

[newyorker.com](https://www.newyorker.com)

Renewable Energy Is Suddenly Startlingly Cheap

Bill McKibben

16-20 minutes

Subscribers to The Climate Crisis newsletter received this piece in their in-boxes. [Sign up](#) to receive future installments.

Earth Week has come and gone, leaving behind an ankle-deep and green-tinted drift of reports, press releases, and earnest promises from C.E.O.s and premiers alike that they are planning to become part of the solution. There were contingent signs of real possibility—if some of the heads of state whom John Kerry called on to make Zoom speeches appeared a little strained, at least they appeared. (Scott Morrison, the Prime Minister of Australia, the most [carbon-emitting developed nation](#) per capita, struggled to make his technology work.) But, if you want real hope, the best place to look may be a little noted [report](#) from the

London-based think tank Carbon Tracker Initiative.

Titled “The Sky’s the Limit,” it begins by declaring that “solar and wind potential is far higher than that of fossil fuels and can meet global energy demand many times over.” Taken by itself, that’s not a very bold claim: scientists have long [noted](#) that the sun directs more energy to the Earth in an hour than humans use in a year. But, until very recently, it was too expensive to capture that power. That’s what has shifted—and so quickly and so dramatically that most of the world’s politicians are now living on a different planet than the one we actually inhabit. On the actual Earth, circa 2021, the report reads, “with current technology and in a subset of available locations we can capture at least 6,700 PWh p.a. [petawatt-hours per year] from solar and wind, which is more than 100 times global energy demand.” And this will not require covering the globe with solar arrays: “The land required for solar panels alone to provide all global energy is 450,000 km², 0.3% of the global land area of 149 million km². That is less than the land required for fossil fuels today, which in the US alone is 126,000 km², 1.3% of the country.” These are the kinds of numbers that reshape your understanding of the future.

We haven't yet fully grasped this potential because it's happened so fast. In 2015, zero per cent of solar's technical potential was economically viable—the small number of solar panels that existed at that time had to be heavily subsidized. But prices for solar energy have collapsed so fast over the past three years that sixty per cent of that potential is already economically viable. And, because costs continue to slide with every quarter, solar energy will be cheaper than fossil fuels almost everywhere on the planet by the decade's end. (It's a delicious historical irony that this evolution took place, entirely by coincidence, during the Administration of [Donald Trump](#), even as he [ranted](#) about how solar wasn't "strong enough" and was "very, very expensive.") The Carbon Tracker report, co-written by Kingsmill Bond, is full of fascinating points, including how renewable energy is the biggest gift of all for some of the poorest nations, including in Africa, where solar potential outweighs current energy use by a factor of more than a thousand. Only a few countries—Singapore, Japan, Korea, Taiwan, and a handful of European countries—are "stretched" in their ability to rely on renewables, because they both use a lot of energy and have little unoccupied land. In these terms, Germany is in the third-worst position, and the fact that

it is nonetheless one of the world's leaders in renewable energy should be a powerful signal: "If the Germans can find solutions, then so can everyone else." Clearly, those few nations are going to be importing some renewable energy—a more farsighted Australian Prime Minister would be figuring out how to send ships full of solar-generated hydrogen to Japan, not how to continue shipping coal to China. (And, in fact, the world's [largest](#) solar farm is set to end up in the Australian outback, connected by at least two thick undersea cables to Singapore.)

The numbers in the report are overwhelming—even if the analysts are too optimistic by half, we'll still be swimming in cheap solar energy. "We have established that technical and economic barriers have been crossed by falling costs. It follows that the main remaining barrier to change is the ability of incumbents to manipulate political forces to stop change," the report reads. Indeed. And the problem is that we need that change to happen right now, because the curves of damage from the climate crisis are as steep as the curves of falling solar prices. Given three or four decades, economics will clearly take care of the problem—the low price of solar power will keep

pushing us to replace liquid fuels with electricity generated from the sun, and, eventually, no one will have a gas boiler in the basement or an internal-combustion engine in the car. But, if the transition takes three or four decades, no one will have an ice cap in the Arctic, either, and everyone who lives near a coast will be figuring out where on earth to go.

That conundrum was illuminated on Friday, when [word came](#) that Governor Gavin Newsom, of California, who has been under pressure from an unrelenting activist campaign, agreed to ban new fracking permits in his state and end fossil-fuel production there altogether. This is a stunning achievement—for the planet and also for the California communities (and you can guess what kinds of communities they are) that currently have oil wells in their schoolyards and next to their hospitals. The [environmentalists](#) who banded together in the Last Chance Alliance should be incredibly proud; Newsom (who is now facing a recall election) deserves credit, as well, because this is precisely the step that his famously green predecessor, Jerry Brown, did not take. The fracking ban, though, only affects a small percentage of California's oil production, and won't take effect until 2024. The ban on oil production would not

happen until 2045, which in climate terms is the very distant future—a decade past the date when California will ban the sale of new gas-powered cars, which are the main use of oil in the state. It's clear why Newsom is slow-walking the changes. An executive secretary of a building-trades council immediately responded, “We will work to oppose this effort for our membership, their families, our schools, and our future. I have one question for Gavin Newsom: Are our jobs too dirty for you?”

Change is hard. The job of politicians is to make it easier for those affected, so that what must happen can happen—and within the time we've been allotted by physics. But that hard job is infinitely easier now that renewable energy is suddenly so cheap. The falling price puts the wind at our backs, as it were. It's the greatest gift we could have been given as a civilization, and we dare not waste it.

Passing the Mic

Audrea Lim is a Brooklyn-based journalist who has written for [this magazine](#), and also for *Harper's*, the *Times*, and *The Nation*. She is the editor of the book [“The World We Need: Stories and Lessons from](#)

[America's Unsung Environmental Movement](#),” which the New Press will publish next week. For the book, she surveyed America, finding the people who are powering the environmental movement now. (Our conversation has been edited for length.)

People may have an image in their mind of what an environmentalist looks like—but what does an environmentalist actually look like in 2021?

They don't look any one way! Far from the “white college-educated hippie” stereotype, environmentalists are Black and brown youth transforming an abandoned jail into a community farm; a former coal miner turned blogger and environmental advocate; Asian, Latinx, and indigenous people creating healthier and more equitable neighborhoods for their kids.

“Environmentalist” just describes any people defending the quality of their surroundings. This work can be local (protecting air or water from toxic emissions or lead paint in the walls) or global (protecting the glaciers and oceans that regulate local climates, from Brooklyn's streets to the Alaskan coast). The health, safety, and well-being of their communities hang in the balance, but many activists understand that these goals also require bigger changes, from better access to parks,

recreation, and community spaces to more localized food systems and good, clean jobs. I think that's why many environmentalists don't even call themselves "environmentalists." They are culture-makers, or community, housing, labor, and immigration activists who understand that environmental issues are ingrained in every part of society, and have simply made them a core element of their work.

What are the most important insights that came as, say, the climate movement morphed into the climate-justice movement?

That climate change will touch every community, demographic, and region, but is also on track to devastate poor and *BIPOC* communities the most. Many of these communities already struggle to meet basic needs—food, housing, education, physical and mental health—making them more vulnerable to sudden shocks, as we've seen through [the pandemic](#). Many of these communities also live near polluting developments (factories, refineries, waste incinerators) or on eroded and contaminated lands (mines, Superfund sites), or lack proper water and sewage infrastructure. These are added risks when the fires and floods arrive.

This uneven burden is part of America's legacy of environmental racism: a history of hazardous, polluting fossil-fuel developments being concentrated in communities of color—sometimes by design and often through neglect. It's the conjoined twin of residential segregation. But, in addressing this reality head on, the climate-justice movement also has another important insight to offer: everyone benefits when we empower these communities to build more equitable, resilient local economies, and transition away from the dirty industries long looming over them.

If you could pick one story that would really stick in people's minds and hearts, what would it be?

Eric Enos grew up on the Waianae Coast of Oahu, with little knowledge of his Native Hawaiian culture, including the central importance of taro, a root vegetable. (Native culture was suppressed under U.S. colonialism.) After graduating from college, in the seventies, he began teaching art to Native youth-gang members, taking them to dive in the ocean, protest the conversion of local fishing grounds into a resort, and hike in the back of the desiccated Waianae Valley. Here they found abandoned walls and terraces in the ground. These were clearly cultural sites, but what

were they?

Archeologists at the Bishop Museum found that the entire area was once under taro cultivation, as well as other traditional Hawaiian plants. The water had long ago been diverted toward colonial sugar plantations, but, with guidance from a state senator and local agencies, Enos, the youth, and community members built a new irrigation system. A group of multi-ethnic taro farmers, whom they had earlier helped defend against eviction from their lands, helped prepare the terraces for cultivation. And, with seeds donated from the Lyon Arboretum, they began growing native plants, learning about the land, their own culture, and taro in the process.

These were the beginnings of [Ka'ala Farm](#), a cultural learning center that connects troubled youth to the land. The story underscores how different institutions and people from different communities can collaborate toward a more equitable and resilient future.

Climate School

Two former Prime Ministers of Australia wrote [an insightful op-ed](#) about why their country, bathed in sun, continues to insist on building more coal mines and gas

wells. They note that “the main thing holding back Australia’s climate ambition is politics: a toxic coalition of the Murdoch press, the right wing of the Liberal and National parties, and vested interests in the fossil fuel sector.” Last week, the center-left Australian Labor Party, too, said that it will not stand against building more coal mines, and believes that the nation will be exporting the black rocks past 2050.

A wonderful leftover from Earth Day: Tia Nelson, the daughter of the late senator Gaylord Nelson, who launched the April day of action, in 1970, [wrote](#) about how her father helped welcome [Joe Biden](#) to the Senate, in 1973, comforting him after his wife and infant daughter had been killed in a car crash. Nelson said, of her father, “It would delight him to see that something he started so long ago, to shake the Washington establishment out of its lethargy, still playing such an important role these many years later. And he would be moved to see that the heartbroken young man he helped recover from despair is carrying his legacy forward.” It’s remarkable how long Biden has been around—one good effect is that he’s known some superb people.

A new [study](#) has found that climate change will cause

lakes in the Northern Hemisphere to stratify earlier in the year and over longer periods, and that “many of the ecosystem services that lakes provide, ranging from the delivery of drinking water and food to recreation, may be endangered by the projected change in stratification phenology during the twenty-first century, particularly in urbanized and agricultural regions where lakes are already eutrophic.”

A sign of what’s to come: a new renewable-energy [project](#) in Oregon marries solar power, wind turbines, and large-capacity battery storage. A spokesman for the local utility, Portland General Electric, said, “We feel pretty certain that this is what the future of renewable power looks like. It’s more diverse, and it’s more flexible.” A little further south and looking a little further into the future, the invaluable Sammy Roth, in his weekly “Boiling Point” newsletter, discusses the [possibility](#) of covering California’s irrigation canals with solar panels, to both generate clean energy and cut evaporation.

The Movement for Black Lives is launching a [Red Black and Green New Deal](#), with a virtual summit on May 11th. Its Web site states, “We are organizing to introduce a National Black Climate Agenda that

includes federal legislation to address the climate crisis by investing in Black communities and repairing past harms.”

A Yale team has developed a [podcast devoted](#) to climate policy and carbon pricing—the most recent episode is about why conservatives might be comfortable with the tactic. As Naomi Shimberg, a junior, explains, “Many conservatives echo the classic economic argument: pricing harm across the economy, rather than controlling it with direct forms of government regulation, is the most efficient way to cut pollution.”

Scoreboard

A new [report](#) from the World Meteorological Organization documented just how dismal 2020 was in climatic terms: it was one of the three warmest years on record, with more than eighty per cent of the world’s oceans subject to at least one “marine heat wave;” extensive flooding in the Greater Horn of Africa helped trigger a plague of locusts; and severe drought in South America caused three billion dollars in crop losses in Brazil alone.

A Baylor College of Medicine pediatrician and a

University of California, Davis, environmental economist published an [assessment](#), in *Scientific American*, of the actual health impact of climate change. They argue that the Biden Administration should set the “social cost” of carbon at a higher level, to reflect the damage that it’s doing to “every organ system in the human body.”

Water levels in Lake Powell and Lake Mead are [expected](#) to drop to record lows in the coming months, and reduced snowpacks and increased evaporation along the Colorado watershed may trigger the first-ever official water-shortage declaration in the area—and, hence, cuts in the water supply to Arizona and Nevada.

The student-body presidents of all the Ivy League schools signed a [joint call](#) for full fossil-fuel divestment last week. Meanwhile, divestment campaigners at Harvard produced a [series of comic sketches](#) as part of their ongoing efforts, and Christiana Figueres, the former head of the United Nations convention on climate change who spearheaded the push for the [Paris accord](#), [criticized](#) the university for its investments in fossil-fuel companies, warning that Harvard management is on the verge of “breaching its true fiduciary responsibility.”

The *Times* [obtained](#) a detailed summary of an upcoming United Nations scientific report, which makes clear that, in addition to cutting carbon emissions, controlling methane emissions is crucial in solving the climate crisis. Along with issuing calls for plugging leaks, the report makes the critical point, according to the *Times*, that “expanding the use of natural gas is incompatible with keeping global warming to 1.5 degrees Celsius, a goal of the international Paris Agreement.”

Warming Up

Bonnie Raitt and the Indigo Girls are among the artists who cut “[No More Pipeline Blues \(On this Land Where We Belong\)](#),” to raise money and awareness for the fight against Minnesota’s Line 3 pipeline. Listen for the voice of the first enrolled member of a Native American tribe to be named U.S. Poet Laureate, [Joy Harjo](#).