

An Analysis on the Impact on Environment from Covid-19 and Economic Shutdown

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Introduction

The global crisis of COVID-19 has not only had a detrimental impact on human health and life but also severely affected the world economy along with major environmental implications. While this is not the first time for an pandemic have environmental implications, it is certainly the most recent case. The spread of a disease has been linked to lower emission rates throughout history, well before the industrial age. Pandemics like the Black Death, Spanish Flu and Smallpox epidemic recorded a decreased atmospheric level of CO₂ (carbon dioxide). Likewise, during the current pandemic, lowering of the NO₂ and CO₂ emissions along with reduction in particulate matters in air was explained by environmentalists as the result of reduced

human activities leading to cleaner air and pollution free water across the globe. Reduction in industrial activity, cancellation of flights and other journeys along with reduction of greenhouse gas emissions largely contribute to the reduction of emissions. It has been reported that the level of greenhouse gasses decreased for the first-time during the lockdown after World War II. Industrial processes involving manufacturing and construction make up 18.4% of the global anthropogenic emissions. But given the pandemic, a fall in carbon emissions from fossil fuels, approximately 2.5 billion metric tons in the year 2020 was recorded, which was also the largest drop in history. This in turn resulted in reduced energy production and its consumption levels. Alongside facing such direct implications from covid, there were certain indirect impacts from the affected global economy. Given the restrictions imposed globally to curb the spread of this disease, human movement and transportation was regulated. This significantly reduced economic activity, putting pressure on both consumer and productive economic activities. Given their inverse relationship, the environment positively benefited from the economic shutdown. We witnessed significant short-term reductions in environmental pressures in the form of 7% reduction in energy-related emissions and around 2% reduction in agriculture-related environmental pressures. Also, reduction in usage of non-metallic minerals, including construction materials, reached double digits. Whereas, the long-term changes in

environmental pressure will depend on their economic drivers. Sectors like manufacturing and construction were more affected than others like agriculture, implications of which are yet to be determined.

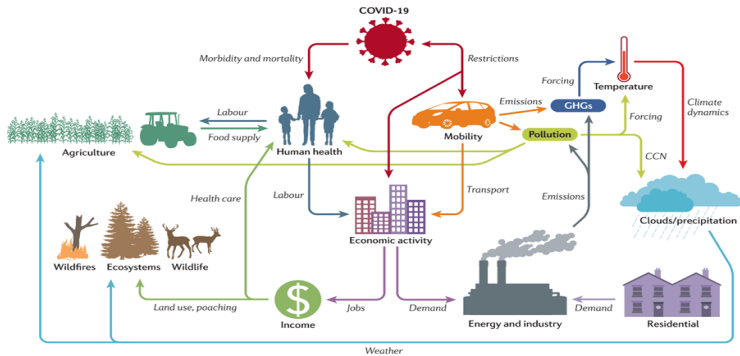


Illustration of interactions linked to the COVID-19 socioeconomic disruption along two pathways: 1.) energy, emissions, climate and air quality; and 2.) poverty, globalization, food and biodiversity. (Image credit: Noah Diffenbaugh, et al. / Nature Reviews Earth & Environment)

Implication Of Covid-19 On Environment

The effects of COVID-19 on the environment can be broadly categorized as positive and negative. One of such implications of the pandemic was abruptness in industrial activities. Along with industries being shut down and work halted, vehicular emissions were reduced. As a result, we were able to witness a low-carbon future. The World Health Organization (WHO) estimates that around 3 million people die every year due to the ailments caused by the air pollution and about 80% of the people living in urban areas are exposed to air quality levels exceeding the safe limits. Nitrogen dioxide, one of the main causes of respiratory

illnesses like asthma, is majorly emitted from road transports and power plants. It worsens the symptoms for people having prior lung or heart ailments. The major sectors contributing to air pollution are transportation, industries, construction activities, power plants, road dust suspension. Furthermore, activities like landfill fires, operation of DG sets and restaurants contribute to air pollution. These activities were prohibited during the lockdown, thus making the environment slightly less polluted with the air becoming a bit cleaner. While India saw two complete lockdowns in the years 2020 and 2021 along with multiple restrictions imposed upon unlocking, a significant dip in air pollution levels was measured across the country in the time being. Metro-Politian cities like Delhi, Kolkata, Bengaluru and Lucknow witnessed their average Air Quality Index (AQI) staying within the range of two digits. Most prominent example of better AQI was seen when, on 3rd April,2020 residents of Jalandhar, a city in the state of Punjab, woke up to a view of the Dhauladhar mountain range, a feat which is rare normally, the distance between the two places is nearly 213 kilometers.

If fossil fuels are replaced by renewable, low carbon energy sources, the improvements witnessed in the past year in terms of air quality could be made permanent. Below is a table comparing air quality of the lockdown and unlock period of DTU, Delhi, India, proving that a cleaner

atmosphere is possible if sustainable development is pursued in future.

Parameters	May 31, 2019 (average)	May 31, 2020 (average)	May 31,2021 (average)	Standards given by CPCB
PM2.5 ($\mu\text{g}/\text{m}^3$)	176	47	67	0.00-60.00
PM10 ($\mu\text{g}/\text{m}^3$)	348	53	103	0.00-100.00
NO ₂ ($\mu\text{g}/\text{m}^3$)	53	19	64	0.00-80.00
NH ₃ ($\mu\text{g}/\text{m}^3$)	15	1	18	0.00-400.00
SO ₂ ($\mu\text{g}/\text{m}^3$)	43	8	6	0.00-80.00
CO (mg/m ³)	36	10	29	0.00-2.00
Ozone ($\mu\text{g}/\text{m}^3$)	120	60	27	0.00-100.00

(Source: Central Pollution Control Board)

Air pollution wasn't the only type of pollution that came under control during the lockdown. Water and noise pollution too saw a decline. Water bodies and the rivers like Yamuna and Ganga have seen significant improvement since the nationwide lockdown was enforced. According to the real-time water monitoring data of the Central Pollution

Control Board (CPCB), the average water quality of 27 points of the Ganga (as seen during the enforcement of lockdown) was termed suitable for bathing and propagation of wildlife and fisheries. With the industries up and running, increase in toxic waste dumping in water bodies is seen hindering the progress made so far. Given below is a comparative analysis of the water quality of the river Ganga, Prayagraj city, India before and during the lockdown period.

Parameters	Before lockdown	During lockdown
DO (mg/L)	11.50	8.00
BOD (mg/L)	2.60	2.30
Total coliform (MPN/100 mL)	8400.00	2400.00
fecal coliform (MPN/100 mL)	3300.00	790.00

(Source: Pollution Control Board, Uttar Pradesh, India)

As per European Union 2015, all sources of noise pollution originate from human activities like, residential noise, noise from commercial premises, building site, burglar alarm, loud speakers, noise in the street (vehicular traffic) and noise in air (aircraft). Due to the shutdown of transportation during the lockdown, animals especially birds along with humans enjoyed a noise free environment. While industries are slowly reverting back to running on their full potential, the improvement made during the lockdown is slowly losing traction. The link between economic growth and

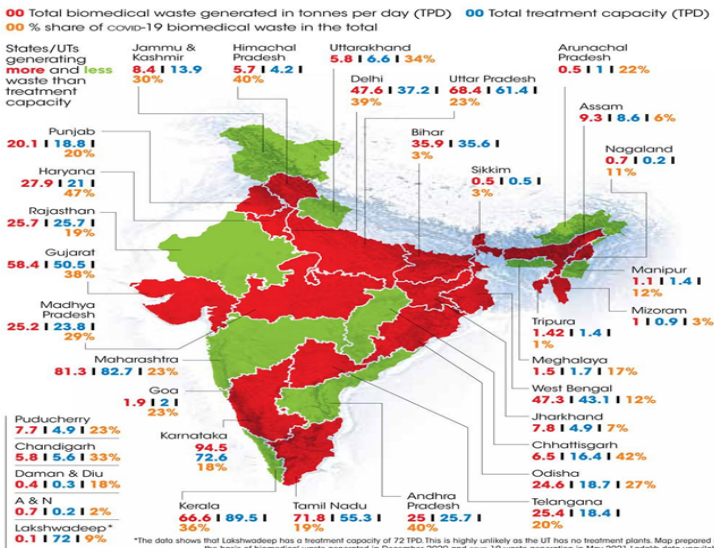
pollution has been a valid global concern since the 1970s. According to a recent study published in Journal of Cleaner Production, 2020 titled “Temperature-responsive deep eutectic solvents as green and recyclable media for the efficient extraction of polysaccharides from *Ganoderma lucidum*” environmental pollution increases with economic growth and vice versa. The assessment of energy and financial efficiency is usually connected to environmental pollution research. Green practices at a national level with the inclusion of renewable energy, regulatory pressure and the sustainable use of natural resources are associated with environmental sustainability. The strict control over movement and business activity due to COVID-19 led to an economic downturn, which in turn, reduced environmental pollution.

Not every consequence of the pandemic had a positive effect on the environment. Volumes of non recyclable wastes have risen; severe cuts in agricultural and fishery export levels have led to the generation of large quantities of organic waste and has disturbed solid waste recycling processes. Due to the rise in demand of medical supplies, including disposable masks and gloves, generation of medical waste was witnessed at a major level. The decomposition of organic waste also releases greenhouse gasses like methane (CH_4) and nitrous oxide (NO_2) into the air. In addition, due to stay-at-home policies, many consumers have increased their consumption of take-away

food delivered with single-use packaging, increasing plastic waste generation. All these developments have created acute challenges for the waste management industry. India's waste management system raises concern especially with the added pressure of the national vaccination drive. Siddharth Ghanshyam Singh, deputy programme manager of CSE's Solid Waste Management states, "By the conclusion of the vaccination drive, which the Center hopes to reach by the end of this year, the country would have generated over 1.3 billion used syringes and needles and more than 100 million discarded glass vials".

TOO MUCH TO HANDLE

As many as 22 states/UTs have generated more biomedical waste than their treatment capacity during the pandemic's second wave



Natural ecosystems and endangered species are at critical risk during the coronavirus crisis. In many countries,

environmental protection workers at national parks and land and marine conservation zones are operating with limited manpower due to government-imposed rules, leaving such areas unmonitored. Their absence has resulted in a rise of illegal deforestation, fishing and wildlife hunting.

The stoppage of ecotourism activity has also left natural ecosystems at risk of illegal harvesting and encroachment. While it is going to be some time before tourism picks up, attention must be given to threats on the environment and natural resources at present as a result of the pandemic. Besides these environmental impacts, pandemic also affected the global sustainable development goals (SDGs). World leaders had adopted the 2030 agenda for sustainable development while committing to a shared vision- to set the world on a sustainable path for people, planet, partnership, peace and prosperity. Due to the prolonging pandemic, the 2030 agenda of UNSDG's too has been affected negatively.

After covering the impact of COVID-19 on the environment directly and via disruption of economic activities, we come to the final aspect of climate change in correlation to covid. It was human hypermobility in our globalized world which favored the spread of this infectious disease. While there is no scientific evidence proving the involvement of climate change in emergence or transmission of COVID-19, it is likely that it can indirectly make the effects of future pandemics worse. According to Arthur Wyns ,

climate change advisor to the World Health Organization, “climate change undermines the environmental conditions we need for good health-access to water, clean air, food and shelter and places additional stress on health systems”.As the country’s economy is starting to rebuild, there are a few key policy changes that could be implemented to help us combat climate change after COVID. Firstly, eco-friendly public transport facilities should be introduced and developed on a large scale. This would not only help in the long-term sustainable management of the environment but also urban sustainability with lesser vehicular emissions. Another step that can help lessen vehicular emission are encouraging cycling and walking as a mode of commute. In order to inculcate this habit, the government should facilitate the ease of public charging points for such electric vehicles.Lastly, in order to cope up with the imposed lockdown, offices started implementing work-from-home or remote working policy. While it was put into effect to reduce the spread of virus, it was realized that it helped reduce road haulage and noise pollution created due to traffic jams during the office hours. If companies started preferring virtual meetings over physical venues, it would help cut down energy consumption by huge folds. In order to be better prepared for crises like these in future, it is essential to have climate resilient infrastructure so that damage can be reduced if not stopped. While the pandemic is coming to an

end, social distancing should continue to be followed to expand the social security nets.

Conclusion

This lockdown has given us a rare opportunity to step back and assess our impact on the environment. Clean air, better quality water and livable cities which we have aspired for so long are proving to be a possible reality, only if we reflect back on how we were exploiting the resources before we were forced shut in our own homes. Therefore, before life comes back on its track, commitment to environmentally friendly practices is necessary to ensure the effectiveness of the principles of sustainable development in our social behavior and public policy making. The lockdown gave us perspective on the possibility of life where we could do away with some modernization and lean back to the lifestyle of the older days. We need to re-evaluate our need for solar energy and wind mills and other such green resources in order to achieve the possibility of a clean and healthy environment we witnessed during the pandemic. During the past two decades, India witnessed an expeditious industrial growth which definitely improved the standard of living but we seem to have paid a heavy cost for this development. In order to restore the damage done by excessive utilization of fossil fuels, we need to further reduce the consumption like we did during the lockdown, giving the environment enough time to replenish them. These improvements should be treated as stepping stones towards

a better future. When this ongoing crisis comes to an end, humans would face a choice of reverting back to heavily influenced carbon energy sources (fossil fuels, greenhouse gasses) or could opt for more sustainable and eco-friendly resources. Economy though needs to be revived; it should not be done at the expense of the environment. Therefore, as the country is slowly coming back to the pre-covid times, going forward it's necessary to adopt behavioral changes focused on a less resource-intensive lifestyle. Industries should pay attention to long-term sustenance along with the focus on economic growth. While we strive to achieve normalcy after covid turned our lives upside down, it's important to implement the environmental reforms mentioned above to make sustainable development a possibility in near future.

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