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Environmental restoration during Covid-19 pandemic

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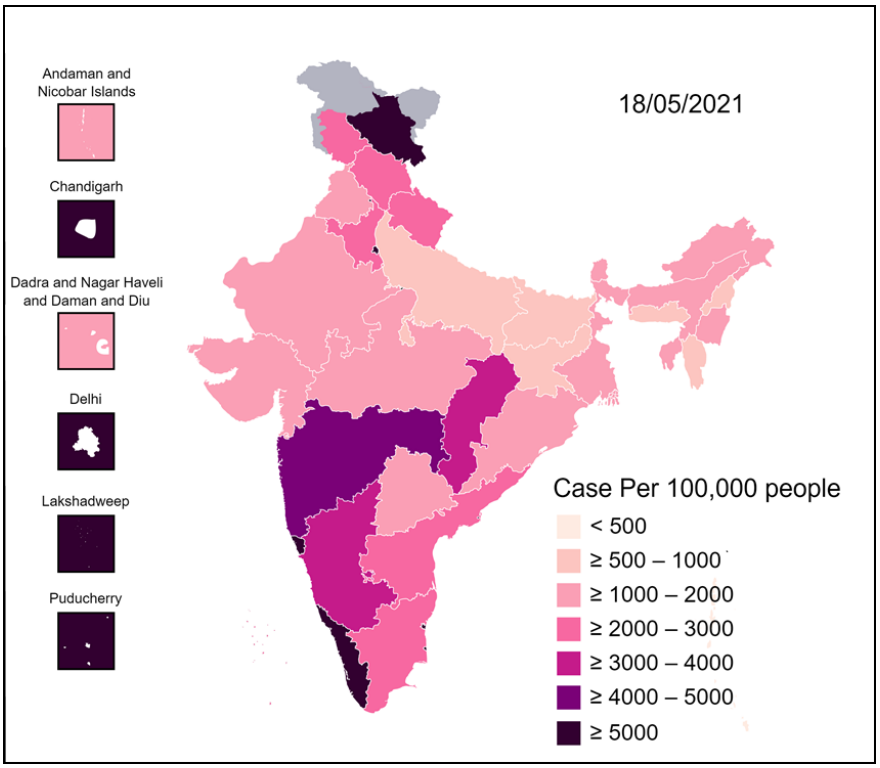
Abstract
The sudden increase in the COVID-19 cases has affected everything including the corporal world. The steps taken to manage the increasing cases of COVID-19 by slowing down the commercial activities have notable effects on the environment. This study indicates the positive impacts on the environment by reviewing the available scientific research. The study shows how the pandemic has eventually helped in environmental restoration by improving the Air Index, healing of the ozone layer, reduced noise as well as air pollution and comparatively low Greenhouse gas emissions. The study outlines possible outcomes to attain long term environmental restoration methods. If followed appropriately then it would be helpful in global environmental sustainability.

Keywords: COVID-19, environmental restoration, environmental impacts, air index, greenhouse gas emissions, noise pollution, water pollution

Introduction

Coronavirus disease (COVID-19) is a contagious disease caused by a newly discovered virus namely coronavirus. It first emerged in December 2019 in Wuhan city of China and weeks later was declared as the global pandemic by World Health Organization (WHO). COVID-19 is a severe acute respiratory syndrome which also shows mild symptoms like fever, cold and cough, breathing difficulties etc. The coronavirus spreads from infected person through aerosols from nose and saliva while they talk, cough or sneeze. The new coronavirus also known as SARS-CoV-2 is closely related to the original SARS-CoV and is thought to have a zoonotic origin.

As per of 18th May 2021 total number of coronavirus cases in India are 25,228,996 with 263,533 (WHO 2021) new cases on 18th May 2021 and the count is rising rapidly. The number of cases per 100,000 people is shown (Figure 1) in parts of India till 18th May 2021.



Source: http://www.mygov.in/covid-19

Fig 1: Cases per 100,000 people in different states of India.

Mostly COVID-19 cases include mild symptoms like cold, cough, chills, fatigue while people who are already suffering from diseases like blood pressure related issues, heart diseases, cancer, diabetes, tumours, old aged people etc are at greater risks of contracting coronavirus. They can have extreme illness or even die if not treated properly and on time. WHO and other experts are suggesting to wear masks, gloves and carry sanitizers whenever stepping out. Maintaining the distance of 6 feet when in public is really very necessary and should be followed in order to control the spread of coronavirus. In March 2020 India went under a lockdown and restricted the movement of people internationally, within the country state wise as well as city wise. People were forced to stay at their homes due to pandemic. As a preventive measure schools, colleges, offices, government bodies all were shut down. Public transports like buses, cabs, rickshaws, trains, aeroplanes were also not allowed. Only essential services like food supply, police, fire stations were working. People were not allowed to move in and about the city until and unless it was too necessary. The pandemic has resulted in demographic disturbance but it has affected environment in positive ways too like the air quality and water quality have improved, less greenhouse gas emissions, less use of fuels, reduction in the noise and water pollution and restoration of the ecology. This study intends to explore the positive effects on the environment due to the lockdown and discuss the measures for global environmental sustainability.

Methodology

This research study was performed after reviewing many published articles, research papers and through online available data from the government as well as non-government databases like NCBI, PubMed, PubMed central, Research gate, Google scholar, Wikipedia, WHO, Springer link etc. This study represents the data as well as the information that is related to environmental restoration during covid-19 and meets the research goals.

Observation

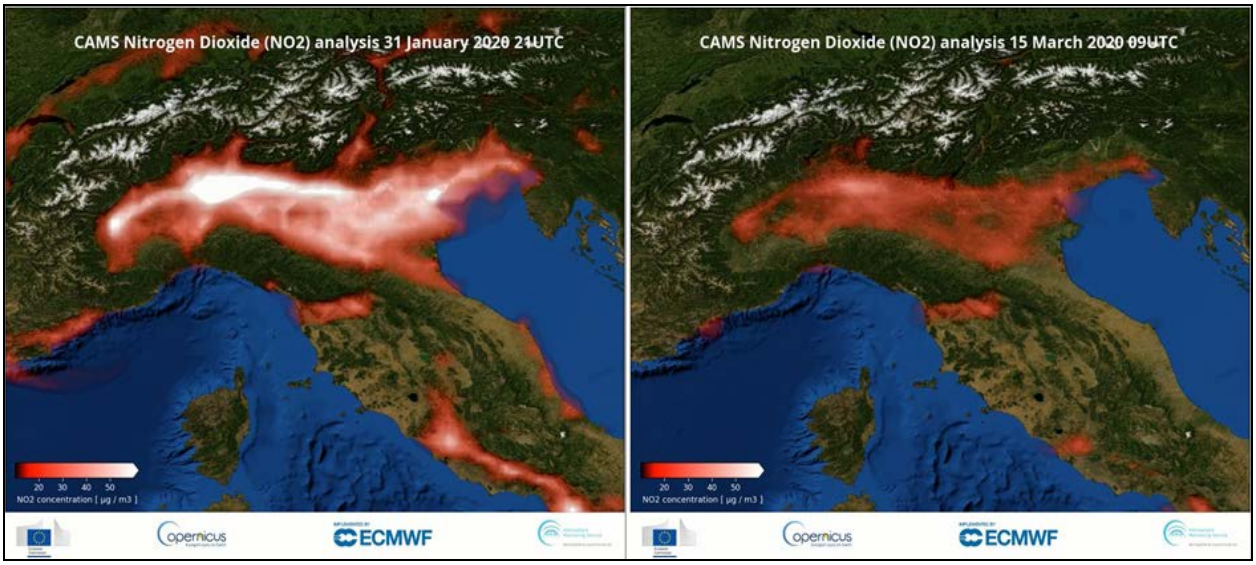
Positive Environmental Effects of Covid-19

The worldwide disruption caused the coronavirus (COVID-19) has many impacts on the environment as well as the climate. Due to movement limitation and slowdown in the corporal world and commercial activities, the air quality index of many cities in India have improved. Reduction in air, noise and water pollution can also be seen. Lower greenhouse gas emissions can also be seen.

Improved Air Quality Index

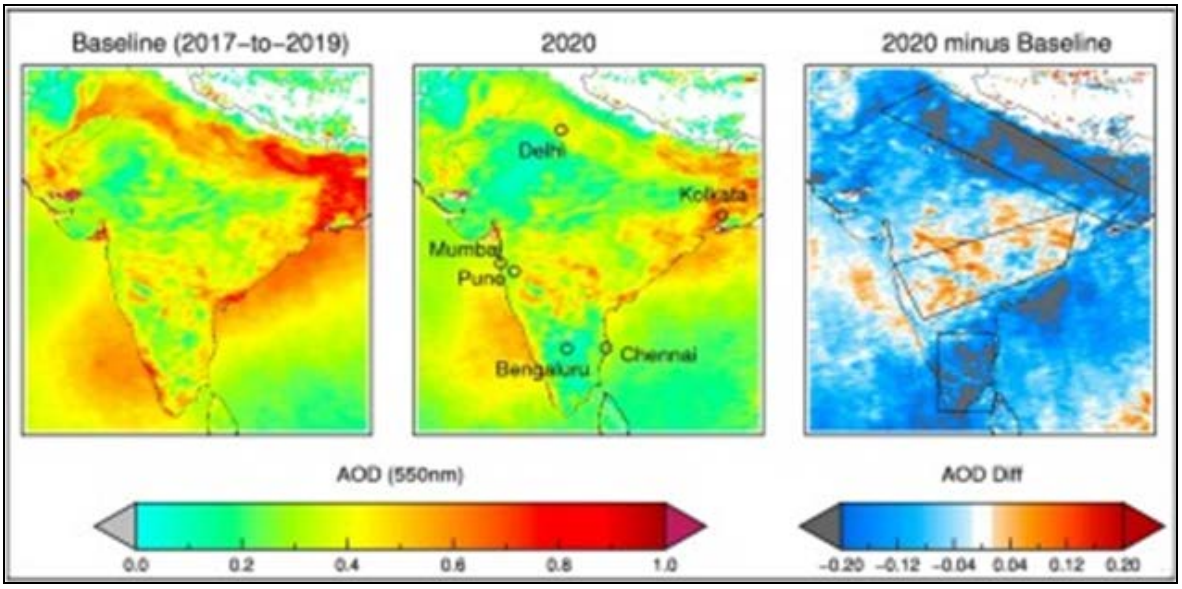
AIQ tells the daily air quality. Higher the value of AQI more populated the air is. As factories, industries, transportation were not in use due to the lockdown it has brought a sudden drop in the greenhouse gas emissions too. Nitrogen di oxide is one of the indicators of commercial activities which has immensely decreased. NO2 is mainly emitted by burning of fossil fuels and most of its percentage comes from motorcycles or bikes. As assumed vehicles and aviation are the main causes of greenhouse gas emissions. Central Pollution Control Board (CPCB) said that improved air quality levels are seen when compared to last years level. PM levels of PM 2.5 has decreased by 24% in early stages of lockdown and later decreased to 50% while PM10 reduced by 60%, Nitrogen by 64%, Benzene by 62% and Sulphur di oxide by 35%.

The Nitrogen di oxide levels before and after first stage lockdown is shown in the Figure 2.



Source: https://www.frontiersin.org/articles/10.3389/fpubh.2020.569353/full

Fig 2: CAMS NO2 Analysis before and after images.

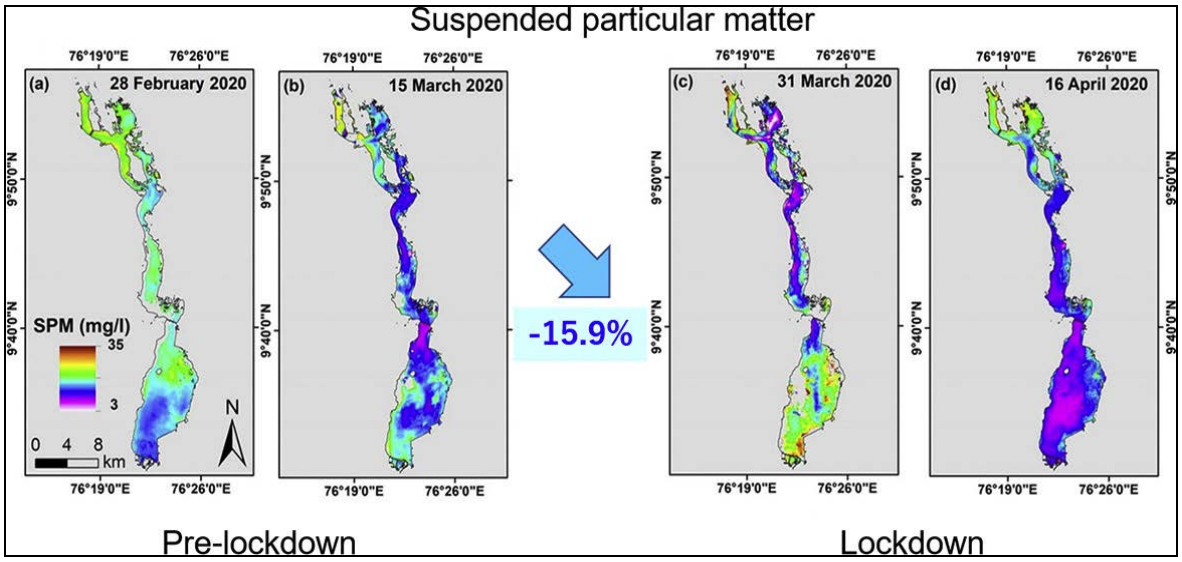


Source: https://www.sciencedirect.com/science/article/abs/pii/S2210670720309033

Fig 3: Observations from Surface and Sattelite of Air Pollution during Covid-19 Lockdown

Reduction in Water Pollution

Water pollution is one of the major issues in a developing country like India where most of the industrial as well as household waste is dumped into the rivers without any treatment which causes extensive pollution in the water. Due to the nationwide lockdown these activities were shut down which resulted in improved qualities of water. River Ganges and Yamuna have also shown better results in terms of pollution. Due to great decrease in tourism in Haridwar and Rishikesh the places have witnessed a better water quality and a rapid decrease in sewage and industrial pollution. SPM (suspended particulate matter) levels were comparatively very high before the lockdown was imposed in India but a decrease was observed in the SPM concentration during the nationwide lockdown. Reduction in SPM levels are shown in the given figure 4.



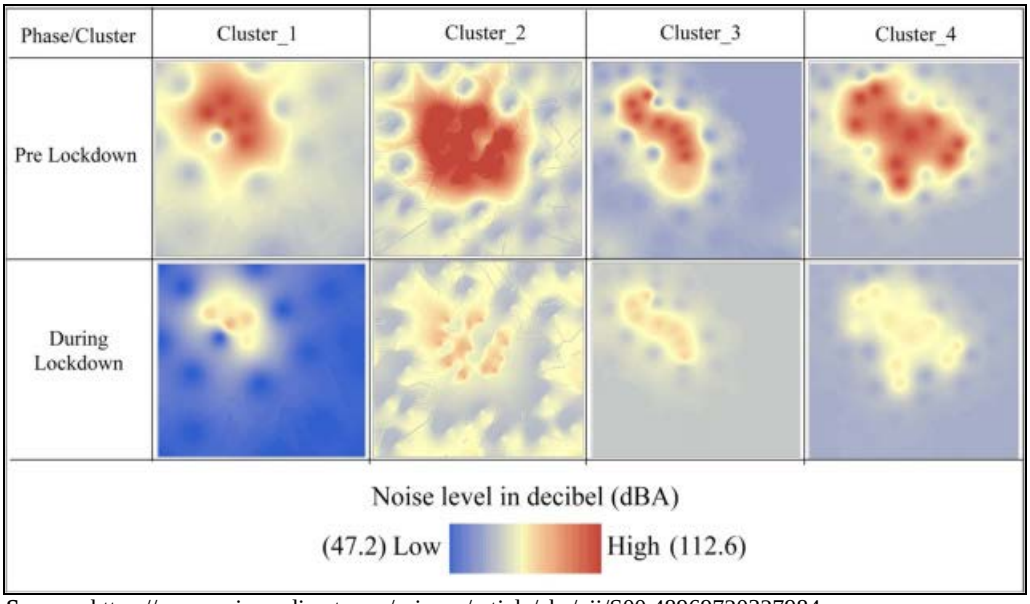
Source: https://www.sciencedirect.com/science/article/pii/S00489 6972 0325298

Fig 4: Decrease in SPM Concentration before and After Lockdown

Reduction of Noise Pollution

Noise Pollution is exposure to raised sound levels produced by human activities that includes heavy machineries, transportation, engines and construction work that have adverse effects on the humans as well as the animals. Noise has many effects on a person health including hypertension, hearing loss and even some cardiovascular related disorders. While anthropogenic noise pollution has a very bad impact on wildlife from the changing balance between predators and the respective prey detection. Noise also has negative effects on the invertebrates which plays an important role in balancing the ecosystem.

Though the lockdown has restricted people from moving and thus resulting in very less vehicle movement which has reduced the noise by many decibels. For example, many residential areas have seen a decrease in noise level from 100db to 55-65db in the day time while 45db during night due to less vehicle honking and low use of heavy machineries. In short Covid-19 lockdown have lessen the commercial activities which has lowered the noise pollution levels. Reduction in noise pollution levels is shown in the Figure 5.



Source: https://www.sciencedirect.com/science/article/abs/pii/S00 48969720327984

Fig 5: Reduced Noise Pollution Levels During Lockdown In India.

Plan of Action for Environment Sustainability

It is presumed that most of the environmental outcomes are short term. There is a need to strategize long term plans for environment sustainability in order to protect the earth, the homes of human beings and protect the flora and fauna. There are some strategies that we can use in our day-to-day life to attain environment sustainability. Some of the measures are listed below:

1. Weekly Lockdown

Even after the COVID-19 pandemic ends, a weekly lockdown can be planned to reduce the number of vehicles running on the road and causing pollution, factories and industries can also be shut on the weekends to reduce the amount of emissions. This small initiative can work wonders if followed sincerely and properly.

2. Strategy of Avoiding Oil Based-Plastics

Oil based- plastics are the synthetic plastics obtained from the crude oil, gas, coal. They are widely used on the daily basis as plastic bags, containers, used in many companies for manufacturing of their products. The reduced use of oil based- plastics results in evident reduction in carbon emissions. Less carbon emissions result in less pollution in the environment. And in general, these oil-based plastics are really harmful for the environment as they lead to water pollution if drained in water, air pollution if burnt. Hence oil-based plastics should be avoided in order to protect our environment.

3. Renewable Energy Sources

Cutting down the use of coal, crude oil, other fossil fuels as they are the main contributor of Greenhouse gas emissions which is leading to pollution. We can shift to using renewable sources of energy like wind energy, solar energy, hydropower, geothermal heat in our day-to-day life to reduce pollution. Hence renewable energy sources should be swapped with the non-renewable energy source.

4. The 3 R's

Reduce, Reuse and Recycle, we are learning about them from our childhood but we hardly follow them. In order to protect our environment, it is very necessary to comply to these rules. We should Reduce our plastic waste while opting of other eco- friendly options like cloth bags instead of plastic bags etc. Reuse and Recycle the products that are intended to cause harm to the environment.

5. Lifestyle and Behavioral Changes

Use of bicycles for travelling to short distances instead of cars and motorbikes. Less use of processed food and increase the intake of locally grown food, switching off the electronic devices and machines when not in use, instead of throwing away food waste it can be used as natural fertilizer. These small changes can help in reducing the carbon footprint and greenhouse gas emissions.

Conclusion

The pandemic has affected the environment directly or indirectly in many ways. Though these impacts are short term which can seen due to the lockdown which affected the air quality index, water quality index, pollution in a positive way. If we opt to follow the plan of action for environment sustainability, we can see the evident changes on long term basis too. These measure if followed appropriately will surely make earth a better place to live.

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