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SUMMARY

For over a year, the COVID-19 pandemic and concerns about systemic racial injustice have highlighted the conflicts and opportunities currently faced by environmental law. Scientists uniformly predict that environmental degradation, notably climate change, will cause a rise in diseases, disproportionate suffering among communities already facing discrimination, and significant economic losses. In this Article, members of the Environmental Law Collaborative examine the legal system's responses to these crises, with the goal of framing opportunities to reimagine environmental law. The Article is excerpted from their book *Environmental Law, Disrupted*, to be published by ELI Press later this year.

I. Introduction

As the authors of this Article were in the final phases of editing a book on disruption in environmental law, a pandemic swept across the world, disrupting daily life and the functioning of society to an extent unprecedented in living memory. The novel coronavirus known as COVID-19 was identified in China in late 2019 and by late February 2020, it had spread to every continent except Antarctica[1]; as of April 2021, the World Health Organization (WHO) estimated that over 148 million people had been infected worldwide with over 3 million deaths.[2] Scientists and public health experts have raced to understand the virus—how is it transmitted and spreads, who is vulnerable, how is it dangerous, and what are effective treatments—to help governments respond.

In many places, including the United States, governments slowed the spread of the virus by relying primarily on the blunt tool of physical distancing, typically in the form of stay-at-home orders. Physical distancing, whether engaged in voluntarily as a result of fear of the virus or required by stay-at-home orders, coupled with other virus control measures, including mask wearing, travel restrictions, and a nationwide conversion to distance learning at all levels of education, impeded the virus' spread, but it also occasioned massive economic disruption, with unemployment rates reaching over 14% in April 2020 before dropping again to around 8% (pre-COVID rates had been right below 4%).[3] The National Bureau of Economic Research concluded by early June 2020 that "the unprecedented magnitude of the decline in employment and production, and its broad reach across the entire economy" had led to a recession.[4] By late spring 2020, having either met public health criteria, seeking economic and psychological relief, or simply acting out of political partisanship, many states began to relax social distancing measures.

At around the same time, nationwide mass protests erupted in the wake of the horrific killing of George Floyd and against the backdrop of the extraordinary and disproportionate suffering of low-income communities and communities of color. Protesters demanded the end of systemic racism in the United States and imposed purposeful social disruption to achieve long overdue and urgent reforms. In short, spring and summer 2020 witnessed a nation drastically altered.

1. Joshua Berlinger, *Coronavirus Has Now Spread to Every Continent Except Antarctica*, CNN (Feb. 26, 2020), https://www.cnn.com/2020/02/25/asia/novel-coronavirus-covid-update-us-soldier-intl-hnk/index.html. Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus called SARS-associated coronavirus (SARS-COV).
2. WHO, WHO Coronavirus Disease (COVID-19) Dashboard, https://covid19.who.int/.
3. News Release, Bureau of Labor Statistics, The Employment Situation (Sept. 2020), https://www.bls.gov/news.release/pdf/empsit.pdf.
4. National Bureau of Economic Research, Determination of the February 2020 Peak in U.S. Economic Activity, https://www.nber.org/cycles/june2020.html.

We did not envision these events when writing our book. Nevertheless, the COVID-19 crisis and urgency to address the ubiquity and deep harms of systemic racial injustice serve to heighten our concerns and highlight the conflicts and opportunities already contemplated by the authors. Scientists uniformly predict that environmental degradation, most notably climate change, will cause a rise in known and presently unknown diseases,[5] disproportionate suffering among sectors of society (especially in communities already facing discrimination due to race and/or economic power),[6] and significant economic losses.[7]

Hence, examining the responses of our legal institutions to the pandemic will give us some insights about our resiliency and our past (and ongoing) failures to ensure equity as we face the challenges of climate change; it also suggests that if we respond to climate change events the way we responded to COVID, we are all in trouble. Thus, we offer this jointly authored Article in the hope that it will further frame opportunities for reimagining environmental law.

II. How the Pandemic Revealed Weakness and Lack of Resilience in Our Systems

Climate change is a threat multiplier. It promotes and intensifies a diverse array of harms, including increasing the frequency and severity of extreme storm events, causing heat waves and heat-related deaths, heightening the risk of crop failure, and facilitating the spread of vector-borne diseases. Developing resilience, or the capacity to predict, prepare for, and competently and equitably navigate a wide range of stressors, has thus long been at the center of efforts to adapt to climate change.

COVID-19 has revealed critical weaknesses and vulnerabilities in our political, economic, health, cultural, and legal institutions to devastating effect. As recently noted by the United Nations Office for Disaster Risk Reduction, "all nations failed to prepare appropriately to prevent the wave of death and illness unleashed across the globe by the COVID-19 pandemic, despite many urgings to do so from a plethora of experts."[8] The United States was not an exception: we were unprepared and unable to respond effectively on so many levels. Our response to COVID-19 offers a glimpse of the consequences of our ongoing failure to develop resilient social and political structures to address climate change. Using supply chains and energy systems as examples, this section describes how the pandemic wreaked havoc on the functioning of these systems and illustrates how vulnerabilities in one system can intersect with and compound other legal, institutional, and social problems.

A. *Supply Chains*

The pandemic has laid bare our reliance on extended supply chains and low-paid essential workers unsupported by adequate social safety nets. It particularly has exposed our failure to stockpile adequate medical supplies and, once shortages became apparent, to address those shortages in a competent, coordinated, and just fashion. Finally, it has shown how partisanship and dysfunctional governance can impede recovery.

The COVID-19 pandemic has revealed how our reliance on just-in-time procurement policies and our unwillingness to invest in supply stockpiles makes us vulnerable. Even our medical supplies have become limited, resulting in a scramble to secure personal protective equipment (PPE) for medical workers and other care providers, as well as raw materials necessary to produce virus testing and vaccines. Initially, medical professionals took to social media begging for supplies.[9] In this scramble, wealth and race were often outcome-determinative. Well-resourced private hospitals serving wealthier patients, received an influx of donations and private aid, while public hospitals serving poor communities resorted to plastic bags and duct tape.[10]

Hospitals regularly informed the federal government of supply shortages including ventilators and personal protective gear.[11] Frontline workers struggled to equip themselves with masks and gloves,[12] while hospitals went to great lengths to secure ventilators to keep intubated patients alive.[13] Medical providers identified shortages of blood[14] and prescription pain relievers,[15] while they waited to receive testing kits and swabs.[16] Shipments of products and raw materials from Asia and elsewhere suffered delays as the virus spread throughout the manufacturing industry.

Supply chain failures extended well beyond the medical sector, obstructing goods from arriving in the marketplace. Relatively speaking, residents of the United States have less

5. *See, e.g.*, Arturo Casadevall, *Climate Change Brings the Specter of New Infectious Diseases*, 130 J. Clinical Investigation 553 (2020).
6. Michele K. Evans, *Covid's Color Line—Infectious Disease, Inequity, and Racial Justice*, 383 N. Engl. J. Med. 408-10 (2020).
7. IPCC, Summary for Policymakers, *in* Global Warming of 1.5°C, B.5 (2018), https://www.ipcc.ch/sr15/chapter/spm/.
8. U.N. Office for Disaster Risk Reduction, Human Cost of Disasters: An Overview of the Last 20 years (Oct. 13, 2020), at 3. ("It is baffling that we willingly and knowingly continue to sow the seeds of our own destruction, despite the science and evidence that we are turning our only home into an uninhabitable hell for millions of people. It really is all about governance.")
9. Mariel Padilla, *"It Feels Like a War Zone": Doctors and Nurses Plead for Masks on Social Media*, N.Y. Times, Mar. 19, 2020.
10. Michael Schwirtz, *One Rich N.Y. Hospital Got Warren Buffet's Help. This One Got Duct Tape*, N.Y. Times, Apr. 26, 2020.
11. Benjamin Siegel & Anne Flaherty, *More Than 300 U.S. Hospitals Warn of Supply Shortages in Coronavirus Fight, Watchdog Says*, ABC News (Apr. 6, 2020), https://abcnews.go.com/Politics/300-us-hospitals-warn-supply-shortages-coronavirus-fight/story?id=70003733.
12. Brian Krans, *From Pain Meds to Condoms: Other Medical Supply Shortages Under COVID-19*, Healthline (Apr. 2, 2020), https://www.healthline.com/health-news/medical-supplies-that-will-have-shortages-soon-under-covid-19-outbreak.
13. Megan L. Ranney et al., *Critical Supply Shortages—The Need for Ventilators and Personal Protective Equipment During the Covid-19 Pandemic*, 382 New Eng. J. Med. e41 (2020), https://www.nejm.org/doi/full/10.1056/NEJMp2006141.
14. DeeDee Stiepan, *Critical Blood Shortages Because of COVID-19*, Mayo Clinic News Network (Mar. 16, 2020), https://newsnetwork.mayoclinic.org/discussion/critical-blood-shortages-because-of-covid-19/.
15. Krans, *supra* note 12.
16. Robert Kuznia et al., *Severe Shortages of Swabs and Other Supplies Hamper Coronavirus Testing*, CNN.com, Mar. 18, 2020, https://www.cnn.com/2020/03/18/us/coronovirus-testing-supply-shortages-invs/index.html.

experience with scarcity than other regions and economies of the world. Yet, fear-driven disaster gave even wealthy Americans a taste of what shortage might look like. Infant formula[17] shelves emptied quickly, as did toilet paper[18] and disinfectants.[19] High infection rates among meatpacking plant workers[20] disrupted meat production, leading some stores to limit meat purchases.[21] Yeast,[22] garlic, auto parts, electronics, and toys became harder to find.[23]

The federal government's responses to these shortages were riddled with incompetency, graft, and cruelty. In the spring, when hospitals and state leaders warned they faced critical shortages of medical supplies, the Donald Trump Administration initially refused to exercise its authority under the Defense Production Act to order U.S. manufacturers to produce necessary equipment.[24] The White House told states they were on their own. Governors scrambled to secure supplies, often finding themselves bidding against each other for equipment. They soon began to coordinate with each other, only to face overt and often hostile competition from the federal government, which—in a futile effort to concurrently deny that COVID was a crisis and demonstrate it could control the crisis—was attempting to build up the federal stockpile by bidding against states that actively needed supplies.[25]

When asked why the Administration was working against the states and refusing to share federal supplies, President Trump's son-in-law and advisor Jared Kushner declared the federal stockpile "ours," and not the states' or Americans' more broadly (a declaration that required some editing on the U.S. Department of Health and Human Services website to make it conform to Kushner's description).[26] The same hostility to states and workers played out when President Trump invoked the Defense Production Act to override state and local orders to close meatpacking plants that had COVID-19 outbreaks.[27] Later reporting would show that the meatpacking orders were issued in part to fulfill the requests of major campaign donors of President Trump.[28]

B. *Energy Protectionism*

The COVID-19 pandemic has also shined a light on how dysfunctional our energy systems have become. One of the starkest examples of this dysfunction manifested in April, when oil began trading at negative prices, i.e., energy traders were paying people to take oil from them.[29] But COVID-19 has also revealed the fragility and unsustainability of much of our energy and transportation systems. Perhaps, as more people understand the weak underpinnings of these sectors, they will begin to embrace more systemic and strategic reforms.

For many Americans, the idea that the world has an oil glut likely came as a shock. Since at least the 1970s—when the United States reeled from oil shortages caused by a lack of domestic production, increased reliance on oil imports, and embargos imposed by the Organization of the Petroleum Exporting Countries (OPEC)—U.S. energy policy has equated energy security with abundant U.S. energy production. So long as the United States could develop its own oil resources and be "energy independent," the thinking was that the United States would be protected from the vagaries of international oil politics and markets.

An inordinate amount of subsidization and investment backed this effort toward energy independence, and both U.S. energy policy and politics (including the so-called all-of-the-above energy plans embraced by presidents George W. Bush and Barack Obama) seemed to be driven by the fear that the United States was always at risk of future domestic oil shortages. So, the United States developed more policies and invested in new technologies, namely horizontal drilling and hydraulic frac-

17. Jessica Guynn, *Baby Formula Shortages Easing After Coronavirus Panic Buying, But Don't Expect Fully Stocked Shelves for Months*, USA Today, Apr. 17, 2020, https://www.usatoday.com/story/money/2020/04/17/coronavirus-shopping-baby-formula-infant-formula-shortage-covid-19/5139317002/.
18. Brent Schrotenboer, *Coronavirus and Shopping for Supplies: Getting to the Bottom of the Toilet Paper Shortage*, USA Today, Apr. 8, 2020, https://www.usatoday.com/story/money/2020/04/08/coronavirus-shortage-where-has-all-the-toilet-paper-gone/2964143001/.
19. Pat Rizzuto et al., *Disinfectant Shortage to Last Weeks Without Raw Materials*, Bloomberg L. Env't & Energy Rep. (Mar. 27, 2020), https://news.bloomberglaw.com/environment-and-energy/disinfectant-shortage-to-last-weeks-without-raw-materials; Lauren Weber, *As the Country Disinfects, Diabetes Patients Can't Find Rubbing Alcohol*, Kaiser Health News (Apr. 3, 2020), https://khn.org/news/as-the-country-disinfects-diabetes-patients-cant-find-rubbing-alcohol/.
20. Michelle A. Waltenburg et al., *Update: COVID-19 Among Workers in Meat and Poultry Processing Facilities—United States, April-May 2020*, 69 MMWR Morb. Mortal Wkly Rep. 887 (2020). The overwhelming majority of infected workers were members of racial and ethnic minorities. President Donald Trump responded by invoking the Defense Production Act, despite refusing to use that statutory authority to produce PPE.
21. Jaewon Kang & Jacob Bunge, *A Smart Guide to the U.S. Meat Shortage*, Wall St. J., May 6, 2020, https://www.wsj.com/articles/a-smart-guide-to-the-u-s-meat-shortage-11588768651.
22. Aaron Mak, *The Yeast Supply Chain Can't Just Activate Itself: There's a Reason the Ingredient Is Still Missing From Stores*, Slate (Apr. 15, 2020), https://slate.com/business/2020/04/yeast-shortage-supermarkets-coronavirus.html.
23. David Payne, *10 Products in Short Supply Due to Coronavirus*, Kiplinger (Mar. 26, 2020), https://www.kiplinger.com/slideshow/business/T062-S010-products-in-short-supply-due-to-the-coronavirus/index.html.
24. Zolan Kanno-Youngs & Ana Swanson, *Wartime Production Law Has Been Used Routinely, but Not With Coronavirus*, N.Y. Times, Mar. 31, 2020, nytimes.com/2020/03/31/us/politics/coronavirus-defense-production-act.html.
25. Joel Rose, *A "War" for Medical Supplies: States Say FEMA Wins by Poaching Orders*, NPR (Apr. 15, 2020), https://www.npr.org/2020/04/15/835308133/governors-say-fema-is-outbidding-redirecting-or-poaching-their-medical-supply-or.
26. Aaron Rupar, *Jared Kushner's Ventilator Remarks Contradicted a Government Website. Hours Later, the Site Was Changed*, Vox.com (Apr. 3, 2020), vox.com/2020/4/3/21207140/jared-kushner-strategic-national-stockpile-ventilators.
27. Andrew Restuccia & Jacob Bunge, *Trump Takes Executive Action to Keep Meat-Processing Plants Open*, Wall St. J., Apr. 28, 2020, https://www.wsj.com/articles/trump-to-take-executive-action-to-keep-meat-processing-plants-open-11588099443?mod=article_inline.
28. Jane Mayer, *How Trump Is Helping Tycoons Exploit the Pandemic*, New Yorker (July 13, 2020), https://www.newyorker.com/magazine/2020/07/20/how-trump-is-helping-tycoons-exploit-the-pandemic?utm_source=twitter&utm_medium=social&utm_campaign=onsite-share&utm_brand=the-new-yorker&utm_social-type=earned.
29. Liam Vaughan et al., *The Essex Boys: How Nine Traders Hit a Gusher With Negative Oil*, Bloomberg Businessweek (Dec. 10, 2020), https://www.bloomberg.com/news/features/2020-12-10/stock-market-when-oil-when-negative-these-essex-traders-pounced.

turing, to get the oil out. As oil resources began to flow, companies realized that a lack of pipeline and railcar capacity was constraining their business. So, they successfully lobbied to expand infrastructure.

Even when the infrastructure proved unsafe—for example, when oil trains exploded in Canada, killing 47 people and devastating the town of Lac-Mégantic in 2013; or when a train carrying oil derailed and caught fire in the town of Mosier, Oregon, along the Columbia River, in 2016; or when a pipeline burst in 2010, leading to uncontrolled oil releases in Michigan, resulting in a five-year cleanup; or when, also in 2010, the *Deepwater Horizon* drilling operation catastrophically failed, killing 11 drilling rig workers, spilling oil uncontrollably into the Gulf of Mexico for at least 87 days, causing untold ecological destruction and economic hardships for communities dependent on the Gulf of Mexico's non-petroleum natural resources—the United States drilled baby drilled,[30] seeking to fulfill a seemingly insatiable appetite for energy independence and energy security.

For some period, this drive was lucrative, even though the costs associated with the massive ramp-up in production were enormous. Modern-day oil drilling is capital-intensive. If oil prices are high enough, as they were for about a decade from 2005-2014 (when they ranged from about $65 to $109 per barrel), oil producers can afford the costs. While the lower fuel costs helped some low-income populations and altered geopolitics in potentially productive ways, the changes created some unexpected consequences for oil producers. As oil production expanded and competition grew, more drillers found themselves operating uneconomic wells. They then took out new loans to pay for the capital costs of drilling new wells, but often used those loans to cover past loans for past uneconomic wells. A few prescient (or maybe just honest) investors sent warnings of this unsustainable "fracking treadmill" nearly a decade ago.[31] But few banks or investors paid much attention, and oil drilling continued apace.

At some point, it became apparent to the oil industry (but likely less so to most Americans) that energy security and independence had in fact turned into oversupply. Vehicle emissions standards, fuel economy standards, biofuels, and electric vehicles had begun to reduce domestic oil consumption, and although oil businesses pushed back against these policies, the writing was on the wall: unless U.S. oil businesses secured new markets, they would likely have too much, rather than too little, oil. So, they sought, and received in 2015, repeal of a long-standing prohibition against exporting crude oil from the United States.[32]

Presumably, their business models showed that global demand for oil would continue to rise as developing countries, particularly behemoths like China and India, expanded their use of passenger vehicles. They failed to anticipate how the citizens of those countries would demand cleaner air and how their governments would respond by embracing electric vehicles. They also failed to anticipate how Saudi Arabia and Russia would engage in a game of oil production chicken, ramping up their oil production to drive prices down and, they hoped, to bankrupt their competition.[33] And they failed to anticipate how the Trump Administration would be impotent in international negotiations designed to keep oil prices stable.

And so, when the pandemic hit the world, oil businesses were unprepared. Energy traders had signed oil purchase contracts pursuant to which they had agreed to accept oil in May 2020. They had planned to resell the oil, as they had done numerous times before. But the pandemic and the necessary mitigation strategy of social distancing resulted in plummeting oil consumption. Oil traders thus faced the prospect of accepting the oil and paying the high daily fees charged for storing the oil in the limited number of storage facilities available around the globe, or of paying someone else to take the oil off their hands. They rationally chose the latter option because no one knew how long the oversupply would, or will, last—and they undoubtedly knew the U.S. government would bail the oil sector out, as it has time and time again. But this rational choice reveals the underlying instability and irrationality of the oil market and U.S. energy policy.

C. Health, Economics, and Race

Racism has structured America's distribution of benefits and burdens since the founding of the republic. The legal construct of property depended on erasing Native Americans' presence and claims to land. White property owners' interests in free labor were constitutionalized at the expense of untold violence and dehumanization of Black people. Ever since, even our most egalitarian and redistributive policies have entrenched inequality based on race, serving the purpose of establishing a racial caste system, as Isabelle Wilkerson eloquently documents in her book *Caste*. The devastating racial inequality of the COVID-19 pandemic reflects this mournful state of affairs, and so will climate change impacts, barring immediate and decisive government intervention.

Of course, given the suddenness of the onset and its wide-sweeping consequences, COVID-19 was supposed to

30. "Drill Baby Drill" was a phrase closely associated with vice presidential candidate Sarah Palin in her 2008 failed run on the 2008 Republican presidential ticket. The phrase crystalized the core of the "all-of-the-above" strategy of energy independence. Josh Kurz, *Drill Baby Drill! Almost Didn't Happen*, E&E News (Aug. 29, 2012).

31. Deborah Rogers, *Energy Policy Forum, Shale and Wall Street: Was the Decline in Natural Gas Prices Orchestrated?* (2013), http://shalebubble.org/wp-content/uploads/2013/02/SWS-report-FINAL.pdf; Wolf Richter, *The Fracking Bust Has Been Breathtaking*, Bus. Insider (Mar. 2, 2015), http://assets.businessinsider.com/the-fracking-bust-has-been-breathtaking-2015-3.

32. Eric Lipton & Clifford Krauss, *Oil Industry Gaining in Push for Repeal of U.S. Ban on Petroleum Exports*, N.Y. Times, Oct. 15, 2015; Brian Wingfield, *U.S. Reverses Decades of Oil-Export Limits With Obama's Backing*, Bloomberg (Dec. 18, 2015), https://www.bloomberg.com/news/articles/2015-12-18/house-votes-to-repeal-u-s-oil-export-limits-senate-vote-next.

33. Clifford Krauss & Stanley Reed, *Oil Prices Dive as Saudi Arabia Takes Aim at Russian Production*, N.Y. Times, Mar. 8, 2020.

be a great equalizer. Policymakers emphasized social solidarity, and similar themes echoed throughout social media and the press. After all, "the virus does not discriminate."[34] Everyone from politicians to mega stars reiterated that "we are all in this together."[35] Though attractive, these platitudes were rapidly falsified.[36] The coronavirus spread through a profoundly unequal society—with stark differences in who had access to PPE, testing and medical care, who was able to work from home, and whose lived reality put them at greater risk of both exposure to and serious complications from COVID-19 infection. Or to paraphrase a tweet that went viral in April 2020: "[W]e are all in the same storm but not in the same boat."[37]

By every vector we could use to measure inequality, the story remained the same: Black, indigenous, and other people of color were more likely to get infected with COVID-19, and once infected more likely to die. According to APM Research Lab: "For each 100,000 Americans (of their respective group), about 114 Black persons have died from the coronavirus, the highest actual mortality rate of all groups—above Asians (48), Whites (62), Pacific Islanders (75), Latinos (78), and Indigenous people (104)," with some far exceeding the disparities.[38] Nationwide, Black people are three times more likely to die from the virus than white people and indigenous people are 3.2 times more likely.[39]

It has also been abundantly clear that the economic ramifications of the pandemic impacted racial and ethnic minorities disproportionately. Black Americans make up a majority of essential and frontline workers, resulting in more frequent exposure to the virus.[40] They are less likely to have access to healthcare services, and hospitals in their neighborhoods are more likely to be under-resourced and overstretched. Black Americans are also disproportionately employed in the low-paying jobs that were lost when businesses shut down. With historically higher unemployment rates, lower hiring chances, and comparatively low compensation in the workforce, minorities are less likely to be protected with sufficient savings to respond to an emergency.[41] And indeed, unemployment numbers among minorities has reached historic numbers, with predictions that any recovery will be hard-fought and slow.

Moreover, the economic support provided by the government in response to the pandemic was less likely to reach Black Americans. The legacy of redlining and discrimination in mortgages meant that Black families are less likely than white families to own their homes.[42] As a result, the federal government's decision to offer mortgage relief but not rent relief steered a disproportionate share of that government benefit to white families. Overall, Black, indigenous, and other people of color were more likely to lose their jobs, less likely to benefit from government emergency measures, more likely to be arrested for violating social distancing, all against a backdrop of being more likely to contract COVID-19 and more likely to die from the illness.

A history of environmental racism and injustice increased the COVID-19 vulnerability that Black and brown communities face. Pollution is not distributed equally across the United States. Even though particulate pollution is disproportionately generated by white Americans, the air that they breathe rarely bears the brunt of this polluting activity.[43] Instead, Black and latino communities are overburdened by pollution. Black Americans are exposed to 56% more pollution than their consumption generates.[44] They bear well-documented health burdens that flow from long-term pollution exposure, including higher rates of asthma, cardiopulmonary disease, neurocognitive disease, and some cancers.[45]

Many of these pollution-related illnesses are the same preexisting conditions that increase the risk of severe COVID-19 symptoms. A Harvard University study found that those living in a high-pollution area have a significantly elevated risk of dying from COVID-19.[46] Indeed, this study concluded that "[a] small increase in long-term

34. This phrase was used many places and commonly appeared on flyers produced by public health agencies. *See, e.g.*, Public Health Madison & Dane County, Coronavirus & Stigma (Feb. 2020), https://publichealthmdc.com/documents/Anti-Stigma%20Fact%20Sheet.pdf.
35. *COVID-19 and Human Rights: We Are All in This Together*, U.N. Policy Brief (Apr. 24, 2020) https://www.un.org/sites/un2.un.org/files/un_policy_brief_on_human_rights_and_covid_23_april_2020.pdf.
36. Harmeet Kaur, *The Coronavirus Pandemic Is Hitting Black and Brown Americans Especially Hard on All Fronts*, CNN.com, May 8, 2020, https://www.cnn.com/2020/05/08/us/coronavirus-pandemic-race-impact-trnd/index.html.
37. The trending hashtag #samestormdifferentboat captured this sentiment expressed in a tweet by Damian Barr in April 2020, https://twitter.com/damian_barr/status/1252626152604270593?lang=en.
38. APM Research Lab, *COVID-19 Deaths by Race and Ethnicity in the U.S.*, https://www.apmresearchlab.org/covid/deaths-by-race (last visited Nov. 30, 2020).
39. *Id.*
40. Hayley Brown et al., Center for Economic and Policy Research, *Racial Inequality Among Workers in Frontline Industries: Black Workers Are Overrepresented and Undercompensated* (June 4, 2020), https://cepr.net/racial-inequality-among-workers-in-frontline-industries-black-workers-are-overrepresented-and-undercompensated/.
41. Jeanna Smialek & Jim Tankersley, *Black Workers, Already Lagging, Face Big Economic Risks*, N.Y. Times, June 1, 2020, https://www.nytimes.com/2020/06/01/business/economy/black-workers-inequality-economic-risks.html; Jonnelle Marte, *Coronavirus U.S. Job Losses Hitting Minorities the Hardest, Fed's Powell Says*, Reuters (Apr. 29, 2020), https://www.reuters.com/article/us-usa-fed-labor/coronavirus-u-s-job-losses-hitting-minorities-the-hardest-feds-powell-says-idUSKBN22B3EO (quoting U.S. Federal Reserve Chair Jerome Powell: "Everyone is suffering here, but I think those who are least able to bear it are the ones who are losing their jobs and losing their incomes and have little cushion to protect them in times like that.").
42. Richard Rothstein, The Color of Law 59-75 (2017).
43. Christopher W. Tessum et al., *Inequality in Consumption of Goods and Services Adds to Racial-Ethnic Disparities in Air Pollution Exposure*, 116 PNAS 6001 (Mar. 26, 2019).
44. *Id.*
45. U.S. Environmental Protection Agency, *Integrated Science Assessment for Particulate Matter* (Final Report, 2019); *see also* Gregory A. Wellenius et al., *Ambient Air Pollution and the Risk of Acute Ischemic Stroke*, 172 Archives Internal Med. 229 (2012); Jonathan Ciencewicki & Illona Jaspers, *Air Pollution and Respiratory Viral Infection*, 19 Inhalation Toxicology 1135 (2007); Robert D. Brook et al., *Air Pollution and Cardiovascular Disease: A Statement for Healthcare Professionals From the Expert Panel on Population and Prevention Science of the American Heart Association*, 21 Circulation 2655 (2004).
46. Xiao Wu et al., *Exposure to Air Pollution and COVID-19 Mortality in the United States: A Nationwide Cross-Sectoral Analysis*, Health Sciences Preprint (Apr. 24, 2020) https://www.medrxiv.org/content/10.1101/2020.04.05.20054502v2.

exposure to $PM_{2.5}$ [particulate matter] leads to a large increase in the COVID-19 death rate."[47] Past exposure to pollution thus adds an additional layer of vulnerability to those Black and brown Americans already at greater risk of COVID-19 infection because of their jobs. Worse, there is a direct connection between current exposure to air pollution and the likelihood of acquiring COVID-19 infections because the polluted air that environmental justice communities disproportionately breathe may actually help spread the coronavirus.[48]

In the face of this information about the nexus between pollution and COVID-19 vulnerability, the U.S. Environmental Protection Agency (EPA) made the situation worse. In March 2020, the Agency announced a relaxation of the environmental rules designed to curb the very air pollutants that put Black and brown Americans at greater risk from the pandemic.[49] EPA's decision, which allowed major polluters to validate their own compliance with emissions limits, and waived fines for noncompliance, was widely perceived as Agency indifference to the already outsized risks environmental justice communities face.

This context, the history of disproportionate pollution burdens coupled with current administrative indifference, forms an important backstory to the Black Lives Matter protests. The police killing of George Floyd, yet another unarmed Black man, occurred in a context of ongoing racial discrimination across multiple fronts that jeopardize health and welfare of Black and brown Americans in the global pandemic. The calls for reform ignited by the Black Lives Matter protests—not just in the United States, but across the globe—demand an end not only to police brutality, but also to the systemic, institutionalized racism that created this situation. Environmental justice needs to be part of the overall racial justice response to the Black Lives Matter protests.

This is also acutely the case for Native Americans, who like other people of color suffer from disproportionate environmental burdens and preexisting health disparities. In addition, Native Americans struggle to ensure that their tribal members have access to clean water, electricity, and healthcare. Further, due to limited economic choices, many Native people who live in tribal communities have to leave home for work, and then return for family gatherings and ceremonies. The COVID-19 pandemic hit Indian country hard for this combination of reasons. For example, the coronavirus was introduced on the Navajo Nation to a small rural community and then spread rapidly, resulting in infection rates far higher than surrounding states and more than 760 deaths in spring 2021.[50] The Navajo Nation leadership responded swiftly and decisively, imposing a curfew and stay-at-home orders, organizing deliveries of food, water and personal protective equipment, and urging tribal members to wear masks and follow other science-backed protocols.[51]

Many other Native American tribes responded similarly.[52] But these responses—stark contrasts to the White House deceptions and bumbling—were no match for structural inequalities that are the result of centuries of treaty violations and failures to live up to the U.S. trust obligations to tribes. Indeed, tribes had to sue the Trump Administration to get their fair share of CARES Act funding and combat states like South Dakota to enforce their border closings.[53] Climate change is already causing similarly extreme disparities for Native American tribes and their members. Responses must include respect for Native American tribal self-governance and long-overdue support for tribal infrastructure, health, and culturally determined economic development.

All of these lessons from the global pandemic must inform climate mitigation and adaptation responses going forward. Otherwise we will merely reproduce systemic injustice on yet another front. We have long recognized that environmental harms are disproportionately visited upon, and environmental benefits withheld from, low-income communities and communities of color. Recognizing that the broad array of harms from climate change will be experienced disproportionately on these communities, the climate justice movement seeks strong mitigation measures and to ensure equitable responses to climate harms.

The climate justice movement is thus premised on the core insight that disasters and other societal stressors are inherently inequitable in the harm they inflict. The pandemic underscores in dramatic fashion the extent to which this is true. The stark economic and especially racial disparities in the harms inflicted by the virus should galvanize efforts to prepare and correct for such disparities in response to the myriad climate disruptions to come.

47. *Id.* at 2.
48. Maria A. Zoran et al., *Assessing the Relationship Between Surface Levels of $PM_{2.5}$ and PM_{10} Particulate Matter Impact on COVID-19 in Milan Italy*, 738 Sci. Total Env't 139825 (2020); Leonardo Setti et al., *The Potential Role of Particulate Matter in the Spreading of COVID-19 in Northern Italy: First Evidence-Based Research Hypotheses*, Health Sciences Preprint (Apr. 17, 2020) https://www.medrxiv.org/content/10.1101/2020.04.11.20061713v1.full.pdf.
49. Press Release: EPA Announces Enforcement Discretion Policy for COVID-19 Pandemic (Mar. 26, 2020) https://www.epa.gov/newsreleases/epa-announces-enforcement-discretion-policy-covid-19-pandemic.
50. *In Numbers: COVID-19 Across the Navajo Nation*, Navajo Times, Oct. 26, 2020, https://navajotimes.com/coronavirus-updates/covid-19-across-the-navajo-nation/; *Coronavirus in the U.S.: Latest Map and Case Count*, N.Y. Times, https://www.nytimes.com/interactive/2021/us/covid-cases.html (continuously updated).
51. *Navajo Nation Response to COVID-19 Outpaced Arizona,* Ariz. Republic (Aug. 27, 2020), https://www.azcentral.com/story/news/local/arizona-health/2020/08/27/navajo-nation-response-covid-19-outpaced-arizona/5515585002/; Katharine Davis-Young, *The Navajo Nation Took a Hard Stance Against COVID-19; Experts Say It Worked*, Fronteras (Mar. 22, 2021), https://fronterasdesk.org/content/1665868/navajo-nation-took-hard-stance-against-covid-19-experts-say-it-worked.
52. *See COVID-19 Tribal Documents*, https://turtletalk.blog/covid-19-tribal-documents/ (last visited Oct. 26, 2020) (providing a running list of COVID-19 actions taken by tribal governments).
53. *See* Confederated Tribes of the Chehalis Reservation v. Mnuchin, Case No. 1:20-cv-1002-APM (D.D.C. Apr. 27, 2020), *appeal docketed*, 2020 WL 1984297 (D.C. Cir. June 26, 2020); Mark Walker & Emily Cochrane, *Tribe in South Dakota Seeks Court Ruling Over Standoff on Blocking Virus*, N.Y. Times, June 24, 2020, https://www.nytimes.com/2020/06/24/us/politics/coronavirus-south-dakota-tribe-standoff.html.

III. Governance in Crisis

One of the few active federal responses to the coronavirus was the Paycheck Protection Program (PPP)—a Small Business Association program that steered millions of dollars to hedge funds and businesses with ties to the Trump Administration,[54] while Black-owned, women-owned, and small businesses had to fight to even get the opportunity to apply for funding.[55] Without a doubt, money is important (just ask the small business owners who have been able to navigate the PPP). Yet, in terms of assistance to renters struggling to stay in their homes, to schools and universities trying to adapt to new learning constraints, and to state and local governments reeling from shutdowns, the federal government largely watched from the sidelines.

Complicating the pandemic landscape was the apparent lack of shared civic responsibility to mitigate the virus, fueled by President Trump's distain for masks, social distancing, and other noneconomic (health-based) solutions to the pandemic. If COVID-19 is a leadership test, the Trump Administration failed it miserably.[56] Yet, leadership is needed. Like the pandemic, adaptation to climate change will require robust, unpopular measures. Mitigation will cost trillions. Without decisive leadership, we should wonder whether Americans, together with the federalist underpinnings of our traditional responses to environmental crises, are equipped to handle it. Many now look to the Joseph Biden-Kamala Harris Administration; its ability to change course on COVID-19 signals its ability to lead in the climate crisis.

A. *The Dangers of Politicized and Resource-Starved Agencies*

A consistent problem in American politics has been poor communication and carry-through across administrations. Planning fails to bridge successive administrations, with changes in adaptation plans, pandemic planning, and climate action. Each new administration seems to start afresh increasingly unwilling to take up the processes of previous presidents leaving us with a swinging pendulum and significant policy implementation time lags.

For example, the Obama Administration handed its successor a 69-page National Security Council briefing book titled the *Playbook for Early Response to High-Consequence Emerging Infectious Disease Threats and Biological Incidents*, colloquially known as the "pandemic playbook."[57] The incoming Trump Administration promptly ignored this document.[58] Indeed, within one year, the Trump Administration had disbanded the Obama-era pandemic response team within the U.S. Department of Homeland Security[59] and had lost track of a decade's worth of pandemic readiness plans.[60] The next year, just months before the coronavirus pandemic hit, the Trump Administration shrunk the U.S. Centers for Disease Control and Protection (CDC) expert observer staff in Beijing by two-thirds.[61] President Trump then proceeded to publicly deny the risk of pandemics generally, and the emerging threat posed by the Wuhan coronavirus outbreak specifically.[62]

Amidst the pandemic, the Trump Administration pressed on with efforts to reduce environmental protection and increase resource extraction as before—sometimes with COVID-19 justifications while refusing to extend any commenting deadlines or cooperate on litigation deadlines—going full steam ahead on its antiregulatory agenda and taking advantage of the reduced ability of environmental organizations to respond. EPA outraged many when it announced that it was relaxing enforcement monitoring and reporting requirements, sparking newspaper reports across the country that it was abandoning the environment in light of COVID-19. Even acknowledging that the public response was both a bit too simplistic and a bit overblown given the relatively limited announcement that EPA actually made, that announcement and the responses to it illustrate the extent to which the Agency has lost the public's trust.

The legacy of President Trump's antiregulatory agenda has been the marginalization of an already slim and weak EPA that was directed to avoid reconsidering past mistakes (such as carbon emission policies and systemic racism). Instead, President Trump's EPA avoided enforcement of environmental laws, battled states and local governments that prioritize health and the environment, and publicly questioned science. In short, EPA was no longer tasked with preventing environmental catastrophe. The Biden-Harris Administration has announced an intention to

54. Ben Popken, *Here Are Some of the Billionaires Who Got PPP Loans While Small Businesses Went Bankrupt*, NBC News (July 7, 2020), https://www.nbcnews.com/business/business-news/here-are-some-billionaires-who-got-ppp-loans-while-small-n1233041.

55. Ben Popken, *Why Are So Many Black-Owned Businesses Shut Out of PPP Loans?*, NBC News (Apr. 29, 2020), https://www.nbcnews.com/business/business-news/why-are-so-many-black-owned-small-businesses-shut-out-n1195291.

56. One report found that deaths per capita in the United States (including COVID-19 and all other causes) and other causes are 85% higher than in other similarly situated countries. "The United States really has done remarkably badly compared to other countries," says Dr. Ezekiel J. Emanuel, a professor of health policy and medical ethics at the University of Pennsylvania, and adds: "I mean, remarkably badly." Jason Beaubien, *Americans Are Dying in the Pandemic at Rates Far Higher Than in Other Countries*, NPR (Oct. 13, 2020), https://www.npr.org/sections/health-shots/2020/10/13/923253681/americans-are-dying-in-the-pandemic-at-rates-far-higher-than-in-other-countries.

57. Dan Diamond & Nahal Toosi, *Trump Team Failed to Follow NSC's Pandemic Playbook*, Politico (Mar. 25, 2020), https://www.politico.com/news/2020/03/25/trump-coronavirus-national-security-council-149285.

58. *Id.*

59. Daniel Lippman, *DHS Wound Down Pandemic Models Before Coronavirus Struck*, Politico (Mar. 24, 2020), https://www.politico.com/news/2020/03/24/dhs-pandemic-coronavirus-146884.

60. *Id.*

61. Marisa Taylor, *U.S. Slashed CDC Staff Inside China Prior to Coronavirus Outbreak*, Reuters (Mar. 25, 2020), https://www.reuters.com/article/us-health-coronavirus-china-cdc-exclusiv/exclusive-u-s-slashed-cdc-staff-inside-china-prior-to-coronavirus-outbreak-idUSKBN21C3N5.

62. Ryan Goodman & Danielle Schulkin, *Timeline of the Coronavirus Pandemic and the U.S. Response*, Just Security (Oct. 15, 2020), https://www.justsecurity.org/69650/timeline-of-the-coronavirus-pandemic-and-u-s-response/.

bring science back into decisionmaking.[63] EPA Administrator Michael Regan is prioritizing environmental justice and protection of human health and the environment.[64] If successful, these efforts could begin to repair some of the damage of the previous administrations.

B. *The Dangers of Politicized Science*

The Trump Administration's response to the pandemic was shaped by its commitment to dangerous beliefs, namely a deeply skeptical, anti-science denialism and an anti-globalist, nationalist ideology. These ideas are not new. The Administration's views on climate change were grounded in the misleading rhetoric of scientific uncertainty used by organized movements to discredit climate change.[65] Similarly, President Trump's anti-globalist ideology tapped into long-held views on both extremes of the political spectrum. We saw the detrimental effects of political policies informed by these ideas in the Trump Administration's efforts to roll back environmental laws and withdraw from international climate negotiations.[66] But because the COVID-19 crisis requires policy decisions about public health in a compressed time frame with direct life and death consequences, it has the potential to underscore the serious damage that these ideologies can cause and, in doing so, may create openings to challenge them.

President Trump endorsed a number of claims antithetical to scientific and expert knowledge. Early on, he denied the severity of the crisis and suggested that the very idea of the pandemic was crafted by "fake news" and Democrats to undermine his re-election chances. He suggested that drugs like hydroxychloroquine could treat the disease even though no scientific evidence supported his claim,[67] which may have caused shortages for patients who depend on this drug for other uses.[68] Authorization for the use of these drugs against COVID-19 was later withdrawn because, in addition to having dangerous side effects, the drug was considered to be ineffective.

For months, President Trump refused to wear a mask, a preventive measure supported by public health experts, even as the disease spread through the White House[69] and among his campaign staff. Even once infected himself, he minimized the risk and continued to hold events where masks were not required. He fired public health experts and refused to disavow conspiracy theories that hospitals and doctors are inflating the numbers of people who have died from the virus.[70] President Trump even suggested the direct injection of disinfectants into the human body and ultraviolet treatments, leaving everyone aghast.[71]

President Trump was not alone in his denialism. Instead, he drew from and fed into a larger discourse that pervades conservative media and networks on the political right.[72] For example, in April 2020, conservative outlets touted the purported results of a scientific study suggesting that the infection rate could be 85 times higher than official estimates, a finding that would make the virus about as deadly as the seasonal flu.[73] The study was a "preprint," that is, a scientific article that has yet to undergo peer review. Preprints are useful because scientists are trying to share information with each other in real time, but the intended audience (other scientists) understands that they are just a preliminary step, not an end result, in the scientific process. In fact, it did not take long for the scientific community to highlight the study's failings, including the use of an unreliable antibody test.[74] Unfortunately, unlike the initial study, the scientific dialogue regarding the study was not tweeted and retweeted in political right-wing networks.

The political manipulation of science is not new: Movements to deny climate change have weaponized the uncertainty inherent in scientific knowledge to cast doubt on well-established climate science.[75] In the case of COVID-19, forces on the political right cherry-picked studies and misrepresented what is contested scientific debate as scientific fact (an ironic shift from the climate denial playbook of all science is uncertain). In both cases, the danger is that some segments of the public will believe only what others in their political and cultural groups believe (a phenomenon known as "motivated reasoning" or "identity-protective cognition").[76] Until commentators on Fox News and other

63. Memorandum on Restoring Trust in Government Through Scientific Integrity and Evidence-Based Policymaking (Jan. 27, 2021), https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/memorandum-on-restoring-trust-in-government-through-scientific-integrity-and-evidence-based-policymaking/.
64. U.S. EPA, Press Release, EPA Administrator Announces Agency Actions to Advance Environmental Justice, Apr. 7, 2021, https://www.epa.gov/newsreleases/epa-administrator-announces-agency-actions-advance-environmental-justice; U.S. EPA, Press Release, EPA Administrator Regan Establishes New Council on PFAS, Apr. 27, 2021, https://www.epa.gov/newsreleases/epa-administrator-regan-establishes-new-council-pfas.
65. *See* Shawn Otto, The War on Science: Who's Waging It, Why It Matters, What We Can Do About It (2016).
66. *See* Nadja Popovich & Hiroko Tabuchi, *Tracking the Environmental Rules Reversed Under Trump*, N.Y Times, May 13, 2020; Brady Dennis, *Trump Makes It Official: U.S. Will Withdraw From the Paris Climate Accord*, Wash. Post, Nov. 4, 2019.
67. *See* Denise Grady & Andrea Kannapell, *Trump Urges Coronavirus Patients to Take Unproven Drug*, N.Y. Times, Apr. 9, 2020; Kelly Servick, *Antimalarials, Widely Used Against COVID-19 Heighten Risk of Cardiac Arrest. How Can Doctors Minimize the Danger?*, Sci. Mag., Apr. 21, 2020, (noting that the safety and efficacy of the drug for patients with COVID-19 has not been tested in large, randomized trials).
68. Rosie Scuccimarri et al., *Hydroxychloroquine: A Potential Ethical Dilemma for Rheumatologists During the COVID-19 Pandemic*, 47 J. Rheumatology 783 (2020).
69. *See* Ashley Parker et al., *White House Implements Stringent Mask Policy—But Not for Trump*, Wash. Post, May 11, 2020; *see* Matthew Rosenberg & Jim Rutenberg, *Fight Over Virus' Death Toll Opens Grim New Front in Election Battle*, N.Y. Times, May 9, 2020.
70. *See* Michelle Goldberg, *We're All Casualties of Trump's War on Science*, N.Y. Times, May 11, 2020.
71. Peter Aitken, *States See Spike in Poison Control Calls Following Trump's Comments on Injecting Disinfectant*, Fox News (Apr. 26, 2020), https://www.foxnews.com/us/states-spike-poison-control-calls.
72. *See* Rosenberg & Rutenberg, *supra* note 69 (noting the political and organizational connections between current attacks on public health expertise regarding the virus and climate denial movements).
73. *See* Aleszu Bajak & Jeff Howe, *A Study Said COVID Wasn't That Deadly. The Right Seized It*, N.Y. Times, May 14, 2020.
74. *See id.*
75. *See* Otto, *supra* note 65, at 320-21.
76. *See* Dan Kahan, *On the Sources of Ordinary Science Knowledge and Extraordinary Science Ignorance*, *in* The Oxford Handbook on the Science

media sources change their anti-science rhetoric, their followers will deny the seriousness of the pandemic and fail to engage in protective practices such as social distancing. Anti-science strains attached to the anti-vaccine movement are leading some people to use social media to persuade people not to receive the now-available vaccines.[77]

As such, tragically, the response to COVID-19 has all the earmarks of a free-for-all assault on science by corporations, politicians, agencies, nonprofit organizations, and others both in public misinformation and in weaponizing research support. Indeed, the nonprofit organization Climate Science Legal Defense Fund, which provides pro bono legal assistance to climate researchers subject to political harassment, reached out to provide support to similarly besieged scientists involved in the response to COVID-19,[78] circulating a guide to scientific integrity policy at the CDC.[79] Shortly thereafter, information surfaced suggesting that political pressure caused the National Institutes of Health to revoke a grant to the EcoHealth Alliance,[80] a New York-based nonprofit research organization that focuses on understanding the origin of and preventing zoonotic pandemics, merely because it had worked with the Wuhan Institute of Virology. The treatment of science during the pandemic underscores how easily public understandings about science can be manipulated with powerful results and hence the urgency of finding effective levers at meaningful action points that can constrain purposeful efforts—corporate, political or otherwise—to shape public understandings of science and risk.

These anti-science narratives have fueled political protests against state shelter-at-home orders and restrictions on businesses, but they are part of a larger story. The protests are also inspired by anti-globalist and nationalist views. In one important respect, COVID-19 has exposed the vulnerability caused by a global economy; inadequate supplies of medical equipment and materials to create tests have revealed the failings of our domestic public health system. But the Trump Administration's attacks on China, global health institutions, and immigrants were driven by nationalism and xenophobia, not facts or science. This aggressive nationalism obviously injures people when, for example, their healthcare system does not receive WHO funds or they are denied asylum in the United States.[81]

IV. The Implications

Grappling with the virus has illuminated how many existing problems in our society impede our ability to respond to looming catastrophes, and may, in fact, make some of them worse. Indeed, we see weakening of environmental protection (characterized as not as important as public health or the economy, and as something we don't have time or energy to deal with right now) and heightening of racial and socioeconomic disparities (the wealthy are relatively resilient to both pandemic and climate change—not immune, but more resilient). COVID-19 is placing pressure on our institutions and some of them are not faring well.

A. *Reducing Our Regulatory Capacity Reduces Our Ability to Respond to a Crisis*

The federal government was particularly slow to act in response to the crisis and often downplayed the severity of the disease and its broader implications. Its major policy responses revolved around providing short-term economic relief to large and small businesses and temporarily enhanced unemployment benefits. But the federal government did little to abate the spread of the disease—to the contrary, it made it worse—and failed to consider whether and how existing systems were capable of addressing the crisis. And yet, while the agencies and staff members charged with the COVID-19 response were often too late or ineffective, other agencies demonstrated a remarkable ability to seize the opportunity to reduce regulatory burdens unrelated to the pandemic and to keep pace with their environmental deregulatory agenda. These efforts included: (1) reductions in enforcement; (2) continued action to reduce environmental protection and increase resource extraction as before; and (3) refusal to extend any commenting deadlines or cooperate on litigation deadlines—going full steam ahead on its antiregulatory agenda and taking advantage of the reduced ability of environmental organizations to respond.

EPA's decision to reduce some environmental enforcement activities raised the issue of how to do a risk-risk analysis in the middle of a pandemic. Places like Los Angeles and Salt Lake City enjoyed clear skies worthy of newspaper headlines and front-page pictures but also demonstrated the fairly immediate connection between health-afflicting air pollution and "normal" daily human activity. At the same time, scientists and others highlighted the web of connections among COVID-19, environmental justice, and climate change, and China and international environmental lawyers recognized that both domestic and international regulation of trade in species were relevant to zoonotic human pandemic. These developments underscored the complexity of environmental risk assessment but

of Science Communication 35, 43 (Kathleen Hall Jamieson et al. eds., 2017).

77. *See* Kevin Roose, *Get Ready for a Vaccine Information War*, N.Y. Times, May 13, 2020.

78. Climate Science Legal Defense Fund, *The Trump Administration's Response to COVID-19 Violates Scientific Integrity* (Mar. 13, 2020), https://www.csldf.org/2020/03/13/the-trump-administrations-response-to-covid-19-violates-scientific-integrity/.

79. Climate Science Legal Defense Fund, *CSLDF Published Guides to Scientific Integrity at Nine Federal Agencies* (Mar. 3, 2020), https://www.csldf.org/2020/03/03/csldf-publishes-guides-to-scientific-integrity-at-nine-federal-agencies/.

80. Scott Pelley, *Trump Administration Cuts Funding for Coronavirus Researcher Jeopardizing Possible COVID-19 Cure*, 60 Minutes (May 11, 2020), https://www.cbsnews.com/news/trump-administration-coronavirus-vaccine-researcher-covid-19-cure-60-minutes/.

81. *See* Joshua Goodman, *Dem Lawmakers Say Trump's Freeze for WHO to Hurt Venezuelans*, AP News (May 1, 2020); Lucas Guttentag & Stefano M. Bertozzi, *Trump Is Using the Pandemic to Flout Immigration Laws*, N.Y. Times, May 11, 2020.

also indicated that at least certain kinds of environmental regulation are disease-prevention measures as well.

B. Teaching Us About Federalism

The coronavirus pandemic offers lessons for leaders on every level about how—and how not—to manage complex interjurisdictional challenges, like the environment, which unfold without regard for political boundaries. The pandemic has highlighted the strengths and weaknesses of American federalism, illustrating both the need for and limits of centralized and localized responses, and the value of jurisdictional redundancy in times of crisis.

In a matter of months, the coronavirus pandemic laid bare the interdependence of the world[82] on every front imaginable: global public health; economic development; social and professional networks; transportation and migration; and of course, ecological well-being. No single nation has COVID-19. No one state has been economically disrupted. There is no single ethnic group, occupation, or corner of the world that has been impacted. *All* of us, in every corner of the world, in every profession, and in every ecosystem are affected. Since the virus was introduced, it surfed the channels of our interdependence until we were all united in the grip of pandemic. Similarly, unless we can act in unison to contain it, it will continue to surf those channels, exposing our unavoidable interconnectedness despite all efforts to the contrary.

In this way, the virus and our response to it betrays the fundamental problem with which environmental governance has always contended in our interdependent, multijurisdictional world: we just can't do it alone. The major environmental problems we wrestle with—air and water pollution, biodiversity preservation, ecosystem integrity, climate stability, and all the others—are bigger than we are, and certainly bigger than any one jurisdiction. No matter how skilled or well-intended, no single town, city, state, or even nation can effectively cope with the critical environmental challenges of our time, because they extend beyond these arbitrary political boundaries.[83] To accomplish our goals, we must coordinate our efforts.

The pandemic exposes this lesson even within the boundaries of a single nation, trying to act as one. For example, the disappointing U.S. response in the early days of the pandemic highlights the futility of purely state or local response to an interjurisdictional problem of this magnitude. The virus—like pollution—jumps so easily from people in one state to people in neighboring states, that inconsistent local regulatory responses are doomed to failure. If New Jersey stays in lockdown but Pennsylvania opens up,[84] New Jersey residents will still get sick. Just as if Florida limits offshore drilling and Louisiana does not, all Gulf of Mexico coastlines are vulnerable to the next spill.[85]

The federal government was also considerably better-positioned than any individual state or city to deploy its unique array of technical expertise, fiscal resources, and legal authority in preparation for the pandemic. For example, the national government could have invoked the Defense Production Act,[86] which enables the president to mobilize domestic industry to produce supplies during an emergency, such as respirators, masks, test kits, and swabs. Without centralized coordination to secure or produce these resources in advance, many states devolved into scrambled and unproductive competition for the woefully scarce existing resources. These are exactly the kinds of tasks for which coordinated national capacity outperforms isolated local action. Only the federal government could marshal necessary resources on a national scale, by means of both market force and sovereign authority—just as a nationally coordinated response to climate change is direly needed.

At the same time, the pandemic response also exposes the value of coordinated multilevel governance—and federalism in particular—for coping with complex interjurisdictional problems. Even strong national planning for the pandemic requires localized implementation and enforcement,[87] and more local levels of government are always better-positioned to understand the constellation of geographic, demographic, economic, and cultural factors that will either facilitate or complicate implementation on the ground in each unique community. In administering virus tests,[88] coordinating food assistance, or delivering public education from lockdown, the state and local governments are far better-positioned than the national government. Just as they are in implementing climate-friendly transportation infrastructure and stormwater pollution controls.

Most dramatically, however, the failed federal response to the pandemic highlights the value of dynamic federalism as a system of good governance, perhaps because of the way federalism allows for simultaneous response by different levels of government in realms of jurisdictional overlap.[89] The Trump Administration was widely condemned[90]

82. *Coronavirus Disease (COVID-19) Pandemic*, World Health Organization (May 22, 2020), https://www.who.int/emergencies/diseases/novel-coronavirus-2019.
83. *See* Erin Ryan, *Environmental Federalism's Tug of War Within*, *in* The Law and Policy of Environmental Federalism: A Comparative Analysis 355 (Kalyani Robbins ed., 2015).
84. Sarah Mervosh et al., *See Which States Are Reopening and Which Are Still Shut Down*, N.Y. Times (May 26 2020), https://www.nytimes.com/interactive/2020/us/states-reopen-map-coronavirus.html.
85. Alex Daugherty, *House Passes Bill to Permanently Ban Offshore Drilling Off Florida's Gulf Coast*, Miami Herald (Sept. 11, 2019), https://www.miamiherald.com/news/politics-government/article234922247.html.
86. Katie Rogers et al., *Trump Resists Pressure to Use Wartime Law to Mobilize Industry in Virus Response*, N.Y. Times (Mar. 20, 2020), https://www.nytimes.com/2020/03/20/us/politics/trump-coronavirus-supplies.html.
87. *Coronavirus: What You Need to Know*, National Governors Association (May 26, 2020). https://www.nga.org/coronavirus/#glance.
88. *Memorandum [on Testing]*, National Governors Association (May 14, 2020), *available at* https://www.nga.org/wp-content/uploads/2020/04/Testing-Memo-Update-5-13-20.pdf.
89. This is not to say that all state and local responses to COVID-19 have been a success at managing the spread of the virus. Such failures may suggest limits to the potential of dynamic federalism to address broader challenges.
90. Kayla Epstein & Sonam Sheth, *A Timeline of How Years of Missteps and Budget Cuts Undermined the Trump Administration's Preparedness for COVID-19*, Business Insider (Apr. 7, 2020), https://www.businessinsider.com/coronavirus-timeline-trump-failures-undercut-pandemic-response-2020-4?r=DE&IR=T.

for its failure of leadership during the pandemic,[91] from its failure to respond to early warnings to its later abdication of responsibility for a national response plan. *The Lancet*, a leading world medical journal, excoriated the Administration early on for politicizing its own public health response agency, the CDC,[92] further compromising the nation's response. In its place, however, many state governors rose to the occasion, providing leadership and role-modeling to fill the national void. The checks and balances built into U.S. federalism create inefficiencies by design,[93] which can be frustrating indeed. But during the pandemic, citizens in those states could be grateful that it enabled someone to take the reins at a critical moment when the Commander-in-Chief faltered.

Alternate leadership emerged in red and blue states alike. For example, California Gov. Gavin Newsom acted quickly to institute shelter-in-place orders to mitigate the spread of virus from neighboring Washington State, admirably flattening the curve in his state in comparison to other parts of the country.[94] Kentucky Gov. Andy Beshear began offering statewide virus testing to all comers as early as April 2020, well in advance of many other states.[95] New York Gov. Andrew Cuomo deployed his state's considerable economic might to commission the production of medical supplies and equipment that were needed.[96]

Meanwhile, many local governments demonstrated ingenuity, flexibility, and agency at providing critical services, such as education, library services, water, and sewer, all while role-modeling, as Atlanta Mayor Keisha Lance Bottoms put it, how to "exercise commonsense, listen to the science."[97] Taking advantage of the same regulatory backstop feature of federalism, 24 state governors representing 55% of the U.S. population formed the U.S. Climate Alliance after President Trump announced his intention to withdraw the United States from the Paris Climate Agreement, pledging to lead on critical climate governance initiatives abdicated by the federal government.[98]

The pandemic response and environmental governance are both dynamic projects of policymaking and adaptation, and neither example reveals wholesale success or failure. Reasonable minds may differ on the ideal balance between public health and economic concerns associated with the coronavirus lockdown. Many citizens supported President Trump's laissez-faire approach, and not every citizen in New York or California has been happy with their governors' actions. Nevertheless, these leaders acted more decisively than the president at a time when critical governance decisions had to be made, and the vast majorities of citizens in these states supported their governors' choices at the time.[99]

The leadership these and other state and local leaders have shown gives Americans cause for hope that the United States can improve our still-unfolding pandemic response. We can similarly hope that the COVID-19 experience will embolden national and subnational leaders alike to show the same vision on climate and other matters of interjurisdictional environmental governance moving forward. At the very least, it suggests the importance of beginning to plan for these crises, and to plan for the multilevel coordination that will be needed, now.

V. Ripple Effects and Opportunities

The pandemic experience will shape environmental law and policy and vice versa. We offer below some thoughts about pandemic ripple effects and their implications for environmental policy, as well as some potential opportunities going forward.

A. *Ripple Effects—Nationalism*

Nationalism begets nationalism. It is on the rise not only in the United States, but also in China—partly because of the Trump Administration's unsubstantiated theory that the coronavirus originated in a lab in China.[100] In addition, this China-blaming strategy contributed to an increase in hate crimes and incidents of bias against Asian Americans in the United States.[101] If these trends continue, the world will be on a path toward what climate scientists identify as the worst-case scenario. A world of rising nationalism and decreasing global cooperation presents the steepest challenges to climate change mitigation and adaptation. If COVID-19 results in a surge of nationalism in the United States and elsewhere, environmental laws and policies will have to adapt to the most serious climate disruptions by the end of this century.

Moreover, a politics of nationalism emphasizes who is part of the political community and who is not. It therefore provides support to those who seek to further ideologies of white supremacy. We are not suggesting that all people who subscribe to nationalist ideologies agree with racist ide-

91. Eric Lipton et al., *He Could Have Seen What Was Coming: Behind Trump's Failure on the Virus*, N.Y. Times (Apr. 11, 2020), https://www.nytimes.com/2020/04/11/us/politics/coronavirus-trump-response.html.
92. *Reviving the US CDC*, 395 The Lancet 10236 (May 2020), *available at* https://doi.org/10.1016/S0140-6736(20)31140-5.
93. Erin Ryan, Federalism and the Tug of War Within (Oxford 2012).
94. Geoffrey A. Fowler et al., *Social Distancing Works. The Earlier the Better, California and Washington Data Show*, Wash. Post (Apr. 1, 2020), https://www.washingtonpost.com/nation/2020/04/01lockdown-coronavirus-california-data/.
95. Daniel Desrochers, *Kentucky Expanding COVID-19 Testing to All Who Want It. 196 New Cases and 14 Deaths*, Lexington Herald Leader (Apr. 22, 2020), https://www.kentucky.com/news/coronavirus/article242209666.html.
96. Elisabeth Buckwald, *Cuomo Says New York Inmates Will Produce 100,000 Gallons of Hand Sanitizer a Week to Help Combat Coronavirus*, MarketWatch (Mar. 10, 2020), https://www.marketwatch.com/story/there-aint-no-free-lunch-but-there-is-free-of-charge-hand-sanitizer-in-new-york-state-courtesy-of-inmates-2020-03-09.
97. Rishika Dugyala, *Atlanta Mayor Keisha Lance Bottoms Tests Positive for Covid-19*, Politico (July 6, 2020), https://www.politico.com/news/2020/07/06/atlanta-mayor-lance-bottoms-positive-coronavirus-350021.
98. United States Climate Alliance (2020), http://www.usclimatealliance.org/.
99. Dhrumil Mehta, *Most Americans Like How Their Governor Is Handling the Coronavirus Outbreak*, FiveThirtyEight (Apr. 10, 2020), https://fivethirtyeight.com/features/most-americans-like-how-their-governor-is-handling-the-coronavirus-outbreak/.
100. *See* Vivian Wang & Amy Qin, *As Coronavirus Fades in China, Nationalism and Xenophobia Flare*, N.Y. Times, Apr. 16, 2020.
101. *See* Hannah Allam, *"A Perfect Storm": Extremists Look for Ways to Exploit Coronavirus Pandemic*, NPR (Apr. 16, 2020).

ologies—only that white supremacist ideologies often lean into nationalist rhetoric.[102] Extremists have been searching for ways to exploit the COVID-19 crisis. Among them are far-right white supremacists who endorse using the virus to infect people of color and call for violent attacks on hospitals. They seek to bring about the end of society as we know it and replace it with a "white nationalist model."[103]

Even if extremist views gain little ground, the crisis has already highlighted the deep racial inequalities that exist in American society. Black Americans are experiencing disproportionately high rates of infection and death when compared to the white population.[104] They also suffer disparities in access to and quality of healthcare[105] and bear larger economic losses.[106] Tragically, these racial inequalities are no surprise to those who experience them; as the environmental justice movement illuminated decades ago, environmental hazards and risks disproportionately affect people of color. What the COVID-19 crisis starkly illustrates is that anti-science and nationalist ideologies also further these inequalities.

B. Opportunities for Public Health

COVID-19 has presented an ideal opportunity to remind the public that pollution control regulation, like measures to contain COVID-19, is about protecting public health—and that "protecting public health" is itself a complex problem, particularly when multiple kinds of threats to health are operating simultaneously. Take air pollution for example. In Salt Lake City, Utah, a fairly immediate measure of air quality looking west from the Wasatch Front is how far across Great Salt Lake you can see. During the worst parts of winter inversions, you cannot even see across downtown from the top of the University of Utah campus; the lake itself disappears into the unhealthy haze. Otherwise, there are five mountainous ridges lined up starting from the Oquirrh Mountains that form the western boundary of the valley. In large part because the COVID-19-induced reduction in driving and flights using the Salt Lake City airport, the fifth, western-most ridge has been spectacularly visible almost every day since early April 2020—an extremely rare event under normal circumstances. From this perspective, COVID-19 has dramatically improved the health of the valley's residents, reducing risks to their lungs and hearts from particulate matter and ozone.

It might make for an interesting and complex risk analysis to try to figure out whether Salt Lake City residents, on average, would be better off, at least in terms of local air pollution, to keep some of the COVID-19 restrictions in place. Of course, the analysts would then quickly identify the need to incorporate the impact of lost jobs and declining income on physical and mental well-being and probably conclude that on the whole, effectively dealing with COVID-19 and getting back to "normal" would produce the highest overall health benefits for valley residents. The point is that the relationship between COVID-19, pollution, overall public health, and individual survival is a lot more complicated than it might seem at first blush. In some ways, we are all benefitting from the shutdown of pollution-producing activities, especially reduced driving and flights. On April 30, 2020, the International Energy Agency reported that the world is on track—because of COVID-19—to reduce its greenhouse gas emissions (GHG) by 8% in 2020, with global energy demand falling by 6%.[107] Arguably, therefore, COVID-19 has done more to mitigate climate change than almost 20 years of global climate negotiations.

At the same time, people are dying. In the pollution enforcement context, both employees of critical pollution-causing facilities (like sewage treatment plants, drinking water treatment facilities, and power plants) and state and federal environmental enforcement personnel are at increased risk of contracting a deadly disease simply by doing their jobs. From an overall public health perspective, is it better to let all plant employees who monitor pollution and the agency enforcement personnel stay home during the pandemic?

We don't know, but it is rational to suspect that a formal and complete risk-risk analysis—if we could actually do one—would support the kind of more-nuanced approach that EPA is trying to take to environmental enforcement during the pandemic (even if EPA hasn't gotten that approach exactly right). Someone *should* still be making sure that public drinking water is clean, that major toxic spills are prevented or cleaned up, that sewage treatment plants are not releasing raw sewage into rivers, that power plants are meeting their air quality emissions limitations. On the other hand, just as most of us have switched large portions of our lives to Zoom, we could probably invest in a lot more automation in pollution monitoring, allowing both the monitors and the enforcement agents to simultaneously do their jobs and social distance.

C. Opportunities for Natural Systems

The COVID-19 crisis does show that some hitherto unthinkable or politically contentious legal interventions suddenly can become almost inevitable. For example, it appears that someone eating an infected bat or pangolin caused the virus to jump from wild animal to human and unleashed the pandemic. Under pressure from international leaders, largely unthinkable a year ago, China banned sales of wildlife for consumption and closed its "wet markets," some of which include the sale of wild-caught animals and

102. *See id.*
103. *See id.*
104. *See* Audra D.S. Burch, *Why the Virus Is a Civil Rights Issue: "The Pain Will Not Be Shared Equally,"* N.Y. Times, Apr. 19, 2020.
105. *See* John Eligon & Audra D.S. Burch, *Questions of Bias in COVID-19 Treatment Add to the Mourning for Black Families*, N.Y. Times, May 12, 2020.
106. AP, *AP-NORC Poll: Pandemic Especially Tough on People of Color*, N.Y. Times, May 6, 2020.
107. Press Release, International Energy Association, Global Energy Demand to Plunge This Year as a Result of the Biggest Shock Since the Second World War (Apr. 20, 2020), https://www.iea.org/news/global-energy-demand-to-plunge-this-year-as-a-result-of-the-biggest-shock-since-the-second-world-war.

domestic dogs and cats for human food.[108] Whether the ban is temporary remains to be seen.

Ecotourism is sometimes seen as a disruptor of biodiversity, but is also sometimes the source of revenue that allows biodiversity to compete in a financial market where land is scarce. COVID-19 has shown us one disruption that occurs when regulated ecotourism stops: In southern Africa, when tourists disappear, rhino poaching reaches into normally secure refugia.[109] On the other hand, at least for the moment, the poachers have nowhere to send their plunder, as borders are closed or heavily patrolled in Southeast Asia.[110] Although temporary, the standstill shows that this trade could be disrupted if we had the political will and police power to enforce it.

The major biodiversity lesson we have learned from the epidemic is that if environmental law can aggressively disrupt our incursions into the natural world, the natural world can start to heal itself. The Internet is filled with wonderful stories and charming videos of wildlife rapidly reclaiming areas from which human activity excluded them.[111] When human activity is fundamentally disrupted by the pandemic, biodiversity seems to waste no time disrupting the previous human/nonhuman boundaries. For better or worse, if we fail to disrupt the way we manage our interactions with the nonhuman world, the nonhuman world will waste little time reclaiming the earth.

D. *Opportunities for Infrastructure Planning*

That the reduction of automobile emissions could be impactful became clear during the pandemic. After only a few days of lockdown, the sky in many of the most polluted cities was clear. Transportation emissions are a major source of GHGs in the United States and contribute PM, nitrogen oxides, and volatile organic compounds. While the level of reduction of miles travelled achieved during the lockdown might be difficult under non-pandemic circumstances, part of the reduction could be maintained. As the economy recovers, those temporarily unemployed will go back to commuting; however, those mainly doing office work are discovering that they could work from home at least part of the time. Companies may have realized that face time at the office is not the only way to structure workload. Some companies will maintain telecommuting because they have enjoyed reduced office space expenses or even realized increased productivity when employees work from home.

Hence, we could expect to retain some of the tailpipe emission reductions. But it is also important to ensure that those who continue to commute do so in the cleanest way possible. This could be a challenge in a post-pandemic world. Public transportation is less attractive to many because virus contagion while on public transportation is more likely, suggesting an increase use of private vehicles. In addition, the market projections suggest that the U.S. electric vehicle market will be particularly hit as a result of the macroeconomic recession.[112]

Reducing automobile pollution saves lives. Automobile pollution causes more deaths than automobile crashes.[113] Some cities have jumped on the bandwagon of consolidating the reduction on emissions achieved during the pandemic. Milan, which lies at the epicenter of the Italian tragedy and one of the most polluted urban areas in Europe, is taking this opportunity to reimagine the city by expanding sidewalks and setting up bike lanes to ensure that people do not return to their cars.

After an intense spring, New York City began cautiously reopening while reclaiming public streets for public use. One hundred miles of city streets were removed from carbon-emitting vehicular use, reserved instead for pedestrians and cyclists.[114] Bike use skyrocketed, and the city added miles of protected bike lanes.[115] Nearly 10,000 restaurants converted street parking into outside, socially distant dining. These pandemic-inspired changes offer a glimpse of a possible future for New York and other cities—pedestrian-friendly, livable cities without cars.[116] As a co-benefit, opening up the streets for pedestrians and cyclists helps fight obesity, an epidemic that kills 300,000 people each year in the United States.[117]

As we are learning, crisis can shape (or reshape) communities and their living spaces. Lessons from COVID-19 must include both the design and use of public areas in

108. Jackie Northam, *Calls Grow to Ban Wet Markets Amid Concerns Over Disease Spread*, NPR (Apr. 16 2020), https://www.npr.org/sections/coronavirus-live-updates/2020/04/16/835937420/calls-grow-to-ban-wet-markets; Ben Westcott & Shawn Deng, *China Has Made Eating Wild Animals Illegal After the Coronavirus Outbreak. But Ending the Trade Won't Be Easy*, CNN.Com (Mar. 5, 2020), https://www.cnn.com/2020/03/05/asia/china-coronavirus-wildlife-consumption-ban-intl-hnk/index.html.

109. Annie Roth, *Poachers Kill More Rhinos as Coronavirus Halts Tourism to Africa*, N.Y. Times, Apr. 8, 2020.

110. Rachel Nuwer, *Coronavirus Disrupts Illegal Wildlife Trafficking, for Now*, N.Y. Times, Apr. 29, 2020, https://www.nytimes.com/2020/04/29/science/coronavirus-disrupts-illegal-wildlife-trafficking-for-now.html.

111. Helen Macdonald, *Animals Are Rewilding Our Cities. On YouTube, at Least*, N.Y. Times, Apr. 15, 2020. *Animals Reclaiming the World*, YOUTUBE, https://www.youtube.com/watch?v=5mNgn8VrPkA.

112. Laura Millan Lombrana et al., *An Economic Crash Will Slow Down the Electric Vehicle Revolution . . . But Not for Long*, Bloomberg (Mar. 17, 2020), https://www.bloomberg.com/news/articles/2020-03-17/an-economic-crash-will-slow-down-the-electric-vehicle-revolution-but-not-for-long. *But see* Thomas Gersdorf et al., *Electric Mobility After the Crisis: Why an Auto Slowdown Won't Hurt EV Demand*, McKinsey (Sept. 16, 2020), https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/electric-mobility-after-the-crisis-why-an-auto-slowdown-wont-hurt-ev-demand.

113. Fabio Caiazzo et al., *Air Pollution and Early Deaths in the United States. Part I: Quantifying the Impact of Major Sectors in 2005*, 79 Atmospheric Env't 198, 207 (2013). Furthermore, data suggests that those who have been exposed to high levels of pollution are more likely to die from the coronavirus.

114. New York Dep't of Transp., *Open Streets*, https://www1.nyc.gov/html/dot/html/pedestrians/openstreets.shtml (last visited Oct. 23, 2020).

115. Sasha von Oldershausen, *Could New York City Finally Become a Bike City?*, N.Y. Times, July 3, 2020.

116. Farhad Manjoo, *I've Seen a Future Without Cars, And It's Amazing*, N.Y. Times, July 9, 2020.

117. For an analysis of the link between physical activity and obesity, see Russell P. Lopez & H. Patricia Hynes, *Obesity, Physical Activity, and the Urban Environment: Public Health Research Needs*, Env't Health (Sept. 18, 2006). For an estimate of the number of deaths attributable to obesity each year in the United States, see Ryan K. Masters et al., *The Impact of Obesity on U.S. Mortality Levels: The Importance of Age and Cohort Factors in Population Estimates*, 103 Am. J. Pub. Health 1895 (2013).

cities, which will require some adaptation of building and zoning codes, effective urban transportation planning, and attention to different ways to use density in communities.[118]

E. Opportunity to Stop and Restart

To many, the main failure of our response to the pandemic was the insistence from leadership that a health crisis can be cured by the employment of economic tools that are, on the whole, deaf to the needs of public health. Of course, an economy that bursts at its seams may allow people to ignore some social problems while equipping us with some health-based tools and even access to reliable healthcare, but we are pretty certain that the coronavirus does not shudder in the face of economic strength.

But more than that, the participation of tens of thousands of people raising their voices in protest against police brutality and violence against Black Americans is forcing us to rethink the fundamental principles underlying our institutions. The mayors of New York and Los Angeles have pledged to reduce police budgets in an effort to signal that police practices failed to "protect and serve." The Minneapolis City Council has, in large part, publicly committed to dismantle the police force and build a public safety program that operates in fundamentally different ways. Following the model of the Kuhnian scientific revolution, where we see a breakdown in the trust and expectations of particular institutions, we may need to abandon past practices and start over.[119]

Many institutions and cultural practices that operate as they are supposed to leave us unprepared to face climate change. We need to rethink the roles the respective levels of government play in identifying priorities and coordinating environmental protection efforts. We need to recognize that the economics of energy production in the future need not be built upon the markets that got us here. We need to recognize that people are differently situated, historically, economically, and culturally, and understand that the appearance of race neutrality in the law does not go far enough. In short, the call is one of breaking free of past practices based on both the simple observation that they are not perfect and the complicated observation that they cause harm.

In the meantime, climate change adaptation policy has thus far focused on local and state initiatives to build resilient cities and communities, with the goal being to adapt in situ and to keep communities as intact as possible. National adaptation policy has been focused largely on supporting these local efforts. This "future-proofing" approach was plausible when there was reason to believe mitigation initiatives could control rising temperatures to below 2 degrees Celsius (C). Most researchers now believe the 2°C goal is unlikely to be attained, and that global mean surface temperatures will rise in this century by 3.5°C, possibly even higher.[120]

Under those conditions, in situ adaptation will be impractical in many regions, including within the United States. Over time, as people migrate and agricultural and other land uses must relocate, a national-scale adaptation strategy will be required. The national strategy must go beyond supporting local efforts by facilitating, and in some contexts directing, how this "redesign" mode of adaptation is accomplished. The COVID-19 pandemic teaches that it is not too early to begin planning for that eventuality and to strengthen federal resources and institutions to prepare for climate change conditions demanding a strong national adaptation framework.

F. Role of Community

The coronavirus pandemic has forced reconsideration of many traditional norms of American life. For example, it turns out the Internet is more than just a social media platform for vapid and callous forms of communication (Americans average over two hours per day on social media). It is also a platform to provide education, healthcare, and, in some cases, laughter and sanity. The mutual aid societies that sprung up in the throes of COVID-19 offer an antidote to the narrative of modern disaffected society fostered by such works as *Bowling Alone*.[121] These mutual aid societies, created virtually overnight in the most affected communities, raised funds and solicited volunteers to deliver food and medicine to the most vulnerable members of the community.[122] At their peak, they served as a lifeline for thousands, helping everyone regardless of race, language, or citizenship. They remind us of the best that our society offers, authentic community and real caring for every-

118. While many not-so-dense cities in the United States may not fully replicate the examples of Milan and New York City, local governments can help consolidate the reduction on transportation emissions experimented during the lockdown. Of course, even before the pandemic, many U.S. cities were experimenting with closing streets or increasing the space for pedestrians and bicycles. Municipalities, for instance, can encourage dense urban development and avoid urban sprawl. For an explanation of why density does not mean COVID-19 density even though the case of New York was salient, see Samuel King, *Urban Pandemic Becomes an Urban Sprawl Pandemic*, Chicago Council on Global Affairs (July 7, 2020), https://www.thechicagocouncil.org/blog/global-insight/urban-pandemic-becomes-urban-sprawl-pandemic. In the meantime, municipalities can work on increasing the trust of the public in the cleanliness of the public transportation and shared micromobility devices, while focusing on better use of streetscapes for multimodal transportation, such as the approach embraced in complete streets. Smart Growth America, *What Are Complete Streets?*, https://smartgrowthamerica.org/program/national-complete-streets-coalition/publications/what-are-complete-streets/; Gregory H. Shill, *Should Law Subsidize Driving*, 95 N.Y.U. L. Rev. 498 (2020).

119. In his exploration of scientific investigation and discovery, Thomas Kuhn described a process whereby a dominant paradigm gives way to new ways of thinking after a significant body of observations challenges the ability of the dominant paradigm to explain them. Thomas Kuhn, The Structure of Scientific Revolutions 76 (1962) ("As in manufacture so in science—retooling is an extravagance to be reserved for the occasion that demands it. The significance of crises is the indication they provide that an occasion for retooling has arrived.").

120. *See, e.g.*, Reuters, *Global Temperatures on Track for 3-5 Degree Rise by 2100: U.N.*, Reuters (Nov. 29, 2018), https://www.reuters.com/article/us-climate-change-un-idUSKCN1NY186.

121. Robert D. Putnam, Bowling Alone (2000).

122. Kay Dervishi, *Mutual Aid Groups Deliver Groceries With a Side of Social Change*, City & State (July 15, 2020); Maya Kaufman, *Astoria Volunteers Help Neighbors in Need Amid Coronavirus Crisis*, Patch.com (Mar. 31, 2020).

one. They also remind us that mutual aid is the bedrock of political society, and that ordinary people have the capacity to do extraordinary things.

Moreover, the crisis has changed our definition of heroes in a way that will have a lasting impact. The pandemic upended our sense of what work is essential. During the throes of the pandemic, it was the grocery worker, the delivery person, the respiratory technician who were shown to be the true essential workers of our society. When we think about the "heroes"—the people that have inspired us and helped others while putting their life in danger—it turns out that most of those folks are from our communities. In times of isolation, we find comfort in our community. Health workers, letter carriers, police, teachers, firefighters, delivery people, grocery store workers, and retail employees—these people are beacons.

Most profoundly, this crisis has shown us that we can respond to crises quickly. When it matters, we can marshal immense funds, and change long-standing practices overnight. Watching the response to COVID-19 shows us the dark side of lack of preparedness, rejection of science, and how crises reinforce racial disparities. Yet, we have also witnessed that our fragmented, fractious society can muster a "we are all in this together mentality" reminiscent of the social solidarity of WWII, but on a more global scale. We have been able to come together. Actions that seemed impossible challenges to the American way of life are things we are now embracing. The government was able to marshal trillions of dollars to recovery efforts. We made sacrifices willingly and unwillingly.

VI. Conclusion

The worst time to assess one's vulnerabilities is during a crisis; yet, crises are revealing. Hence, our task is to take advantage of the opportunity and take a hard look at our local, national, and global preparedness, as well as the policies and procedures implemented to contain disruptions. And, although this Article merely scratches the surface, it does illustrate the linkages between climate change, natural disasters, systemic inequities, and the failings of our current approach to crises. *The economy is important, but it does not stand alone, independent of the actors within it.* Failure or refusal to grasp this premise brings unwanted disruptions across a wide range of our otherwise unchallenged expectations, at least as those expectations are relevant to social equity, environmental health, and economic security.

In large part, preparedness is the result of the risks we are willing to acknowledge. If, for instance, we assume that a race-neutral police force protects freedom and security for all, we may overlook the damage done by both the idea of race neutrality and the implementation of that idea at the ground level. If we assume a strong economy is the best cure for a health crisis, we ignore the hundreds of thousands (millions?) who die while we wait for an economic recovery, which may happen to be the same people who derive a marginal or no benefit from that economy. In the final analysis, if we assume that we will be able to weather the climate crisis without addressing it head-on, we should be prepared for major, perhaps unacceptable disruptions.