold, how those chemicals are transported, and ultimately how the end product is ultimately not recycled in an adequate way. They're sent to our communities to be taken apart and then other products made from us. If we don't start looking at the life cycle of products from cradle to cradle, then it doesn't matter who wants to make this world better. It will be making something worse for those communities.

Let's really focus and make sure that we understand where we have to deal with these situations. I've always said that in environmental justice communities, if you deliver an environmental justice community from being impacted by toxics and waste and redlining and everything else that goes along with it, society as a whole benefits. Let's focus where the need is real.

Rooting Ourselves in Justice

Michele Roberts

Michele Roberts has provided technical assistance and advocacy support to communities regarding the impacts of toxins on human health and the environment for over 20 years. She also is a spoken word artist, who created Arts Slam @ SsAMS, a community-based arts program created to advance social justice. She is a proud graduate of an Historically Black College and University. Prior to serving as an advocate, Michele worked as an environmental scientist in the government. She currently serves as the national Co-Coordinator of a National Coalition known as the Environmental Justice and Health Alliance for Chemical Policy Reform. The Environmental Justice and Health Alliance for Chemical Policy Reform is a national, intergenerational grassroots coalition of over 30 groups in 13 states and includes supportive allies such as National Black Farmers Association, National Indian Farmers Association and National Womens Farmers Association in the US.

I'm going to actually begin with the end and end with the beginning: *Anthropocene*. How do we even go up against that? There's only one word: love. That love is what binds us and builds our humanity. That love is our interconnectedness to humanity. That love is our interconnectedness to Mother Earth. We learn from our indigenous brothers and sisters that the Earth can deeply repair herself, as we're seeing in some of the examples of this pandemic.

I work with the Environmental Justice Health Alliance for Chemical Policy Reform, a legacy, fence-line, front-line community organization and group that serves and provides capacity to other legacy core organizations and communities. We say *legacy* because legacy extends beyond legacy pollution. It extends back to legacy historical racism, to the forced migration and extinction of our native brothers and sisters. It extends to my dearly beloved family, those slaves who were ripped from their own land, brought here, left as landless people, and legislated into this society. No one really looked at or addressed the health and trauma conditions that really impacted these people from the very beginning, from the time they reached the shores of the Americas.

When I think about this, I include someone like my uncle David, when he was all of fifteen years old. During the tuberculosis crisis, my uncle David was subjected to die in a separate-but-unequal shack. My grandfather put David in a car and drove him to Terre Haute, Indiana, where my grandmother said, "I will nurse him and help bring him back because we can't have this happen." In that same year, 1952, my maternal grandmother, Pauline Dickerson, had cancer. She lived on the Delaware Route 9 industrial corridor. In addition to cancer, she had TB. She was subjected to a separate-but-equal unequal shack to die, the very same shack that my grandparents refused for my uncle David. Unfortunately, my single-parent grandmother had nowhere else to go but there.

This is not just my story. This is the many stories of the communities we serve in the Environmental Justice Health Alliance for Chemical Policy Reform. There is a huge disconnect between public health and environment, and between public health and communities of color. As we fast-forward to today, when we provide capacity support with data after data after data on who's in danger, life at the fence line, watered-down justice, environmental justice in Delaware, what dollar stores do to your communities—all of these things are a day late and dollar short. For solutions, you think, Look at all those wonderful bodies and faces in this intellectual space! Wonderful! We have solutions coming from the grassroots!

But all states and departments of public health and environmental protection are not created equal. We still hear: "It's those moldy tortillas," or "If you would only stop eating that and drinking too much liquor," and "If you stop smoking so much, you wouldn't be having these cancers." All of these things are from disparate levels, and now we have come into (the equivalent of) Hurricane Katrina. During Katrina we said, "We pulled the cover off of racism in public health and we're going to do better." But did we do better? Here we are in this pandemic. That cover that we pulled off sadly went right back on, and we still have disconnects with chemical and industrial uses, public health and response, access to adequate health care delivery systems, access to treatments.

As we move forward, after the fact, how do we really reopen a space that provides radical health and wholeness to *all*, not just a select few, to *all*? We need to look at industries already in existence and understand, "Yes, we want to do away

with the fossil fuel industry and these harms to our communities such as they are. But what does it look like inside of these facilities in terms of sheltering in place, social distancing? Is output still the same or should facilities be retooled?" Let's ask whether we have rolled back the modest policy gains we've made to offer protection to workers and communities. As we speak to labor, ask, Have we addressed the racism inside of labor? And on and on. The story goes on.

We cannot go back to what we were. We are at a point where we could possibly get it right. The good news is that with EJHA and some of the things we have done and our solutions, we have gone back to some of the folks who have failed us and the policies that have failed us, such as the Toxic Substance Control Act. We are actually sitting down at tables in collectives. We're sitting down with national groups actually going through some of these policies that have created harm to our communities and saying, "This has got to stop."

There are many layers to the ways we must address radical justice. We are no longer in the space to talk about equity. That's over. That was pre-pandemic COVID-19. We now must be clear that the conversation must be rooted in justice. We must be aligned, we must address the sins of the past, and we must be able to move forward in harmony and last in love. Because if we don't have love, as Dr. King said, as these 500 years have shown us—well, we must have love in it all. That's what Mother Earth is trying to explain to us. If we could only just lay down our egos and our intellects and open our hearts wide, and we'll be able to hug each other soon. But right now, we've got to love, and let our hearts be the driving force for us to bring our humanity totally together. Perhaps social distance has helped us understand how much we really do need one another. Let's do this thing aligned in love, and let's leave no one behind this time, no one.

Conclusion

Each of the contributions to this report is informed by a different area of expertise, academic discipline, lived experience, or geography. Even so, it is abundantly clear that all are interconnected and that the only way forward for us all is through that interconnection. Whether one's work occurs within the walls of a hospital, lab, or classroom, or at the policymaking table, in the neighborhood, in front of an audience—whether it is in the Peruvian Amazon, the Great Lakes Basin, Delaware's Route 9 Corridor, or urban communities and neighborhoods from Los Angeles to Chicago—the convergence of climate change and public health in the time of COVID-19 *requires* that we come together and leverage the interconnections in our work.

The effects of COVID-19 have upended daily life around the world, and so many talk of a return to normal, or a “new” normal. But there are no truer words than those of contributor Rachel Havrelock: “It’s not as if the world before this was working for most people.” The contributors to this conversation about climate change and global health are committed to centering equity in their work and their solutions. Anything less will fall short. Anything less, as this discussion makes clear, will prevent us from building the future we need instead of returning to the one we had.

At UIC Great Cities, our vision is to “formulate solutions to tackle the multi-dimensional challenges of the changing socio-political economy of cities and their metropolitan regions.” The conversation on which this report is based was one collaboration at one point in time. In February 2021, we are still learning about COVID-19 and its global effects. We hope to continue this conversation with colleagues across a variety of fields as we all work together to find solutions that serve all of us.

About Great Cities Institute

Serving UIC's Great Cities Commitment: Solutions for Today's Urban Challenges

The Power of Research:

GCI offers bold solutions for urban problems to improve the quality of life in our cities and regions

UIC's Great Cities Institute is a research hub for scholars, policymakers, and stakeholders who share an interest in finding answers to the question, "What can cities and regions do to make themselves into great places?"

The Great Cities Institute (GCI) represents UIC's commitment to "engaged research" while contributing to its stature as a Research One University thereby highlighting the value of quality research for addressing today's urban challenges.

By harnessing the power of engaged research, Great Cities Institute:

- Advances conversations on key issues
- Promotes community economic development strategies
- Produces, with neighborhoods, commercial revitalization and quality of life plans
- Provides data and technical assistance
- Facilitates collaboration and public engagement
- Assists with mentorship, training and capacity building
- Conducts policy and impact analysis
- Convenes local, national and international scholars

Our Goal

Improve the quality of life of residents living and working in Chicago, its metropolitan region, and cities throughout the world.

Our Strategic Focus

GCI's work focuses on *employment and economic development, local and regional governance, dynamics of global mobility, energy and the environment and community wellbeing*. GCI's develops strategic partnerships that leverage the intellectual capital of the university with the local knowledge of neighborhood residents, government and non-profit, foundation, business and civic organizations. GCI is home to the UIC Neighborhoods Initiative, a university-community partnership with neighborhoods both adjacent to the UIC campus and in the Chicagoland area.

Our Vision

Formulate solutions to tackle the multi-dimensional challenges of the changing socio-political economy of cities and their metropolitan regions.

Our Mission

The Mission of the UIC Great Cities Institute is to link its academic resources with a range of partners to address urban issues by providing research, policy analysis and program development. Tied to the University of Illinois at Chicago *Great Cities Commitment*, GCI seeks to improve quality of life in Chicago, its metropolitan region and cities throughout the world.



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