

The False Choice Between Economic Growth and Combatting Climate Change

By [Carolyn Kormann](#), February 4, 2019



Last year, the U.S.'s carbon-dioxide emissions increased by an estimated 3.4 per cent, the second-largest gain in the past two decades. Photograph by Fernando Molerés / Panos Pictures / Redux

In 1974, the economist William Nordhaus described the transition from a “cowboy economy” to a “spaceship economy.” In the former, he wrote, “we could afford to use our resources profligately,” and “the environment could be used as a sink without becoming fouled.” But, in the spaceship economy, “great attention must be paid to the sources of life and to the dumps where our refuse is piled.” He added, “Things which have traditionally been treated as free goods—air, water, quiet, natural beauty—must now be treated with the same care as other scarce goods.” Toward the end of his landmark paper, “Resources as a Constraint on Growth,” Nordhaus discussed the possible adverse effects of energy consumption, most notably the “greenhouse effect.” From a “rough calculation,” he found that the atmospheric concentration of carbon dioxide would increase by

more than forty per cent in the next sixty years. “Although this is below the fateful doubling of CO₂ concentration,” he wrote—scientists had already predicted that such a doubling could cause the polar ice caps to melt catastrophically—“it may well be too close for comfort.” He was prescient. We are now dangerously on track to hit his estimate, four hundred and eighty-seven parts per million, by 2030.

In the United States, after three years of decline, carbon-dioxide emissions increased by an estimated 3.4 per cent in 2018, according to a report released earlier this month by the Rhodium Group, a private climate-research firm. The authors blame two main factors: a particularly cold winter and fast economic growth. In the past two decades, the only greater annual gain in emissions was in 2010, when the

economy was rebounding from the Great Recession. Historically, emissions have aligned with the ebb and flow of the economy. In 2018, economic growth was driven by a higher demand for energy, trucking and air travel, and industrial activity. Companies were manufacturing more stuff, including steel, cement, and chemicals. The carbon intensity of the power sector, meanwhile, did not decline fast enough to offset all those demand increases. As has been common since Nordhaus's 1974 paper, the report seems to pit controlling climate change against a growing global economy.

The picture could have been much different. Nordhaus went on to publish a series of foundational studies on the economics of climate change. In 1992, he created an integrated economic and scientific model that could be used to determine the most efficient ways to cut greenhouse-gas emissions. His work—and that of many other [economists](#) who [followed](#) his lead—showed that a low tax on carbon, set to rise slowly over time, could be enough to keep emissions at reasonable levels, saving us from climate change at little, if any, cost. A “spaceship economy” could thrive if governments made sure that companies paid an appropriate price for the environmental damage they caused—what would come to be called the social cost of carbon. Companies that were most easily able to reduce their level of pollution would be incentivized to make the greatest reductions, and to invest in cheaper and better pollution-reduction systems. The dirtiest activities would be the most costly. The tax would promote innovations in new forms of power generation and, eventually, a widespread adoption of clean-energy technologies. The way to break the chain was to reimagine how we fuel the global economy. “It’s absolutely the case that emissions and growth can be decoupled,” Marshall Burke, an assistant professor in Stanford University’s Department of Earth System Science, told me. He pointed to [research](#) plotting how thirty-five countries, including the United States, did, in fact, experience economic growth in the past fifteen years while reducing their emissions—and not solely due to recessions. But the decline was not nearly enough. “The technology is available to have faster economic growth while reducing over-all emissions,” Trevor Houser, the head of Rhodium Group’s energy and climate team, and one of the authors of the report, told me. But the switch to nuclear and renewables needs to happen more rapidly. “It takes policy. It won’t happen through markets alone,” Houser said.

In October, Nordhaus and another economist, Paul Romer, won the Nobel Prize in Economic Sciences for, respectively, “integrating climate change” and “technological innovations” into “long-run macroeconomic analysis.” The timing of the announcement from Sweden was painfully ironic. Hours earlier, the United Nations had released its [dire report](#) warning that, if climate change’s worst impacts were to be avoided, the nations of the world had about a decade to revolutionize the energy economy. “The policies are lagging very, very far—miles, miles, miles behind the science and what needs to be done,” Nordhaus said after receiving the prize. “It’s hard to be optimistic . . . We’re actually going backward in the United States, with the disastrous policies of the Trump Administration.” The Obama Administration had, in its final years, partially incorporated concepts that Nordhaus had helped to develop, such as putting a price on the economic harm that results from every additional ton of carbon dioxide emitted into the atmosphere. The price was set at forty-five dollars a ton, and used in both regulatory cost-benefit analyses, which undergirded new fuel-efficiency standards, and the Clean Power Plan, which would have propelled a faster retirement of coal-powered electric plants and a broader transition to renewables. Just as such policies were “beginning to bear fruit,” Houser said, “that whole framework was dismantled.” Under [Trump](#), the social cost of a ton of carbon is as little as one dollar.

As emissions keep growing, and climate change advances, there is less and less time to make the necessary cuts. “The pace we needed to decline was already much larger than what was happening,” Houser told me. “Now we have to go even faster to meet our Paris Agreement target by 2025”—on average, a 2.6-per-cent reduction in annual energy-related carbon-dioxide emissions in the next seven years. “That is considerably faster than at any point in history,” he said. And it will need to go even faster if declines in other greenhouse gases, including methane and hydrofluorocarbons—which endure in the atmosphere for much shorter amounts of time than carbon dioxide but are much more potent—do not keep pace.

A modest carbon tax of the sort Nordhaus proposed decades ago—one that was then palatable to conservatives—will therefore no longer bring us anywhere near the Paris Agreement targets. But it’s one of many weapons in the arsenal that policymakers

need to employ. “The real challenge is finding ways to reduce emissions and maintain economic growth on the timeline demanded by the nature of climate change,” Kenneth Gillingham, an associate professor of economics at Yale University, told me. But, as much as the costs of climate mitigation will undoubtedly increase, the question is whether the benefits of mitigation exceed those costs. “It’s a straw man—and terrible economics—to just point out the costs while ignoring the benefits,” Burke said. He and two co-authors published a paper in *Nature* last May that shows that the economic benefits of mitigation are going to be much larger than previously believed. Cooler temperatures would help maintain and grow productivity, and reducing carbon emissions means reducing air pollution—specifically particulate matter, or soot—which brings immediate health benefits. They found that keeping global warming to one and a half degrees Celsius (which is nearly impossible at this point), as opposed to two degrees Celsius, would potentially save more than twenty trillion dollars around the world by the end of the century, and significantly reduce global inequality. Beyond two degrees, they wrote, “we find considerably greater reductions in global economic output.” If nations met their commitments under the Paris Agreement, the world would still see the average global temperature rise by two and a half to three degrees Celsius, which, according to Burke’s paper, would result in a fifteen-to-twenty-five-percent reduction in per capita output by 2100. “To just complain about the costs of this transition and ignore the benefits, as is common in the discussion from this Administration,” Burke said, “is some pretty poor cost-benefit analysis from an Administration that prides itself on economic savvy.”

As a small but growing coalition of congressional Democrats, led by Representative [Alexandria Ocasio-Cortez](#), have outlined as part of their Green New Deal, transforming the energy sector—and, really, the entire economy, in a just and more equitable way—will require some sort of carbon tax (preferably a “fee and dividend” approach, which distributes tax

revenues as rebates directly to citizens), and also new regulations and huge investments. “We can decarbonize the electric sector at a fairly low cost,” Gillingham told me. “That’s where some of the cheapest emissions reductions are to be found.” Extensive government subsidies could hasten the spread of renewables—specifically, solar, wind, and batteries—and offset any rise in emissions elsewhere. As Gillingham said, “We might want to be careful about fighting climate change by preventing people from staying warm in the winter. If a winter is really cold enough, emissions increases are to be expected.” Still, there are ways to reduce the use of fossil fuels in heating; utilities, for instance, can create incentive programs so that homeowners have a motivation to replace their boilers with electric heat pumps.

Houser told me that total emissions are expected to remain flat in 2019. Economists and other market observers predict that over-all economic growth will be slower, and the full impact of recent cuts to coal-plant capacity (2018 was a near-record year) has not yet been recorded. Still, in the absence of major policy changes—which is mostly dependent on a new President who makes climate policy a top and urgent priority—there is almost no chance that the U.S. will achieve the average emissions cuts necessary to meet the Paris targets by 2025. Houser told me that our only hope would be extremely favorable market and technological conditions. “If, over the next couple of years, no more nuclear power plants retired”—more than a dozen are scheduled to retire in the next seven years—“wind, solar, and battery prices fall far faster than the currently most optimistic projections estimate, it is possible that we could come pretty close to meeting the Paris Agreement targets,” he said. States, cities, and private organizations would also have to pick up a tremendous amount of slack from Washington. Even warmer winters would help. “Everything would really have to light up in the right direction,” Houser said. “It’s also, of course, possible that, if there was a massive global recession, we’d see a significant decline, too. But that’s not the reason we want emissions to decline.”

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