

Review Article

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## Covid-19 Lockdown: Environmental Scenario

Jyoti Fulekar<sup>1,2</sup>, Radhey Shyam Kaushal<sup>id</sup><sup>1,2</sup> and Madhusudan H. Fulekar<sup>id</sup><sup>1\*</sup>

<sup>1</sup>Centre of Research for Development, <sup>2</sup>Parul Institute of Applied Sciences,  
Parul University, Vadodara, Gujarat - 391760, India

\*Corresponding author

### ABSTRACT

Worldwide, Corona virus Lock down, including India has improved- Air Quality, Water Quality and Reduction in Green House Gases-Emission as Industries shut, transportation slowed, Flights grounded and Human Activities minimised; there was no Air pollution emission, there was no dumping and /or discharging of Industrial effluents, Solid wastes, Sewage etc. which are sources of pollution. India's Corona virus –Lock down improves water quality of Rivers-Ganga and Yamuna and others water resources as well. Industrial effluents and Sewage, if not discharged, in Ganga-River, Ganga Water can be purified. People in Delhi, one of the World's polluted Cities, are now breathing Cleaner Air. Many other Countries around the World have also seen Air Quality improved Amid the Pandemic. The Covid-19 –Lock down. Corona virus measures imposed in different countries have positive impact on Environment. There is a need to end the illegal wildlife trade globally to prevent future pandemic and biodiversity loss. The Covid-19 had positive and negative consequences on biodiversity resources. The Covid-19 pandemic remains a threat to biodiversity conservation. Worldwide- Green House Gases-Emissions reduced: India (Delhi)-70%, USA (North-East)-30%, China -10%, European Countries-58% likewise. However, Environmentalist worried- reduction in Air Pollution & GHG's-emission is Temporary, as Work will retain to Business, the Level of Air Pollution and GHS's –level again will come back to the level as found, before Corona virus-Lock down. European Activist call for Green Investment to restart growth after Corona virus Crises; and ensure that rebuilt Economies are stronger. Green Groups in India's suggested to take note and rethink Policies on Industrial Development for Concern of Environment. During covid-19 lockdown period climate changes have also been highlighted.

#### Keywords

Covid-19,  
Green house gases,  
Air pollution,  
Air quality Index,  
Lockdown, Wildlife

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### Introduction

Corona virus-19 (Covid-19) has been identified, in December 2019, in Wuhan, China; originally initiated from animals: bats, snakes in animal market and spread up virus - infected humans, disease

outbreak is epidemic leading to pandemic and continues to intensify worldwide (Wang *et al.*, 2020; Zhou *et al.*, 2020). Covid-19 epidemic rapidly spreading across the world. The Government of India, on March 24, 2020, ordered a nationwide lockdown from 25 March 2020 -14 April 2020 -

phase-1 that has limited movement of the entire 1.3 billion population of the India for preventive measures against the coronavirus-2 pandemic. Lockdown period – had Industrial activities, commercial activities shut down, Interstate and Intra state movement restricted, Road Transport, Rail transport restricted, Flight grounded, only essential services were permitted as per the Guidelines issued by the Government.

The whole world adopted the curfew/lockdown activity with restriction of human mobility as the transmission of novel corona virus-19 increases rapidly. The quarantine imposition - stopped all the commercial activity that greatly affects the various important environmental parameters.

The industrial and urbanization, social and economic activities suddenly shut down during the covid-19 lockdown, the nature has taken the advantages and showed improvement in the quality of air, cleaner rivers, less noise pollution, undisturbed and calm wildlife.

The Air quality, Water quality improvement and Green House Gases –emissions dropped down; Clean Environment has been observed thought the Lockdown Countries, including India. The Environmentalist reported data based on satellite Survey and Monitoring of Air and Water quality and Assessment Report.

### **Environment assessment**

India's Context: Air Quality: New Delhi, one of the World's most polluted Cities are Breathing Cleaner Air. India's other 90 Cities are also reduced dramatically lower Air Pollution levels. Wild Life returns as Human stay indoor due to Corona virus – Lockdown. NASA Satellites –Images show Air Pollution dropped in India, after Lockdown (Central Pollution Control Board –Survey: 2019). Reported data states that 1.25 million people dies in India due to Air pollution every year, now Air is cleaner. Blue Skies are seen with clear clouds. And, the pleasant cooling cuckles are observed.

In India, 19 Cities across the country including Delhi dropped pollutants such as –

Nitrogen Dioxide: Reduced – 70%-Delhi, 43 % - Pune, 30% - Mumbai

Particulate Matter 2.5 (Micron Sizes) Reduced: 30% - Delhi, 15%- Ahmadabad, 15%- Pune (Fig. 1)

Central Pollution Control Board – reported Kanpur – polluted City, now level of Air quality is satisfactory; other 51 Cities, Air quality are also Satisfactory; and 39 Cities have observed – Good Air quality. Besides, 92 Cities have lower to Good Air quality.

People in New Delhi, One of the most polluted city are now breathing cleaner air.

Water Quality: Corona virus –Lockdown has resulted in Reduction and /or NO- Discharged of Toxic Industrial Wastes, Dumping of Solid Wastes, and Sewage into River Ganga and Yamuna (Mishra, 2019). The Water Pollution causes - mainly due to the Industrial Wastes and Human Activities- Sewage and Solid Wastes Discharge into Rivers. After, Corona virus –Lock down in India, improvement in water quality (40%-50%) of Ganga and Yamuna – Rivers have been observed. Rivers Cleaners have been reported, after nine days lock down in the Country. Dissolved Oxygen has been found increased, which involve natural mechanism for aquatic living organisms. Fishes were found floating on the surface of River water. The Water Samples for different Parameters are being tested (Central Pollution Control Board –Survey: 2019; Mishra, 2019).

### **Air pollution and green house gases – reduction**

It was noted a sudden drop of greenhouse gases (GHGs) emissions and air pollution as industries, transportation and companies were closed down. Air pollution in Ney York has reduced by nearly 50% because of measures taken to control the virus (Henriques, 2020). In China 2020, nearly 50%

reduction of N<sub>2</sub>O and CO occurred due to the shutdown of heavy industries. Also, emission of NO<sub>2</sub> reduction in many countries (e.g., US, Canada, China, India, Italy, Brazil etc.) observed due to the covid-19 lock down (Biswal *et al.*, 2020; Ghosh, 2020; Saadat *et al.*, 2020; Somani *et al.*, 2020). EEA, 2020 reported - because of the COVID-19 lockdown, NO<sub>2</sub> emission dropped from 30-60% in many European cities including Barcelona, Madrid, Milan, Rome and Paris. It was also reported that, the levels of NO<sub>2</sub> and PM<sub>2.5</sub> reduced by almost 70% in Delhi, the capital of India (Thiessen, 2020). Overall, 46% and 50% reduction of PM<sub>2.5</sub> and PM<sub>10</sub> respectively, was reported in India during the nationwide lockdown (IEP, 2020). Also, coal-based power generation reduced 26% in India with 19% reduction of total power generation after lockdown (CREA, 2020).

### **Water pollution – reduction**

During the covid-19 lockdown period the industrial activities were shut down that has reduced the industrial waste dumping into river and water bodies, resulting reduction in water pollution. For example In India, the river Ganga and Yamuna have reached a significant level of purity due to the absence of industrial pollution on the days of lockdown. Besides, Uttarakhand Pollution Control Board (UPCB, 2020), monitoring data stated that physicochemical parameters i.e, pH (7.4–7.8), dissolved oxygen (DO) (9.4–10.6 mg/L), biochemical oxygen demand (BOD) (0.6–1.2 mg/L) and total coliform (40–90 MPN/100 mL) of the river Ganga were found within the water quality standard. Water pollution are also reduced in the beach areas of Bangladesh, Malaysia, Thailand, Maldives, and Indonesia (Kundu, 2020; Rahman, 2020; Jribi *et al.*, 2020). Overall, due to the covid-19 lockdown, reduces soil water pollution.

### **Wildlife changes – Covid-19 lockdown**

Wildlife expert stated that the animal-borne disease is the outbreaks of the destruction of nature. During lockdown, human confinement - gives space to

animals and birds which were usually occupied by a human and their activities. Globally during the corona virus period many animals like Deer, peacocks, monkeys, elephants, birds, dolphins, etc. were observed on the street coming to locality and moving freely in open area. It was noticed that a comfortable wildlife movement in human restricted zones (Wild Life Institute of India, 2020).

The Covid-19 pandemic affected the environment, placing a strain on the economy and all parts of human society, globally. There was a reduction in human pressures on the natural ecosystem because of the lockdown of social and economic activities. The effects of Covid-19 are inevitable; ecosystem integrity (in terms of species diversity, endemism, and threats) in African countries with global hotspots for biodiversity conservation threatened. The essential conservation work (protected area/national park staff still patrol and guard vulnerable species and landscapes) is still ongoing across the globe with the accruing positive effects of the pandemic—reduced air/water pollution, short-term disruption in wildlife trafficking and ecosystem restoration. Thus, prevailing problems like indiscriminate exploitation of wildlife resources, tourism revenue loss, staff absenteeism/poor performance, increased human dependence on natural resources, disruptions of field/research work, and species monitoring would persist. The world environment is changing, and the conservation of species, living habitats, diversity, extinction, new species formation need to be studied.

### **World Environment – Changes**

The World Data available indicates that – 4.2 million People die from outdoor Air Pollution, every year. The people die due to Air Pollution Exposure in different Countries, every year, indicates: 1.25 million people in India, 60,000 people reported in China and 2,00,000 people in USA. The Lock down has brought the massive impact of Corona virus quarantines on Air Pollution. The danger from Air pollution has been reduced to 50% around the World, due to reduction in the level of Air pollution:

Delhi-70%, USA (North East) -30%, China-10%, European Countries-50%. The Nitrogen Dioxide level and Particulate Matter (2.5 micron Sizes)- are reduced (The Corona virus Impact on Pollution and Climate Change -2019; Corona virus is Helping Environment – For Now, 2020 ; How the Corona virus is Having A Big Impact on the Environment, 2020).

## **World Climate – Change**

### **Green House Gases**

Emissions are reduced as Flights Grounded, Factories Shut and Traffic slowed. Green House Gases – Emissions dropped 58% in European Countries; In India 70% GHG-dropped; and Himalayan Mountain ranges are visible from a distance for first time in some parts of India. In USA, 30% of Air Quality Improvement and Reduction in Green House Gases- Emissions have been reported. (Fig. 3) China is worst for Emissions of Green House Gases, now dropped 40% Nitrogen Dioxide and Reduced GHG-Emissions. Global shut down has Positive Impact on Environment. Expert say- Corona virus measures imposed in different Countries have improved Air Quality (Cleaner Water, Cleaner Air- the environmental effects of corona virus, 2020; Corona virus- Good for Environment? Covid -19 Special, 2020; Covid-19 and Climate how much impact is the current lockdown really having on our environment? 2020; How Corona virus Lock down Are Affecting the Environment, 2020).

### **Climate change**

In the world: such as Europe, the US, India, Australia and South America covid-19 lockdown period - reported air pollution plunge. For example, instead of the 70% drop in nitrogen dioxide levels observed there, satellite measurements show these fell by only 20–38% over western Europe and the US compared with the same time in 2019. It's an impressive drop, but probably not big enough to

have a measurable effect on the weather or climate. The figure demonstrate - Aerosol emissions fall over Europe and Asia Maps showing the fractional change of the model anthropogenic aerosol emissions during the months of lockdown relative to the 2016–2019 baseline period. The drop in air pollution over western Europe and India was far more muted than the 70% fall seen over eastern China.

### **Climate change – expert**

Expert warn –Reduction in Green House Gases – Emission is Temporary

Environmentalists worried, once work will return to Business as usual, the Air pollution and GHG-emission will come back to the earlier level i.e. the level reached, before Lock down

Expert worried Environment concern may not be a Priority for Government, while fighting Covid-19

Scientists fear as to whether the Government could priorities Social and Economic Costs, before the Climate

European Activities call for Green Investment to restart Growth, after Corona virus Crises

Activists say fighting Climate Change would ensure that rebuilt economies are Stronger

Japanese Environment Minister-Said: We want to ensure Environment will not be left behind

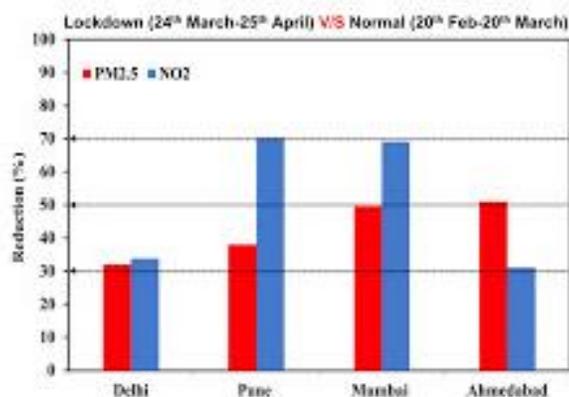
Green Groups hope India's take Note and rethink policies on Industrial Development

The countries concern has declared covid-19 lock down worldwide: industries shut, small unit shut, transportation slowed, flight grounded, and human activities – reduced. Corona virus measures imposed in different countries has improved water quality, air quality and reduction in green house gases-emission.

**Table.1** Central Pollution Control Board: Air Quality Index (AQA)

S. No.	Air Quality Index (AQI)	Remark
1.	0 - 50	Good
2.	51 - 100	Satisfactory
3.	101 - 200	Moderate
4.	201 - 300	Poor
5.	301 - 400	Very poor
6.	401 - 500	Severe

**Fig.1**



**Fig.2** With lockdowns in force, NASA satellite data show a 30 percent decrease in pollution across the northeastern U.S.

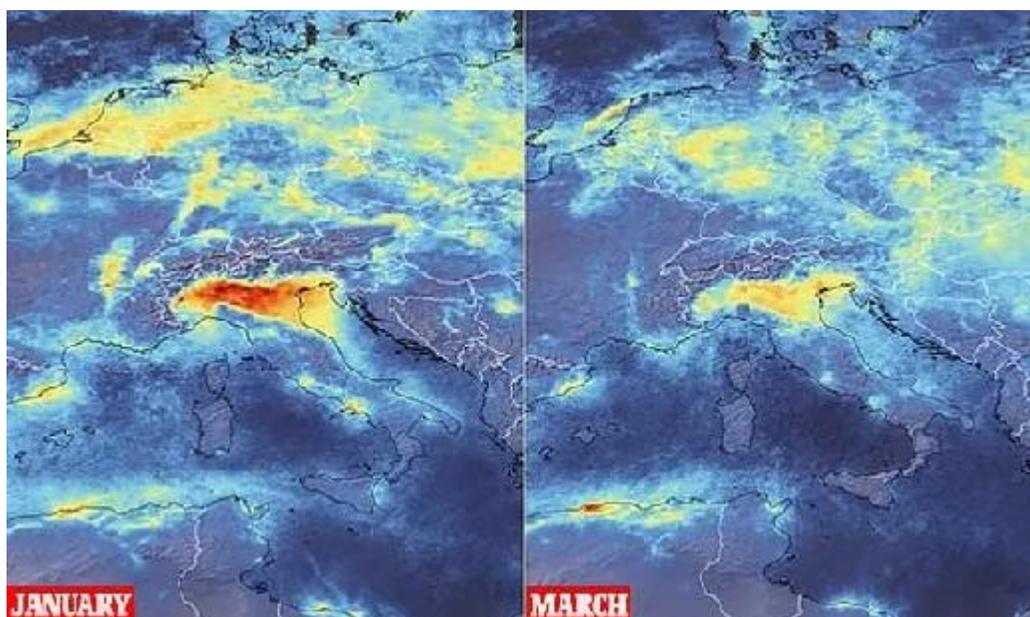
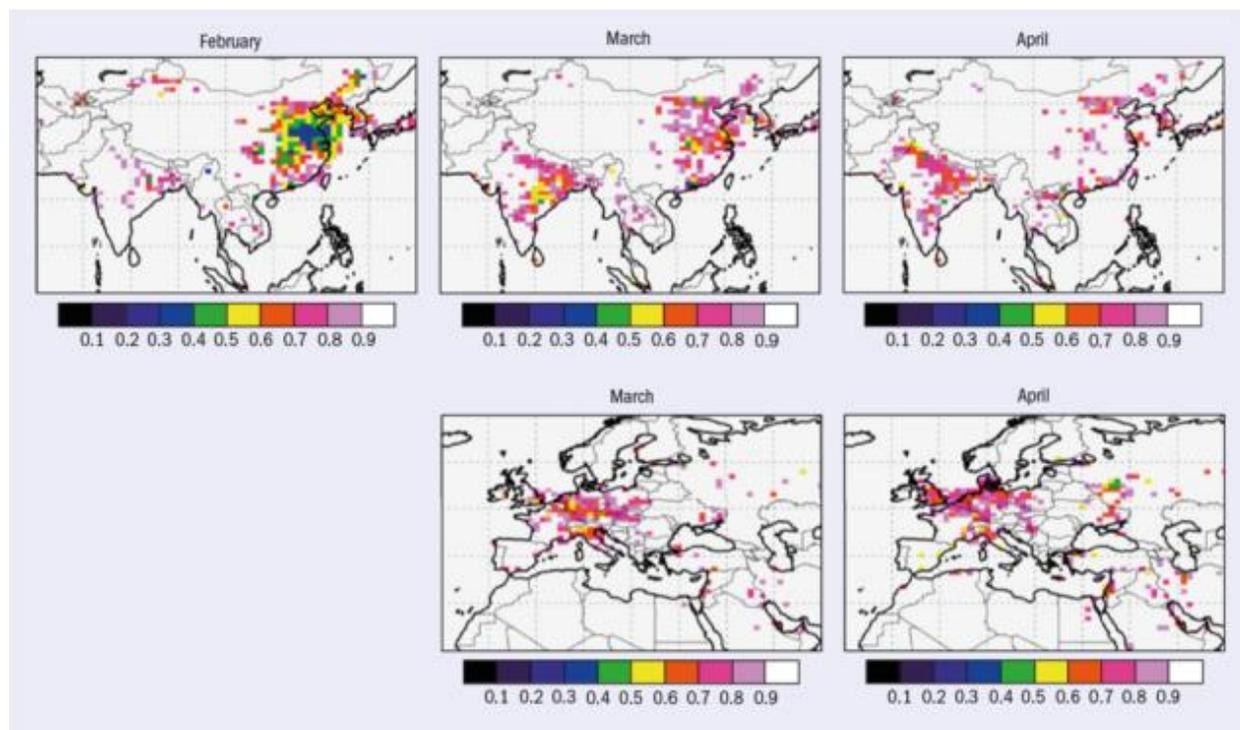


Fig.3



(Source: Axel Timmermann).

Global shut down has observed positive effects on environment. green activists hope- policy makers would rethink on industrial development, and ensure that rebuilt economies are stronger with green investment, after corona virus crises.

Covid-19 lock down strategies - pandemic disaster has brought quality changes in the environment as well as natural ecosystem. The Covid-19 pandemic has led to improved environmental quality air, water, soil and noise pollution and wildlife free movement.

Thus there was significant reductions in environmental pollution and improvements in environmental quality and natural restoration of the environment.

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### Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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