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Is This the Perfect Time, or the Worst Time, to Bend the Climate Change Curve?

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IS THIS THE PERFECT TIME, OR THE WORST TIME, TO BEND THE CLIMATE CHANGE CURVE?

Our world's climate is changing. The related impacts affect human health through a variety of pathways, from exposure to extreme weather and heat waves to worsening air pollution, reduced nutritional value of foods and the spread of insect-borne disease. At the same time, we are living through the greatest public health crisis of our time.

By the end of April, more than 3 million people were infected with the novel coronavirus and the coronavirus disease (COVID-19) had claimed the lives of over 211,000 people. Countries, states, and communities around the world are rightly focused on the urgent task of minimizing the impacts of the pandemic and thinking about how to plan for an economic recovery—but what are the implications for efforts to address the climate change crisis?

In March, a 5.3-magnitude earthquake destroyed buildings and cut off electricity in Zagreb, Croatia just as the novel coronavirus started ramping up in the region. In the U.S., a devastating weather system with tornadoes, high winds, and intense rain tore through six southern states in April, killing over 30 people, and leaving dozens more seeking shelter while also trying to comply with social distancing rules. As temperatures reach record highs, cities across the southwest are scrambling to help people stay cool while also preventing the spread of the virus.

These are stark reminders that the impacts of climate change will not be eclipsed by the rise of another global challenge. Rather, climate change will act as a threat multiplier, making public health emergencies deadlier. In a virtual panel hosted by the NYC Purdue Alumni Club on April 25th, the Purdue Climate Change Research Center brought together a group of experts for a web-based conversation on the interactions between climate change and health in the context of the COVID-19 pandemic. This article explores six key takeaways from the discussion.

1 THE EFFECTS OF CLIMATE CHANGE ON PLANTS WILL IMPACT HUMAN HEALTH.

Seasonal allergies, and the accompanying symptoms that range from an annoying runny nose to life-threatening asthma, affect between 10-30% of the global population. Recent work led by Lewis Ziska, professor of environmental health sciences at Columbia University, has shown that climate change is making allergy season worse in three specific ways. In addition to increasing the duration of the pollen season, rising temperatures, along with higher carbon dioxide (CO_2) levels, heighten pollen production as well as the allergenicity of pollen.

These climate-induced changes not only contribute to increased incidence of asthma and hay fever, they can also affect a person's susceptibility to respiratory viruses such as the novel coronavirus. Ziska's study analyzed 20-25 years of pollen data from 17 different sites across the northern hemisphere, and clearly illustrates the human health effects of climate change.[1]

Plant-mediated health impacts of climate change extend beyond seasonal allergies. How and where we grow food, its nutritional value, and even the ways it gets to our tables, are all affected by climate change, whether it's through rising temperatures, extreme weather events, or CO_2 effects. The pandemic has focused some attention on the vulnerabilities embedded within our food system, said Ziska, "I'm hoping that if nothing else we learn how fragile the food system is... and do what we can to strengthen it, from growing the food in the fields, to transporting it, to storing it, to consuming it."

2 KEEP TALKING ABOUT CLIMATE CHANGE, BUT DO SO EFFECTIVELY.

A recent Pew Research Center study[2] shows that the ranking of climate change on the list of Americans' political priorities has steadily climbed over the last ten years. Even as concern about the spread of the novel coronavirus was rising, in March 2020, six-in-ten Americans said global climate change is a major threat to the country (compare to 44% in 2009).

Under the best of circumstances, however, climate change communication can be fraught with challenges, from the complexity of the science, to the scale of the problem, and what should and could been done about it. Now, with the COVID-19 pandemic disrupting so many lives and livelihoods, Purdue professor of agricultural sciences education and communication Linda Pfeiffer cautioned, "I think it's really important if we're going to be messaging about climate change now, that we prioritize being human first of all—so your messaging has to be sensitive to what your audiences are going through and compassionate."

Pfeiffer offered 4 recommendations to help guide climate change messaging. First, be personally relevant by focusing on how climate change is important in people's day-to-day lives. Ziska also emphasized the importance of making it personally relevant, "If you make it real. If you say, climate change can affect your health because the nutrition of your food is going to be affected—people pay attention to that."

The changes we are observing today as a result of measures to stop the spread of COVID-19 offer a real-time opportunity to show the relevance of climate change to people's lives, said Purdue professor of political science Manjana Milkoreit, "We like the cleaner air, we like that it's much more quiet and we can hear all the birds. We like that the water is cleaner, and we might actually take this as a moment to reflect on the fact that this is desirable and we might want to extend these effects."

Second, be aware of what your audience values—what they believe and who they trust. Bob Inglis, executive director of republicEn and former U.S. congressman, noted the failure to do so in the past has hindered progress, "What we've been dealing with, I think, is a sort of heart rejection of action on climate change, because it seems to not be our tribe, not our story, not our song."

Third, individuals tend to conform to the behaviors of those around them, so use these social norms to guide your conversation. And, finally, efficacy; tailor your message to show that the problem is solvable and that they are able to engage in the relevant action needed to address the problem, "If we tell people who live in rural areas get rid of your car, but there's no mass transit in rural America, it's not going to happen," explained Pfeiffer.

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3 THE PANDEMIC RESPONSE IS DECREASING GLOBAL EMISSIONS—FOR NOW.

COVID-19 has brought most of the world to an abrupt halt. This has resulted in significant implications for climate change, from reductions in greenhouse gas emissions to cancellation of key global climate negotiations, and impacts on climate activism movements. Over the coming months and years, the world will emerge from the restrictions brought on by the pandemic with either a greater or diminished chance of meeting global climate change goals and implementing a clean energy future. "We stand at a fork in the road, and the one we choose, will put us on a path toward two very different kinds of futures," said Milkoreit.

The lockdowns, border closures, and social distancing policies enacted in countries around the world has resulted in a dramatic, if short-term, decline in emissions. With people driving and flying less, storefronts and offices closed, and factories shut down, energy demand has plummeted and is expected to result in a 5-6% drop in global emissions this year. For context, the Intergovernmental Panel on Climate Change's 2018 *Special Report on Global Warming* estimated what it would take to hold global temperature rise to 1.5 degrees Celsius—an annual decrease in emissions of 7.6% every year. That is, a progressive decline, by an additional 7-8% every year, for the next decade.

It remains to be seen how the pandemic will affect emissions in the longer term, but, this forced economic slowdown is neither desirable, nor sustainable. Deep emissions reductions and broad transformations across all sectors of the global economy are needed, and that kind of durable change can only be reached with significant policy interventions. Will countries use the crisis to decarbonize or will the economic stress from the pandemic response see governments turning to business as usual?

"The lesson here might be, let's not waste a good crisis, (let's) figure out how to use it to actually put the things in place that are very much needed," said Milkoreit. How governments ultimately choose to stimulate their economies will be a crucial factor that will define the global emissions trajectory, and Milkoreit sees this as an opportunity for transformational change.

4 FACTS ARE REAL, AND SCIENTISTS ARE A TRUSTED RESOURCE.

As countries and communities around the world try to slow the spread of the novel coronavirus the need for trusted, science-based sources of information and consistent messaging are vital to developing public health responses. The same is true for climate change—trusted, science-based information is critical to addressing climate change. But in both instances, false claims, exaggerations, and half-truths are rampant, leaving the public confused and wondering what and who they should believe.

The decisions we make during the pandemic will have long-term consequences that will define the global emissions trajectory—will we move toward a clean energy future?

We know that scientists are trusted communicators. "Over the last 30 years, the National Science Board has been tracking who the public respects and listens to. Number one has historically been the military; number two is academic scientists, and particularly those that don't have any other affiliation," said Pfeiffer.

But only 1 in 200 Americans say they know a scientist, and this leaves plenty of room for misrepresentation. **"**They're against us. They write all these things about climate science being real so they can get more grant money. All that talk radio narrative made them The Other," said Inglis in describing commonly expressed views from his former constituency.

People need reliable and evidence-based guidance to help them understand the risks as they go about their lives. With the pandemic, Inglis sees an opportunity to demonstrate the important role scientists play in keeping us safe, "The scientists that are working feverishly in labs right now to find a vaccine for us. These are our heroes. These are people who care for us so perhaps there's a way talking about how the climate scientists are also for us, not against us."

5 CAPABLE GOVERNMENT AND COMPETENT GOVERNANCE ARE IMPORTANT.

In climate policy, there are many opportunities for governments at every level to make an impact, but as with the coronavirus pandemic, the absence of national and global leadership and cooperation can derail progress.

"There is a risk of us going retrograde here with another decade of disastrous disputation," said Inglis. He noted, however, there are several compelling reasons to think otherwise, including the increasingly visible impacts of climate change across the country. "In 2018 republicans

lost control of the House and I think it fully dawned on people like Kevin McCarthy, the House Republican leader, that you can't win that majority back with a retro position on climate change."

Milkoreit highlighted the importance of U.S. elections, and more specifically, presidential elections in defining the future of global climate negotiations, "There is another wild card that I think the effects of the pandemic might be important to think about and that's the presidential election. I teach all my students how important in multiple ways US presidential elections are for global climate governance. The effects that you as voters have on the future of the planet through electing a president every four years is significant, given the size of the country, the size of its economy, and its weight in international politics of climate change. There might be changes in the cards due to the pandemic."

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THERE ARE REASONS FOR OPTIMISM.

Over the last decade, momentum has been building among leaders, innovators, scientists and the public for action on climate change. The good news is that there are many pathways to reducing emissions, and where there is a will, there is a way.

For instance, at the current rate of renewable energy adoption, the world is set to tip the balance in favor of clean energy, "I am really excited about the rate at which solar energy is developing and the rate at which wind energy technology is developing. Now the cheapest electricity you can generate is from solar and wind and that's exactly what we need to happen," said Jeff Dukes, director of the Purdue Climate Change Research Center and professor of forestry and natural resources at Purdue University. The challenge with these technologies is that they are intermittent sources of energy, but there's good news on that front as well with battery technologies improving and costs going down.

For Milkoreit, the strongest source of hope, especially over the last year has been the youth movement inspired by Swedish student Greta Thunberg who in 2018 at the age of 15 walked out of school to protest the government's inaction on climate change. This solo act inspired the activism of millions of others around the world, "Finally folks are having the right kinds of emotional responses to what's going on. This is about their future. Finally, somebody is expressing anger—moral outrage— and the lack of an appropriate response to the scale of the problem." She continued, "We do have the energy and the ideas and the passion distributed around the world and that could be mobilized really quickly to create change that we need."

Ziska drew attention to the topic of food waste. "Looking at the food waste and all of the means by which it can be reduced and at the same time, increase food supply and food security and nutrition, I think is very important," said Ziska. Globally, 30% of the food produced is wasted every year. In the U.S. that number is 40%. Estimates of the emissions from this waste show that if we stop wasting food, we could eliminate as much as 8% of our total emissions.[3] -

THIS MAY BE THE RIGHT TIME TO BEND THE CURVE

The steep drop in greenhouse gas emissions that is expected in 2020 is a result of a temporary drop in economic activity related to COVID-19. However, the fast rate of technological development in the energy sector, combined with growing climate activism around the world, could mean that greenhouse gas emissions never return to the levels seen in 2019.

While 2020 will undoubtedly be remembered for the disastrous pandemic, it may also quietly mark a year of technological, societal, and political transitions that pave the way for declining emissions for decades to come. These changes would also bring cleaner air and healthier populations around the world. The 2020 U.S. elections will strongly influence this trajectory, and public discussions about climate change, like the Purdue event on April 25th, could help to shape the political discourse.

— Rose Filley and Jeff Dukes.

[1]Ziska, L. H., L. Makra, S. K. Harry, N. Bruffaerts, M. Hendrickx, F. Coates, A. Saarto, M. Thibaudon, G. Oliver, A. Damialis, et al. 2019. Temperature-related changes in airborne allergenic pollen abundance and seasonality across the northern hemisphere: A retrospective data analysis. Lancet Planetary Health 3 (3): 124-131.

[2]Funk, C. and B. Kennedy (2020) How Americans see climate change and the environment in 7 charts. Pew Research Center. https://www.pewresearch.org/fact-tank/2020/04/21/how-americans-see-climate-change-and-the-environment-in-7-charts/

[3]Food and Agriculture Organization (2017). Save food for a better climate: converting the food loss and waste challenge into climate action. Rome, FAO. http://www.fao.org/3/a-i8000e.pdf