

COVID-19 and clean air: an opportunity for radical change



The COVID-19 pandemic has caused more than 30 million infections and 960 000 deaths, causing disease in almost every country worldwide. Like all pandemics, it has laid bare and exploited social inequalities, and caused disproportionate damage to low-income families, people with poor health, and minority and marginalised groups. A further consequence of this pandemic has been economic havoc of a magnitude not seen since 1932. This downturn is projected to wipe out 200 million jobs worldwide. The previously unimaginable prospect of a second Great Depression seems possible. Yet, among all this suffering, two events have unfolded that suggest that this time of crisis could also be a time of fundamental, even revolutionary, change.

The first has been the global rise of the Black Lives Matter movement. In the aftermath of the killings of Ahmaud Arbery and George Floyd, millions of people in countries across the globe have risen together as one to denounce hatred and racism and to call for an end to the social and economic inequalities—the structural violence—that underlie the disproportionate effects of COVID-19 on people of low-income and racial minority backgrounds.

The second has been a remarkable worldwide reduction in ambient air pollution. These decreases are so great that they can be seen from outer space (figure). In northern India, air pollution is at a 20-year low and concentrations of fine particulate matter ($PM_{2.5}$) in New Delhi have fallen by more than 50%.¹ In Europe, nitrogen dioxide concentrations have fallen by 40% and $PM_{2.5}$ concentrations by 10%.² In New York and Los Angeles, $PM_{2.5}$ concentrations are 25–30% lower than concentrations from the same month a year ago.³

Ambient air pollution is responsible for more than 5 million deaths annually—deaths caused by heart disease, stroke, chronic obstructive pulmonary disease, lung cancer, diabetes, pneumonia, and premature birth.⁴ COVID-19-related improvements in air quality translate into fewer deaths from pollution-related disease. Thus, cleaner air is estimated to have saved 11 000 lives (95% CI 7000–21 000) in Europe in April, 2020,² and 77 000 lives in China in January and February.⁵

These great gains show that cleaner air is possible. They enable us to imagine a world in which

improvements in air quality are permanent, skies are blue, and the numbers of premature deaths caused by air pollution are greatly diminished. Although such a scenario might seem implausible, emerging evidence indicates that we might, in fact, be very close to a tipping point—a massive global transition away from fossil fuels to clean, non-polluting renewable energy.

The development that has brought us to this point has been the unexpectedly rapid growth of wind and solar power over the past decade. Between 2010 and 2020, the proportion of electricity generated globally from wind and sunlight increased by more than four times, from 4% in 2010 to 18% in 2020.⁶ At the same time, renewable energy sources have become more cost-effective than non-renewable energy sources. Since 2010, the cost of generating electricity from solar cells has fallen by 81%, onshore wind by 46%, and offshore wind by 44%.⁶ Production of electricity from wind and sunlight is now cheaper than from fossil fuels in many places.⁷

In 2021, for the first time in history, spending on renewable energy sources is projected to overtake spending on oil and gas exploration,⁸ a development that would have been unthinkable as recently as 5 years ago. If major governments choose to direct their post-COVID-19 recovery investment towards wind and solar power and away from fossil fuels, this transition will move very quickly. Investments in coal, gas, and oil are at growing risk of becoming stranded assets.⁷

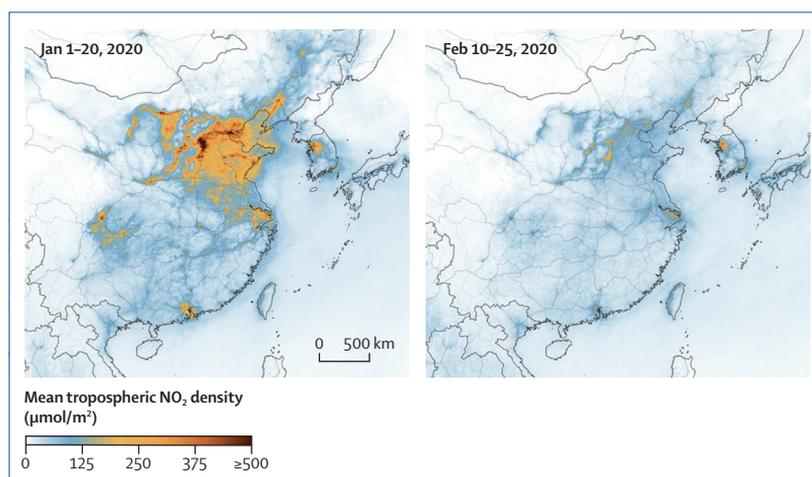


Figure: Airborne nitrogen dioxide pollution, China, Jan 1 to Feb 28, 2020

Images are from NASA Earth Observatory images by Joshua Stevens, using modified Copernicus Sentinel 5P data processed by the European Space Agency. NO_2 =nitrogen dioxide.

We know already that actions taken to reduce air pollution and reduce greenhouse gas emissions can improve health and spur economic growth.⁴ In the USA, concentrations of the six major air pollutants have fallen by 70% since the passage of the Clean Air Act in 1970. Western Europe, Japan, and Australia have achieved similar gains. Before this pandemic, China had begun to make clear progress against air pollution. By removing lead from gasoline, countries around the world have virtually eliminated airborne lead pollution. These actions have saved hundreds of thousands of lives, reduced health disparities, and increased children's intelligence. They have also brought great economic benefit. In the USA, each dollar invested in air pollution control since 1970 has produced an estimated return of US\$30 (range \$4–88). In the same period, the US gross domestic product has grown by 250%, thus contradicting the often heard but unfounded claim that pollution control costs jobs and stifles economic growth.⁴

Some have argued that the present crisis is too profound to permit change. We see the opposite. We argue that this terrible pandemic and its consequences have given a clarity of vision and a unique opportunity to control air pollution, reduce inequality, save lives, and begin to heal the planet. If we wish to pivot toward these goals and catalyse revolutionary improvements in air quality, societies around the world must take five key actions.

The first is to sharply increase investment in renewable energy. Green energy has come a long way, but still accounts for less than one-fifth of global electricity.⁶ A combination of massive private investment in green energy, such as the investment recently announced by Goldman Sachs,⁸ coupled with government investment in renewables using post-COVID-19 recovery funds, which is now under consideration in the EU, could catalyse transition with breathtaking speed.

Second is to redesign cities to prioritise people over motorised vehicles. Sidewalks and safe bicycle lanes need to become the norm in the world's cities. Public transport must become more available to more people and be safe and affordable. Vehicle exclusion zones and congestion pricing should be universal. These actions will reduce reliance on fossil fuels. They will also reduce urban air pollution, reduce greenhouse gas emissions,

and prevent pollution-related heart disease, stroke, obesity, and diabetes.

Third is to prevent further growth of natural gas infrastructure. Gas is not a clean fuel. Emerging data indicate that natural gas causes nearly as many deaths across its lifecycle as coal. Denying this reality and anticipating the rise of renewable energy sources, the fossil fuel industry is engaged in a massive effort to falsely portray gas as a clean fuel, expand its infrastructure, and lock in reliance on gas for decades to come. Unchecked, these actions will thwart any prospect of holding global warming to 1.5°C.

Fourth is to invest generously in communities in which fossil fuel extraction is core to the culture and the economy. Fossil fuel combustion must end. However, we cannot abandon the hard-working communities that, for generations, have produced the coal, gas, and oil that fuelled the Industrial Revolution and made possible the world's growth. These communities deserve sustained, thoughtful, multiyear investments in education, health care, and infrastructure that will enable them and their children to move forward and leave fossil fuels behind.

Fifth is to end all subsidies and tax breaks for fossil fuel industries. The massive governmental subsidies and tax breaks that support the coal, gas, and oil industries perpetuate pollution, disease, and inequality.¹⁰ This governmental support must cease. With a wise, long-term global investment strategy, these funds can be repurposed to accelerate the development of renewable energy, redesign cities, improve public transit, provide new opportunities to mining communities, and increase pandemic preparedness.

COVID-19 has brought our world to a point of crisis. Now we have a once-in-a-generation opportunity to emerge from this crisis and to build a cleaner, healthier, and a more just world that we can deliver with pride to our children and grandchildren.

We declare no competing interests.

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