

“Never let a good crisis go to waste”: The many intersections of the COVID-19 pandemic and climate change

Editor's note: Climate change is the greatest threat to the health of marine ecosystems worldwide, and the COVID-19 pandemic has the potential to alter the world's climate change trajectory, for better or for worse. Numerous, diverse relationships between the two crises have arisen. These relationships have proven enormously changeable over the course of the pandemic and by location, and the net impact of the pandemic on climate change and society remains to be seen. This article briefly characterizes a number of the diverse intersections and parallels between the two crises.

Do you have updated information or a new or different perspective? We would love to get your thoughts and additions. You can add them to the Comments section below or send to The Skimmer editor at skimmer@octogroup.org.

#1: Greenhouse gas emissions went down in 2020, but not by as much as initially expected, not for all that long, and not for the “right” reasons. Without systemic changes, the COVID-19 pandemic is unlikely to have a significant long-term impact on global emission trajectories.

- COVID-19 pandemic restrictions on travel and economic activity led to the largest reduction in global greenhouse gas emissions in history. Compared to a year earlier, carbon emissions were down 15% in April 2020 when restrictions were at their peak and nearly 9% in the first half of 2020. Fewer cars on the road, reduced factory production, and a halt to construction activities also led to significant declines in air pollution in cities around the world
- As restrictions on travel and economic activity eased, greenhouse gas emissions rose, and in December 2020, they exceeded levels from the year before

From the experts:

- Fatih Birol of the International Energy Agency: “The rebound in global carbon emissions toward the end of last year is a stark warning that not enough is being done to accelerate clean energy transitions worldwide.”
- Sarah Ladislaw of the Energy Security and Climate Change Program at the Center for Strategic and International Studies: “Like all major crises, there is a chance to turn this temporary downturn in emissions to a more permanent one by making investments and changing policy, but it won't just happen on its own. Nothing about the economic hardship coming from COVID-19 points the way forward on climate change. Tackling climate change requires a systematic and complete overhaul of our energy system.”
- Ethan Zindler of BloombergNef: “The amount of pain we've had to go through for a relatively modest drop shows that there needs to be more smart policy and smart thinking about emissions. The emphasis has to be not on how to reduce demand, but how to make supply more green.”
- Kevin Book of ClearView Energy Partners: “This is the way it feels to cut emissions in the worst way possible. [Cutting emissions through a worldwide pandemic] still isn't enough to change the atmospheric stock of carbon.”

#2: The massive economic stimulus spending going on right now by nations around the world will be “make or break” for addressing climate change and is unfortunately trending toward carbon-intensive measures.

- The equivalent of more than US\$14.9 trillion worldwide has been committed to economic recovery from the COVID-19 pandemic. To get an idea how much this will matter to climate change:
 - Experts estimate that this is more than twice what is needed to achieve net-zero emissions in the next 30 years
 - One study estimates that directing just 10% of pandemic stimulus funds towards reducing dependence on fossil fuels would be enough to reach the goals of the Paris Agreement.
 - Another study estimates that carbon-intensive stimulus packages (e.g., supporting fossil fuel production and use) would increase global emissions from 2020 to 2024 by over 16%, while stimulus packages supporting low-carbon activities (e.g., clean energy) would reduce global emissions by 5%.
 - Yet another study estimates that if post-pandemic recovery policies increase investment in fossil fuels by 1% of global GDP, it would raise emissions by 10% in the next 10 years (relative to current policies) and eliminate any chance of limiting global warming to 1.5°C.
- Stimulus packages could include measure that reduce greenhouse gas emissions and move countries towards carbon neutrality and increased resilience to climate change. Such measures include:
 - Investing in renewable solar and wind energy generation and use
 - Retrofitting older homes for energy efficiency and non-fossil fuel heating and cooling
 - Upgrading to smart grid technology that reduces electricity demand, particularly at peak periods
 - Providing incentives for the manufacture and purchase of electric vehicles as well as infrastructure for charging electric vehicle
 - Supporting initiatives to reduce shipping and airline emissions
 - Supporting public transportation
 - Investing in sustainable agriculture
 - Installing broadband infrastructure in rural areas to enable more widespread telecommuting
 - Funding green infrastructure and ecosystem recovery projects
 - Climate-proofing critical infrastructure such as water supplies and energy networks
 - Redesigning cities to encourage walking and biking; and
 - Supporting carbon capture and storage.
- The EU and member countries – Germany and France in particular – have focused stimulus money on the types of measures listed above, whereas other countries – such as Russia, Turkey, and Saudi Arabia – have not. Other countries – such as South Korea, China, India, and the US – have included both low-carbon and carbon-intensive elements in their stimulus packages, with the carbon-intensive elements dominating. A February 2021 analysis found that US\$4.6 trillion in global stimulus funds are in environmentally relevant sectors such as energy, transport, waste, agriculture, and industry. Of this \$4.6 trillion, only \$1.8 trillion of this went to activities that would cut greenhouse gas emissions or pollution while \$2.8 trillion went to activities that would increase emissions or pollution
 - For example, as of November 2020, G20 governments had committed more stimulus money to oil and gas production and consumption than clean alternatives. In the US, oil and gas companies received nearly \$2 billion dollars in tax benefits from the first stimulus package passed in March 2020, while the renewable energy industry received relatively little support.
 - For developing countries reliant on coal and unable to borrow money cheaply, reviving economic growth may take precedence over investment in low-carbon energy and result in a “brown recovery” with increased reliance on coal

From the experts:

- Kathryn Harrison of the University of British Columbia “This is a once-in-a-lifetime moment where governments are going to spend very large amounts of money. Let’s not blow it by investing in an economy that we know we need to leave behind.”

#3: Stimulus spending aside, the COVID-19 pandemic may have helped speed the shift in global energy production away from fossil fuels and towards

renewables.

- In 2020, global energy demand dropped roughly 4%, but energy-related carbon emissions fell even more –by roughly 6%. Carbon emissions decreased more than overall demand because of a shift to lower emissions fuels. For starters, fossil fuel-based power plants, while cheaper to build than renewable energy power sources, are more expensive to run and were taken offline first when demand dropped. Second, decreased energy demand made natural gas so cheap that coal power became relatively more expensive, shrinking its share of electricity production. And decreased transport (driving, trucking, flying) led to an 8% drop in demand for oil.
- These changes meant that in 2020 solar and wind energy reached their highest-ever annual share of the global energy mix, increasing by more than 1% to over 20%. This shift towards renewables was expected in the coming decade as fossil fuels become less appealing to investors but the COVID-19 pandemic appears to have sped them up.
 - Furthermore, despite severe disruptions (supply chain and economic) early in the pandemic, renewable energy capacity increased by roughly 4% in 2020. Substantially more growth in renewables is expected in 2021 as more projects come online and government investments increase.
 - Drops in air pollution during pandemic lockdowns boosted power generation by solar photovoltaic cells. Solar output in Delhi, India went up by over 8%, and reduced air pollution boosted solar output in Germany, Spain, and the United Kingdom to new records.

From the experts:

- Fatih Birol of the International Energy Agency: “[The sharp decrease in oil demand has] fast forwarded some power systems 10 years into the future suddenly giving them levels of wind and solar power that they wouldn’t have had otherwise without another decade of investment.”
- Valentina Kretzschmar of Wood Mackenzie: “The oil and gas sector is already a very much unloved sector by investors and in this kind of oil price environment, it becomes low return, high risk and high carbon. It is not a very attractive proposition.”
- Christoph Bertram of the Potsdam Institute for Climate Research: “The events of 2020 could accelerate transformation trends in the power sector, and thus enable faster emission reductions in that sector than previously anticipated.”

#4: The COVID-19 pandemic gave governments an excuse to ease environmental safeguards, potentially offsetting some of the reductions in greenhouse gas emissions from reduced travel and commercial/industrial activity.

- Decreased enforcement led to increased rates of illegal mining and logging in the Amazon, further jeopardizing one of the world’s greatest carbon sinks.
- China and the US rolled back environmental protections. In the US, rollbacks ranging from lowering car fuel efficiency standards to rejecting stricter air quality standards to relaxing enforcement of natural gas pipeline safety regulations to waiving environmental review of infrastructure projects. One of the most significant rollbacks came in late March 2020 when the US Environmental Protection Agency, under the administration of former President Trump, waived requirements for industry to monitor and report pollution if noncompliance “results from the COVID-19 pandemic”

From the experts:

- Gina McCarthy of the Natural Resources Defense Council and former US EPA administrator: “This is an open license to pollute. Plain and simple. The administration should be giving its all toward making our country healthier right now. Instead, it is taking advantage of an unprecedented public health crisis to do favors for polluters that threaten public health. We can all appreciate the need for additional caution and flexibility in a time of crisis, but this brazen directive is an abdication of the EPA's responsibility to protect our health.”

#5: The COVID-19 pandemic has led to cancellations/delays in critical climate

change negotiations and research.

- Among other things, the COVID-19 pandemic postponed numerous critical climate change-related meetings, including:
 - The UN Climate Change Conference (COP26) at which nations were expected to submit more ambitious goals to reduce greenhouse gas emissions
 - The IMO Marine Environment Protection Committee meeting on proposals to reduce greenhouse gas emissions from shipping
 - The Convention on Biological Diversity meeting to establish new global rules to protect species from climate change

These delays have slowed international climate change negotiations and may be allowing countries to put environmental and climate concerns on hold for a while, including ignoring the incorporation of low-carbon strategies in their economic stimulus packages. Disappointingly, a new analysis found that the new pledges announced so far for the UN COP26 to be held in November (from 75 countries representing about 30% of global greenhouse gas emissions) are vastly inadequate and would only reduce global emissions by less than 1% (from 2010 levels) by 2030. To limit global warming to 2°C, emissions would need to decrease by 25% (from 2010 levels) by 2030.

- The pandemic has also postponed and disrupted research to better understand climate change. Research that was interrupted includes:
 - A year-long expedition to freeze-in and drift with Arctic sea ice to study climate change
 - Drilling on the Greenland ice sheet to better understand accelerating ice melt and thus sea level rise
 - Ocean water sampling to measure carbon and heat uptake by the ocean
- A potential silver lining from the pandemic is that it has highlighted some of the practical problems with, as well as the injustices of, “helicopter science” or “parachute science”. “Helicopter science” refers to the practice where researchers travel to a field location, often in a developing country, to collect data and then return to their home country to analyze the data and publish results without involving local communities, stakeholders, and scientists appropriately. Global travel restrictions have derailed a lot of research conducted in this manner whereas research in partnership with local scientists and communities is better positioned to continue.

From the experts:

- Emily Darling of The Wildlife Conservation Society: “We know so much about the inequity of scientific resources and training, where Western researchers can travel and fly and do ‘helicopter science.’ That’s not a model that’s sustainable, and it’s not a model that’s ethical. So this new reality gives us a chance to develop online tools for collaborations, for conferences, for workshops, and identify where we really need to travel and be face-to-face with our work.”

#6: Despite early fears, the COVID-19 pandemic does not appear to have drawn public concern away from climate change long-term, although it may have hurt the ability of some countries and communities to implement mitigation and adaptation measures.

- The COVID-19 pandemic substantially altered climate activism – forcing many demonstrations to go online – and initially decreased public and governmental attention to climate change
- Some activities to increase climate resilience (e.g., elevating flood-prone roads in Miami, Florida, cyclone warning systems for developing nations) were delayed, cancelled, or made more prohibitively costly due to pandemic restrictions and budget cuts brought on by the financial crisis. This problem is exacerbated for developing countries that are at the greatest risk from climate change-related storms, flooding, and drought because they now find themselves with greater debt and weaker credit.
- On the bright side, several studies have found that the pandemic does not seem to have substantially reduced concern about climate change. This suggests that the “finite pool of worry” hypothesis which holds that increased worry about one problem will decrease worry about other problems does not hold for climate change.

From the experts:

- Ali Bongo Ondimba, president of Gabon: “COVID-19 is eroding our developmental gains [and worsening the climate

crisis.]”

- Darrick Evensen of the University of Edinburgh: “At least in the UK, there is no evidence that COVID-19 has led to any reduction in concern about or perceived reality of climate change.”

#7: THE COVID-19 pandemic is having other large-scale societal impacts that will have greenhouse gas emissions implications, including changes to where people live, how they get around, and how they do their work.

- Physical distancing during the COVID-19 pandemic has dealt a major blow to mass transit in the near term because of decreased ridership, with drops of 90% or more of pre-pandemic levels in the spring of 2020. If trips on mass transit are replaced by trips in automobiles – which early surveys suggest will happen in parts the US and already has happened in China – this has the potential to increase greenhouse gas emissions.
- Surveys also suggest that, at least in the US, people are moving or considering moving to areas with lower housing density after the pandemic which could also mean increased trips by automobiles and emissions.
- In an opposing trend, many cities around the world are using the pandemic to ramp up infrastructure for walking, biking, and scootering. Efforts include closing streets to motor vehicles, adding bike lanes, and widening sidewalks.
- And, of course, working from home is now the new normal for many around the globe. Telecommuting is expected to remain higher than pre-pandemic levels even after the pandemic ends, and work travel may become more limited as businesses are now acclimated to conducting work online. As one oceanography professor related, a working group meeting on the ocean carbon cycle held in May 2020 was able to go from 15 to 150 participants by going virtual, “open[ing] up the ideas to a much broader community” as well as reducing its carbon footprint

#8: Last but not least, climate change is making epidemics and pandemics of zoonotic diseases such as COVID-19 more likely because it is increasing interactions between wildlife, domesticated animals, and humans.

- At least 61% of all infectious human diseases – and 75% of new infectious human diseases in the past decade – are “zoonotic”, meaning they come from other animals, both wild and domesticated. Examples of zoonotic diseases include anthrax, bird flu, bubonic plague, Ebola, HIV, Lyme disease, MERS, rabies, SARS, West Nile, and Zika. The alarming increase in the number of diseases “spilling over” from other animals to humans is happening because contact between humans and other animals is increasing due to deforestation, expansion of agriculture into natural areas, the wildlife trade, intensive animal farming, and climate change.
- Climate change forces animals to shift their ranges, both in terms of latitude and altitude/depth. This increases interactions between new species and enables diseases to jump to new hosts. In addition, thawing permafrost in the Arctic is releasing pathogens that are more than ten thousand years old and warmer temperatures are allowing bacteria such as Vibrio strains that cause cholera and life-threatening wound infections to thrive.
- Climate change and zoonotic diseases are also linked because some of the phenomena contributing to climate change – such as deforestation and unsustainable animal husbandry – also increase the spillover of infectious diseases from wild and domesticated animals to humans.

Parallels between the COVID-19 pandemic and climate change

In addition to intersections, there are a number of parallels between the COVID-19 pandemic and climate change.

#1: For starters, although it seems a bit facile to even write this, both the COVID-19 pandemic and climate change are catastrophic public health and economic crises.

- Some data below gives a feel for their relative impacts:

- COVID-19: As of March 2021, over 2.6 million deaths have been attributed to COVID-19. Roughly 30% of these deaths have occurred in the US and Brazil, with mortality spread throughout the globe. In the US where a broad scale vaccination campaign is underway, the pandemic is likely to continue for at least another 5-6 months. It also seems likely that the disease is now endemic and that variants will continue to infect humans for many years to come, after the initial pandemic is over.
- Climate change: The World Health Organization (WHO) estimated that in 2000, 166,000 global deaths were attributable to climate change. Mortality was very unevenly distributed with higher mortality among children and in Southeast Asia, Africa, and the eastern Mediterranean. In 2014, the WHO estimated that climate change would cause roughly 250,000 additional deaths every year between 2030 and 2050, due to malnutrition, malaria, diarrhea, and heat stress. This is a conservative estimate because it does not include other deaths attributable to climate change, including deaths due to reduced food availability.
- COVID-19: While GDP is a highly imperfect measure of human or even economic well-being it does provide a basis for comparison. In March 2021, the OECD projected that global GDP declined by 3.4% in 2020 but would grow by 5.6% in 2021. The World Bank and IMF had similar projections.
- Climate change: Estimates of the impact of global temperature increases on global GDP range from losses of 2-10% or more per year, although these are likely underestimates as well due to factors that are difficult to quantify economically, such as loss of biodiversity.
- These numbers highlight the fact that, while the pandemic is an acute catastrophic threat, climate change is a catastrophic “slow problem” that poses a greater threat to global health and well-being over the long-term. Despite this increased threat, mobilizing society to address climate change is more difficult because COVID-19 feels like an immediate threat to people personally, whereas climate change feels more distant and impersonal.

#2: As with climate change, denialism and misinformation about COVID-19 have worked to prevent effective action to prevent and mitigate the disease in some areas, notably in the US and Brazil.

- Despite the immediacy of the COVID-19 pandemic (over 500,000 people in the US dead by March 2021), denialism and misinformation about the pandemic have surfaced, often from the same people — including government leaders — who deny, downplay, and/or spread misinformation about climate change. This has led to rejection of public health measures such as masking and physical distancing and increased spread of the virus, as it has led to inaction to address climate change.

#3: As with climate change, the COVID-19 pandemic is hitting low-income communities hardest. Mitigation and recovery efforts need to promote social and racial justice to help address these disparities and the systemic inequities that caused them.

- In the same way that those who are most impacted by climate change (e.g., people living in flood- or drought-prone areas or who suffer food insecurity), those with the fewest resources are the most impacted by COVID-19. They are more likely to work jobs that have to be done in person, live in housing where physical distancing from others is harder or impossible, have inadequate healthcare, and be exposed to greater levels of air pollution (associated with higher death rates from COVID-19).
- COVID-19 also makes preparing for and responding to natural disasters exacerbated by climate change (e.g., cyclones and hurricanes, wildfires, heatwaves) more perilous. For example, In May, a powerful cyclone (Cyclone Amphan) hit India and Bangladesh, killing 80 people, destroying thousands of homes, and destroying crops and critical infrastructure. Preparation and response to the cyclone was dramatically complicated by the pandemic — people refused to go to storm shelters for fear of catching the virus and destruction of homes led to more crowding in homes and shelters and likely increased viral spread.

#4: There is generational conflict in how society is responding to the two

crises.

- The COVID-19 pandemic and climate change threaten generations differently, with the virus posing the greatest threat to older generations and climate change posing the greatest threat to younger generations. This fuels generational conflict with younger generations who are less likely to suffer ill health effects from the virus asking why they should physically distance and put themselves at risk of mental health problems when older generations have taken vastly insufficient measures to address climate change.

From the experts:

- Audrey, 18 year old: "We haven't seen the government or adults as passionate about the things we really care about, like mental health and climate issues."
- Jamie Margolin, 18-year-old climate justice activist: "[The pandemic] has exposed how government leaders, and the American public, actually *can* make immediate, dramatic behavioral changes – even when those changes have serious consequences for the economy and our quality of life. It's just that, until now, they haven't been willing to. But the way the coronavirus disproportionately affects older people is the exact way the climate crisis disproportionately affects young people. When it comes to the climate crisis, most of the statistics are flipped: Young people will suffer the most. You want young people to sacrifice – to stop socializing, to shut ourselves inside – so older people can live. But many older people aren't sacrificing so the youth can live."

#5: "Shifting baselines syndrome" is affecting societal response to both crises.

- In many countries, but perhaps most acutely in the US which has had the most infections and highest death toll, the months-long ramp up of the COVID-19 pandemic has led to acclimation to catastrophic infection rates and mortality and resistance to public health measure – such as masking and physical distancing - to control the virus. In much the same way, the human ability to acclimate and continually adjust our "baselines" starts to make increasingly common climate-change related events – such as "nuisance flooding" and more frequent and intense storms and heat waves – "normal" and less noteworthy.

From the experts:

- George Loewenstein of Carnegie Mellon: "There is a tremendous amount of research showing that we tend to adapt to circumstances if they are constant over time, even if they are gradually worsening. Fear tends to diminish over time when a risk remains constant. You can only respond for so long. After a while, it recedes to the background, seemingly no matter how bad it is ... Once the fear is gone, the willingness to take measures is also gone."

#6: Finally, both the COVID-19 pandemic and climate change crises are "collective-action problems."

- The best chance at minimizing the health and economic impacts of both was/is early, big, global, and coordinated government response. Early government responses to the COVID-19 pandemic showed that governments can take quick, dramatic action (e.g., stay-at-home orders, travel restrictions, mask mandates) with good citizen compliance in response to a crisis. However, later pushbacks (e.g., premature elimination of and large-scale non-compliance with mask wearing and physical distancing mandates) in some countries have shown that collective action, even for a fast-moving threat, has its limits in today's world.
- So, ultimately, has the global response to the pandemic so far been a reason for hope or despair on the climate change front? It is too early for a final verdict to be rendered, but most would probably agree that the global response to the COVID-19 pandemic has been mixed at best. Some countries such as South Korea, Taiwan, and Lithuania have excelled at controlling the virus and blunting the financial impacts of the pandemic, but – similar to the global response to climate change – a lack of resources, tribalism, and misinformation have stymied efforts across much of the globe.

From the experts:

- May Boeve of 350.org: "We've seen that governments can act, and people can change their behavior, in a very short amount of time... And that's exactly what the climate movement has been asking governments and people to do for

years in the face of a different kind of threat—the climate crisis—and we don't see commensurate action.”

Editor's note: Stanford economist Paul Romer coined the phrase "a crisis is a terrible thing to waste" in 2004.

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