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# Are We at a Climate Tipping Point?

PAMELA MCELWEE

In 2019, climate change was everywhere. From massive, deadly wildfires in California and Australia to the millions of students who went on strike around the globe, the climate seemed to finally be getting the attention needed to fix our looming problems. Yet the year-end United Nations climate change conference in Madrid failed to make any progress, and the deadlock was exacerbated in part by the Trump administration, which is withdrawing the United States from the Paris Agreement.

Scientific studies issued in recent months have continued to stress the urgency of the problem. One distressing report emphasized that we are beginning to see signs of activation of climate “tipping points,” when the rate of change of a system accelerates rapidly, often in unpredictable and irreversible ways. What kinds of climactic and social tipping points might we be facing in 2020, and where is the world likely to go from here?

## THE POLITICAL PICTURE

The Madrid meeting of the Conference of the Parties (COP) to the UN Climate Convention—moved to Spain at the last minute after antigovernment mass protests forced the original host country, Chile, to cancel—was by all accounts a failure, even after the longest marathon session in the treaty’s 25-year history. It was supposed to be the year when countries began to ramp up initial pledges that they made in 2015, when the Paris Agreement was originally signed, to move toward more aggressive climate action in 2020 and beyond. Instead, the US withdrawal from the agreement seems to have triggered a rush for the door by other recalcitrant parties, including Saudi Arabia, Brazil, and Australia, each with their own political agendas at play.

Meanwhile, China and India, which are both generating rapidly growing carbon emissions, balked at meeting or exceeding their 2020 targets for reducing those growth rates, arguing that fi-

nancial support for developing countries that was agreed to in Paris four years ago has not been forthcoming. The positions of these two countries have been hardened by economic downturns in the past year that have made lofty climate pledges more difficult to put into practice.

In addition to disappointing hopes that it would produce more ambitious pledges by individual countries, the Madrid COP failed to tackle two cross-cutting issues that fall under Article 6 of the Paris Agreement. The first is how to compensate countries already experiencing negative climate impacts, known as “loss and damage.” In 2013, countries agreed to address this through the Warsaw International Mechanism (WIM), a working group that meets regularly to hash out solutions and bring proposals to the COP. But discussions have faltered over putting specific numbers on damages, persuading the reluctant richer countries to commit to providing large amounts of additional funding to the developing world, and considering whether adopting rules proposed by the WIM would expose countries to legal liabilities. Another stumbling block in Madrid was the US insistence that WIM decisions apply only to countries adhering to the Paris Agreement, not to those that have withdrawn, as the Trump administration plans to do by the end of 2020.

The second major issue in Madrid was deciding whether and how countries can trade on an international carbon market. Australia is pushing for old emissions credits from the Kyoto Protocol, a precursor to Paris, to be deemed tradable, but many other countries fear that move would water down more ambitious emissions reductions. Activists and environmental groups excoriated delegates for failing to approve a new market mechanism, but there is reason to proceed cautiously. The Kyoto trading system was mostly a disappointment, and many parties, especially indigenous communities, have raised concerns about the justice implications of emissions “offsets” (tradable credits that fund projects to reduce emissions to make up for continued emissions in another place) that may dump the costs of climate action onto disadvan-

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taged areas. These issues have also been troubling California's nascent emissions trading scheme. It may be wise to allow more local experimentation with different models of carbon trading, particularly for buying offsets in poorer countries, before expanding it on the international scale.

## THE SCIENTIFIC PICTURE

The failures in Madrid stand in stark contrast to the increasingly dire warnings issued by scientific bodies. The Intergovernmental Panel on Climate Change has released three special reports since 2018: one on oceans and the cryosphere (the planet's frozen parts); another on climate and land, for which I was one of nearly 100 authors; and the "1.5 degree report," which identified actions that would need to be taken to limit global warming and avoid the worst impacts. The latter report received unprecedented attention, and although this has been gratifying for many climate scientists, there is concern that its findings have been overly simplified into the motto, "We only have 12 years left," which is both inaccurate and potentially demoralizing enough to thwart hopes of spurring more action.

The pace of political change continues to be slow even as scientists are increasingly confident of being able to determine with specificity how extreme weather events like storms and floods are driven by climate change, a field known as "detection and attribution." A recent major advance in climate science has been the rollout of improved climate models (known as the Coupled Model Intercomparison Project)—global simulations, run by multiple institutions, that can be compared. Although there is some variation among them, their findings increasingly indicate that climate sensitivity (how quickly the climate system responds to increasing levels of greenhouse gases) is higher than previously predicted.

This means that trying to meet the Paris target of holding the global temperature increase to 1.5 degrees Celsius above preindustrial levels is even more urgent. Failure to do so may activate climate tipping points even at lower temperature thresholds, including melting of some Antarctic ice sheets or dieback of the Amazon (a region-wide loss of rainforests that would result in a permanent shift to a lower-biomass, drought-prone, and degraded system), with potentially devastating and irreversible consequences.

## REASONS TO BE OPTIMISTIC

Nonetheless, there are reasons to be optimistic about progress that was made in 2019. Climate change has never been higher on the political agenda, particularly in the United States. Youth activism captured attention in a dramatic way, from the Sunrise Movement in the United States to Extinction Rebellion protesters in Britain, the Fridays for Future school strikes by students in more than 150 countries, and even the disruption of the annual Harvard-Yale football game by protesters urging the two universities to divest their endowments from fossil fuels. These youth—typified by Greta Thunberg, the 16-year-old Swedish activist named *Time* magazine's Person of the Year, but including many other young people of color and from indigenous communities—have helped set a new agenda. We may well be seeing social tipping points in public perception of the problem.

In US politics, there is a new focus on climate within the Democratic Party: all the major presidential candidates have released ambitious climate

plans, and the party's congressional leadership has given serious attention to a proposal for a Green New Deal that would reduce the country's net carbon emissions to zero (known as decarbonization) by 2050. All the parties in Britain's December

election also adopted a decarbonization agenda, even the winning Conservatives—and since Glasgow is hosting the next COP, Prime Minister Boris Johnson will help shape the climate agenda in 2020. Businesses have been taking climate seriously, too: more than a hundred large companies, including big players like Walmart and McDonald's, have pledged to meet challenging carbon reduction targets.

All of this action, from individual to global levels, is starting to bend the greenhouse gas emissions curve ever so slightly downward. Before the Paris Agreement, the world was on track for a temperature increase considerably higher than 4 degrees Celsius, but now existing pledges may keep us to 3 degrees, or even less—though still not the 1.5 degree target we need to aim for. Some countries have been able to grow their economies while also reducing net carbon emissions, a process known as "decoupling" that will be necessary across the board.

Part of this success has come from technological breakthroughs and lower costs for renewable

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*Many countries are actively sabotaging decarbonization goals.*

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and other energy sources. For example, like an increasing number of consumers, my family bought a fully electric vehicle for the first time this year. This was enabled by the rapid expansion of charging stations in our home state of New Jersey, and the increasing range and lower prices of new vehicles from many manufacturers. Much of this progress can be attributed to early investments in the first years of the Obama administration, when economic stimulus funding in the post-financial crisis Recovery Act was channeled to clean energy and battery companies. The results show the importance of government support for research and development in driving innovation.

### REASONS TO BE PESSIMISTIC

These reasons for optimism need to be tempered with realism about how difficult the path ahead will be. There are a number of factors impeding rapid climate action to avoid the worst impacts.

First of all, while the emissions curve is bending slowly, faster reductions are needed to limit the world's average temperature increase to 1.5 degrees. The UN Emissions Gap Report 2019, released just before the Madrid COP, identifies gaps between where we need to be and where we are. It shows that global emissions need to fall 7.6 percent every year from 2020 onward to have any hope of limiting warming to acceptable levels. That scale of change will be nearly impossible to achieve without radical, rapid steps, and no country has gotten to zero net emissions yet. Given the slow pace of change, we also will likely need new negative emissions technologies that can remove existing carbon dioxide from the atmosphere—which raises moral and economic dilemmas, such as trade-offs between bioenergy and food production.

Many countries are not just failing to meet decarbonization goals but are actively sabotaging them by continuing to build coal plants and drill for oil. All the electric vehicles in the world will not make a difference if they plug into a grid run on carbon-intensive coal. The recent public offering of shares in Saudi Aramco, the world's largest oil company, showed that the financial system still values fossil fuels, even as climate scientists warn that we need to keep most of the remaining oil in the ground. Doing so would leave the world's largest energy companies with stranded assets, but there is no sign that they are taking that risk seriously. Instead, much attention has been focused on individual actions, such

as whether climate activists should feel guilty about flying or not, rather than on the systemic change that is needed—from a complete restructuring of energy production and consumption to massive investments in green infrastructure and improved agriculture and land management.

Even more worrisome, public sentiment against climate policies, particularly higher fuel costs, erupted in France, Chile, and elsewhere in 2019. The French *gilets jaunes* (yellow vests) protests were linked to concerns about the inequitable impacts of carbon taxes on poorer and rural families. Populist movements elsewhere have brought to power leaders who care little for tackling climate change. For example, wildfires in Brazil have been seemingly welcomed by President Jair Bolsonaro as a means of expanding agribusiness further into the Amazon, including indigenous territories—a reward for political backers of the president. The recent political turmoil in Bolivia—President Evo Morales went into exile in November after a disputed election—seems likely to end that country's role as a global voice for climate justice.

We also got frightening glimpses in 2019 of what a failure to stop climate change will bring, particularly the terrible inequalities that weather extremes impose. In California, as wildfires raged, celebrities hired private firefighters to protect their multimillion-dollar homes while others lost everything, and some wealthy homeowners evacuated fire zones while housekeepers showed up to work in the empty mansions their employers had left behind. A massive heatwave and drought left millions of poor people in New Delhi scrambling to find water and shade (criminal gangs took over water supplies)—though better-off households still had ample access to both. The political implications of these unequal climate change impacts make the populism sweeping the world appear even more ominous.

The world community stands on a precipice in 2020. Will the differences in how climate impacts are felt drive more wedges between richer and poorer countries, preventing action to strengthen the global response? Or will shared experiences of the destructiveness of climate extremes finally bring parties to the table in Glasgow later this year to recommit to the Paris Agreement in new and ambitious ways? The tipping points we face are very real—but whether or not we fall, and in which direction, is still very much up to all of us. ■