

CLIMATE AND THE CORONAVIRUS

COVID-19 is awful. Climate change could be worse.

But there are lessons from the current crisis that should guide our response to the next one.

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A global crisis has shocked the world. It is causing a tragic number of deaths, making people afraid to leave home, and leading to economic hardship not seen in many generations. Its effects are rippling across the world.

Obviously, I am talking about COVID-19. But in just a few decades, the same description will fit another global crisis: climate change. As awful as this pandemic is, climate change could be worse.

I realize that it's hard to think about a problem like climate change right now. When disaster strikes, it is human nature to worry only about meeting our most immediate needs, especially when the disaster is as bad as COVID-19. But the fact that dramatically higher temperatures seem far off in the future does not make them any less of a problem—and the only way to avoid the worst possible climate outcomes is to accelerate our efforts now. Even as the world works to stop the novel coronavirus and begin recovering from it, we also need to act now to avoid a climate disaster by building and deploying innovations that will let us eliminate our greenhouse gas emissions.

You may have seen projections that, because economic activity has slowed down so much, the world will emit fewer greenhouse gases this year than last year. Although these projections are certainly true, their importance for the fight against climate change has been overstated.

Analysts disagree about how much emissions will go down this year, but the International Energy Agency puts the reduction **around 8 percent**. In real terms, that means we will release the equivalent of around 47 billion tons of carbon, instead of 51 billion.

That's a meaningful reduction, and we would be in great shape if we could continue that rate of decrease every year. Unfortunately, we can't.

Consider what it's taking to achieve this 8 percent reduction. More than 600,000 people have died, and tens of millions are out of work. This April, car traffic was half what it was in April 2019. For months, air traffic virtually came to a halt.

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To put it mildly, this is not a situation that anyone would want to continue. And yet we are still on track to emit 92 percent as much carbon as we did last year. What's remarkable is not how much emissions will go down because of the pandemic, but how little.

In addition, these reductions are being achieved at, literally, the greatest possible cost.

To see why, let's look at what it costs to avert a single ton of greenhouse gases. This figure—the cost per ton of carbon averted—is a tool that economists use to compare the expense of different carbon-reduction strategies. For example, if you have a technology that costs \$1 million, and using it lets you avert the release of 10,000 tons of gas, you're paying \$100 per ton of carbon averted. In reality, \$100 per ton would still be pretty expensive. But many economists think this price reflects the true cost of greenhouse gases to society, and it also happens to be a memorable round number that makes a good benchmark for discussions.

Now let's treat the shutdown caused by COVID-19 as if it were a carbon-reduction strategy. Has closing off major parts of the economy avoided emissions at anything close to \$100 per ton?

No. In the United States, according to **data** from the Rhodium Group, it comes to between \$3,200 and \$5,400 per ton. In the European Union, it's roughly the same amount. In other words, the shutdown is reducing emissions at a cost between 32 and 54 times the \$100 per ton that economists consider a reasonable price.

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If you want to understand the kind of damage that climate change will inflict, look at COVID-19 and spread the pain out over a much longer period of time. The loss of life and economic misery caused by this pandemic are on par with what will happen regularly if we do not eliminate the world's carbon emissions.

Let's look first at the loss of life. How many people will be killed by COVID-19 versus by climate change? Because we want to compare events that happen at different points in time—the pandemic in 2020 and climate change in, say, 2060—and the global population will change in that time, we can't compare the absolute numbers of deaths. Instead we will use the death rate: that is, the number of deaths per 100,000 people.

As of last week, more than 600,000 people are known to have died from COVID-19 worldwide. On an annualized basis, that is a death rate of 14 per 100,000 people.

How does that compare to climate change? Within the next 40 years, increases in global temperatures are projected to raise global mortality rates by the same amount—14 deaths per 100,000. By the end of the century, if emissions growth stays high, climate change could be responsible for 73 extra deaths per 100,000 people. In a lower emissions scenario, the death rate drops to 10 per 100,000.

In other words, by 2060, climate change could be just as deadly as COVID-19, and by 2100 it could be five times as deadly.

The economic picture is also stark. The range of likely impacts from climate change and from COVID-19 varies quite a bit, depending on which economic model you use. But the conclusion is unmistakable: In the next decade or two, the economic damage caused by climate change will likely be as bad as having a COVID-sized pandemic every ten years. And by the end of the century, it will be much worse if the world remains on its current emissions path.

(If you're curious, here is the math. Recent models suggest that the cost of climate change in 2030 will likely be roughly 1 percent of America's GDP per year. Meanwhile, current estimates for the cost of COVID-19 to the United States this year range between 7 percent and 10 percent of GDP. If we assume that a similar disruption happens once every ten years, that's an average annual cost of 0.7 percent to 1 percent of GDP—roughly equivalent to the damage from climate change.)

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The key point is not that climate change will be disastrous. The key point is that, if we learn the lessons of COVID-19, we can approach climate change more informed about the consequences of inaction, and more prepared to save lives and prevent the worst possible outcome. The current global crisis can inform our response to the next one.

In particular, we should:

- 1. Let science and innovation lead the way.** The relatively small decline in emissions this year makes one thing clear: We cannot get to zero

emissions simply—or even mostly—by flying and driving less.

Of course, cutting back is a good thing for those who can afford to do it, as I can. And I believe that many people will use teleconferencing to replace some business travel even after the pandemic is over. But overall, the world should be using more energy, not less—as long as it is clean.

So just as we need new tests, treatments, and vaccines for the novel coronavirus, we need **new tools for fighting climate change**: zero-carbon ways to **produce electricity, make things, grow food, keep our buildings cool and warm**, and move people and goods around the world. And we need **new seeds and other innovations** to help the world's poorest people—many of whom are smallholder farmers—adapt to a less predictable climate.

Any comprehensive response to climate change will have to tap into many different disciplines. Climate science tells us *why* we need to deal with this problem, but not *how* to deal with it. For that, we'll need biology, chemistry, physics, political science, economics, engineering, and other sciences.

- 2. Make sure solutions work for poor countries too.** We don't yet know exactly what impact COVID-19 will have on the world's poorest people, but I am concerned that by the time this is over, they will have had the worst of it. The same goes for climate change. It will hurt the poorest people in the world the most.

Consider climate's impact on death rates. According to a **recent study** published by Climate Impact Lab, although climate change will push the overall death rate up globally, the overall average will obscure an enormous disparity between rich and poor countries. More than anywhere else, climate change will dramatically increase death rates in poor countries near or below the Equator, where the weather will get even hotter and more unpredictable.

The economic pattern will probably be similar: a modest drop in global GDP, but massive declines in poorer, hotter countries.

In other words, the effects of climate change will almost certainly be harsher than COVID-19's, and they will be the worst for the people who did the least to cause them. The countries that are contributing the most to this problem have a responsibility to try to solve it.

In addition, clean sources of energy need to be cheap enough so that low- and middle-income countries can buy them. These nations are looking to grow their economies by building factories and call centers; if this growth is powered by fossil fuels—which are now the most economical option by far—it will be even harder to get to zero emissions.

When there's a vaccine for the coronavirus, organizations like **GAVI** will be ready to make sure it reaches the poorest people in the world. But there is no GAVI for clean energy. So governments, inventors, and entrepreneurs around the world need to focus on making green technologies cheap enough that developing countries will not only want them, but be able to afford them.

3. **Start now.** Unlike the novel coronavirus, for which I think we'll have a vaccine next year, there is no two-year fix for climate change. It will take decades to develop and deploy all the clean-energy inventions we need.

We need to create a plan to avoid a climate disaster—to use the zero-carbon tools we have now, develop and deploy the many innovations we still need, and help the poorest adapt to the temperature increase that is already locked in. Although I am spending most of my time these days on COVID-19, I am still investing in promising new clean energy technologies, building programs that will help innovations scale around the world, and making the case that we need to invest in solutions that will limit the worst impacts of climate change.

Some governments and private investors are committing the funding and the policies that will help us get to zero emissions, but we need even more to join in. And we need to act with the same sense of urgency that we have for COVID-19.

Health advocates said for years that a pandemic was virtually inevitable. The world did not do enough to prepare, and now we are trying to make up for lost time. This is a cautionary tale for climate change, and it points us toward a better approach. If we start now, tap into the power of science and innovation, and ensure that solutions work for the poorest, we can avoid making the same mistake with climate change.

<https://www.gatesnotes.com/Energy/Climate-and-COVID-19>