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PUBLIC AND PAID FOR

Overcoming the Ideological Blocks to the Next Economy

"We have no option but to reinvent mobility . . . much of India still takes the bus, walks or cycles—in many cities as much as 20 percent of the population bikes. We do this because we are poor. Now the challenge is to reinvent city planning so that we can do this as we become rich."

—Sunita Narain, director general, Centre for Science and Environment, 2013¹

"The lady in the Rolls-Royce car is more damaging to morale than a fleet of Göring's bombing-planes."

—George Orwell, *The Lion and the Unicorn*, 1941²

It was a tight vote but on September 22, 2013, residents of Germany's second largest city decided to take their power back. On that day, 50.9 percent of Hamburg's voters cast their ballots in favor of putting their electricity, gas, and heating grids under the control of the city, reversing a wave of corporate self-offs that took place over a decade earlier.³

It's a process that has been given a few clunky names, including "re-municipalization" and "re-communalization." But the people involved tend to simply refer to their desire for "local power."

The Our Hamburg—Our Grid coalition made a series of persuasive arguments in favor of taking back the utilities. A locally controlled energy system would be concerned with public interests, not profits. Residents would have greater democratic say in their energy system, they argued, rather than having the decisions that affect them made in distant boardrooms. And

money earned in the sale of energy would be returned to the city, rather than lost to the shareholders of multinationals that had control over the grids at the time—a definite plus during a time of relentless public austerity. "For people it's self-evident that goods on which everybody is dependent should belong to the public," campaign organizer Wiebke Hanssen explained in an interview.⁴

There was something else driving the campaign as well. Many of Hamburg's residents wanted to be part of *Energiewende*: the fast-spreading transition to green, renewable energy that was sweeping the country, with nearly 25 percent of Germany's electricity in 2013 coming from renewables, dominated by wind and solar but also including some biogas and hydro—up from around 6 percent in 2000. In comparison, wind and solar made up just 4 percent of total U.S. electricity generation in 2013. The cities of Frankfurt and Munich, which had never sold off their energy grids, had already joined the transition and pledged to move to 100 percent renewable energy by 2050 and 2025, respectively. But Hamburg and Berlin, which had both gone the privatization route, were lagging behind. And this was a central argument for proponents of taking back Hamburg's grid: it would allow them to get off coal and nuclear and go green.⁵

Much has been written about Germany's renewable energy transition—particularly the speed at which it is being achieved, as well as the ambition of its future targets (the country is aiming for 55–60 percent renewables by 2035).⁶ The weaknesses of the program have also been hotly debated, particularly the question of whether the decision to phase out nuclear energy has led to a resurgence of coal (more on that next chapter).

In all of this analysis, however, scarce attention has been paid to one key factor that has made possible what may be the world's most rapid shift to wind and solar power: the fact that in hundreds of cities and towns across the country, citizens have voted to take their energy grids back from the private corporations that purchased them. As Anna Leidreiter, a climate campaigner with the World Future Council, observed after the Hamburg vote, "This marks a clear reversal to the neoliberal policies of the 1990s, when large numbers of German municipalities sold their public services to large corporations as money was needed to prop up city budgets."⁷

Nor is this some small trend. According to a Bloomberg report, "More

than 70 new municipal utilities have started up since 2007, and public operators have taken over more than 200 concessions to run energy grids from private companies in that time.” And though there are no national statistics, the German Association of Local Utilities believes many more cities and towns than that have taken back control over their grids from outside corporations.⁸

Most surprising has been the force with which large parts of the German public have turned against energy privatization. In 2013 in Berlin 83 percent of participating voters cast their ballots in favor of switching to a publicly owned power utility based eventually on 100 percent renewable energy. Not enough people turned out to vote for the decision to be binding (though the campaign came very close), but the referendum made public opinion so clear that campaigners are still pushing for a nonprofit cooperative to take over the grid when the current contract ends.⁹

Energy privatization reversals—linked specifically to a desire for renewable energy—have started to spread beyond Germany in recent years, including to the United States. For instance, in the mid-2000s, residents and local officials in the liberal city of Boulder, Colorado, began lobbying their privatized power utility to move away from coal and toward renewable energy. The company, the Minneapolis-based Xcel Energy, wasn’t particularly interested, so a coalition of environmentalists and an energetic youth group called New Era Colorado came to the same conclusion as the voters in Germany: they had to take their grid back. Steve Fenberg of New Era explains, “We have one of the most carbon-intensive energy supplies in the country, and [Boulder] is an environmentally minded community, and we wanted to change that. We realized that we had no control over that unless we controlled the energy supply.”¹⁰

In 2011, despite being outspent by Xcel by ten to one, the renewables coalition narrowly won two ballot measures that called on the city of Boulder to consider buying back its power system.¹¹ The vote did not immediately put the power utility under public control, but it gave the city the authority and financing to seriously consider the option (which it is currently doing). The coalition won another crucial vote in 2013 against an Xcel-supported initiative that would have blocked the formation of a new public utility, this time by a wide majority.

These were historic votes: other cities had reversed earlier privatizations because they were unhappy with the quality of the service or the pricing under the private operator. But this was the first time a U.S. city was taking these steps “for the sole purpose of reducing its impact on the planet,” according to Tim Hillman, a Boulder-based environmental engineer. Indeed the pro-public forces had put fighting climate change front and center in their campaigns, accusing Xcel of being just another fossil fuel company standing in the way of much needed climate action. And according to Fenberg, their vision reaches beyond Boulder. “We want to show the world that you can actually power a city responsibly and not pay a lot for it,” he now says. “We want this to be a model, not just do this one cool thing for ourselves in our community.”¹²

What stands out about Boulder’s experience is that, unlike some of the German campaigns, it did not begin with opposition to privatization. Boulder’s local power movement began with the desire to switch to clean energy, regardless of who was providing it. Yet in the process of trying to achieve that goal, these residents discovered that they had no choice but to knock down one of the core ideological pillars of the free market era: that privately run services are always superior to public ones. It was an accidental discovery very similar to the one Ontario residents made when it became clear that their green energy transition was being undermined by free trade commitments signed long ago.

Though rarely mentioned in climate policy discussions, there is a clear and compelling relationship between public ownership and the ability of communities to get off dirty energy. Many of the countries with the highest commitments to renewable energy are ones that have managed to keep large parts of their electricity sectors in public (and often local) hands, including the Netherlands, Austria, and Norway. In the U.S., some of the cities that have set the most ambitious green energy targets also happen to have public utilities. Austin, Texas, for instance, is ahead of schedule for meeting its target of 35 percent renewable power by 2020, and Sacramento, California’s, utility is gearing up to beat a similar target and has set a pioneering goal of reducing emissions by 90 percent by mid-century. On the other hand, according to John Farrell, senior researcher at the Minneapolis-based Institute for Local Self-Reliance, the attitude of most private players

has been, “we’re going to take the money that we make from selling fossil fuels, and use it to lobby as hard as we can against any change to the way that we do business.”¹³

This does not mean that private power monopolies will not offer their customers the option of purchasing power from renewables as part of a mix that includes fossil fuels: many do offer that choice, usually at a premium price. And some offer renewable power exclusively, though this is invariably from large-scale hydropower. Nor is it the case that public power will always willingly go green—there are plenty of publicly owned power utilities that remain hooked on coal and are highly resistant to change.

However, many communities are discovering that while public utilities often need to be pressured hard to make emission reductions a priority (a process that may require fundamental reform to make them more democratic and accountable to their constituents) private energy monopolies offer no such option. Answerable chiefly to their shareholders and driven by the need for high quarterly profits, private companies will voluntarily embrace renewables only if it won’t impact their earnings or if they are forced to by law. If renewables are seen as less profitable, at least in the short term, these bottom-line companies simply won’t make the switch. Which is why, as German antinuclear activist Ralf Gauger puts it, more and more people are coming to the conclusion that, “Energy supply and environmental issues should not be left in the hands of private for-profit interests.”¹⁴

This does not mean that the private sector should be excluded from a transition to renewables: solar and wind companies are already bringing clean energy to many millions of consumers around the world, including through innovative leasing models that allow customers to avoid the upfront costs of purchasing their own rooftop solar panels. But despite these recent successes, the market has proved extremely volatile and according to projections from the International Energy Agency, investment levels in clean energy need to quadruple by 2030 if we are to meet emission targets aimed at staying below 2 degrees Celsius of warming.¹⁵

It’s easy to mistake a thriving private market in green energy for a credible climate action plan, but, though related, they are not the same thing. It’s entirely possible to have a booming market in renewables, with a whole

new generation of solar and wind entrepreneurs growing very wealthy—and for our countries to still fall far short of lowering emissions in line with science in the brief time we have left. To be sure of hitting those tough targets, we need systems that are more reliable than boom-and-bust private markets. And as a 2013 paper produced by a research team at the University of Greenwich explains, “Historically, the private sector has played little role in investing in renewable energy generation. Governments have been responsible for nearly all such investments. Current experience from around the world, including the markets of Europe, also shows that private companies and electricity markets cannot deliver investments in renewables on the scale required.”¹⁶

Citing various instances of governments turning to the public sector to drive their transitions (including the German experience), as well as examples of large corporate-driven renewable projects that were abandoned by their investors midstream, the Greenwich research team concludes, “An active role for government and public sector utilities is thus a far more important condition for developing renewable energy than any expensive system of public subsidies for markets or private investors.”¹⁷

Sorting out what mechanisms have the best chance of pulling off a dramatic and enormously high-stakes energy transition has become particularly pressing of late. That’s because it is now clear that—at least from a technical perspective—it is entirely possible to rapidly switch our energy systems to 100 percent renewables. In 2009, Mark Z. Jacobson, a professor of civil and environmental engineering at Stanford University, and Mark A. Delucchi, a research scientist at the Institute of Transportation Studies at the University of California, Davis, authored a groundbreaking, detailed road map for “how 100 percent of the world’s energy, for *all* purposes, could be supplied by wind, water and solar resources, by as early as 2030.” The plan includes not only power generation but also transportation as well as heating and cooling. Later published in the journal *Energy Policy*, the road map is one of several credible studies that have come out in recent years that show how wealthy countries and regions can shift all, or almost all, of their energy infrastructure to renewables within a twenty-to-forty-year time frame.¹⁸ Those studies demonstrating the potential for rapid progress include:

- In Australia, the University of Melbourne's Energy Institute and the nonprofit Beyond Zero Emissions have published a blueprint for achieving a 60 percent solar and 40 percent wind electricity system in an astonishing ten years.¹⁹
- By 2014, the U.S. National Oceanic and Atmospheric Administration (NOAA) had concluded from its own extensive research into weather patterns that cost-effective wind and solar could constitute nearly 60 percent of the U.S. electricity system by 2030.²⁰
- Among more conservative projections, a major 2012 study by the U.S. Department of Energy's National Renewable Energy Laboratory argues that wind, solar, and other currently available green technologies could meet 80 percent of Americans' electricity needs by 2050.²¹

Most promising of all is new work by a team of researchers at Stanford, led by Mark Jacobson (who coauthored the 2009 global plan). In March 2013, they published a study in *Energy Policy* showing that New York state could meet all of its power needs with renewables by 2030. Jacobson and his colleagues are developing similar plans for every U.S. state, and have already published numbers for the country as a whole. "It's absolutely not true that we need natural gas, coal or oil—we think it's a myth," he told *The New York Times*.²²

"This really involves a large scale transformation," he says. "It would require an effort comparable to the Apollo moon project or constructing the interstate highway system. But it is possible, without even having to go to new technologies. We really need to just decide collectively that this is the direction we want to head as a society." And he is clear on what stands in the way: "The biggest obstacles are social and political—what you need is the will to do it."²³

In fact it takes more than will: it requires the profound ideological shift already discussed. Because our governments have changed dramatically since the days when ambitious national projects were conceived and implemented. And the imperatives created by the climate crisis are colliding with the dominant logic of our time on many other fronts.

Indeed every time a new, record-breaking natural disaster fills our screens with human horror, we have more reminders of how climate change demands that we invest in the publicly owned bones of our societies, made brittle by decades of neglect.

Rebuilding, and Reinventing, the Public Sphere

When I first spotted Nastaran Mohit, she was bundled in a long puffy black coat, a white toque pulled halfway over her eyes, barking orders to volunteers gathered in an unheated warehouse. "Take a sticky pad and write down what the needs are," the fast-talking thirty-year-old was telling a group newly designated as Team 1. "Okay, head on out. Who is Team 2?"²⁴

It was ten days after Superstorm Sandy made landfall and we were in one of the hardest-hit neighborhoods in the Rockaways, a long, narrow strip of seaside communities in Queens, New York. The storm waters had receded but hundreds of basements were still flooded and power and cell phone service were still out. The National Guard patrolled the streets in trucks and Humvees, making sure curfew was observed, but when it came to offering help to those stranded in the cold and dark, the state and the big aid agencies were largely missing in action. (Or, more accurately, they were at the other, wealthier end of the Rockaway peninsula, where these organizations and agencies were a strong and helpful presence.)²⁵

Seeing this abandonment, thousands of mostly young volunteers had organized themselves under the banner "Occupy Sandy" (many were veterans of Occupy Wall Street) and were distributing clothes, blankets, and hot food to residents of neglected areas. They set up recovery hubs in community centers and churches, and went door-to-door in the area's notorious, towering brick housing projects, some as high as twenty-three stories. "Muck" had become a ubiquitous verb, as in "Do you need us to come muck out your basement?" If the answer was yes, a team of eager twenty-somethings would show up on the doorstep with mops, gloves, shovels, and bleach, ready to get the job done.

Mohit had arrived in the Rockaways to help distribute basic supplies but quickly noticed a more pressing need: in some areas, absolutely no one was

providing health care. And the need was so great, it scared her. Since the 1950s, the Rockaways—once a desirable resort destination—had become a dumping ground for New York's poor and unwanted: welfare recipients, the elderly, discharged mental patients. They were crammed into high-rises, many in a part of the peninsula known locally as the "Baghdad of Queens."²⁶

As in so many places like it, public services in the Rockaways had been cut to the bone, and then cut some more. Just six months before the storm, Peninsula Hospital Center—one of only two hospitals in the area, which served a low-income and elderly population—had shut down after the state Department of Health refused to step in. Walk-in clinics had attempted to fill the gap but they had flooded during the storm and, along with the pharmacies, had not yet reopened. "This is just a dead-zone," Mohit sighed.²⁷

So she and friends in Occupy Sandy called all the doctors and nurses they knew and asked them to bring in whatever supplies they could. Next, they convinced the owner of an old furrier, damaged in the storm, to let them convert his storefront on the neighborhood's main drag into a makeshift MASH unit. There, amidst the animal pelts hanging from the ceiling, volunteer doctors and nurses began to see patients, treat wounds, write prescriptions, and provide trauma counseling.

There was no shortage of patients; in its first two weeks, Mohit estimated that the clinic helped hundreds of people. But on the day I visited, worries were mounting about the people still stuck in the high-rises. As volunteers went door-to-door distributing supplies in the darkened projects, flashlights strapped to their foreheads, they were finding alarming numbers of sick people. Cancer and HIV/AIDS meds had run out, oxygen tanks were empty, diabetics were out of insulin, and addicts were in withdrawal. Some people were too sick to brave the dark stairwells and multiple flights of stairs to get help; some didn't leave because they had nowhere to go and no way to get off the peninsula (subways and buses were not operating); others feared that if they left their apartments, their homes would be burglarized. And without cell service or power for their TVs, many had no idea what was going on outside.

Most shockingly, residents reported that until Occupy Sandy showed up, no one had knocked on their doors since the storm. Not from the Health

Department, nor the city Housing Authority (responsible for running the projects), nor the big relief agencies like the Red Cross. "I was like 'Holy crap,'" Mohit told me. "There was just no medical attention at all."²⁸ Referring to the legendary abandonment of New Orleans's poor residents when the city flooded in 2005, she said: "This is Katrina 2.0."²⁹

The most frustrating part was that even when a pressing health need was identified, and even when the volunteer doctors wrote the required prescriptions, "we bring it to the pharmacy and the pharmacy is sending it back to us because they need insurance information. And then we get as much information as we can and we bring it back and they say, 'Now we need their Social Security number.'"³⁰

According to a 2009 Harvard Medical School study, as many as 45,000 people die annually in the United States because they lack health insurance. As one of the study's coauthors pointed out, this works out to about one death every twelve minutes. It's unclear how President Obama's stunted 2010 health care law will change those numbers, but watching the insurance companies continue to put money before human health in the midst of the worst storm in New York's history cast this preexisting injustice in a new, more urgent light. "We need universal health care," Mohit declared. "There is no other way around it. There is absolutely no other way around it." Anyone who disagreed should come to the disaster zone, she said, because this "is a perfect situation for people to really examine how nonsensical, inhumane, and barbaric this system is."³¹

The word "apocalypse" derives from the Greek *apokalypsis*, which means "something uncovered" or revealed. Besides the need for a dramatically better health care system, there was much else uncovered and revealed when the floodwaters retreated in New York that October. The disaster revealed how dangerous it is to be dependent on centralized forms of energy that can be knocked out in one blow. It revealed the life-and-death cost of social

* This was the situation not only in the Rockaways but seemingly wherever public housing was in the path of the storm. In Red Hook, Brooklyn, many residents were left without power for three weeks, during which time the Housing Authority never went systematically door-to-door. As sixty-year-old Wally Bazemore put it at an angry residents meeting: "We were literally in the dark and we were completely in the dark."

isolation, since it was the people who did not know their neighbors, or who were frightened of them, who were most at risk. Meanwhile, it was the tightest-knit communities, where neighbors took responsibility for one another's safety, that were best able to literally weather the storm.

The disaster also revealed the huge risks that come with deep inequality, since the people who were already the most vulnerable—undocumented workers, the formerly incarcerated, people in public housing—suffered most and longest. In low-income neighborhoods, homes filled not only with water but with heavy chemicals and detergents—the legacy of systemic environmental racism that allowed toxic industries to build in areas inhabited mostly by people of color. Public housing projects that had been left to decay—while the city bided its time before selling them off to developers—turned into death traps, their ancient plumbing and electrical systems giving way completely. As Aria Doe, executive director of the Action Center for Education and Community Development in the Rockaways, put it, the peninsula's poorest residents “were six feet under” before the storm even hit. “Right now, they’re seven or eight feet under.”³²

All around the world, the hard realities of a warming world are crashing up against the brutal logic of austerity, revealing just how untenable it is to starve the public sphere at the very moment we need it most. The floods that hit the U.K. in the winter of 2013–2014, for instance, would have been trying for any government: thousands of homes and workplaces were inundated, hundreds of thousands of houses and other buildings lost power, farmland was submerged, several rail lines were down for weeks, all combining to create what one top official called an “almost unparalleled natural disaster.” This as the country was still reeling from a previous devastating storm that had struck just two months before.³³

But the floods were particularly awkward for the coalition government led by Conservative prime minister David Cameron because, in the three years prior, it had gutted the Environment Agency (EA), which was responsible for dealing with flooding. Since 2009, at least 1,150 jobs had been lost at the agency, with as many as 1,700 more on the chopping block, adding up

to approximately a quarter of its total workforce. In 2012 *The Guardian* had revealed that “nearly 300 flood defence schemes across England [had] been left unbuilt due to government budget cuts.” The head of the Environment Agency had stated plainly during the most recent round of cuts that “Flood risk maintenance will be impacted.”³⁴

Cameron is no climate change denier, which is what made it all the more incredible that he had hobbled the agency responsible for protecting the public from rising waters and more ferocious storms, two well-understood impacts of climate change. And his praise of the good works of the staff that had survived his axe provided cold comfort. “It is a disgrace that the Government is happy to put cost cutting before public safety and protecting family homes,” announced the trade union representing EA workers in a scathing statement. “They can’t have it both ways, praising the sterling work of members in the Agency in one breath, and in the next breath announcing further damaging cuts.”³⁵

During good times, it’s easy to deride “big government” and talk about the inevitability of cutbacks. But during disasters, most everyone loses their free market religion and wants to know that their government has their backs. And if there is one thing we can be sure of, it’s that extreme weather events like Superstorm Sandy, Typhoon Haiyan in the Philippines, and the British floods—disasters that, combined, pummeled coastlines beyond recognition, ravaged millions of homes, and killed many thousands—are going to keep coming.

Over the course of the 1970s, there were 660 reported disasters around the world, including droughts, floods, extreme temperature events, wildfires, and storms. In the 2000s, there were 3,322—a fivefold boost. That is a staggering increase in just over thirty years, and clearly global warming cannot be said to have “caused” all of it. But the climate signal is also clear. “There’s no question that climate change has increased the frequency of certain types of extreme weather events,” climate scientist Michael Mann told me in an interview, “including drought, intense hurricanes, and super typhoons, the frequency and intensity and duration of heat waves, and potentially other types of extreme weather though the details are still being debated within the scientific community.”³⁶

Yet these are the same three decades in which almost every government

in the world has been steadily chipping away at the health and resilience of the public sphere. And it is this neglect that, over and over again, turns natural disasters into unnatural catastrophes. Storms burst through neglected levees. Heavy rain causes decrepit sewer systems to back up and overflow. Wildfires rage out of control for lack of workers and equipment to fight them (in Greece, fire departments can't afford spare tires for their trucks driving into forest blazes). Emergency responders are missing in action for days after a major hurricane. Bridges and tunnels, left in a state of disrepair, collapse under the added pressure.

The costs of coping with increasing weather extremes are astronomical. In the United States, each major disaster seems to cost taxpayers upward of a billion dollars. The cost of Superstorm Sandy is estimated at \$65 billion. And that was just one year after Hurricane Irene caused around \$10 billion in damage, just one episode in a year that saw fourteen billion-dollar disasters in the U.S. alone. Globally, 2011 holds the title as the costliest year ever for disasters, with total damages reaching at least \$380 billion. And with policymakers still locked in the vise grip of austerity logic, these rising emergency expenditures are being offset with cuts to everyday public spending, which will make societies even more vulnerable during the next disaster—a classic vicious cycle.³⁷

It was never a good idea to neglect the foundations of our societies in this way. In the context of climate change, however, that decision looks suicidal. There are many important debates to be had about the best way to respond to climate change—storm walls or ecosystem restoration? Decentralized renewables, industrial scale wind power combined with natural gas, or nuclear power? Small-scale organic farms or industrial food systems? There is, however, *no* scenario in which we can avoid wartime levels of spending in the public sector—not if we are serious about preventing catastrophic levels of warming, and minimizing the destructive potential of the coming storms.

It's no mystery where that public money needs to be spent. Much of it should go to the kinds of ambitious emission-reducing projects already discussed—the smart grids, the light rail, the citywide composting systems, the building retrofits, the visionary transit systems, the urban redesigns to keep us from spending half our lives in traffic jams. The private sector is

ill suited to taking on most of these large infrastructure investments: if the services are to be accessible, which they must be in order to be effective, the profit margins that attract private players simply aren't there.

Transit is a good example. In March 2014, when air pollution in French cities reached dangerously high levels, officials in Paris made a snap decision to discourage car use by making public transit free for three days. Obviously private operators would strenuously resist such measures. And yet by all rights, our transit systems should be responding with the same kind of urgency to dangerously high levels of atmospheric carbon. Rather than allowing subway and bus fares to rise while service erodes, we need to be lowering prices and expanding services—regardless of the costs.

Public dollars also need to go to the equally important, though less glamorous projects and services that will help us prepare for the coming heavy weather. That includes things like hiring more firefighters and improving storm barriers. And it means coming up with new, nonprofit disaster insurance programs so that people who have lost everything to a hurricane or a forest fire are not left at the mercy of a private insurance industry that is already adapting to climate change by avoiding payouts and slapping victims with massive rate increases. According to Amy Bach, cofounder of the San Francisco–based advocacy group United Policyholders, disaster insurance is becoming “very much like health insurance. We’re going to have to increasingly take the profit motive out of the system so that it operates efficiently and effectively, but without generating obscene executive salaries and bonuses and shareholder returns. Because it’s not going to be a sustainable model. A publicly traded insurance company in the face of climate change is not a sustainable business model for the end user, the consumer.”³⁸ It's that or a disaster capitalism free-for-all; those are the choices.

These types of improvements are of course in far greater demand in developing countries like the Philippines, Kenya, and Bangladesh that are already facing some of the most severe climate impacts. Hundreds of billions of dollars are urgently needed to build seawalls; storage and distribution networks for food, water, and medicine; early warning systems and shelters for hurricanes, cyclones, and tsunamis—as well as public health systems able to cope with increases in climate-related diseases like malaria.³⁹

Though mechanisms to protect against government corruption are needed, these countries should not have to spend their health care and education budgets on costly disaster insurance plans purchased from transnational corporations, as is happening right now. Their people should be receiving direct compensation from the countries (and companies) most responsible for warming the planet.

The Polluter Pays

About now a sensible reader would be asking: how on earth are we going to pay for all this? It's the essential question. A 2011 survey by the U.N. Department of Economic and Social Affairs looked at how much it would cost for humanity to "overcome poverty, increase food production to eradicate hunger without degrading land and water resources, and avert the climate change catastrophe." The price tag was \$1.9 trillion a year for the next forty years—and "at least one half of the required investments would have to be realized in developing countries."⁴⁰

As we all know, public spending is going in the opposite direction almost everywhere except for a handful of fast-growing so-called emerging economies. In North America and Europe, the economic crisis that began in 2008 is still being used as a pretext to slash aid abroad and cut climate programs at home. All over Southern Europe, environmental policies and regulations have been clawed back, most tragically in Spain, which, facing fierce austerity pressure, drastically cut subsidies for renewables projects, sending solar projects and wind farms spiraling toward default and closure. The U.K. under David Cameron has also cut supports for renewable energy.

So if we accept that governments are broke, and they're not likely to introduce "quantitative easing" (aka printing money) for the climate system as they have for the banks, where is the money supposed to come from? Since we have only a few short years to dramatically lower our emissions, the only rational way forward is to fully embrace the principle already well established in Western law: the polluter pays.

The fossil fuel companies have known for decades that their core prod-

uct was warming the planet, and yet they have not only failed to adapt to that reality, they have actively blocked progress at every turn. Meanwhile, oil and gas companies remain some of the most profitable corporations in history, with the top five oil companies pulling in \$900 billion in profits from 2001 to 2010. ExxonMobil still holds the record for the highest corporate profits ever reported in the United States, earning \$41 billion in 2011 and \$45 billion in 2012. These companies are rich, quite simply, because they have dumped the cost of cleaning up their mess onto regular people around the world. It is this situation that, most fundamentally, needs to change.⁴¹

And it will not change without strong action. For well over a decade, several of the oil majors have claimed to be voluntarily using their profits to invest in a shift to renewable energy. In 2000, BP rebranded itself "Beyond Petroleum" and even changed its logo to a sunburst, called "the Helios mark after the sun god of ancient Greece." ("We are not an oil company," then-chief executive Sir John Browne said at the time, explaining that, "We are aware the world wants less carbon-intensive fuels. What we want to do is create options.") Chevron, for its part, ran a high-profile advertising campaign declaring, "It's time oil companies get behind renewables. . . . We agree." But according to a study by the Center for American Progress, just 4 percent of the Big Five's \$100 billion in combined profits in 2008 went to "renewable and alternative energy ventures." Instead, they continue to pour their profits into shareholder pockets, outrageous executive pay (Exxon CEO Rex Tillerson makes more than \$100,000 a day), and new technologies designed to extract even dirtier and more dangerous fossil fuels.⁴²

And even as the demand for renewables increases, the percentage the fossil fuel companies spend on them keeps shrinking—by 2011, most of the majors were spending less than 1 percent of their overall expenditures on alternative energy, with Chevron and Shell spending a deeply unimpressive 2.5 percent. In 2014, Chevron pulled back even further. According to *Bloomberg Businessweek*, the staff of a renewables division that had almost doubled its target profits was told "that funding for the effort would dry up" and was urged "to find jobs elsewhere." Chevron also moved to sell off businesses that had developed green projects for governments and school dis-

tricts. As oil industry watcher Antonia Juhász has observed, "You wouldn't know it from their advertising, but the world's major oil companies have either entirely divested from alternative energy or significantly reduced their investments in favor of doubling down on ever-more risky and destructive sources of oil and natural gas."⁴³

Given this track record, it's safe to assume that if fossil fuel companies are going to help pay for the shift to renewable energy, and for the broader costs of a climate destabilized by their pollution, it will be because they are forced to do so by law. Just as tobacco companies have been obliged to pay the costs of helping people to quit smoking, and BP has had to pay for much of the cleanup of its oil spill in the Gulf of Mexico, it is high time for the industry to at least split the bill for the climate crisis. And there is mounting evidence that the financial world understands that this is coming. In its 2013 annual report on "Global Risks," the World Economic Forum (host of the annual superlative gathering in Davos), stated plainly, "Although the Alaskan village of Kivalina—which faces being 'wiped out' by the changing climate—was unsuccessful in its attempts to file a US\$ 400 million lawsuit against oil and coal companies, future plaintiffs may be more successful. Five decades ago, the U.S. tobacco industry would not have suspected that in 1997 it would agree to pay \$368 billion in health-related damages." But it did.⁴⁴

The question is: how do we stop fossil fuel profits from continuing to hemorrhage into executive paychecks and shareholder pockets—and how do we do it soon, before the companies are significantly less profitable or out of business because we have moved to a new energy system? As the Global Risks report suggests, communities severely impacted by climate change have made several attempts to use the courts to sue for damages, but so far they have been unsuccessful. A steep carbon tax would be a straightforward way to get a piece of the profits, as long as it contained a generous redistributive mechanism—a tax cut or income credit—that compensated poor and middle-class consumers for increased fuel and heating prices. As Canadian economist Marc Lee points out, designed properly, "It is possible to have a progressive carbon tax system that reduces inequality as it raises the price of emitting greenhouse gases."⁴⁵ An even more direct route to getting a piece of those pollution profits would be for governments to negotiate much higher royalty rates on oil, gas, and coal extraction, with the revenues going

to "heritage trust funds" that would be dedicated to building the post-fossil fuel future, as well as to helping communities and workers adapt to these new realities.

Fossil fuel corporations can be counted on to resist any new rules that cut into their profits, so harsh penalties, including revoking corporate charters, would need to be on the table. Companies would threaten to pull out of certain operations, to be sure, but once a multinational like Shell has spent billions to build the mines and drilling platforms needed to extract fossil fuels, it is unlikely to abandon that infrastructure because royalties go up. (Though it will bitterly complain and may well seek damages at an investment tribunal.)

But the extractive industries shouldn't be the only targets of the "polluter pays" principle. The U.S. military is by some accounts the largest single consumer of petroleum in the world. In 2011, the Department of Defense released, at minimum, 56.6 million metric tons of CO₂ equivalent into the atmosphere, more than the U.S.-based operations of ExxonMobil and Shell combined.⁴⁶ So surely the arms companies should pay their share. The car companies have plenty to answer for too, as do the shipping industry and the airlines.

Moreover, there is a simple, direct correlation between wealth and emissions—more money generally means more flying, driving, boating, and powering of multiple homes. One case study of German consumers indicates that the travel habits of the most affluent class have an impact on climate 250 percent greater than that of their lowest-earning neighbors.⁴⁷

That means any attempt to tax the extraordinary concentration of wealth at the very top of the economic pyramid, as documented so persuasively by Thomas Piketty among many others, would—if partially channeled into climate financing—effectively make the polluters pay. As journalist and climate and energy policy expert Gar Lipow puts it, "We should tax the rich more because it is the fair thing to do, and because it will provide a better life for most of us, and a more prosperous economy. However, providing money to save civilization and reduce the risk of human extinction is another good reason to bill the rich for their fair share of taxes." But it must be said that a "polluter pays" principle would have to reach beyond the super rich. According to Stephen Pacala, director of the Princeton Environmen-

tal Institute and codirector of Princeton's Carbon Mitigation Initiative, the roughly 500 million richest of us on the planet are responsible for about half of all global emissions. That would include the rich in every country in the world, notably in countries like China and India, as well significant parts of the middle classes in North America and Europe.⁴⁸

Taken together, there is no shortage of options for equitably coming up with the cash to prepare for the coming storms while radically lowering our emissions to prevent catastrophic warming.

Consider the following list, by no means complete:

- A "low-rate" financial transaction tax—which would hit trades of stocks, derivatives, and other financial instruments—could bring in nearly \$650 billion at the global level each year, according to a 2011 resolution of the European Parliament (and it would have the added bonus of slowing down financial speculation).⁴⁹
- Closing tax havens would yield another windfall. The U.K.-based Tax Justice Network estimates that in 2010, the private financial wealth of individuals stowed unreported in tax havens around the globe was somewhere between \$21 trillion and \$32 trillion. If that money were brought into the light and its earnings taxed at a 30 percent rate, it would yield at least \$190 billion in income tax revenue each year.⁵⁰
- A 1 percent "billionaire's tax," floated by the U.N., could raise \$46 billion annually.⁵¹
- Slashing the military budgets of each of the top ten military spenders by 25 percent could free up another \$325 billion, using 2012 numbers reported by the Stockholm International Peace Research Institute. (Granted, probably the toughest sell of all, particularly in the U.S.)⁵²
- A \$50 tax per metric ton of CO₂ emitted in developed countries would raise an estimated \$450 billion annually, while a more modest

\$25 carbon tax would still yield \$250 billion per year, according to a 2011 report by the World Bank, the International Monetary Fund, and the Organisation for Economic Co-operation and Development (OECD), among others.⁵³

- Phasing out fossil fuel subsidies globally would conservatively save governments a total \$775 billion in a single year, according to a 2012 estimate by Oil Change International and the Natural Resources Defense Council.⁵⁴

If these various measures were taken together, they would raise more than \$2 trillion annually.⁵⁵ Certainly enough for a very healthy start to finance a Great Transition (and avoid a Great Depression). And that doesn't count any royalty increases on fossil fuel extraction. Of course, for any of these tax crackdowns to work, key governments would have to coordinate their responses so that corporations had nowhere to hide—a difficult task, though far from impossible, and one frequently bandied about at G20 summits.

In addition to the simple fact that the money is badly needed, there are practical political reasons why "polluter pays" should guide climate financing. As we have seen, responding to the climate crisis can offer real benefits to a majority of people, but real solutions will also, by definition, require short- and medium-term sacrifices and inconveniences. And what we know from past sacrifices made in the name of a crisis—most notably via rationing, conservation, and price controls during both world wars—is that success depends entirely on a perception of fairness.

In Britain and North America during World War II, for instance, every strata of society was required to make do with less, even the very rich. And in fact, though overall consumption in the U.K. dropped by 16 percent, caloric intake for the poor increased during the war, because the rations provided low-income people with more than they could otherwise afford.⁵⁶

There was plenty of cheating and black market profiteering, of course, but these programs enjoyed broad-based support because they were, at least in theory, fair. The theme of equality pervaded government campaigns about these wartime programs: "Fair Shares for All" was a key slogan in the U.K, while the U.S. went with "Share and Share Alike" and "Produce, Conserve, Share and Play Square."⁵⁷ An Office of Price Administration

* This is why the persistent positing of population control as a solution to climate change is a distraction and moral dead end. As this research makes clear, the most significant cause of rising emissions is not the reproductive behavior of the poor but the consumer behaviors of the rich.

pamphlet from 1942 argued that rationing was part of the American tradition. “What Is Rationing?” it asked.

First, let’s be sure what rationing is not. It is not starvation, long bread lines, shoddy goods. Rather, it is a community plan for dividing fairly the supplies we have among all who need them. Second, it is not “un-American.” The earliest settlers of this country, facing scarcities of food and clothing, pooled their precious supplies and apportioned them out to everyone on an equal basis. It was an American idea then, and it is an American idea now, to share and share alike—to sacrifice, when necessary, but sacrifice together, when the country’s welfare demands it.⁵⁸

Governments also made sure that there were very public crackdowns on wealthy and well-connected individuals who broke the rules, sending the message that no one was exempt. In the U.K., movie stars, as well as corporations like Woolworth and Sainsbury, faced prosecution for rations violations. In the United States, cases were brought against some of the largest corporations in the country. It was no secret that many large U.S. manufacturers disliked the entire rationing system; they lobbied against it, because they believed it eroded their brand value. Yet they were forced to accept it all the same.⁵⁹

This perception of fairness—that one set of rules applies to players big and small—has been entirely missing from our collective responses to climate change thus far. For decades, regular people have been asked to turn off their lights, put on sweaters, and pay premium prices for nontoxic cleaning products and renewable energy—and then watched as the biggest polluters have been allowed to expand their emissions without penalty. This has been the pattern ever since President Jimmy Carter addressed the American public in July 1979 about the fact that “too many of us now tend to worship self-indulgence and consumption. Human identity is no longer defined by what one does, but by what one owns.” He urged Americans “for your good and for your nation’s security to take no unnecessary trips, to use carpools or public transportation whenever you can, to park your car one extra day per week, to obey the speed limit, and to set your thermostats to save fuel. Every act of energy conservation like this is more than just common sense—I tell you it is an act of patriotism.”⁶⁰

The address was initially well received but came to be derided as the “malaise” speech and is frequently cited as one of the reasons Carter lost his reelection bid to Ronald Reagan. And though he was not talking about climate change but rather a broad “crisis of confidence” against a backdrop of energy scarcity, the speech is still invoked as proof that any politician who asks voters to sacrifice to solve an environmental crisis is on a suicide mission. Indeed this assessment has shaped the win-win messaging of environmentalists ever since.

So it’s interesting to note that the late intellectual Christopher Lasch, who was one of Carter’s key advisors on the infamous speech, was also one of its most pointed critics. The author of *The Culture of Narcissism* had strongly urged the president to temper his message of personal austerity with assurances of fundamental fairness and social justice. As Lasch revealed to an interviewer years later, he had told Carter to “put a more populist construction in his indictment of American consumerism. . . . What was needed was a program that called for sacrifices all right, but made it clear that the sacrifices would be distributed in an equitable fashion.” And that, Lasch said, “would mean that those most able to make sacrifices would be the ones on whom the sacrifices fell. That’s what I mean by populism.”⁶¹

We cannot know if the reaction might have differed had Carter listened to that advice and presented a plan for conservation that began with those pushing and profiting most from wasteful consumption. We do know that responses to climate change that continue to put the entire burden on individual consumers are doomed to fail. For instance, the annual “British Social Attitudes” survey, conducted by the independent NatCen Social Research, asked a set of questions about climate policies in the year 2000, and then again in 2010. It found that, “Whereas, 43 per cent a decade ago said they would be willing to pay higher prices to protect the environment, this is nowadays only true of 26 per cent. There has been a similar fall in the proportion prepared to pay higher taxes (31 to 22 per cent), but a smaller decline in relation to cuts in the standard of living (26 per cent to 20 per cent).”⁶²

These results, and others like them, have been cited as proof that during times of economic hardship, people’s environmental concerns go out the window. But that is not what these polls prove. Yes, there has been a drop in the willingness of individuals to bear the financial burden of responding to

climate change, but not simply because economic times are hard. Western governments have responded to these hard times—which have been created by rampant greed and corruption among their wealthiest citizens—by asking those least responsible for the current conditions to bear the burden. After paying for the crisis of the bankers with cuts to education, health care, and social safety nets, is it any wonder that a beleaguered public is in no mood to bail out the fossil fuel companies from the crisis that they not only created but continue to actively worsen?

Most of these surveys, notably, don't ask respondents how they feel about raising taxes on the rich and removing fossil fuel subsidies, yet these are some of the most reliably popular policies around. And it's worth noting that a U.S. poll conducted in 2010—with the country still reeling from economic crisis—asked voters whether they would support a plan that “would make oil and coal companies pay for the pollution they cause. It would encourage the creation of new jobs and new technologies in cleaner energy like wind, solar, and nuclear power. The proposal also aims to protect working families, so it refunds almost all of the money it collects directly to the American people, like a tax refund, and most families end up better off.” The poll found that three quarters of voters, including the vast majority of Republicans, supported the ideas as outlined, and only 11 percent strongly opposed it. The plan was similar to a proposal, known as “cap and dividend,” being floated by a pair of senators at the time, but it was never seriously considered by the U.S. Senate.⁶³

And when, in June 2014, Obama finally introduced plans to use the Environmental Protection Agency to limit greenhouse gas emissions from existing power plants, the coal lobby howled with indignation but public opinion was solidly supportive. According to one poll, 64 percent of Americans, including a great many Republicans, backed such a policy even though it would likely mean paying more for energy every month.⁶⁴

The lesson from all this is not that people won't sacrifice in the face of the climate crisis. It's that they have had it with our culture of lopsided sacrifice, in which individuals are asked to pay higher prices for supposedly green choices while large corporations dodge regulation and not only refuse to change their behavior, but charge ahead with ever more polluting activities. Witnessing this, it is perfectly sensible for people to shed much of the keener enthusiasm that marked the early days of the climate movement,

and to make it clear that no more sacrifice will be made until the policy solutions on the table are perceived as just. This does not mean the middle class is off the hook. To fund the kind of social programs that will make a just transition possible, taxes will have to rise for everyone but the poor. But if the funds raised go toward social programs and services that reduce inequality and make lives far less insecure and precarious, then public attitudes toward taxation would very likely shift as well.

To state the obvious: it would be incredibly difficult to persuade governments in almost every country in the world to implement the kinds of redistributive climate mechanisms I have outlined. But we should be clear about the nature of the challenge: it is not that “we” are broke or that we lack options. It is that our political class is utterly unwilling to go where the money is (unless it's for a campaign contribution), and the corporate class is dead set against paying its fair share.

Seen in this light, it's hardly surprising that our leaders have so far failed to act to avert climate chaos. Indeed even if aggressive “polluter pays” measures were introduced, it isn't at all clear that the current political class would know what to do with the money. After all, changing the building blocks of our societies—the energy that powers our economies, how we move around, the designs of our major cities—is not about writing a few checks. It requires bold long-term planning at every level of government, and a willingness to stand up to polluters whose actions put us all in danger. And that won't happen until the corporate liberation project that has shaped our political culture for three and a half decades is buried for good.

Just as the climate change deniers I met at the Heartland Institute fear, there is a direct relationship between breaking fossilized free market rules and making swift progress on climate change. Which is why, if we are to collectively meet the enormous challenges of this crisis, a robust social movement will need to demand (and create) political leadership that is not only committed to making polluters pay for a climate-ready public sphere, but willing to revive two lost arts: long-term public planning, and saying no to powerful corporations.