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Political Will



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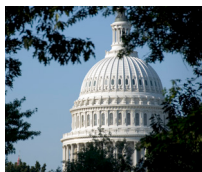
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Environmental activist protesting outside the White House in Washington, D.C.
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How the Active Many Can Overcome the Ruthless Few

by Bill McKibben

“Adapted from the inaugural Jonathan Schell Memorial Lecture on the Fate of the Earth, created by The Nation Institute and the Gould Family Foundation and presented at The New School.”

Nonviolent direct action was the 20th century's greatest invention - and it is the key to saving the earth in the 21st century.

I know what you want from me-what we all want-which is some small solace after the events of Election Day. My wife Sue Halpern and I have been talking nonstop for days, trying to cope with the emotions. I fear I may not be able to provide that balm, but I do offer these remarks in the spirit of resistance to that which we know is coming. We need to figure out how to keep the lights on, literally and figuratively, and all kinds of darkness at bay.

I am grateful to all those who asked me to deliver this inaugural Jonathan Schell Lecture-grateful most of all because it gave me an excuse for extended and happy recollection of one of the most generous friendships of my early adulthood. I arrived at *The New Yorker* at the age of 21, two weeks out of college, alone in New York City for the first time. *The New Yorker* was wonderfully quirky, of course, but one of its less wonderful quirks was that most people didn't talk to each other very much, and especially to newcomers 50 years their junior. There were exceptions, of course, and the foremost exception was Jonathan. He loved to talk, and we had long colloquies nearly every day, mostly about politics.

Ideas-not abstract ideas, but ideas drawn from the world as it wound around him-fascinated him. He always wanted to dig a layer or two deeper; there was never anything superficial or trendy about his analysis. I understood better what he was up to when I came, at the age of 27, to write *The End of Nature*. It owes more than a small debt to *The Fate of the Earth*, which let me feel it was possible and permitted to write about the largest questions in the largest ways.

In the years that followed, having helped push action on his greatest cause-the danger of nuclear weapons-that issue began to seem a little less urgent. That perception, of course, is mistaken: Nuclear weapons remain a constant peril, perhaps more than ever in an increasingly multipolar world. But with the end of the Cold War and the build-down of US and Russian weapon stocks, the question compelled people less feverishly. New perils

- climate change perhaps chief among them - emerged. Post-9/11, smallerbore terrors informed our nightmares. We would have been wise, as the rise of a sinister Vladimir Putin and a sinister and clueless Donald Trump remind us, to pay much sharper attention to this existential issue, but the peace dividend turned out mostly to be a relaxing of emotional vigilance.

However, for the moment, we have not exploded nuclear weapons, notwithstanding Trump's recent query about what good they are if we don't use them. Our minds can compass the specter of a few mushroom clouds obliterating all that we know and love; those images have fueled a fitful but real effort to contain the problem, resulting most recently in the agreement with Iran. We have not been able to imagine that the billion tiny explosions of a billion pistons in a billion cylinders every second of every day could wreak the same damage, and hence we've done very little to ward off climate change.

We are destroying the earth every bit as thoroughly as Jonathan imagined in the famous first chapter of *The Fate of the Earth*, just a little more slowly. By burning coal and oil and gas and hence injecting carbon dioxide and methane into the atmosphere, we have materially changed its heat-trapping properties; indeed, those man-made greenhouse gases trap the daily heat equivalent of 400,000 Hiroshima-size explosions. That's enough extra heat that, in the space of a few decades, we have melted most of the summer sea ice in the Arctic-millennia old, meters thick, across a continent size stretch of ocean that now, in summer, is blue water. (Blue water that absorbs the sun's incoming rays instead of bouncing them back to space like the white ice it replaced, thus exacerbating the problem even further.) That's enough heat to warm the tropical oceans to the point where Sue and I watched with our colleagues in the South Pacific as a wave of record-breaking warm water swept across the region this past spring, killing in a matter of weeks vast swaths of coral that had been there since before the beginning of the human experiment. That's enough heat to seriously disrupt



the planet's hydrological cycles: Since warm air holds more water vapor than cold, we've seen steady increases in drought in arid areas (and with it calamities like wildfire) and steady, even shocking, increases in downpour and flood in wet areas. It's been enough to raise the levels of the ocean-and the extra carbon in the atmosphere has also changed the chemistry of that seawater, making it more acidic and beginning to threaten the base of the marine food chain. We are, it bears remembering, an ocean planet, and the world's oceanographers warn that we are very rapidly turning the seven seas "hot, sour, and breathless." To the "republic of insects and grass" that Jonathan imagined in the opening of *The Fate of the Earth*, we can add a new vision: a hypoxic undersea kingdom of jellyfish.

This is not what will happen if something goes wrong, if some maniac pushes the nuclear button, if some officer turns a key in a silo. This is what has already happened, because all of us normal people have turned the keys to our cars and the thermostat dials on our walls. And we're still in the relatively early days of climate change, having increased the planet's temperature not much more than 1 degree Celsius. We're on a trajectory, even after the conclusion of the Paris climate talks last year, to raise Earth's temperature by 3.5 degrees Celsius-or more, if the feedback loops we are triggering take full hold. If we do that, then we will not be able to maintain a civilization anything like the one we've inherited. Our great cities will be underwater; our fields will not produce the food our bodies require; those bodies will not be able to venture outside in many places to do the work of the world. Already, the World Health Organization estimates, increased heat and humidity have cut the labor a human can perform by 10 percent, a number that will approach 30 percent by midcentury. This July and August were the hottest months in the history of human civilization measured globally; in southern Iraq, very near where scholars situate the Garden of Eden, the mercury in cities like Basra hit 129 degrees-among the highest reliably recorded temperatures in history, temperatures so high that human survival becomes difficult.

Against this crisis, we see sporadic action at best. We know that we could be making huge strides. For instance, engineers have managed to cut the cost of solar panels by 80 percent in the last decade, to the point where they are now among the cheapest methods of generating electricity. A Stanford team headed by Mark Jacobson has shown precisely how all 50 states and virtually every foreign nation could make the switch to renewable energy at an affordable cost in the course of a couple of decades. A few nations have shown that he's correct: Denmark, for instance, now generates almost half of its power from the wind.

In most places, however, the progress has been slow and fitful at best. In the United States, the Obama administration did more than its predecessors, but far less than physics requires. By reducing our use of coal-fired power, it cut carbon-dioxide emissions by perhaps 10 percent. But because it wouldn't buck the rest of the fossil-fuel industry, the Obama administration basically substituted fracked natural gas for that coal. This was

a mistake: The leakage of methane into the atmosphere means that America's total greenhouse-gas emissions held relatively steady or perhaps even increased. This willingness to cater to the industry is bipartisan, though in the horror of this past election that was easy to overlook. Here's President Obama four years ago, speaking to an industry group in Oklahoma: "Now, under my administration, America is producing more oil today than at any time in the last eight years. That's important to know. Over the last three years, I've directed my administration to open up millions of acres for gas and oil exploration across 23 different states. We're opening up more than 75 percent of our potential oil resources offshore. We've quadrupled the number of operating rigs to a record high. We've added enough new oil and gas pipeline to encircle the Earth and then some." Hillary Clinton opened an entire new wing at the State Department charged with promoting fracking around the world. So much for the establishment, now repudiated.

Trump, of course, has famously insisted that global warming is a hoax invented by the Chinese and has promised to abolish the Environmental Protection Agency. His election win is more than just a speed bump in the road to the future - it's a ditch, and quite likely a crevasse. Even as we gather tonight, international negotiators in Marrakech, stunned by our elections, are doing their best to salvage something of the Paris Agreement, signed just 11 months ago with much fanfare.

* * *

But the real contest here is not between Democrats and Republicans; it's between human beings and physics. That's a difficult negotiation, as physics is not prone to compromise. It also imposes a hard time limit on the bargaining; if we don't move very, very quickly, then any progress will be pointless. And so the question for this lecture, and really the question for the geological future of the planet, becomes: How do we spur much faster and more decisive action from institutions that wish to go slowly, or perhaps don't wish to act at all? One understands that politicians prize incremental action-but in this case, winning slowly is the same as losing. The planet is clearly outside its comfort zone; how do we get our political institutions out of theirs?

And it is here that I'd like to turn to one of Jonathan's later books, one that got less attention than it deserved. *The Unconquerable World* was published in 2003. In it, Jonathan writes, in his distinctive aphoristic style: "Violence is the method by which the ruthless few can subdue the passive many. Nonviolence is a means by which the active many can overcome the ruthless few." This brings us, I think, to the crux of our moment. Across a wide variety of topics, we see the power of the ruthless few. This is nowhere more evident than in the field of energy, where the ruthless few who lead the fossil-fuel industry have more money at their disposal than any humans in the past. They've been willing to deploy this advantage to maintain the status quo, even in the face of clear scientific warnings and now clear scientific proof. They are, for lack of a better word, radicals:



If you continue to alter the chemistry of the atmosphere past the point where you're melting the polar ice caps, then you are engaging in a radicalism unparalleled in human history.

And they're not doing this unknowingly or out of confusion. Exxon has known all there is to know about climate change for four decades. Its product was carbon, and it had some of the best scientists on earth on its staff; they warned management, in clear and explicit terms, how much and how fast the earth would warm, and management believed them: That's why, for instance, Exxon's drilling rigs were built to accommodate the sea-level rise it knew was coming. But Exxon didn't warn any of the rest of us. Just the opposite: It invested huge sums of money in helping to build an architecture of deceit, denial, and disinformation, which meant humankind wasted a quarter of a century in a ludicrous argument about whether global warming was "real," a debate that Exxon's leaders knew was already settled. The company continues to fund politicians who deny climate change and to fight any efforts to hold it accountable. At times, as Steve Coll makes clear in his remarkable book *Private Empire*, the oil industry has been willing to use explicit violence—those attack dogs in North Dakota have their even more brutal counterparts in distant parts of the planet. More often, the industry has been willing to use the concentrated force of its money. Our largest oil and gas barons, the Koch brothers—two of the richest men on earth, and among the largest leaseholders on Canada's tar sands have promised to deploy three-quarters of a billion dollars in this year's contest. As Jane Mayer put it in a telling phrase, they've been able to "weaponize" their money to achieve their ends. So the "ruthless few" are using violence—power in its many forms.

But the other half of that aphorism is hopeful: "Nonviolence is the means by which the active many can overcome the ruthless few." When the history of the 20th century is written, I'm hopeful that historians will conclude that the most important technology developed during those bloody hundred years wasn't the atom bomb, or the ability to manipulate genes, or even the Internet, but instead the technology of nonviolence. (I use the word "technology" advisedly here.) We had intimations of its power long before: In a sense, the most resounding moment in Western history, Jesus's crucifixion, is a prototype of nonviolent action, one that launched the most successful movement in history. Nineteenth-century America saw Thoreau begin to think more systematically about civil disobedience as a technique. But it really fell to the 20th century, and Gandhi, to develop it as a coherent strategy, a process greatly furthered by Dr. Martin Luther King Jr. and his associates in this country, and by adherents around the world: Otpor in Eastern Europe, various participants in the Arab Spring, Buddhist monks in Burma, Wangari Maathai's tree-planters, and so on.

We have done very little systematic study of these techniques. We have no West Point or Sandhurst for the teaching of nonviolence; indeed, it's fair to say that the governments of the world have spent far more time figuring out how to stamp out such efforts than to promote them. (And given the level of threat

they represent to governments, that is perhaps appropriate.) What we know is what we've learned by experience, by trial and error.

In my own case over the last decade, that's meant helping to organize several large-scale campaigns or social movements. Some have used civil disobedience in particular—I circulated the call for arrestees at the start of the Keystone XL pipeline demonstrations in 2011, and observers said the resulting two weeks of nonviolent direct action resulted in more arrests than any such demonstration on any issue in many years. Others have focused on large-scale rallies—some in this audience attended the massive climate march in New York in the autumn of 2014, organized in part by 350.org, which was apparently the largest demonstration about anything in this country in a long time. Others have been scattered: The fossil-fuel divestment campaign we launched in 2012 has been active on every continent, incorporated a wide variety of tactics, and has become the largest anticorporate campaign of its kind in history, triggering the full or partial divestment of endowments and portfolios with nearly \$5 trillion in assets. These actions have helped spur many more such actions: Keystone represented a heretofore very rare big loss for Big Oil, and its success helped prompt many others to follow suit; now every pipeline, fracking well, coal mine, liquid-natural-gas terminal, and oil train is being fought. As an executive at the American Petroleum Institute said recently—and ruefully—to his industry colleagues, they now face the "Keystone-ization" of all their efforts.

And we have by no means been the only, or even the main, actor in these efforts. For instance, indigenous activists have been at the forefront of the climate fight since its inception, here and around the world, and the current fight over the Dakota Access pipeline is no exception. They and the residents of what are often called "frontline" communities, where the effects of climate change and pollution are most intense, have punched far above their weight in these struggles; they have been the real leaders. These fights will go on. They'll be much harder in the wake of Trump's election, but they weren't easy to begin with, and I confess I see little alternative—even under Obama, the chance of meaningful legislation was thin. So, using Jonathan's template, I'll try to offer a few lessons from my own experience over the last decade.

* * *

Lesson one: Unearned suffering is a potent tool. Volunteering for pain is an unlikely event in a pleasure-based society, and hence it gets noticed. Nonviolent direct action is just one tool in the activist tool kit, and it should be used sparingly—like any tool, it can easily get dull, both literally and figuratively. But when it is necessary to underline the moral urgency of a case, the willingness to go to jail can be very powerful, precisely because it goes against the bent of normal life.

It is also difficult for most participants. If you've been raised to be law-abiding, it's hard to stay seated in front of, say, the White House when a cop tells you to move. Onlookers understand that difficulty. I remember Gus Speth being arrested at those initial Keystone demonstrations. He'd done everything possible within



the system: co-founded the Natural Resources Defense Council, chaired the president's Council on Environmental Quality, ran the entire UN Development Program, been a dean at Yale. But then he concluded that the systems he'd placed such faith in were not coming close to meeting the climate challenge—so, in his 70s, he joined that small initial demonstration. Because his son was a high-powered lawyer, Gus was the only one of us able to get a message out during our stay in jail. What he told the press stuck with me: "I've held many important positions in this town," he said. "But none seem as important as the one I'm in today." Indeed, his witness pulled many of the nation's environmental groups off the sidelines; when we got out, he and I wrote a letter to the CEOs of all those powerful green groups, and in return they wrote a letter to the president saying, "There is not an inch of daylight between our position and those of the people protesting on your lawn." Without Gus's willingness to suffer the indignity and discomfort of jail, that wouldn't have happened, and the subsequent history would have been different.

Because it falls so outside our normal search for comfort, security, and advancement, unearned suffering can be a powerful tool. Whether this will be useful against a crueler White House and a nastier and more empowered right wing remains to be seen, but it *will* be seen. I imagine that the first place it will see really widespread use is not on the environment, but in regard to immigration. If Trump is serious about his plans for mass deportation, he'll be met with passive resistance of all kinds—or at least he should be. All of us have grown up with that Nazi-era bromide about "First they came for the Jews, but I was not a Jew..." In this case, there's no mystery: First they're coming for the undocumented. It will be a real fight for the soul of our nation, as the people who abstractly backed the idea of a wall with Mexico are forced to look at the faces of the neighbors they intend to toss over it.

Lesson two: These tactics are useful to the degree that they attract large numbers of people to the fight. Those large numbers don't need to engage in civil disobedience; they just need to engage in the broader battle. If you think about it, numbers are the currency of movements, just as actual cash is the currency of the status quo—at least until such time as the status quo needs to employ the currency of violence. The point of civil disobedience is rarely that it stops some evil by itself; instead, it attracts enough people and hence attention to reach the public at large.

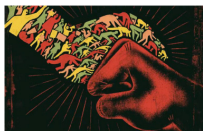
When the Keystone demonstrations began, for instance, no one knew what the pipeline was, and it hadn't occurred to people to think about climate change in terms of infrastructure. Instead, we thought about it in the terms preferred by politicians, i.e., by thinking about "emissions reductions" far in the future from policies like increased automobile efficiency, which are useful but obviously insufficient. In the early autumn of 2011, as we were beginning the Keystone protests, the *National Journal* polled its DC "energy insiders;" and 93 percent of them said TransCanada would soon have its permit for the pipeline. But those initial arrests attracted enough people to make it into a national issue.

Soon, 15,000 people were surrounding the White House, and then 50,000 were rallying outside its gates, and before long it was on the front pages of newspapers. The information spread, and more importantly the analysis did too: Infrastructure became a recognized point of conflict in the climate fight, because enough people said it was. Politicians were forced to engage on a ground they would rather have avoided.

In much the same way, the divestment movement managed to go from its infancy in 2012 to the stage where, by 2015, the governor of the Bank of England was repeating its main bullet points to the world's insurance industry in a conference at Lloyd's of London: The fossil-fuel industry had more carbon in its reserves than we could ever hope to burn, and those reserves posed the financial risk of becoming "stranded assets." Note that it doesn't take a majority of people, or anywhere close, to have a significant—even decisive—impact: In an apathetic world, the active involvement of only a few percentage points of the citizenry is sufficient to make a difference. No more than 1 percent of Americans, for instance, ever participated in a civil-rights protest. But it does take a sufficient number to make an impression, whether in the climate movement or the Tea Party.

Lesson three: The real point of civil disobedience and the subsequent movements is less to pass specific legislation than it is to change the zeitgeist. The Occupy movement, for instance, is often faulted for not having produced a long list of actionable demands, but its great achievement was to make, by dint of recognition and repetition, the existing order illegitimate. Once the 99 percent and the 1 percent were seen as categories, our politics began to shift. Bernie Sanders, and to a lesser extent Donald Trump, fed on that energy. That Hillary Clinton was forced to say that she too opposed the Trans-Pacific Partnership trade deal was testimony to the power of the shift in the zeitgeist around inequality. Or take LGBTQ rights: It's worth remembering that only four years ago, both Barack Obama and Hillary Clinton still opposed same-sex marriage. That's difficult to recall now, since at this point you'd think they had jointly invented the concept. But it was skillful organizing for many years that changed less the laws of the land than the zeitgeist of the culture. Yes, some of those battles were fought over particular statutes; but the battles in Hollywood, and at high school proms, and in a dozen other such venues were as important. Once movements shift the zeitgeist, then legislative victory becomes the mopping-up phase; this one Trump won't even attempt to turn back.

This is not how political scientists tend to see it—or politicians, for that matter. Speaking to Black Lives Matter activists backstage in the course of the primary campaign, Hillary Clinton laid out her essential philosophy: "I don't believe you change hearts. I believe you change laws, you change allocation of resources, you change the way systems operate." This is, I think, utterly backward, and it explains much of the intuitive sense among activists of all stripes that Clinton wouldn't have been a leader. As Monica Reyes, one of the young immigration activists in the Dreamer movement great organizers who did much to shift



public opinion-put it: “You need to change the culture before you can change laws.” Or as that guy Abraham Lincoln once put it: “Public sentiment is everything.”

By forever straddling the middle, centrist politicians delay changes in public sentiment. The viewpoint of the establishment-an appellation that in this case includes everyone from oil companies to presidents-is always the same: We need to be “realistic”; change will come slowly if it comes at all; and so forth. In normal political debates, this is reasonable. Compromise on issues is the way we progress: You want less money in the budget for X, and I want more, and so we meet in the middle and live to fight another day. That’s politics, as distinct from movement politics, which is about changing basic feelings over the great issues of the day. And it’s particularly true in the case of climate change, where political reality, important as it is, comes in a distinct second to reality reality. Chemistry and physics, I repeat, do what they do regardless of our wishes. That’s the difference between political science and science science.

* * *

There are many other points that Jonathan gets at in his book, but there’s one more that bears directly on the current efforts to build a movement around climate change. It comes in his discussion of Hannah Arendt and Mohandas Gandhi. Despite widespread agreement on the sources of power and the possibilities for mobilization, he finds one large difference between the two: Whereas Gandhi saw “spiritual love as the source and inspiration of nonviolent action, Arendt was among those who argued strenuously against introducing such love into the political sphere.” Hers was not an argument against spiritual love, but rather a contention that it mostly belonged in the private sphere, and that “publicity, which is necessary for politics, will coarsen and corrupt it by turning it into a public display, a show.” I will not attempt to flesh out the illuminating arguments on both sides, but I will say that I have changed my mind somewhat over the years on this question, at least as it relates to climate change.

Gandhi, like Thoreau before him, was an ascetic, and people have tended to lump their political and spiritual force together-and, in certain ways, they *were* very closely linked. Gandhi’s spinning wheel was a powerful symbol, and a powerful reality, in a very poor nation. He emphasized individual action alongside political mobilization, because he believed that Indians needed to awaken a sense of their own agency and strength. This was a necessary step in that movement-but perhaps a trap in our current dilemma. By this I mean that many of the early efforts to fight climate change focused on a kind of personal piety or individual action, reducing one’s impact via lightbulbs or food choices or you name it. And these are useful steps. The house that Sue and I inhabit is covered with solar panels. I turn off lights so assiduously that our daughter, in her *Harry Potter* days, referred to me as “the Dark Lord.” Often in my early writing, I fixed on such solutions. But in fact, given the pace with which we now

know climate change is advancing, they seem not irrelevant but utterly ill-equipped for the task at hand.

Let’s imagine that truly inspired organizing might somehow get 10 percent of the population to become really engaged in this fight. That would be a monumental number: We think 10 percent of Americans participated in some fashion in the first Earth Day in 1970, and that was doubtless the high point of organizing on any topic in my lifetime. If the main contribution of this 10 percent was to reduce its own carbon footprint to zero- itself an impossible task-the total impact on America’s contribution to atmospheric carbon levels would be a 10 percent reduction. Which is helpful, but not very. But that same 10 percent-or even 2 or 3 percent actually engaged in the work of politics might well be sufficient to produce structural change of the size that would set us on a new course: a price on carbon, a commitment to massive subsidies for renewable energy, a legislative commitment to keep carbon in the ground.

Some people are paralyzed by the piety they think is necessary for involvement. You cannot imagine the anguished and Talmudic discussions I’ve been asked to adjudicate on whether it’s permissible to burn gasoline to attend a climate rally. (In my estimation, it’s not just permissible, it’s very nearly mandatory-the best gas you will burn in the course of a year.) It has also become-and this is much more dangerous-the pet argument of every climate denier that, unless you’re willing to live life in a dark cave, you’re a hypocrite to stand for action on climate change. This attempt to short-circuit people’s desire to act must be rejected. We live in the world we wish to change; some hypocrisy is the price of admission to the fight. In this sense, and this sense only, Gandhi is an unhelpful example, and a bludgeon used to prevent good-hearted people from acting.

In fact, as we confront the blunt reality of a Trump presidency and a GOP Congress, it’s clearer than ever that asceticism is insufficient, and maybe even counterproductive. The only argument that might actually discover a receptive audience in the new Washington is one that says, “We need a rapid build-out of solar and wind power, as much for economic as environmental reasons.” If one wanted to find the mother lode of industrial jobs that Trump has promised, virtually the only possible source is the energy transformation of our society.

I will end by saying that movement-building-the mobilization of large numbers of people, and of deep passion, through the employment of all the tools at a nonviolent activist’s disposal-will continue, though it moves onto very uncertain ground with our new political reality. This work of nonviolent resistance is never easy, and it’s becoming harder. Jonathan’s optimism in *The Unconquerable World* notwithstanding, more and more countries are moving to prevent real opposition. China and Russia are brutally hard to operate in, and India is reconfiguring its laws to go in the same direction. Environmentalists are now routinely assassinated in Honduras, Brazil, the Philippines. Australia, where



mining barons control the government, has passed draconian laws against protest; clearly Trump and his colleagues would like to do the same here, and will doubtless succeed to one extent or another. The savagery of the police response to Native Americans in North Dakota reminds us how close to a full-bore petro-state we are.

And yet the movement builds. I don't know whether it builds fast enough. Unlike every other challenge we've faced, this one comes with a time limit. Martin Luther King would always say, quoting the great Massachusetts abolitionist Theodore Parker, that "the arc of the moral universe is long, but it bends toward just ice"—meaning that it may take a while, but we are going to win. By contrast, the arc of the physical universe is short and it bends toward heat. I will not venture to predict if we can, at this point, catch up with physics. Clearly, it has a lot of momentum. It's a bad sign when your major physical features begin to disappear—that we no longer have the giant ice cap in the Arctic is disconcerting, to say the least. So there's no guarantee of victory. But I can guarantee that we will fight, in every corner of the earth and with all the nonviolent tools at our disposal. And in so doing, we will discover if these tools are powerful enough to tackle the most disturbing crisis humans have ever faced. We will see if that new technology of the 20th century will serve to solve the greatest dilemma of our new millennium.

Bill McKibben is an author and environmentalist who in 2014 was awarded the Right Livelihood Prize, sometimes called the 'alternative Nobel.' His 1989 book *The End of Nature* is regarded as the first book for a general audience about climate change, and has appeared in 24 languages; he's gone on to write a dozen more books. He is a founder of 350.org, the first planet-wide, grassroots climate change movement, which has organized twenty thousand rallies around the world in every country save North Korea, spearheaded the resistance to the Keystone Pipeline, and launched the fast-growing fossil fuel divestment movement.

The Schumann Distinguished Scholar in Environmental Studies at Middlebury College and a fellow of the American Academy of Arts and Sciences, he was the 2013 winner of the Gandhi Prize and the Thomas Merton Prize, and holds honorary degrees from 18 colleges and universities. *Foreign Policy* named him to their inaugural list of the world's 100 most important global thinkers, and the Boston Globe said he was "probably America's most important environmentalist."

A former staff writer for *the New Yorker*, he writes frequently for a wide variety of publications around the world, including the *New York Review of Books*, *National Geographic*, and *Rolling Stone*. He lives in the mountains above Lake Champlain with his wife, the writer Sue Halpern, where he spends as much time as possible outdoors. In 2014, biologists honored him by naming a new species of woodland gnat—*Megophthalmidia mckibbeni*—in his honor.

Editorials & Op-Eds

- May 21, 2014, Bill McKibben, *Rolling Stone*, "A Call to Arms: An Invitation to Demand Action on Climate Change"
- Dec 17, 2013, Bill McKibben, *Rolling Stone*, "Obama and Climate Change: The Real Story"
- Oct 27, 2013, Bill McKibben, *TomDispatch*, "X-Ray of a Flagging Presidency"
- Aug 18, 2013, Bill McKibben, *TomDispatch*, "Movements Without Leaders"
- May 30, 2013, Bill McKibben, *The Guardian*, "It's Time to Stop Investing in the Fossil Fuel Industry"
- Apr 8, 2013, Bill McKibben, *Salon*, "Will Democrats Destroy the Planet?"
- Oct 30, 2012, Bill McKibben, *New Republic*, "After Sandy, a Climate Change Conversation? Dream On"
- July 19, 2012, Bill McKibben, *Rolling Stone*, "Global Warming's Terrifying New Math"
- May, 2012, Bill McKibben, *Solutions Journal*, "It's Time to Fight the Status Quo"
- May 3, 2012, Bill McKibben, *TomDispatch*, "Too Hot Not to Notice?"
- Feb 7, 2012, Bill McKibben, *Huffington Post*, "The Great Carbon Bubble"
- Oct 3, 2011, Bill McKibben, *The New York Times*, "The Cronyism Behind a Pipeline for Crude"
- Sept 28, 2011, Bill McKibben, *Rolling Stone*, "The Keystone Pipeline Revolt: Why Mass Arrests are Just the Beginning"
- June 27, 2011, Bill McKibben, *New Republic*, "Canada and its Tar Sands: What the Country Can Learn from Brazil About Protecting the Environment"
- June, 2011, Bill McKibben, *National Geographic*, "Can China Go Green?"
- Aug 18, 2010, Bill McKibben, *The Guardian*, "Why has extreme weather failed to heat up the climate debate?"
- Aug 4, 2010, Bill McKibben, *TomDispatch*, "We're hot as hell and we're not going to take it any more."
- Aug 4, 2010, Bill McKibben, *LA Times*, "It's time to talk, and act, tough."
- Feb 24, 2010, Bill McKibben, *LA Times*, "The O.J. tactic."
- Oct 19, 2009, Bill McKibben and Chip Giller, *Grist*, "Day of Climate Action Shows Power of Web Organizing"
- Sept 9, 2009, Rev. Lennox Yearwood Jr. & Bill McKibben, *The Nation*, "People, Let's Get Our Carbon Down"
- Nov 6, 2008, Bill McKibben, *The Guardian*, "Welcome to Reality, Mr. President Elect"
- June 23, 2008 Bill McKibben, *Washington Post* "End of the Open Road"
- May 11, 2008, Bill McKibben, *LA Times*, "Civilization's Last Chance"



All Environmental Politics is Local

by Steven Cohen

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The political differences we see on climate issues globally reflect different cultures and distinct stages of economic development. Just as global treaty negotiations work to bridge the divide between nations, Americans need to renew our search for common ground. For most of the 21st century, our national politics has been about how we differ. With the phrase “climate change” disappearing from U.S. federal government websites and increased talk of regulatory overreach, it is obvious that protecting the environment will continue to be a fault line in American political ideology. While there are plenty of examples of environmental regulations being administered with rigidity and inflexibility, there are far more examples of accommodation and a process that provides plenty of time for businesses and localities to comply with environmental standards. The typical pace of regulation implementation in America is measured in decades, not days, and the gradual and incremental approach to environmental protection has worked.

I anticipated President Trump’s shortsighted decision to withdraw from the Paris climate accord and predicted that his actions might provide environmentalists with a common enemy to rally against. That seems to have happened. Former New York City Mayor Michael Bloomberg is organizing American corporations, states, cities and other institutions to commit to greenhouse gas reductions and be recognized by the U.N. as they fulfill the U.S. reduction obligations under the Paris agreement. Bloomberg’s leadership and the rapid mobilization of leaders concerned about climate change demonstrate that America’s power resides both inside and outside the Washington beltway. Fortunately, many of Trump’s plans are being countered by other parts of our government, other institutions, and his own inability to form a competent government. Congress restored some of the science budget cuts initially proposed by Trump and the courts have countered some of his immigration policy excesses. The Senate voted to uphold regulations on methane emissions from oil and gas wells on public land, and nearly everyone is trying to reduce their greenhouse gases. President Trump’s visible attack

on the climate treaty was discouraging, but it was far from the last word on the subject. As the current political climate develops and the Trump administration works to chip away at Barack Obama’s legacy, it is easy to be disheartened for the environmental agenda. But history has shown that change, especially that which is instigated by policy, happens incrementally.

America’s air and water are cleaner today than they were in the 1970s and our population and economy have grown substantially since then. The hazardous waste regulations required in the 1976 Resource Conservation and Recovery Act, and the 1984 amendments to that bill, were not finalized until the 1990s. The Federal Water Pollution Control Act was enacted in 1972 and here in Manhattan we were still dumping raw sewage into the Hudson River until the North River wastewater treatment plant opened in 1984. However, when we look back to assess the effects of improved water infrastructure, we can see positive results. The federal government spent \$56 billion in municipal sewage treatment between 1970 and 1990. The portion of U.S. citizens served by wastewater treatment plants grew from 42% to almost 75% by 1985 (Adler, Landman & Cameron, 1993).





Developing, issuing and implementing environmental regulations is a long process of give and take, but given the proper timeline, improvements are measurable. The takeaway is that government agencies must invest in the fundamental systems that citizens rely on.

Whenever I hear that environmental protection is a partisan issue, I'm reminded of New York City Mayor Fiorello LaGuardia's famous statement that there is no Democratic or Republican way to pick up garbage. The provision of clean air, safe drinking water, solid waste management and flood control are all basic public services that people who pay taxes expect to receive. When governmental agencies take a short cut for these fundamental public services, the consequences can be dire.

We all witnessed the extensive coverage of the water crisis in Flint, Michigan. When the city of Flint decided to stop using Detroit's water system in 2014, they began instead to pump water from the Flint River as a temporary solution before connecting to a regional water system once its construction was completed. Yet by 2015, high levels of lead were found when they conducted blood tests for local children. According to a 2015 study, the water from the Flint River was, on average, 19 times more corrosive than the water from the Detroit water system (Roy, 2015). The damage was done and the pipes in the city were completely contaminated with lead and other pollutants. Then-President Obama declared Flint to be under a state of emergency. This situation might have been avoided if the state had required that corrosion protection chemicals be added to the new water supply, which the Department of Environmental Quality failed to do in violation of federal law. According to an article in the *American Journal of Public Health*, "the legal safeguards and regulating bodies designed to protect vulnerable populations from preventable lead exposure failed" (Hanna-Attisha, LaChance, Sadler & Schnepf, 2016).

However, the situation in Flint and other similar stories may have an upside since there is a chance that a consensus is emerging on the importance of rebuilding America's infrastructure. We may be entering a period of intense capital construction to reinvent our decaying infrastructure. If this is to take place, it is critical that we do not simply build for its own sake, but build with a sense of strategy and purpose. America is a more crowded and urban place than it once was. Our fundamental systems are all in need of investment and construction. The repair and construction of 21st century infrastructure could provide the bridge employment needed by people with 20th century skillsets. While those construction jobs are also increasingly mechanized, our roads, bridges, electrical systems, water and waste systems need a major infusion of capital and construction.

Infrastructure such as water and sewage systems, smart energy grids and public transit are important in every part of the world, even more so as population grows. Strong leadership at state and local levels can help to develop successful solutions for region-specific issues, and are crucial for the collaboration with

the private sector to create the kind of public-private partnerships necessary for coupling economic growth with a sustainable society.

The Importance of Local-Level Sustainability to Building Political Support

Sustainability initiatives are funded by state and federal entities, but local governments often implement them. At the heart of the presidential campaigns, partisan discord, and sustainability policy, environmental quality for citizens and their day-to-day experiences rely heavily on the issues relevant to their region. I find that when environmental politics leaves the symbolic and abstract discussion at the national and global levels and turns to local issues such as what do we do with the garbage and how do we deal with traffic, support for the goals of urban sustainability grows. That is why successful strategy for environmental protection needs to focus on local impacts, like the new transit options for New York City, or how to avoid the issues of water infrastructure for cities like Flint. According to the UN Environment Programme, "local authorities construct, operate and maintain economic, social, and environmental infrastructure, oversee planning processes, establish local environmental policies and regulations, and assist in implementing national and subnational environmental policies. As the level of governance closest to the people, they play a vital role in educating, mobilizing, and responding to the public to promote sustainable development" (UNEP, 2000).

Most of the actual work of government is done at the local level. Cities are important agents for sustainability because of their population size, environmental impact, and direct service delivery role. Local governments are responsible for schools, police, firefighting, transportation, land use, water, and waste management—not to mention parades and fireworks. The federal and state governments make policy and collect and distribute revenue, but for the most part, the real work of government is local. Researchers Daley, Sharp, and Bae (2013, 146) stated in a study that at lower levels of government, "problems are more likely to be accurately identified, solutions are crafted at the local level by individuals who understand the political and social culture, and feedback and adaptive management can be more immediate."

City-level sustainability initiatives, such as PlaNYC 2030/OneNYC in New York City, or Greenworks in Philadelphia, tend to be integrated into local economic development efforts and often enjoy a high level of nonpartisan support. Many local leaders have come to understand that sustainability drives economic growth. According to the New Climate Economy commission, investing in public and low-emission transport, energy efficiency of buildings, and waste management in cities could generate \$17 trillion in savings worldwide by 2050 (The New Climate Economy, 2015). Green initiatives attract business, tourists, and new residents. People can see and experience local-level sustainability initiatives because they have an immediacy



not typically seen at other levels of government. In New York City, you can see the bike-sharing stations, the new bike lanes, and the three types of trash and recycling baskets out on the street. Efforts at energy efficiency can be seen in lower utility bills. Federal or state governments fund some sustainability initiatives, but local governments typically implement them.

At the state and local levels, *Governing Magazine* counted water supply and carbon emissions as two of the top 10 “legislative issues to watch in 2015” (*Governing Magazine*, 2015). This is an indication that apart from the strategy considerations of American presidential politics, the basic needs of state and local governance show that environmental issues are moving to the center of the political process. These state and local priorities could influence presidential primaries and spill into the national election agenda, although clearly we saw little of this in 2016. Despite 2016’s relentless national race to the bottom, efforts to avoid addressing environmental issues may become more difficult in our evolving electoral political life. While we desperately need U.S. federal sustainability policy, in the final analysis the environmental quality that people experience in their home communities will have the highest degree of political salience. A successful strategy to protect our environment will need to focus on local effects. Once again, the late Speaker of the House Tip O’Neill is proven correct: “all politics is local” (and, by extension, all environmental politics is local).

In the United States, it has fallen to states and cities to facilitate the transition to sustainability. The cities that implement sustainability plans and the states that enforce environmental rules have cleaner air, better parks, and higher quality of life. The most popular sustainability practices in cities include tree conservation, alternative-fuel vehicle adoption, promotion of bicycle use, water conservation, education, and construction of new buildings using Leadership in Energy and Environmental Design (LEED) standards (Wang et al. 2012, 847). In the long run, these assets will attract people and business in the global economy.

But a large part of the country clings to the fossil fuel-based economy. They treasure their SUVs and express a desire to turn the clock back to an America that was simpler, and somehow “greater”. I’m not sure that world ever existed, but nostalgia is a powerful political force. Still, people of all political persuasions like to breathe fresh air and drink clean water. Some may never believe the science of climate change, but they know orange water when they see it and they know it is government’s job to keep the drinking water clean and safe. One of the attractions of American cities that continue to be based on a suburban sprawl mode of land use is that housing tends to be less expensive, and many people prefer large private spaces. However, even these sprawling cities are beginning to see solar arrays installed on their rooftops along with electric vehicles charging in their garages.

Moves Toward a Renewable Resource-Based Economy

As we strategize progressing to a more sustainable society, there are many areas that require investment: transportation, airports, solid waste management, smart grid and micro-grid computer control upgrades to energy systems, and water and sewage treatment centers. We need to learn that the use of outmoded and decaying infrastructure is less of a bargain than it seems, and we need new systems to be based on renewable energy.

One of the most profound and important issues involved in the discussion of sustainability is energy – even without environmental destruction such as ecosystem damage and climate change, renewable energy is clearly the next phase of human technological evolution. The energy future, like the rest of our economic future, depends on technological innovation and ingenuity. We are now in the brain-based economy. Software makes more money than hardware. A century ago most of our economy and most of our labor was in the production of food, clothing and shelter. Today, less and less of our GDP is in those necessary but relatively shrinking businesses. In the book *Cloud Manufacturing*, Bi and Wang explain this gradual transition in their chapter ‘Manufacturing Paradigm Shift Towards Better Sustainability.’ In the chapter, the authors describe the global trend away from manufacturing and towards a more information-technology driven economy: “With an abrupt advancement of information technology (IT) from 1980, the global manufacturing markets were gradually saturated, thus companies were pressured to manufacture new products at a fast pace to catch earlier marketing opportunities. Today, we are more conscious ... of the shortage of natural resources in the near future; manufacturing companies are forced to change their system paradigms to accommodate ... sustainability” (Bi & Wang, 2013).

My view is that the real action and focus of our effort should be on making sure the demand for fossil fuels goes down as soon as possible. Just as we went from human-pulled carts to animal labor and from animals to fossil fuels, the next step is electric vehicles powered by renewable energy stored in high-tech batteries. Part of the argument for renewables is price. Though it is difficult to make a direct comparison between the cost of fossil fuels and renewable energy sources due to government subsidies, studies have shown the massive amount of money being spent to facilitate the fossil fuel industry (Bast, Doukas, Pickaard, van der Burg & Whitley, 2015). Even if we ignore their damage to the environment, and even though the technology of fossil fuel extraction is advancing rapidly, fossil fuels have the fatal flaw of being finite. That means over time they become less plentiful. That time may or may not come soon, but it will come. The technology of extracting and storing energy from the sun will become cheaper over time. We have already seen the impact of technology on price with computers and cell phones. The price of energy from the sun remains zero, and human ingenuity and the advance of technology are inevitable. Someone soon is going to



solve the problem of generating and storing renewable energy. If done correctly, the leader of that effort will be the Bill Gates or Steve Jobs of the next generation.

A recent report released by the International Renewable Energy Agency (IRENA) discusses the barriers to energy storage, such as performance and safety. However, these barriers are already being reduced by continued research and development. According to IRENA (2015), “In multiple application areas around the world, batteries have been deployed to aid the integration of renewable energy, especially solar and wind power... Costs are coming down, and technological progress is improving performance. Recent progress is also making batteries safer and more efficient.”

The nation that develops renewable energy that is cheaper than, and as reliable as, fossil fuels will dominate the world economy. Reducing climate change and air pollution is a beneficial byproduct of this technology, but cheaper and more reliable energy is the main outcome. This cannot be achieved without government support. In the past century, America’s research universities and national laboratories, funded by the federal government and often by the military, have been an engine of technological innovation: transistors, semi-conductors, satellite communications, mini computers, GPS, the internet...the list goes on.

Coupled with this pursuit of winning the race for technological advancement, we should also focus on modernizing our state and local energy systems. We should prepare for distributed generation of renewable energy from households and businesses by building community level micro-grids that will eventually be tied together into state-level smart grids. These computer-controlled updated electrical systems will allow energy to be stored and generated with maximum efficiency. They will enable the system to be resilient in the face of storms and other disruptions. We should encourage the business of auto charging stations and/or build public charging stations if the private sector doesn’t initially see the profit. We should use state and local tax and zoning laws to encourage energy efficiency and renewable energy. By modernizing the energy system we can reduce the costs and environmental impact of our energy use.

State governments, particularly in California and New York are looking to modernize the electric grid and the business models of power utilities to permit decentralized, distributed generation of energy. The Energy Commission for California estimates that about 27 percent of its electricity retail sales in 2016 were served by renewable energy sources (CEC, 2016). New York State’s renewable energy portfolio is made up of about 80% hydroelectricity, mostly due to the Robert Moses Niagara hydroelectric plant, the largest hydroelectric power plant east of the Rocky Mountains. New York is one of the leading states for converting their landfill gas to electricity (US EIA, 2016). These

states are taking these measures to improve the resiliency and cost of their energy systems to serve the needs of residents and businesses. Both are promoting smart grids and the environmental impact of smart grids will be profound. Smart grids will increase the use of renewables and reduce the vulnerability of our power system to natural and human made disasters.

When the energy dilemma is finally fixed, we will be free to pursue the post-industrial economy and the sustainable lifestyles we are beginning to see. The transition to this new economy will not be easy and it is likely that many people who benefited from the old economy will have difficulty adjusting to the new one. It will be the job of government to ensure that the social safety net is adjusted to provide not just material wellbeing, but a sense of purpose and dignity for people who face the challenges of adjustment. This transition does have a cost, but the solution to climate change is not to punish consumers or raise the cost of energy. Poor people and rich people rely on energy. For poor people, the energy bill is a high proportion of their weekly budget. Rather than raise the price of fossil fuels, our climate policy should lower the price of renewable energy. We should subsidize electric cars, solar panels and other technologies to make it possible for working families to afford them. The infrastructure needed for renewable energy will be built and managed by private firms, but requires public sector engagement in the form of investment and sophisticated public-private collaboration.

Sustainable Urban Living

Environmental advocates often focus on individual behavior and say we need to develop lifestyles that consume less and do not damage ecosystems. On a worldwide basis with billions of people aspiring to higher levels of material consumption, individual reductions in consumption in the developed world will have little real impact. But I have hope that we can and are changing the nature of consumption just as we are changing the nature of work. A person can spend time and enjoy that time by consuming resources at a ferocious rate or at a moderate rate. You could walk and bike to work, take a train, or be driven in a huge, shiny SUV. You could recycle your food waste from your kitchen or toss it out your window to the alley below. Your lifestyle has resource implications. Sustainable urban living requires energy efficient buildings, smart grids, mass transit, and green spaces—but it also seems to be evolving a new approach to owning and using resources.

A growing aspect of sustainable urban living is the “sharing economy.” Sharing has always been a part of urban life; we have long shared books in public libraries, nature in parks, and seats on the stoops of row houses. But in the past few years, cities have seen a significant revival and acceleration in sharing activity and innovation. In cities around the world, people are now welcoming guests into spare rooms, sharing tools and equipment, and paying for rides in cars of people they don’t know. Start-up businesses



are sharing computing space in the cloud and leasing office space and conference rooms by the hour. The sharing economy is growing as young people and a few older folks decide that access to cars and other resources is more important than owning them.

The sharing economy, or collaborative consumption, is a way of “renting” resources owned by one individual to be accessed by many other individuals. It is a system built around the use of unused or under-used resources. The modern sharing economy dates back to the 1990s with the founding of online marketplaces eBay and Craigslist, which allow for the recirculation of goods. But today’s sharing economy looks slightly different, fueled by information and communication technology and the proliferation of web-based communities. The size and scale of leading companies operating within the sharing economy, most of which didn’t exist a decade ago, now rival some of the world’s largest businesses. By using innovative technologies and creative business models, and even redefining concepts of equity and safety, the sharing economy is starting to change our cities and our lives.

Cities have many resources that can easily and effectively be redistributed and shared. By allowing people to own less and consume only what they need, fewer resources are wasted, promoting urban sustainability. However, sharing economy services have also presented cities with unprecedented and complex questions of governance. The greatest challenge for cities is finding a balance between embracing these new businesses, as well as the various benefits they offer to residents and visitors, and regulating their safety and quality. With more types of sharing businesses entering the market and the rising popularity of these new applications and services, city leaders have been forced to address a variety of issues all at once, such as how to conduct background checks on service providers, and how to combat discrimination from resource owners such as drivers and homeowners? Despite these issues, the popularity and growth of the sharing economy has been rapid and dramatic.

Technological innovations have streamlined entry into the market for suppliers, facilitated easy access to searchable listings for consumers, and kept the costs of doing business low. As a result, sharing goods and services is cheaper and easier than ever before, and possible on a much larger scale. Before the internet, renting a good or space from someone else was feasible and common, but rarely quick and simple. Now websites match up apartment owners and renters; smartphones with GPS let people see where the nearest rentable car is parked; social networks provide a way to check up on people and build trust; and online payment systems handle any billing. Just as YouTube changed TV and social media disrupted the mainstream media, the sharing economy replaces the industrial model of companies owning and people consuming, and allows everyone to be both consumer and producer.

It is not difficult to imagine these changes, but the only way they will happen is if people are positively attracted to them rather

than punished for their attraction to unsustainable consumption patterns. According to researchers from the University of Groningen, by creating a dynamic in which pro-environmental behavior is not only the “right” thing to do but also aligns with the “norm” of society, those behaviors become what is referred to as “normative goal framing.” Observing others participating in a sustainable behavior can encourage one to adopt those habits as well (Steg, Lindenberg, and Keizer, 2015). Culture and values are far more powerful forces of social change and consumption patterns than regulation. Hopefully the images of interesting and exciting work and play will reflect the growing understanding of the need to minimize the damage of our work and play on the planet that sustains us.

An Example of Sustainable Infrastructure: Parks & Open Space

In a world that is increasingly urban, we often overlook the importance of city parks as critical pieces of urban infrastructure. When hard-pressed city officials are balancing the demands of public safety, education, transportation, water, sanitation and homeless services with parks, it is easy to see why parks are often seen as a residual budget category. Nevertheless, day in and day out our urban parks are among the most important, used and even loved services of city governments.

In PlaNYC 2030’s original 2007 urban sustainability plan, the Bloomberg administration set a goal that every city resident would live within a ten minute walk of a city park. This was a clear, operational and measurable indication of the importance of parks to urban life. There are a great many different types of urban parks and uses of parks. One use is for recreation- ball fields, tennis and basketball courts, pools, skating rinks, boating and sailing. Another use is ecological. Green space absorbs heat and carbon dioxide, assists in controlling storm water runoff, and can help preserve biodiversity. There is also the visual amenity offered by a park. In many cities, homes with a view of a park are more highly valued than identical homes without a park view.

Parks can also provide a commerce-free zone for families. Most public spaces in America feature commercial venues of one sort or another: amusement parks, shopping malls, professional sports facilities, movie theatres and so on. This adds to the financial pressure on a family. Parks are often free of commerce or if there is a restaurant or ice cream vendor in the park, they do not dominate the environment. Families can bring their own food, sports equipment and games, and folks can relax knowing their wallets aren’t being emptied by the hour.

Parks are a place where friends and families can gather and where neighbors can informally and casually interact with neighbors. They are a democratizing feature of urban life. There is no VIP line, charge, or special place for the elite in the typical public park. Rich and poor share the same space and facility. In this sense parks can contribute to social understanding and political stability.



While many people who live in cities spend most of their time indoors, parks provide actual and implicit outdoor space. The fact is that if everyone indoors suddenly decided to go to their local park, they would be so crowded that it would serve no purpose. But people visit parks for relatively short periods of time and most people do not visit their local park on any given day. But the experience of the park provides a pleasant memory and the potential access may well be more important than actual park use. This means that a relatively small amount of land can meet the outside space needs of a relatively large amount of people. Skilled landscape design can enable a large number of people to use outdoor park space without being aware of the number of people present. Sound effects from waterfalls can mask the sounds of people. Trees, hills, ponds and other design features as well as public plazas surrounded by wooded areas without recreation facilities can be used to concentrate people but also leave natural areas less trafficked.

In addition to publicly owned and operated parks, we see examples like New York's Central Park which is owned by the City of New York, but operated by the nonprofit Central Park Conservancy under contract to the City. It is also possible for private developers to build and operate public spaces for public use or to build and operate private spaces for the use of their own customers or residents. In some cities a private developer may be given permission to build more densely than the rules allow, in return for the "community benefit" of open space or a public plaza or facility. In some cities, institutions such as museums, botanical gardens, universities and zoos maintain both restricted spaces and spaces that are typically open to the public for events. Columbia University has a stunning central plaza that is open to the public and is a popular stop for tour buses and tourists. These public-private partnerships can help extend the reach of public spaces.

In 2016, New York opened a new urban park in Staten Island on the site of the city's last landfill. While this park will probably never have the glamor of the High Line Park in Manhattan, it will become increasingly important as Staten Island continues to develop and become more densely settled and more like New York City's other outer boroughs.

New York's Freshkills Park may be a tough sell for those of us who remember the huge landfill that used to be there. But anyone born in the 21st century will not associate that space with garbage, and over the next half century it will become of increasing importance to the development of Staten Island and New York City. Philip Hutchinson discusses the desire for open space in urban areas in his paper *Exploring the Connection between Landscape and Biopolitics: The Story of Freshkills Park*. Hutchinson discusses how Fresh Kills Park represents an overlap in the population's need for parks, and the behavior of the population relating to human impacts on the biosphere. "In crowded cities like NYC, it is parks that provide the spaces where activities of recreation can freely occur. In that sense, parks provide the spatial requirement for practices of self-discipline.

Thus, in part, the provision of parks in a city is responding to the perceived needs and desires of the population and adds a positive element to the fabric of a large city" (Hutchinson, 2017).

New York has a long history of park development with an eye toward the future. When Central Park was designed, the land surrounding it was not yet developed. Imagine Manhattan today without Central Park. Imagine the Upper West Side of Manhattan without Riverside Park. Someday people will have a hard time imagining Staten Island without Freshkills Park.

The Future of Urban Sustainability

Elements of economic and demographic life provide great challenges to our governments and leaders here in America and around the world. There are over seven billion people on the planet, and if economic growth continues along with better health care and birth control, human population will probably peak at 9 or 10 billion. As we see the world shift in the direction of faster transportation, healthier food, and safer communities, we must assess the roles of stakeholders in preserving the earth and its resources. We are in a culture that values wellness. Today, Americans tend to watch what they eat, attempt to exercise, take advantage of medical technology and monitor their children's well-being. Lead in the water supply, toxics in basements, untreated sewage, garbage floating in the ocean- these environmental insults, when made obvious to the public eye, inspire rapid and effective political reaction. At the state and local level we should be monitoring the environment and publicizing exposure to toxics in local media. Because of the lack of leadership from federal agencies in our country, the power to support environmental agendas shifted to local and state level agencies long ago. In most (but not all) of America these institutions have grown in capacity over the past quarter century. They are well positioned to continue progressing and resist any efforts to backpedal that may come from the out of step ideologues running the federal government.

Ecosystems do not recognize state or national borders. Toxics transported by air and water can easily move from place to place. That is why national institutions and international treaties are needed to protect the planet. States and communities are the first line of defense, but they may lack the resources or the scientific expertise needed to understand and successfully address the problem. Americans concerned with wellness, diet, exercise, and preventative health care will not be happy when they learn that the federal government is cutting back on efforts to study, regulate, and control toxics in their air, water, and land.

Climate change may not be a highly visible local issue, but it is one that most people are concerned about. In a 2017 Quinnipiac University National Poll, 67 percent of American voters in the survey oppose cuts to scientific research on the environment and climate change; 73 percent are concerned about climate change and 63 percent do not want climate regulations removed. Of those voters between 18 and 34 years of age, 78 percent believe



that human activity causes climate change—that compares to 54 percent of those over 65. Polling on visible local pollution shows even deeper support for environmental protection (Quinnipiac University, 2017).

State and local governments cannot perform all the functions that a national environmental agency can. There are places where a failing EPA will fail the American people. Scientific research, cross border impacts, and global issues will be neglected under the Trump-Pruitt EPA. But visible local environmental impacts will generate “not-in-my-backyard” community activation. People care about their family’s health and their own health. Toxic waste, polluted air, garbage on the beach, and lead in their drinking water will require mayors and governors to act. And they will. My hope is that state and local environmental concerns can counter the anti-regulatory zeal of the extreme right. As Pew reports in its most recent survey of environmental attitudes: “...about three-quarters of U.S. adults (74%) said “the country should do whatever it takes to protect the environment,” compared with 23% who said “the country has gone too far in its efforts to protect the environment” (Anderson, 2017).

But the survey also indicates growing partisanship on environmental regulation. Nearly 60 percent of Republicans think that environmental regulation reduces economic growth and employment. Before the Great Recession only 34% of Republicans held that factually inaccurate view. Conservative ideology may argue that environmental regulation costs jobs, but the opposite is true. Environmental protection is a “product line” that stimulates growth and employment. People will pay for clean air and water, and the technology that cleans air and water adds to the GDP. As does the increased productivity of those who are not made ill by environmental insults. While conservative ideology is anti-regulation, the environment is so important to health that most conservatives favor the government doing “whatever is needed” to protect the air, water and land. But the Pew study worries that people are inconsistent in their support of environmental protection. The study notes that the environment doesn’t rank as high as other issues and that many people don’t live “environmental lifestyles.”

My view is that America’s environmental attitudes and values are quite consistent and the Pew analysts are misreading how the environment works as a policy issue and lifestyle choice. As a policy issue, the environment always has tremendous latent power. The public knows that the air and water are cleaner than they used to be. If people believed the environment was getting worse, it would move up on their public policy issue priority list. High ranking on policy issues results from a combination of the issue’s importance and government’s progress in addressing the issue.

What is needed politically and in reality is a positive vision of a sustainable society. In the case of this country, it will need to be built on the traditional values that have always attracted people to America: freedom, rewarding individual achievement,

a love of the new and novel, innovation, and acceptance (even if reluctantly) of other people, cultures, and lifestyles. We may end up living in smaller and better-designed personal spaces along with increased access to more interesting and beautiful public spaces. More of us will spend more of our time in cities and towns. Some of our personal transportation may be replaced by mass transit or Uber-like shared transport. Our diets will continue to change; our engagement in physical fitness, health care, wellness, education, and electronic media will increase. And we will pay more attention to the source of our energy, food, and water and will look to ensure that it is renewable and free of toxics. We will pay more attention to where our garbage goes and think about how to make sure that our waste does not go to waste.

These changes are not simply a temporary fad or a symbolic trend, but a durable element of our changing values. I believe there are two reasons for this shift. The first is the objective degradation of environmental conditions that people can see, smell, or at least view through the media. Whether it is smog in China, drinking water in West Virginia, or the BP oil spill in the Gulf of Mexico, people know these facts. The second reason is related to the growing emphasis on health, nutrition, exercise, and what we sometimes term “wellness.” People are paying more attention to their physical and psychological health. In order to succeed in protecting yourself and your loved ones, government must do its part and protect the environment: on a more crowded planet with higher and higher levels of economic consumption, environmental sustainability cannot be assumed, it must be managed.

Our economy will continue to change, as will our lifestyles as technology and new services and products come to market. How we spend our time and what we do every day will continue to change. Human ingenuity guarantees it. What is not guaranteed is that our inventiveness will take into account the health of our natural systems. But the growing number of people determined to live a sustainable lifestyle will help assure that this new chapter of economic evolution will not be the final chapter. My view is that consumption must change, but that we can grow our economy while doing a better job of managing environmental impacts.

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The Sustainable City (forthcoming 2017), *Sustainability Policy: Hastening the Transition to a Cleaner Economy* (2015), *Understanding Environmental Policy* (2014, 2006), *Sustainability Management* (2011), *The Responsible Contact Manager* (2008), *Total Quality Management in Government* (1993), and *The Effective Public Manager* (1988, now co-authored in its fifth edition). He has written numerous articles on public management, sustainability management, and environmental policy. Dr. Cohen also is a weekly contributor to The Huffington Post.

References

- Adler, R.W., Ladman, J.C., & Cameron, D.M. (1993). *The Clean Water Act 20 years later*. Washington, D.C.: Island Press.
- Anderson, M. (2017, April 20). For Earth Day, here's how Americans view environmental issues. *Pew Research Center*. Retrieved from <http://www.pewresearch.org/fact-tank/2017/04/20/for-earth-day-heres-how-americans-view-environmental-issues/>
- Bast, E., Doukas, A., Pickard, S., van der Burg, L., & Whitley, S. (2015, November). Empty promises: G20 subsidies to oil, gas and coal production. *Oil Change International*. Retrieved from http://priceofoil.org/content/uploads/2015/11/Empty-promises_main-report.2015.pdf
- Bi, Z.M., & Wang, L. (2013). Manufacturing paradigm shift towards better sustainability. In W. Li & J. Mehnert (Eds.), *Cloud Manufacturing* (pp. 99-119). London, UK: Springer.
- California Energy Commission (CEC). (2016, December 22). *Renewable energy – overview*. Retrieved from http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf
- Daley, D. M., Sharp, E.B. and Bae, J. (2013). Understanding city engagement in community-focused sustainability initiatives. *Cityscape*, 15(1), 143–161.
- Feygin, M., & Satkin, R. (2004, March). The oil reserves-to-production ratio and its proper interpretation. *Natural Resources Research*, 13(1), 57-60. Retrieved from <https://link.springer.com/content/pdf/10.1023%2FB%3AANARR.000023308.84994.7f.pdf>
- Governing Magazine. (2015, January). *2015's top legislative issues to watch*. Retrieved from <http://www.governing.com/topics/politics/gov-issues-to-watch-2015.html>
- Hanna-Attisha, M., LaChance, J., Sadler, R.C., & Schnepf, A.C. (2016, January 21). Elevated blood lead levels in children associated with the Flint drinking water crisis: a spatial analysis of risk and public health response. *American Journal of Public Health*, 106(2), 283-290. doi: 10.2105/AJPH.2015.303003
- Hutchinson, P. (2017). Exploring the connection between landscape and biopolitics: the story of Freshkills Park. *Landscape Review*, 17(1), 96-107. Retrieved from <https://journals.lincoln.ac.nz/index.php/lr/article/view/1011/685>
- International Renewable Energy Agency (IRENA). (2015). *Battery storage for renewables: market status and technology outlook*. Retrieved from http://www.irena.org/documentdownloads/publications/irena_battery_storage_report_2015.pdf
- Quinnipiac University (2017, March 24). *Quinnipiac University poll: American voters want to save big bird, Quinnipiac University national poll finds; most oppose spending cuts in trump budget* [Press release]. Retrieved from https://poll.qu.edu/images/polling/us/us03242017_Ukux36wm.pdf/
- Roy, S. (2015, September 11). Test update: Flint River water 19X more corrosive than Detroit water for lead solder; now what? *Flint Water Study*. Retrieved from <http://flintwaterstudy.org/2015/09/test-update-flint-river-water-19x-more-corrosive-than-detroit-water-for-lead-solder-now-what/>
- Ruckelshaus, W.D. (2017, March 7). A lesson Trump and the E.P.A. should heed. *The New York Times*. Retrieved from https://www.nytimes.com/2017/03/07/opinion/a-lesson-trump-and-the-epa-should-heed.html?mcubz=1&_r=1
- Steg, L., Lindenberg, S. & Keizer, K. (2015). Intrinsic motivation, norms, and environmental behavior: the dynamics of overarching goals. *International Review of Environmental and Resource Economics*, 9, 179–207. doi: 10.1561/101.00000077
- The New Climate Economy. (2015, November 8). *Low-carbon cities are a US\$17 trillion opportunity worldwide* [Press release]. Retrieved from <http://newclimateeconomy.net/content/press-release-low-carbon-cities-are-us17-trillion-opportunity-worldwide>
- U.S. Energy Information Administration (USEIA). (2016, July 21). *New York state profile and energy estimates*. Retrieved from <https://www.eia.gov/state/analysis.php?sid=NY#69>
- United Nations Environment Programme (UNEP). (2000). *"Agenda 21" chapter 28*. Retrieved from <http://www.unep.org/Documents/Default.asp?DocumentID=52>.
- Wang, X., Hawkins, C.V., Lebrede, N. & van M. Berman, E.M. (2012). Capacity to sustain sustainability: a study of US cities. *Public Administration Review*, 72(6): 841–853. doi: 10.1111/j.1540-6210.2012.02566.x



Sustainability and the Future of Louisville

by **Greg Fischer**
Mayor, Louisville, KY



My personal love for the outdoors and the natural world began early, on family camping trips to Kentucky landmarks like Natural Bridge or Jenny Wiley State Park. It continued as a young man, when I spent summers working on the docks of Kodiak, Alaska and camped on a mountainside just outside of town.

Those experiences inform my commitment to greater sustainability, though the truth is that the condition and the future of our air, land and water are just as critical in the heart of urban Louisville as they are in the wilderness.

Sustainability is about much more than preserving greenspace for recreation. It's about our very survival as a civilization and as a species. All of our achievements as human beings, our cities, our transportation, our technologies, are possible because we had basic resources – air to breathe, water to drink, land on which we could live and grow food.

I believe in envisioning a bright future, and then working hard in collaboration with others to make it a reality. That's the approach I brought to city government when I became mayor in 2011. We were still coming out of the Great Recession, unemployment was high, and people were understandably focused on the most immediate concerns: jobs, the economy, taking care of their families in the short-term.

My team and I worked to address those concerns -- and I'm proud to say we were one of the fastest cities in the nation to recover from the recession -- but we also knew that you don't solve one challenge by neglecting the others. That's why we also got to work creating a culture of sustainability in our city government and our community at large by establishing Louisville's first Office of Sustainability.

The Office of Sustainability is housed within Louisville Forward, the city's economic development agency, because in Louisville, we reject the idea that we have to choose between a healthy economy or a healthy environment. That's a false choice. Our citizens need and deserve a healthy economy *and* a healthy environment, and it's our job to meet those needs, along with public safety, transportation, quality of life and more. We also know that the best talent will only work at environmentally progressive companies.

Sustainability is a critical factor in decision-making for all of our work in Metro Government. The Office for Sustainability worked with other city agencies, businesses, nonprofits, schools, neighborhood groups and residents to create an action plan called *Sustain Louisville* to guide and shape our city's progress toward a vibrant, prosperous and healthy community. Published in 2013, *Sustain Louisville* recognizes that protecting our tree canopy, water quality and air quality will support the health and economic prosperity of our citizens, and underscores our belief that the health of our environment and the health of our citizens are one and the same.

That's something we know instinctively, and a conclusion that we have scientific evidence to support. In 2014, we commissioned a first-of-its-kind study of our urban heat island. We learned that Louisville has one of the fastest growing urban heat islands in the country, and that parts of our urban core that have more concrete surfaces and less greenspace can be up to 10 degrees hotter than our city's outlying areas. Vulnerable populations in our city are at risk from heat-related illnesses and poor air quality, as heat intensifies the impact of air pollution. This is unacceptable, and we're taking steps to address this challenge through our Cool502 program, which includes tree planting in targeted locations, increasing the number of cool roof installations, and piloting cool pavement technologies.

In addition, Louisville Metro Government applied and was chosen by the Rockefeller Foundation to participate in the 100 Resilient Cities (100RC) program, a prestigious international network of cities committed to helping each other by sharing information and resources so we can find more and better ways to deal with environmental and economic challenges. We've also hired a chief resilience officer, Eric Friedlander, to guide our efforts to become a more resilient city.

Partnerships like 100RC are critical for Louisville and for the sustainability movement as a whole, because preserving the environment is both a local and a global priority. That's why I signed on to the U.S. Conference of Mayors Climate Protection Agreement in 2011, and reaffirmed that commitment by joining the Compact of Mayors in support of the Paris Agreement.

Louisville is committed to measure and reduce our city's greenhouse gas emissions and prepare for the impacts of climate change. And this year, I signed onto "We're Still In," an open letter to citizens and governments around the world affirming that the United States' local governments and businesses are still committed to doing our part to meet the Paris Agreement and address global warming. Louisville is also furthering sustainability through partnerships with community organizations and national programs, like the Louisville Energy Alliance, which promotes energy efficiency and conservation through the EPA ENERGY STAR program. We also have a strong partnership with TreesLouisville, which launched a \$1 million dollar matching campaign in 2016 in an effort to increase the city's tree canopy. We also partner with the Louisville Sustainability Council, which hosts an annual Sustainability Summit and works to connect and convene citizens around key sustainability topics. One goal in *Sustain Louisville* is to divert 90 percent of solid waste from the landfill by 2042. We've just completed a 10-year solid waste management study to guide us as we move forward toward this goal. Louisville Metro Government, in a partnership funded by Bloomberg Philanthropies, is working with our business community to pilot a ground-breaking waste reduction program in the Central Business District.

The Wet-Dry Recycling program encourages businesses to separate waste by what is physically wet and dry. Dry materials go into a clear bag and are sorted for recycling, while wet items go into black bags and are sent directly to the landfill. The program also includes collection for organics and food waste.

Within the first nine months of the program, diversion rates increased from 11 percent to nearly 80 percent. Line-item cost-savings from reassigning collection crews helped Louisville Metro to hire a contractor to collect organics. The reallocation of resources resulted in fewer trips for pick-up crews, greenhouse gas savings, cleaner air and more business for our local partner.

This type of innovation demonstrates that sustainability is good for business, the health of our residents and for the environment. We established the Division of Community

Forestry, and we have completed a tree canopy assessment, advocated for new policies that protect our current canopy, and planted over 30,000 new trees in the ground.

Metro Government is also supporting efforts to reduce food deserts throughout the city. Three Fresh Stops were recently opened in underserved areas of the community. These outlets offer farm-fresh food to the community that can be purchased with electronic benefit transfer (EBT). We've worked to increase the use of EBT mobile readers so that low-income citizens can more easily shop at farmers' markets using their Supplemental Nutrition Assistance Program (SNAP) benefits.

Other recent initiatives will help our environment by reducing automobile traffic, like our new LouVelo bike-sharing system. The Riverport Circulator Project is a new bus line made possible through a federal grant that will transport employees to Riverport, a hub for employers. Projects like these complement those laid out in *Move Louisville*, a long-range strategic transportation plan we published in 2016. *Move Louisville* is designed to further improve public and active transportation options, resulting in less traffic, better air quality and often, enhanced opportunity for economic development. And many of our local businesses, from start-ups and mom-and-pop shops to global companies, have found that sustainability is good for the bottom line. I would like to particularly recognize Brown-Forman, UPS, Humana, Yum! Brands, and Ford Motor Co., all of which have taken steps to reduce their own carbon footprint in Louisville and beyond, and publicly offered their support when I signed the Compact of Mayors on Earth Day last year.

With every sustainability initiative or program, we recognize that we're taking steps that will have an immediate impact today and will affect the health, economy and livability of our city, our nation and our world for generations to come.

That's a challenge and a responsibility we accept. We know that none of us can meet it by ourselves, but that by working together, we can protect and preserve our land, our air, our water and our future and hammer home the fact that we humans are an inextricably integrated and dependent part of nature.



The Global Politics of Climate Change

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Political leaders and analysts have frequently asserted that meaningful international action to prevent potentially catastrophic climate change is precluded by a lack of sufficient political will. For typical examples, consider the concerns often expressed in December 2007, when 10,000 delegates from 187 nations met in Bali, Indonesia, to continue international negotiations on the United Nations Framework Convention on Climate Change. Delegates were greeted by executive secretary Yvo de Boer (UNFCCC 2007) who declared that “a large part of the solution is available to us today, what we need is political will.” His views were echoed by UN Secretary General Ban Ki-Moon (UNFCCC 2007), who said at a press briefing in Bali that the science was “quite clear; all that was lacking was political will.” The conclusion of the summit, however, demonstrated that political will remained deficient. The meeting ended with participants agreeing merely to a “roadmap” outlining the significant progress needed prior to the next climate summit. Likewise, that follow-up meeting in 2009 in Copenhagen, Denmark, ended without a legally binding agreement to address climate change. Many media outlets reported that the conference was an outright failure (BBC 2009). Bolivian president Evo Morales (quoted in Vidal 2009) agreed, asserting bluntly that “The meeting has failed. It’s unfortunate for the planet. The fault is with the lack of political will by a small group of countries led by the US [United States].”

More recently, upon the eve of the Paris climate summit in late 2015, the environment minister of Peru identified an important apparent turning point in global politics. Manuel Pulgar-Vidal (quoted in Collins 2015) declared that “There’s never been such political will as we have today.” He continued by noting that “Developed countries and emerging economies are in agreement and are driving the agenda forward.” Indeed, years of frustration were seemingly set aside in November 2015 at the Paris climate summit when 195 nation-states adopted a universal, legally binding climate agreement. The parties agreed in Article 2 (Paris Agreement 2015) to hold “the increase in the global average temperature to well below 2° C above pre-industrial levels” and to pursue “efforts to limit the temperature increase to 1.5° C above pre-industrial levels.” These temperature thresholds are explicitly connected to the consensus view of scientists and aim to avoid disastrous climate changes. Every party to the Paris Agreement is obliged in Article 3 to create an “ambitious” effort

to reduce greenhouse gas emissions (ghg) and in Article 4 to “undertake rapid reductions thereafter in accordance with the best available science.” The accord went into force on November 4, 2016, a month after at least 55 Parties to the Convention accounting for at least 55% of total global greenhouse gas emissions deposited an instrument of ratification, acceptance, approval, or accession. To-date, 153 nations have ratified the Paris Agreement. Most of the states that have not ratified are relatively small developing nations in Latin America or Africa, or are fossil fuel-exporting states such as Iran, Iraq, Kuwait, Libya, and the Russian Federation.

Barack Obama committed the U.S. to the Paris accord in fall 2016. Unsurprisingly, however, given his campaign promises and prior statements on the topic, President Donald J. Trump announced on June 1, 2017, that the United States would withdraw from the Paris Agreement. Trump (2017) justified his decision by arguing that the agreement “disadvantages the United States to the exclusive benefit of other countries, leaving American workers...and taxpayers to absorb the cost in terms of lost jobs, lower wages, shuttered factories, and vastly diminished economic production.” In addition to his claims about unemployment and reduced GNP in manufacturing and natural resource sectors, Trump also asserted that the deal would have a minimal positive influence on global temperatures by 2100 and would allow U.S. economic competitors like China and India to continue building more coal-fired power plants. Trump additionally expressed a willingness to improve the climate agreement so that the U.S. could “get back into the deal” – both by working with domestic supporters of the Paris accord and by renegotiating with the remaining parties.

American withdrawal from the Paris Agreement is a significant development. After all, the United States is responsible for about 17% of the world’s energy consumed annually and produces about 16% of all yearly greenhouse gas emissions (BP 2017: 8, 47). Thus, despite Trump’s offer to renegotiate the terms of the Paris accord, long-time American allies and major trading partners almost immediately signaled their disapproval of the U.S. decision. In July 2017, German Chancellor Angela Merkel (quoted in Slawson 2017), who was hosting the annual G20 summit, said at a final press conference that she “deplored”



the American decision to withdraw from the Paris Agreement. British Prime Minister Theresa May, who like Merkel and Trump heads a conservative government, similarly said she was “dismayed” at the U.S. withdrawal and she urged Trump to reconsider. Likewise, newly elected French President Emmanuel Macron said that it was his duty to try to get Trump to change his decision. However, Trump did not alter U.S. policy at the G20 meeting. In turn, the 19 other members of the group (G20 Leaders’ Declaration 2017) took “note of” the U.S. unilateral decision to withdraw from the accord, but declared that “the Paris Agreement is irreversible.” Moreover, the 19 national leaders affirmed their plans to increase investments in sustainable, clean, and renewable energy technologies and infrastructure as well as in energy efficiency projects.

Despite the U.S. policy reversal, other leading nations are signaling that they continue to have sufficient political will to address climate change. Such commitments to stay the course are important because the world remains largely addicted to fossil fuels, which are the primary source of the greenhouse gases that are primarily responsible for ongoing climate change. Moreover, the need for action is more urgent than ever. Even as countries negotiated the Paris Agreement, greenhouse gas emissions grew by an average of 2.5% annually during the prior decade. The world is therefore emitting more than 50% more carbon today than it did in 1990 when nation-states started negotiating about climate change in earnest (Boden et al 2017). The economic, scientific, and political tasks ahead remain enormous. Indeed, the Intergovernmental Panel on Climate Change (2014: 20), the global organization responsible for identifying the temperature thresholds embraced in the Paris accord, estimated that by 2050, the world will need to reduce greenhouse gases 40 to 70% compared to 2010 levels. By 2100, ghg emissions will need to be eliminated. Can the international community really sustain the political will needed to transform world energy systems to make a dramatically different future possible? What are the implications of American intransigence?

A Brief History

Scientists have long known that human extraction and burning of fossil fuels adds startling amounts of carbon dioxide to the earth’s atmosphere and could disastrously alter the planet’s climate. Indeed, even in the mid-1950s, renowned oceanographer Roger Revelle (quoted in Weart 2007) noted – albeit with “more curiosity than apprehension” -- that “human beings are now carrying out a large scale geophysical experiment” on the planet. By 1977, the results of that experiment were already becoming apparent and the National Academy of Sciences published an important seminal work with a bland title, *Energy and Climate: Studies in Geophysics*. The scientists from the Assembly of Mathematical and Physical Sciences (1977) who authored the volume warned against the potentially catastrophic consequences of manmade climate change and called for the “organization of a comprehensive worldwide research program.”

They also recommended the development of “new institutional arrangements” at the national level that could coordinate research and action plans because of the likely need for “adjustments in national policy or the formulation of new legislation.” Of course, climate change is a global environmental problem; thus, scientists and policymakers from around the world needed to be involved in the research and action planning processes. Not long after the NAS report appeared, the influential journal *Foreign Affairs*, produced by the Council on Foreign Relations in New York, published an article explaining some of the international scientific and political issues inherent to the debate about climate change. The author, ecologist Charles Cooper (1978) noted the “formidable interdisciplinary and international research task” ahead, but optimistically referenced “heartening indications of a growing international consensus on the need for cooperation to provide solutions.”

In fact, the international community soon initiated impressive scientific and political processes aimed at understanding and then addressing the problem. The first World Climate Conference (1979) presaged the founding in 1988 of the Intergovernmental Panel on Climate Change (IPCC), which assesses the science of human-induced climate change, its potential risks and impact, and options for adaptation and mitigation. The United Nations General Assembly began negotiating the Framework Convention on Climate Change in 1990. The newly achieved UNFCCC was opened for ratification at the Rio de Janeiro Earth Summit in June 1992 and entered into force in 1994. Just three years later, nation-states agreed to a Kyoto Protocol to this treaty, marking the first time that countries had decided together to reduce greenhouse gas emissions. Industrialized countries promised to reduce ghg emissions about 5% below 1990 baseline levels.

A contemporaneous international effort to save the atmospheric ozone layer provided observers with good reasons to believe that these efforts to address climate change could be successful. Scientists had in the mid-1970s found that manmade chlorofluorocarbons (CFCs) – used as an aerosol propellant, a refrigerant, a solvent, and a blowing agent for Styrofoam – were altering the chemical composition of the earth’s atmosphere and were likely undermining the stratosphere’s ozone layer, which protects life on the planet from deadly ultraviolet radiation. The National Academy of Sciences published a report in 1976 confirming the linkage between CFCs and ozone depletion – just one year prior to the publication of the climate change report. Then, during a remarkably brief period, the science was widely accepted by policy makers and the international community negotiated CFC production limits that would be strengthened over time. Notably, the United States took a leading role in the negotiations that created the Montreal Protocol, during the political administration of conservative Republican President Ronald Reagan. The treaty went into force in January 1989, less than 15 years after scientists had first raised the alarm about CFCs and the ozone layer.



Unfortunately, the two decades since Kyoto have been filled mostly with a series of disappointments, demonstrating that neither the productive early climate negotiations nor the Montreal Protocol were strong signals that the world would address climate change in a timely fashion. The legacy of failure lead to the kinds of statements about the lack of political will quoted in the introduction. Bali and Copenhagen were certainly not the only climate summits to conclude without making meaningful progress. To make matters worse politically, American obstruction of global efforts did not begin with the Trump administration. The United States Senate never ratified the Kyoto Protocol and President George W. Bush withdrew the American signature from this agreement at the start of his first term in 2001. American inaction and opposition made it very difficult for the other parties to meet the terms of the treaty and the 1997 Kyoto Protocol did not go into force until 2005. The agreement expired in 2012 and an initial follow-up commitment – the Doha Amendment – has been ratified by only 66 nation-states of the 144 required. Canada withdrew from Kyoto altogether and Japan, New Zealand, and Russia are among the nations that have not agreed to new commitments to reduce emissions under this treaty. Meanwhile, the planet remained addicted to fossil fuels, which continued to emit worrisome amounts of greenhouse gases. While the members of the European Union have significantly decreased their emissions, increased discharges from China and other nation-states have dwarfed those reductions. The world is emitting more than 50% more carbon today than it did in 1990 (Boden et al 2017).

From Inaction to Action

The slow pace of global progress prior to the Paris Agreement is all too easily explained. In fact, barriers to progress were readily identified 40 years ago. In his seminal *Foreign Affairs* piece, Cooper (1978: 516) noted that “Short-term economic and social consequences are almost sure to rule out the required unanimous international consent. Fossil fuels are so convenient for so many purposes, and so easily extracted, that they are almost certain to be used to the limit of their availability.” Cooper (1978: 520) also referenced experts who viewed climatic change as “a virtual prototype of a problem poorly matched to existing human institutions.” The time horizon is quite lengthy and the enormous potential consequences conceivably dwarf normal man-made technical and social changes. “This kind of problem presents an almost insurmountable challenge to institutions,” Cooper (1978: 520) wrote. Moreover, the sources of carbon dioxide may be localized, but atmospheric concentrations will be dispersed throughout the earth’s atmosphere and the consequences of climate change will be distributed globally. Cooper speculated that climate change might even “appreciably benefit some nations and regions while harming others.”

The concerns Cooper identified decades ago persist. Petroleum (about 33%), coal (28%), and natural gas (25%) today supply over 85% of the world’s energy, while renewable sources account for only about 3.2% (BP 2017: 11). This energy

allocation will not change quickly as the world continues to invest over \$1 trillion annually on new fossil fuel infrastructure (International Energy Agency, 2014), with only about 15% of new energy investments made in renewable fuels. Virtually all nations contribute greenhouse gases to the atmosphere, but the volumes vary dramatically and have changed over time. The United States and other western industrial states are largely responsible for the historic accumulation of gases, but China is now the leading contemporary emitter and India is also a significant rising source. The benefits of the status quo mainly accrue to the richest and most powerful countries. They consume most of the fossil fuels that are largely responsible for global warming and their citizens achieve a higher standard of living as a result. Political leaders in some of these nations – especially the United States and China, the two largest polluters – have argued at various times that their countries ought not to be forced to make dramatic changes in their lifestyle or reduce their standard of living. While many experts argue that the adverse consequences of global warming are already becoming apparent, the richest and most powerful countries obviously have the greatest abilities to endure those consequences and adapt to them. For example, named hurricanes Katrina and Sandy were quite costly to the United States, together responsible for over \$150 billion in damages. However, America’s GDP is nearly \$18 Trillion annually and the costs were ultimately absorbed. Tragically, the nations that are most vulnerable to climate change appear to be among the poorest and least powerful countries. Some small island nations may disappear altogether because of rising sea levels.

Conceivably, the Paris accord has reversed the negative trend. Along with various other international and national agreements on climate change, the Paris Agreement establishes significant goals for reducing greenhouse gas emissions and promoting non-fossil fuel energy sources. Some indicators suggest that important changes in energy policy are already underway. In 2016, wind energy production (BP 2017: 6-7) grew by over 15% worldwide and solar power grew by nearly 30%. BP’s annual *Statistical Review of World Energy* (BP 2017) noted that carbon emissions did not increase significantly in 2016 – for the third consecutive year. With the U.S. unwilling to take a leading role on this topic, two other powerful nations – Germany and China -- will likely play pivotal roles in determining the planet’s fate.

Chancellor Angela Merkel, who has led Germany’s conservative Christian Democratic Union government since 2005, was trained as a scientist and previously served as Germany’s environmental minister. Under her leadership, Germany has taken a central role promoting international climate negotiations and helped spur the development of ambitious emissions reductions goals in the European Union. These efforts have been impressive. In 2009, EU members promised to reduce their emissions by 20% by 2020 (from 1990 levels). Later, the EU countries committed to reduce carbon emissions by 40% by 2030 and by 80 to 95% by 2050. To meet these goals, EU members will have to transition away from fossil fuels. For its part, Germany’s national energy



policy (*Energiewende*) has featured a rapid transition to renewable sources of electricity. Between 1990 and 2014, Germany reduced its greenhouse gas emissions by 27%. Almost 14% of Germany's energy comes from renewable energy sources, including over 27% of electricity. Going forward, the official German policy embraces the ambitious EU goals, which means the economy would be almost totally reliant upon renewable energy sources by mid-century. In contrast to President Trump, Chancellor Merkel argues that Germany's commitment to renewable energy will provide it with more jobs, new technologies, and increased export income as the world transitions to a greener economy.

At the summer 2017 G20 summit, Merkel praised China for its steadfastness on climate change and called Beijing a "strategic partner." These comments might seem strange as China's carbon emissions have increased dramatically for decades and coal still provides two-thirds of its energy. China burns more coal annually than the rest of the world combined and emits about twice as much carbon as the United States, which lost its position as the world's top producer of greenhouse gas emissions a decade ago. China has long argued that its large impoverished population and economic underdevelopment justified its status as the world's top emitter of greenhouse gases. Chinese negotiators point out that the United States remains the country most responsible for the historic cumulative volume of greenhouse gases in the atmosphere and even today the average resident of the U.S. produces four times as much greenhouse gas as does a resident of China. Despite its relatively low per capita emissions, China's total emissions may have already peaked in 2014 as the country cancelled over 100 coal-fired power plants in the last two years. Green energy technologies in China now employ 3.5 million people and its \$78 billion investment in renewable energy in 2016 exceeded similar investments by European countries (\$60 billion) and the U.S. (\$46 billion) (Economy 2017). China is responsible for over 40% of global growth in this sector and is now the world's largest producer of renewable energy. Remarkably, that total may increase fourfold by 2020! A handful of the world's largest solar manufacturing firms are in China, which will also soon host the world's largest farms for solar and wind energy. China is also the world's largest market for Electric Vehicles. Thus, while the volume of China's emissions are certainly worrisome, its apparent economic commitment to green technologies could well transform world energy markets and help prevent climate change. Like Germany, China seems vested in a future green economy.

Conclusion: What about the United States?

The United States has not always been a climate scofflaw. After all, the Kyoto Protocol likely would not have been negotiated without the creative input of Bill Clinton's Vice President, Al Gore. Moreover, during the presidency of Barack Obama, the United States participated actively in international negotiations on climate change and played an important role in fashioning the Paris Agreement. The U.S. also struck a key bilateral deal on climate change with China in 2014. Both

countries made significant promises -- the U.S. would cut net greenhouse gas emission 26 to 28% below 2005 levels by 2025. In turn, China would peak its emissions in 2030 and increase its share of non-fossil fuel energy to 20% by that date. Domestically, the economic stimulus legislation from President Obama's first term promoted green technologies and auto fuel efficiency standards were also increased during the time when the federal government was bailing out the automobile industry. Perhaps most significantly, the Environmental Protection Agency created the Clean Power Plan -- new regulations for power plants identifying carbon dioxide as a pollutant. Between this plan and the increase in "fracking," the U.S. reduced its reliance on coal-fired power plants significantly and increasingly turned to natural gas as a fuel for its power plants. Gas has long been identified as a "bridge" climate fuel because it produces fewer emissions per unit of energy. In all, U.S. greenhouse gas emissions fell about 9% during Obama's presidency (Lehmann and Chemnick 2017) and are down about 14% since 2005. Prior to the Obama presidency, emissions had declined during the Great Recession of 2007-2008 because of slowed economic activity.

There are many reasons to believe that the U.S. could well be a leader on climate change again once Donald Trump is no longer President (or changes his mind about the Paris Agreement). To begin, public opinion polls (Meyer 2017) reveal that almost 70% of Americans want the U.S. to remain in the Paris climate accord and to continue the EPA's Clean Power Plan. Even more impressively, more than 80% of Americans support building additional wind and solar power plants. Strong partisan divisions persist concerning the science of climate change, unfortunately, but political analysts suggest that this is largely a reflection of party politics and does not reflect deeply held beliefs about the world. If the national Republican party stopped contesting the science of climate change, their voters would likely follow along. In fact, this may occur over time as a matter of demographic change. A majority of 18 to 30-year old Republicans already believe that human activity is changing the earth's climate.

In addition to past and potential national action on climate change, California and other states, as well as numerous cities and universities, have made dramatic pledges to reduce their greenhouse gas emissions. Many promising and effective policies are already in place, including regional "cap and trade" policies in the northeastern United States and in California. Indeed, California -- which has an economy larger than all but five nations -- has passed legislation (Plumer 2017) calling for 40% reductions in greenhouse gas emissions by 2030. While a quarter of California's electricity comes from renewable sources today, the newest state laws ambitiously require that figure to increase to half by 2030. Additionally, nine northeastern states participate in the Regional Greenhouse Gas Initiative that has reduced emissions significantly (Murray and Maniloff 2015) and is said to increase economic activity and jobs. The leaders of 125 U.S. cities and 9 states representing 120 million Americans signed the "We Are Still In" pledge on the Paris Agreement after President



Trump announced that the U.S. would withdraw. Over 20 Fortune 500 Companies also signed the pledge, including Apple, Google, Microsoft, and Nike. Hundreds of college and universities also pledge to meet the goals established in the Paris deal. Clearly, climate action planning is occurring nationwide in the U.S. on many levels.

Institutions at every level – from universities to cities to nations -- will have to make herculean efforts to dramatically reduce dependence upon fossil fuels to meet the aspirations of the Paris Agreement. Nonetheless, it is now apparent that key political, academic, and business leaders have demonstrated the requisite political will to begin addressing climate change. The fate of the planet beyond the twenty-first century likely depends upon their success.

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References

- Assembly of Mathematical and Physical Sciences. (1977). Geophysics Study Committee, *Energy and Climate: Studies in Geophysics*. National Academy of Sciences.
- BBC. (2009). Why did Copenhagen fail to deliver a climate deal? 22 December. Available at <http://news.bbc.co.uk/2/hi/8426835.stm>.
- Boden, T.A., G. Marland, and R.J. Andres. (2017). *Global, Regional, and National Fossil-Fuel CO₂ Emissions*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi 10.3334/CDIAC/00001_V2017.
- BP. (2017) *BP Statistical Review of World Energy*, 66th edition, June. Available at <http://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-full-report.pdf>.
- Collins, D. (2015), Political will for Paris climate deal 'unprecedented'. *The Guardian*. 23 November. Available at <https://www.theguardian.com/environment/2015/nov/23/political-will-for-paris-climate-deal-unprecedented>.
- Cooper, C.F. (1978). What might man-induced climate change mean? *Foreign Affairs* 56(3): 500-520.
- Economy, E. (2017). Why China Is No Climate Leader. *POLITICO*. June 12. Available at <http://www.politico.com/magazine/story/2017/06/12/why-china-is-no-climate-leader-215249>.
- G20 Leaders' Declaration. (2017). Shaping an interconnected world. Hamburg, Germany, 7-8 July. Available at <https://www.g20.org/gipfeldokumente/G20-leaders-declaration.pdf>.
- Intergovernmental Panel on Climate Change. (2014). *Climate Change 2014 Synthesis Report Summary for Policymakers*. Available at http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf.
- International Energy Agency. (2014). World needs \$48 trillion in investment to meet its energy needs to 2035. 3 June. Available at <https://www.iea.org/newsroom/news/2014/june/world-needs-48-trillion-in-investment-to-meet-its-energy-needs-to-2035.html>.
- Lehmann, E. and J. Chemnick. (2017). Obama's climate legacy: 8 years of troubles and triumphs. *E&E News*, January 20. Available at <https://www.eenews.net/stories/1060048703>.
- Meyer, R. (2017), What Americans Really Think About Climate Change, *The Atlantic* (online), April 22. Available at <https://www.theatlantic.com/science/archive/2017/04/climate-polling-burnout/523881/>.
- Murray, B.C. and P.T. Maniloff (2015). Why have greenhouse emissions in RGGI states declined? An econometric attribution to economic, energy market, and policy factors. *Energy Economics*, September. 51: 581-89.
- Paris Agreement. (2015) UNFCCC. Available at https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english.pdf.
- Plumer, B. (2017). Just How Far Can California Possibly Go on Climate? *New York Times*, July 26. Available at <https://www.nytimes.com/2017/07/26/climate/california-climate-policy-cap-trade.html>.
- Slawson, N. (2017). G20 summit: 'G19' leave Trump alone in joint statement on climate change - as it happened. *The Guardian*. 8 July. Available at <https://www.theguardian.com/world/live/2017/jul/08/g20-summit-may-meets-world-leaders-in-bid-to-boost-brexite-trade-prospects>.
- Trump, Donald J. (2017). Statement by President Trump on the Paris Climate Accord. White House, Office of the Press Secretary, June 1. Available at <https://www.whitehouse.gov/the-press-office/2017/06/01/statement-president-trump-paris-climate-accord>.
- United Nations Framework Convention on Climate Change (2007). COP 13 Newsroom. 15 December. Available at http://unfccc.int/meetings/bali_dec_2007/items/4231.php.
- Vidal, J. (2009). Rich and poor countries blame each other for failure of Copenhagen deal. *The Guardian*. 18 December. Available at <https://www.theguardian.com/environment/2009/dec/19/copenhagen-blame-game>.
- Weart, S. (2007). Roger Revelle's Discovery. In *The Discovery of Global Warming*. Available at <https://history.aip.org/history/climate/Revelle.htm>.

Our First Big Win Against Trump's Agenda

Fred Krupp
President
Environmental Defense Fund



On May 10, in a victory for the environment and public health, the U.S. Senate voted to uphold an Obama-era climate regulation to control the release of methane, a potent greenhouse gas, from oil and gas wells on public lands. The triumph marked EDF's—and the nation's—first big environmental win against the Trump administration.

This action sent a powerful signal that those who intend to gut our environmental laws will not have free rein. The attack failed because communities most affected by this decision spoke up. The fact is, the oil and gas industry and the administration fundamentally misread the mood of the American people. After all, in the wake of the November election, hundreds of thousands took to the streets to support science and to demonstrate their belief in global climate action, including policies to control methane pollution.

The methane rule in question affects 245 million acres of federal and tribal lands overseen by the Bureau of Land Management (BLM). Large tracts of these lands are leased for oil and gas drilling. This activity is responsible for about 12% of the nation's emissions of methane, a gas that is 84 times more potent than CO₂ over 20 years.

In 2016, the BLM finalized rules that regulate methane pollution from the oil and gas industry on public lands. The methane rule will prevent roughly 180,000 tons of pollution a year, the equivalent, over 20 years, of taking more than 900,000 cars off the road.

Under the Trump administration, Congress wasted no time in rolling back Obama-era protections, using its authority under the Congressional Review Act (CRA) to nullify 14 environmental safeguards introduced during the final months of Obama's term. The BLM methane rule, which requires oil and gas companies to repair leaks and capture gas that is traditionally vented or burned off at drilling sites, was their next target.

Springing into action to defend the climate and clean air

The demise of the rule seemed inevitable, but EDF fought back. With our allies, we mounted an aggressive campaign targeting key senators and mobilizing communities far outside the Beltway who are most affected by pollution from oil and gas operations. Early on, we knew we had to get three Republicans on board to have any chance of winning. And to do that, we had to garner broad public support in favor of the rule.

EDF's political affairs and legal teams jumped into action. From early January to May, they held near-daily calls to strategize and deploy the diverse coalition of stakeholders we had forged years before to get the methane rule adopted late last year. We also partnered with a number of environmental groups including the Wilderness Society, Earthjustice and the National Wildlife Federation, as well as tribal interests, taxpayer advocates, veterans and local farmers and ranchers.

A compelling case

Methane, which is mostly natural gas, accounts for a quarter of the warming we experience today. In the United States, oil and gas operations are the largest source of methane pollution.

Five years ago, little was known about how much methane was escaping or intentionally released. To fill in the gaps, EDF launched a series of 16 field studies of methane leakage throughout the U.S. natural gas system. The studies, which to date have yielded more than 30 papers published in peer-reviewed journals, revealed that emissions were much higher than EPA or industry had estimated. In 2016, EPA raised its estimate of methane pollution by 34% and committed to action.

We also laid a foundation for the economics of reducing methane at oil and gas facilities. Squandering natural gas is a big waste of money. A study commissioned by EDF found that \$1.5 billion worth of gas is wasted every year in the United States, meaning that millions in royalties are lost to the federal government and thus to taxpayers.¹

Overtaking the methane rule would have resulted in more than \$300 million in wasted gas over the next decade on federal and tribal lands alone. By volume, we're talking about enough gas to heat every home in Chicago for a year.² Taxpayers dislike government waste, and this message, which EDF and its partners publicized widely, resonated with a wide spectrum of people, including business leaders.

There's also an ironclad health case for limiting methane pollution, which EDF helped to publicize in the months leading up to the methane vote. Along with methane, oil and gas facilities spew smog-forming and toxic air pollutants like benzene. Nationally, 12.4 million people live within one-half mile of oil and gas facilities and breathe such noxious fumes.

Persistence pays off

To defend the methane standards, EDF Action, the lobbying arm of EDF, became a regular presence on Capitol Hill. We cultivated strong champions like Tom Udall (D-NM) and reached out to swing senators on both sides of the aisle, including John McCain (R-AZ), Lindsay Graham (R-SC), Susan Collins (R-ME), Heidi Heitkamp (D-ND) and Joe Manchin (D-WV). They all voted against repeal.

Mobilizing the grassroots was essential, too. EDF members urged senators to stand strong against the oil and gas lobby through an outpouring of phone calls and emails. The senators' offices were getting 50-100 calls a day, delivering the message that retaining the methane rule was an important issue for senators' constituents.

EDF also worked hard to marshal business and investor support for the rule. EDF+Business worked closely with corporate leaders, as well as with the Interfaith Center on Corporate Responsibility and Ceres, which works with corporations on sustainability issues. As a result, investors representing some \$500 billion in assets met with key senators and wrote opinion articles in local newspapers in support of the methane rule.

On the day of the vote, I was standing outside the Capitol in Washington, DC, with one of my colleagues, when we saw Vice President Pence's motorcade drive up and out he stepped. In that instant, we both had a sinking feeling, believing that Pence had arrived to cast a tie-breaking vote for the opposition. Had one of the senators who had promised to cast a tough vote buckled under pressure?

The answer was no. In the end, our strategy worked. The Senate voted to block repeal of the rule by a 51-49 margin, with McCain casting the decisive vote. For anyone in the chamber May 10 or watching a live stream of the vote, the suspense was palpable. Getting ready to go to the dais and cast his vote, Senator McCain appeared to be blocked by Senator John Barrasso (R-WY) and others. Finally McCain pushed past the group and cast the deciding vote. A long pause followed, presumably to give McCain a chance change his vote. He did not.

To win, EDF and its allies engaged a broad spectrum of Americans, who made their voices heard in support of the methane rule. Thanks in part to this groundswell of support, three Republican senators committed to voting no in the run-up to the vote. That was critical to getting the Democratic leadership to line up its votes and keeping Senators Heitkamp and Manchin in the fold.

Challenges ahead

Despite the victory, the BLM rule is still in the crosshairs of the Trump administration. In June, BLM announced it would suspend key parts of the rule, without providing opportunity for public comment. To undo the rule itself requires a lengthy and complex review process.

In response, EDF and our allies are vigorously defending the rule. In July, we and 16 other health and environmental groups filed a complaint with the U.S. District Court for the Northern District of California seeking to keep the standards in place and block the effort to suspend parts of the rule without public comment.³

Meanwhile, we'll continue to push for state methane rules, similar to the ones we helped win in Colorado, Ohio and Wyoming.

As we fight on, we know we have the public on our side: 73% of Americans favor laws that stop gas leaks. After all, no one who voted in November wanted public lands plundered or our health put at risk.

EXTRA:

Until January, only one such resolution had ever been passed and signed into law, and the Congressional Review Act has never been tested in court.⁴

Timing was important. We could try to run down the clock. But if there was to be a vote at all, Dick Durbin's vote was essential, and he was scheduled to go into heart surgery.

Westerners were among the most vocal supporters of the regulations to reduce methane waste.

References

- 1 <https://www.edf.org/climate/federal-rules-target-costly-waste-methane>
- 2 <https://www.edf.org/blog/2017/05/10/methane-rule-endures-common-sense-prevails>
- 3 https://www.edf.org/sites/default/files/content/1_-_2017.07.10_-_complaint.pdf
- 4 <http://blogs.edf.org/energyexchange/2017/02/09/congressional-review-act-a-law-of-unintended-and-long-lasting-consequences/>

Creating Political Will through Framing: Strategies for Environmental Communication

by **Melissa K. Merry**
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Introduction

It is hard to imagine a more difficult, or more critical, moment to discuss political will as it relates to sustainability. Since the 2016 presidential election, the federal government's commitment to environmental protection has significantly weakened, as indicated (in part) by the appointment of agency heads—at the Environmental Protection Agency, Department of Energy, and others—who are openly critical of environmental regulations and skeptical about humans' contribution to climate change. Of necessity, states and local governments will increasingly bear the responsibility of environmental policy leadership, even as they face some of the same obstacles thwarting progress at the national level.

Drawing on insights from social science, this article first identifies three major challenges facing those seeking to cultivate political will today. Then, in defiance of those who would draw pessimistic conclusions, it identifies strategies for overcoming those challenges. The latter discussion focuses mainly on communication strategies, recognizing that political will depends upon framing environmental issues in ways that resonate with people, convincing them of the severity of environmental problems and of the urgent need to take action.

Three Challenges to Political Will

The first, and arguably most daunting, challenge to political will is the deep divide between Democrats and Republicans on environmental issues. Political polarization is a general phenomenon apparent across a range of policy areas and seen among both political leaders and members of the public, though it is especially pronounced on environmental issues (see Guber, 2013). Interestingly, this political divide is a fairly recent development in U.S. environmental policy. In the early 1970s, both Democrats and Republicans in Congress supported environmental regulation, passing landmark legislation—including the Clean Air Act and Clean Water Act—with large majorities. However, as shown by average voting scores calculated by the League of Conservation Voters, the two major parties have since diverged significantly, making bipartisan policymaking much less likely (McCright, Xiao, & Dunlap, 2014). Using Gallup poll data from

1990 to 2010, Guber (2013) demonstrated a similar trend in public opinion; compared to Republicans, Democrats reported greater concern for a host of environmental problems, ranging from air and water pollution to tropical deforestation.

Today, that gap is starkly illustrated with the issue of climate change. According to a recent Gallup poll, 66 percent of Democrats worry “a great deal” about climate change, while only 18 percent of Republicans share that sentiment (Norman, 2017). Another survey by the Pew Research Center finds that, unlike Democrats, a majority of Republicans do *not* believe that climate change is the result of human activity (Funk & Kennedy, 2016). These divisions are important because public opinion is a significant driver of the policy process; if members of the public are deeply concerned about an issue, elected officials have a strong incentive to address it. However, when the public is divided, that signal to politicians is much weaker.

A second, related, challenge to political will stems from the fact that sustainability-related issues are scientifically complex (see Moser, 2010). In many cases, environmental problems are not apparent to the naked eye—for instance, we cannot see or smell increasing concentrations of carbon dioxide in the atmosphere—and, as in the case of climate change, their harmful consequences are projected to occur in the future. Such issues place a heavy burden on public officials to explain these problems to lay audiences and to convince people that these issues are personally relevant (see Scannell & Gifford, 2013).

Beyond these difficulties, scientific complexity affords opponents to environmental regulation an opportunity to challenge the very basis of concern—by exploiting the inherent uncertainty of science. As Sarewitz and Pielke, Jr. (2000, p. 59) assert, science “is not a fact or even a set of facts; rather, it is a process of inquiry that generates more questions than answers.” Further, the answers that science generates are often stated in probabilistic terms. Take, for example, the most recent report by the Intergovernmental Panel on Climate Change, which found that it is “likely” that human activity has led to more frequent, longer heat waves since 1950, with “likely” defined as a 66 percent or greater probability (IPCC, 2014).



The strategy of citing uncertainty to contend that fears of climate change are overblown has a long track record. In the 1990s, Republican consultant Frank Luntz circulated a strategy memo to lobbyists and Republican members of Congress suggesting that they characterize global warming as scientifically uncertain and highlight findings undermining the notion of human-induced climate change (see Nisbet, 2009). Today, the success of climate denial is apparent in the fact that top level officials in the Trump administration seem to pull directly from Luntz's playbook. In 2016, the current head of the EPA, Scott Pruitt, opined that the debate over climate change "is far from settled. Scientists continue to disagree about the degree and extent of global warming and its connection to the actions of mankind" (Pruitt & Strange, 2016). As citizens take cues from officials such as Pruitt, this view trickles down to the public; currently, fewer than 20 percent of Republicans believe that scientists understand the causes of climate change (Funk & Kennedy, 2016). This absence of public consensus—despite a near consensus among scientists—threatens to undermine the basis for policy action on climate change and related issues.

The third and final challenge to political will relates to shortcomings of the modern environmental movement. In 2004, policy experts Shellenberger and Nordhaus were among the first to note these shortcomings; in their essay, "The Death of Environmentalism," they accused environmentalists of fixating on technical policy solutions—such as corporate average fuel economy standards—and of failing to inspire the public with a positive vision for the future. Extending this critique, linguist George Lakoff (2010) argued that the environmental movement suffers from "hypocognition," or a lack of ideas. According to Lakoff, the environmental movement erred in conceptualizing the environment as separate from other issue areas—such as "economics, energy, food, health, trade, and security"—which with it is actually intimately connected, thereby limiting the movement's potential reach and impact (p. 76). While not all environmentalists agree with this critique, surveys clearly demonstrate that environmental issues struggle to capture public attention. In particular, although most people express general support for environmental protection, only a small fraction of survey respondents name the environment as the top issue facing the country; instead, members of the public routinely prioritize jobs and the economy (Anderson, 2017; Smith & Saad, 2016).

Overcoming Challenges to Political Will

These challenges, while formidable, are not insurmountable. In fact, social scientists from a wide range of disciplines—including psychology, sociology, and political science—have significantly advanced our understanding of how the policy process works, generating insights into how to tackle these obstacles. Much of this work focuses on strategies for framing policy issues. Framing refers to how we talk about policy issues—the terms we use to describe problems, the aspects of problems that we highlight or downplay—which is important in politics given that the meaning of such phenomena as rising

global average temperatures is not "given." Depending on one's beliefs about climate change, rising temperatures could indicate natural fluctuations or the catastrophic consequences of human activity. Politics involves the competition over the meaning of such information, and language is the medium through which we construct interpretations and seek to convince others.

Numerous studies have found that framing influences public opinion (see Benford & Snow, 2000; Iyengar, 1991). For example, researchers found that changing just one word in a policy proposal—from a "carbon tax" to a "carbon offset"—significantly increased support for the proposal among Republicans (Hardisty, Johnson, & Weber, 2010). Framing can also be an effective means to build political alliances and motivate political participation (Haider-Markel & Joslyn, 2001; Layzer, 2006). By defining issues broadly, interest groups can capture the attention of more people, bringing in new supporters (Hannigan, 1995; Pralle, 2006; Schattschneider, 1960). Similarly, interest groups can mobilize their supporters by demonizing their opponents, or those deemed responsible for particular policy problems (Jacobs & Sobieraj, 2007; Lewicki, Gray, & Elliot, 2003).

Drawing on insights from framing research, the following sections identify specific recommendations for how to discuss sustainability-related issues. The first two are universal suggestions related to the structure and content of messages. The last four recommendations are context-specific, addressing ways to tailor the content of messages to different audiences and the timing of messages.

Suggestions for Framing Sustainability

First, to most effectively capture and hold people's attention, environmental advocates should explain problems through stories or narratives, rather than through dry presentations of scientific information (see Jones & Peterson, 2017). This suggestion is based in part on what we know about the "knowledge deficit model" of communication (see Hart & Nisbet, 2012). This model assumes that the main obstacle to political will on scientifically complex topics is that the public is simply unaware; thus, to move public opinion in line with scientific consensus, all policymakers need to do is to provide the public with accurate information. However, recent research has challenged this model by showing that more information doesn't necessarily lead to greater concern about environmental problems and may deepen political polarization, as people reject information that does not fit with their ideological orientations (see Brulle et al., 2012; Kahan et al., 2012). Further, a growing body of research in policy studies suggests that people are more engaged when information is presented in narrative form. Scholars of the Narrative Policy Framework contend that narratives—or stories containing a setting, characters, plot, and a moral or resolution—are one of the primary mechanisms by which individuals process complex information and interpret events and issues (McBeth, Jones, & Shanahan, 2014). Their research has shown that narratives are more effective at capturing people's attention than scientific



information (see Golding, Krinsky, & Plough, 1992; Roser-Renouf et al., 2015) and, further, that narratives influence public opinion on issues such as climate change (see Jones & Song, 2014).

In addition to structuring information in narrative form, environmental advocates should offer positive messages, rather than dwelling exclusively on negative information or fear-based calls to action. While one might be tempted to frame sustainability initiatives as imperative in the face of environmental crisis, research in psychology suggests that doom-and-gloom frames can be counterproductive. Studies examining the impact of public service announcements and campaign advertisements show that messages emphasizing threats and provoking anxiety and fear lead to a range of maladaptive responses, such as disengaging and avoiding or even refuting threatening information (Brader, 2005; Ruiter, 2001). In experimental research, for instance, Feinberg and Willer (2011) found that dire messaging about climate change actually increased participants' skepticism about climate change and reduced their intentions to lower their carbon footprint. In contrast, scholars have found that positive frames, emphasizing the effectiveness of taking action, increase support for policy action (Dickinson et al., 2013; Spence & Pidgeon, 2010).

Tailoring and Timing Messages

While the above discussion offers suggestions with respect to the form and content of messages that apply across audiences and contexts—i.e., use narratives, and create positive messages—the next section focuses on how to adapt frames to different circumstances in order to maximize their impact. First, environmental advocates should frame sustainability-related issues in terms of local, rather than global, impacts, especially on issues (like climate change) that may seem remote. This suggestion draws on research indicating that frames are more compelling when they highlight the personal relevance of problems to individuals, such as by emphasizing socially proximate neighbors and places (Clarke, 2006; Nisbet, 2009). Supporting this notion, Scannell and Gifford (2011) found that messages focusing on local impacts of climate change were more persuasive than those emphasizing global impacts.

Second, environmental advocates should seek to understand their audiences' beliefs and values and tailor different messages to those values. As social science research has demonstrated, framing effects depend, in part, on the prior beliefs and attitudes of message recipients; that is, individuals are more likely to accept messages that are consistent with their values, and they are more likely to reject messages that do not conform to their values (see Hart & Nisbet, 2012). Within environmental communication, there is much promising work identifying ways of appealing to different values. Examining the role of moral values in framing, Feinberg and Willer (2013, p. 57) found that appeals emphasizing purity and sanctity were more persuasive to conservatives than appeals highlighting the commonly invoked value of "harm/

care" (or "concerns about the caring for and protection of other people"). The authors further suggested that simply by reframing environmental messages in terms of purity, advocates could potentially "reduce or even eliminate the differences in liberal and conservative environmental attitudes" (p. 61). Focusing on cultural values, scholars have similarly found that framing environmental messages in ways that affirm particular cultural identities—such as individualism and egalitarianism—can increase acceptance of scientific messages (Kahan et al., 2011; Kahan et al., 2012).

Third, just as it is important to vary the content of messages based on audience characteristics, environmental advocates should consider varying the messengers themselves. The importance of "source credibility" in persuasion is widely recognized in social psychology (see Pornpitakpan, 2004) and has been examined in the context of environmental communication (see Akerlof & Witte, 2011; Hoffman, 2011). For instance, Hoffman (2011) contends that environmental advocates should identify "climate brokers," or those who can credibly communicate with different audiences on the topic of climate change. For conservatives—especially those who do not trust climate scientists—Hoffman notes that the most effective messengers would come from the political right, though he acknowledges that no one has yet stepped into that role (21). Alternatively, Akerlof and Witte (2011) propose that representatives of the National Park Service could serve as authoritative voices on climate change, given their respected status.

While the task of identifying messengers for liberal audiences is easier, it is no less important. Roser-Renouf et al. (2015) offer strategies for concerned members of the public to become "opinion leaders," extending the reach of environmental messages to wider audiences. For instance, they note that many environmental organizations ask people who have signed petitions or made online donations to repost the original requests on social media or to email them to their families and friends, thereby "fostering interpersonal (although mediated) communication, and broadening the original message's impact" (p. 383).

The fourth and final suggestion relates to the timing of messages. While creating political will for sustainability is an ongoing battle, environmental advocates can take advantage of political "windows of opportunity" to increase the salience of sustainability-related issues. Within policy studies, there has been much research examining *why* certain issues rise on the government's agenda at certain moments (see Baumgartner & Jones, 1993; Kingdon, 1984). Often, issues will gain prominence in the wake of focusing events—such as oil spills or nuclear accidents—that draw public and elite attention to previously neglected problems (see Birkland, 1997). Such events typically catch everyone off guard, such that elected officials do not get a head start in "spinning" the issues for political advantage. Given that focusing events typically highlight failures of the status-quo, they provide a rare opening for advocates of policy change to



advance alternative narratives and to make a case for reform. However, it is not necessary to wait for large-scale environmental tragedies. In the case of climate change, a heat wave will suffice as an opportunity to emphasize environmental threats. In fact, research has shown that people are more likely to affirm the scientific consensus on climate change on unusually warm days (Druckman, 2015).

Conclusion

In short, fostering political will for sustainability is no easy task, especially given that many elected officials and members of the public fail to acknowledge that problems like climate change even exist! Nonetheless, there is reason to be hopeful. Scholars in a wide range of fields are investigating how to decrease political polarization, persuade skeptics, and create political momentum for change. This article has highlighted just a handful of insights related to how environmental issues are framed. First, environmental advocates should frame environmental messages in narrative form and emphasize positive messages. Second, advocates should tailor messages to audiences—highlighting local impacts, appealing to different moral and cultural values, finding the most appropriate messengers, and taking advantage of opportune moments to emphasize those messages. Collectively, these strategies offer tremendous promise to those dedicated to achieving a more sustainable society.

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References

- Akerlof, K., Bruff, G., & Witte, J. (2011). Audience segmentation as a tool for communicating climate change. *Park Science*, 28(1), 56–64.
- Anderson, M. (2017, April 20). For Earth Day, here's how Americans view environmental issues. Pew Research Center. Retrieved from <http://www.pewresearch.org/fact-tank/2017/04/20/for-earth-day-heres-how-americans-view-environmental-issues/>
- Baumgartner, F.R., & Jones, B.D. (1993). *Agendas and instability in American politics*. Chicago, IL: The University of Chicago Press.
- Benford, R.D., & Snow, D.A. (2000). Framing processes and social movements: An overview and assessment. *Annual Review of Sociology*, 26, 611–639.
- Birkland, T.A. (1997). *After disaster: Agenda setting, public policy, and focusing events*. Washington, DC: Georgetown University Press.
- Brader, T. (2005). Striking a responsive chord: How political ads motivate and persuade voters by appealing to emotions. *American Journal of Political Science*, 49(2): 388–405.
- Brulle, R.J., Carmichael, J., & Jenkins, J.C. (2012). Shifting public opinion on climate change: An empirical assessment of factors influencing concern over climate change in the US, 2002–2010. *Climatic Change*, 114(2), 169–188.
- Clarke, L. (2006). *Worst cases: Terror and catastrophe in the popular imagination*. Chicago: The University of Chicago Press.
- Dickinson, J. L., Crain, R., Yalowitz, S., & Cherry, T. M. (2013). How framing climate change influences citizen scientists' intentions to do something about it. *The Journal of Environmental Education*, 44(3), 145–158.
- Druckman, J.N. (2015). Eliminating the local warming effect. *Nature Climate Change*, 5, 176–177.
- Feinberg, M., & Willer, R. (2011). Apocalypse soon? Dire messages reduce belief in global warming by contradicting just-world beliefs. *Psychological Science*, 22, 34–38.
- Feinberg, M., & Willer, R. (2013). The moral roots of environmental attitudes. *Psychological Science*, 24(1), 56–62.
- Funk, C. & Kennedy, B. (2016, October 4). *The politics of climate*. Retrieved from <http://www.pewinternet.org/2016/10/04/the-politics-of-climate/>.
- Golding, D., Krinsky, S., & Plough, A. (1992). Evaluating risk communication: Narrative vs. presentations of information about radon. *Risk Analysis*, 12(1), 27–35.
- Guber, D.L. (2013). A cooling climate for change? Party polarization and the politics of global warming. *American Behavioral Scientist*, 57(1), 93–115.
- Haider-Markel, D.P., & Joslyn, M.R. (2001). Gun policy, opinion, tragedy, and blame attribution: The conditional influence of issue frames. *The Journal of Politics*, 63(2), 520–543.
- Hannigan, J.A. (1995). *Environmental sociology: A social constructionist perspective*. New York: Routledge.
- Hardisty, D. J., Johnson, E. J., & Weber, E. U. (2009). A dirty word or a dirty world?: Attribute framing, political affiliation, and query theory. *Psychological Science*, 21, 86–92.
- Hart, P.S., & Nisbet, E.C. (2012). Boomerang effects in science communication: How motivated reasoning and identity cues amplify opinion polarization about climate mitigation policies. *Communication Research*, 39(6), 701–723.



- Hoffman, A.J. (2011). Talking past each other? Cultural framing of skeptical and convinced logics in the climate change debate. *Organization & Environment*, 24, 3–33.
- IPCC. (2014). Climate change 2014: Synthesis report. Intergovernmental Panel on Climate Change. Retrieved from <http://ar5-syr.ipcc.ch/>
- Iyengar, S. (1991). Is anyone responsible? How television frames political issues. Chicago: University of Chicago Press.
- Jacobs, R.N., & Sobieraj, S. (2007). Narrative and legitimacy: U.S. congressional debates about the nonprofit sector. *Sociological Theory*, 25(1), 1–25.
- Jones, M.D. & Song, G. (2014). Making sense of climate change: How story frames shape cognition. *Political Psychology*, 35(4), 447–476.
- Kahan, D.M., Jenkins-Smith, H., & Braman, D. (2011). Cultural cognition of scientific consensus. *Journal of Risk Research*, 14(2), 147–74.
- Kahan, D.M., Peters, E., Wittlin, M., Slovic, P., Ouellete, L.L., Braman D., & Mandel, G. (2012). The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nature Climate Change*, 2(10), 732–735.
- Kingdon, J.W. (1984). *Agendas, alternatives, and public policy*. Boston: Little, Brown.
- Lakoff, G. (2010). Why it matters how we frame the environment. *Environmental Communication*, 4(1), 70–81.
- Layzer, J. (2006). Fish stories: Science, advocacy, and policy change in New England fishery management. *Policy Studies Journal*, 34 (1), 59–80.
- Lewicki, R.J., B. Gray, and M. Elliot (Eds.). (2003). Making sense of intractable environmental conflicts: Concepts and cases. Washington, DC: Island Press.
- McBeth, M.K., Jones, M.D., & Shanahan, E.A. (2014). The Narrative Policy Framework. In P.A. Sabatier and C.M. Weible (Eds.). *Theories of the policy process*, 3rd ed (pp. 225– 266). Boulder, CO: Westview Press.
- McCright, A.M., Xiao, C., & Dunlap, R.E. (2014). Political polarization on support for government spending on environmental protection in the USA, 1974–2012. *Social Science Research*, 48, 251–260.
- Moser, S. 2010. Communicating climate change: History, challenges, process and future directions. *WIREs Climate Change*, 1, 31–53.
- Nisbet, M.C. (2009). Communicating climate change: Why frames matter for public engagement. *Environment*, 51(2), 14–23.
- Norman, J. (2017, March 17). Democrats drive rise in concern about global warming. Retrieved from http://www.gallup.com/poll/206513/democrats-drive-rise-concern-global-warming.aspx?utm_source=genericbutton&utm_medium=organic&utm_campaign=sharing
- Jones, M.D., & Peterson, H. (2017). Narrative persuasion and storytelling as climate change communication strategies. Forthcoming in the *Oxford Research Encyclopedia of Climate Science*.
- Pralle, S.B. (2006). *Branching out, digging In: Environmental advocacy and agenda setting*. Washington, DC: Georgetown University Press.
- Schattschneider, E.E. (1960). *The Semisovereign people*. New York: Holt, Rinehart and Winston.
- Pornpitakpan, Chanthika (2004). The Persuasiveness of source credibility: a critical review of five decades' evidence. *Journal of Applied Social Psychology*, 34(2), 243–281.
- Pruitt, S. & Strange, L. (2016, May 17). The climate-change gang. *National Review*. Retrieved from <http://www.nationalreview.com/article/435470/climate-change-attorneys-general>
- Roser-Renouf, C., Stenhouse, N., Rolfe-Redding, J., Maibach, E., & Leiserowitz, A. (2015). Engaging diverse audiences with climate change: message strategies for global warming's six Americas. In A. Hansen and J.R. Cox (Eds.). *The Routledge handbook of environment and communication* (pp. 368–386). New York: Routledge.
- Ruiter, R.A.C., Abraham, C., & Kok, G. (2001). Scary warnings and rational precautions: A review of the psychology of fear appeals. *Psychology and Health*, 16, 613–630.
- Sarewitz, D., and R. Pielke, JR. (2000, July). Breaking the global-warming gridlock. *The Atlantic Monthly*. Retrieved from <https://www.theatlantic.com/magazine/archive/2000/07/breaking-the-global-warming-gridlock/304973/>
- Scannell, L., & Gifford, R. (2013). Personally relevant climate change the role of place attachment and local versus global message framing in engagement. *Environment and Behavior*, 45(1), 60–85.
- Shellenberger, M., & Nordhaus, T. (2004). The death of environmentalism: global warming politics in a post-environmental world. The Breakthrough Institute. Retrieved from https://www.thebreakthrough.org/images/Death_of_Environmentalism.pdf
- Smith, M. & Saad, L. (2016, December 19). Economy top problem in a crowded field. Retrieved from http://www.gallup.com/poll/200105/economy-top-problem-crowded-field.aspx?g_source=Economy&g_medium=newsfeed&g_campaign=tiles
- Spence, A., & Pidgeon, N. (2010). Framing and communicating climate change: The effects of distance and outcome frame manipulations. *Global Environmental Change*, 20(4), 656–667.



UCS is ready to respond when Trump administration policies threaten public health and safety or weaken the role of science in policymaking.

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Standing Strong for Science and Democracy

By Seth Shulman

Early on a wintry morning at the Cambridge, Massachusetts, headquarters of the Union of Concerned Scientists, as most staff members are just arriving at work, a dedicated team is already hunkered in a conference room, hard at work—as they have been each morning since the 2016 election—monitoring news about the incoming Trump administration, prioritizing available resources, and overseeing the organization’s rapid response. This morning’s top agenda item: responding to the dismaying announcement that President Donald Trump plans to appoint ExxonMobil CEO Rex Tillerson to head the US State Department.

The group readies a press response that includes a forceful statement from UCS President Ken Kimmell that Tillerson’s nomination is further evidence that “President-elect Trump is creating a government of, by, and for the oil and gas industry.” Before the day is out, the sound bite will reverberate in press accounts around the world.

Public Health and Safety at Stake

After one of the most contentious US elections in memory—and based on everything we know so far about the Trump administration—federal decisionmaking based on science, data, and evidence now faces an enormous threat. In no sense did American voters grant the new president a mandate to turn back the clock. And yet, the election results raise the specter of backsliding on the critical progress our nation has made on many vital issues.

UCS is mobilizing as fast as we can because we recognize how much is at stake.

Science. Evidence. Facts. Reason.

They form the very foundation of a strong democracy—indeed, of America itself. They protect our health. They keep our communities, families, and children safe. As an organization, we will not sit passively by when our health and safety are threatened. We will not be silent in the face of an administration

that has already begun to fill its ranks with people like Tillerson, whose company has worked to confuse the public about climate change. Or politicians such as Scott Pruitt—the Trump nominee to head the Environmental Protection Agency—who has actively sued the agency in recent years to prevent it from enforcing clean air and clean water safeguards. We will stand strong for science and democracy.

“Scientists will pay close attention to how the Trump administration governs, and are prepared to fight any attempts to undermine the role of science in protecting public health and the environment,” says James McCarthy, UCS board chair emeritus, professor of biological oceanography at Harvard University, and former president of the American Association for the Advancement of Science. “We will hold them to a high standard from day one.”



UCS Outreach Coordinator Liz Schmitt shows up for science in Washington, D.C.

PHOTO LIZ SCHMITT/UCS



“Americans recognize that science is critical to improving our quality of life, and when science is ignored or politically corrupted, it’s the American people who suffer,” says physicist Lewis Branscomb, a UCS member and professor at the University of California–San Diego School of Global Policy and Strategy who has served as vice president and chief scientist at IBM and as director of the National Bureau of Standards under President Richard Nixon. “Respect for science in policy making should be a prerequisite for any cabinet position.”

Of paramount concern are climate change and other vital issues of public health and safety. As a UCS statement explains, without investments in science in the public interest and policies that draw upon scientific evidence, “children will be more vulnerable to lead poisoning, more people will be exposed to unsafe drugs and medical devices, and we will be less prepared to limit the impacts of increasing extreme weather and rising seas.”

But we also recognize that this new administration poses potential threats not just to science but to our democratic principles as well. “At UCS, we reject rhetoric and will resist actions that divide the nation by race, religion, gender, geography, or any other factor,” says UCS President Ken Kimmell. “We cannot move forward to tackle the enormous challenges of our time without a cohesive, respectful, and pluralistic society.”

And that means, among other things, continuing the organization’s strong commitment to environmental justice and policies that help protect everyone—especially low-income communities, tribal communities, and communities of color who bear a disproportionate burden of climate impacts and environmental degradation.

A Watchdog for Science

Drawing upon nearly 50 years of experience, UCS is fast positioning itself as a leading watchdog of science-based public policy in the new administration. (For more on our track record fighting for scientific integrity during the George W. Bush administration, see the Then and Now column) In the months to come, we will scrutinize all legislation and proposed regulations that serve special interests above the public interest, we will expose the actors behind it, and we will mobilize the scientific community and the broader public to fight back as needed.

With impressive speed, UCS has already taken preemptive action. We released an open letter to the Trump administration and Congress urging them to set a high bar for integrity, transparency, and independence when using science to inform federal policies. The letter has now been signed by more than 5,500 scientists from all 50 states, including 25 Nobel Prize recipients and several advisors to Republican and Democratic presidents from Richard Nixon to Barack Obama (see the sidebar).

We’ve also released a report, *Preserving Scientific Integrity in Federal Policymaking*, that lays out the case for independent,

impartial science in policy decisions, offers lessons from the past two administrations, and establishes a baseline assessment of the current state of scientific integrity at federal agencies, against which we can more effectively judge the actions of the Trump administration moving forward.

Meanwhile, the initial response from our members has been impressive. In just a matter of weeks after the election, 3,000 scientists joined our Science Network, swelling its ranks to more than 20,000. We have seen more people join our webinars and visit our conference tables, and have been swamped with a heartening surge in unsolicited donations and offers of support. We know we’ll be calling on our members and supporters like never before, so the increased interest gives us a strong start as a leading organization in the fights ahead. But we’ve only just begun.

Using Science to Bolster Our Democracy

As former New York Senator Daniel Patrick Moynihan famously put it, “We are each entitled to our own opinion, but no one is entitled to his own facts.” You can count on UCS to closely monitor the Trump administration’s activities and ensure

Excerpts from the Scientists’ Letter to President Trump and the 115th Congress

“From disease outbreaks to climate change to national security to technology innovation, people benefit when our nation’s policies are informed by science unfettered by inappropriate political or corporate influence. . . .

“First, creating a strong and open culture of science begins at the top. Federal agencies should be led by officials with demonstrated track records of respecting science as a critical component of decision making. . . .

“Second, Congress and the Trump administration should ensure our nation’s bedrock public health and environmental laws—such as the Clean Air Act and the Endangered Species Act—retain a strong scientific foundation, and that agencies are able to freely collect and draw upon scientific data to effectively carry out statutory responsibilities established by these laws. . . .

“Third, Congress and the Trump administration should adhere to high standards of scientific integrity and independence in responding to current and emerging public health and environmental threats. . . .”



its policies are grounded in the best available, impartial, and independent science, and to push back when they aren't. We will also continue, as we always have, to find ways to make progress. In particular, we'll expand our work on the state, regional, and municipal levels to promote smart science-based policies. This past summer, for example, we helped California and Massachusetts pass farsighted bills that go far beyond federal policies in moving us toward a clean energy future.

Equally important, we have a strong tailwind working in our favor on clean energy because the economics are improving so rapidly. Advances are possible in all the states, and the presidential election does not change that. For example, Texas has invested billions of dollars in transmission lines that take advantage of plentiful and inexpensive renewable energy—wind energy is now so inexpensive in some areas that it's being given away at night. And Illinois recently passed an impressive package committing the state to substantial increases in solar and wind power.

The bottom line is this: UCS will continue to work toward practical solutions and, regardless of whether or not our elected leaders choose to come together, we will stand up on behalf of science and democracy as forcefully as needed. We will call out elected officials and special interests when they ignore science and undermine safeguards that protect people's health and safety. We will expose fossil fuel companies when they deceive the public and their shareholders about climate change. We will connect members of our Science Network with local groups working to reduce the pollution that makes their children sick. We will provide research to communities on the front lines of climate change—threatened with rising seas, wildfires, floods, and drought.

In short, we will find ways to make progress on the issues that matter and, as always, will rely heavily on you for support—the more than 500,000 supporters who make possible our work toward a healthier planet and safer world.

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