



## COVID-19 Forced Lockdown: Nature's Strategy to Rejuvenate Itself

Koushik Sen<sup>1\*</sup>, Tanmay Sanyal<sup>2</sup>, Susanta Roy Karmakar<sup>3</sup>

<sup>1</sup>Department of Zoology, Jhargram Raj College, Jhargram, West Bengal, India.

<sup>2</sup>Department of Zoology, Krishnagar Government College, Krishnagar, West Bengal, India.

<sup>3</sup>Department of Zoology, Maulana Azad College, Kolkata, West Bengal, India.

### ABSTRACT

Coronavirus diseases-2019 (COVID-19) pandemic emerged in late 2019 and many countries initially adopted partial or complete lockdown measures to restrict the transmission of the disease, as effective drugs or vaccines were unavailable till then. Imposing lockdown drastically reduced anthropogenic and commercial activity. All types of large and small industries and markets were closed; all sorts of public and commercial transportation, except for the essential ones, along with railways and flights were completely shut off. Worldwide reports and research indicating that COVID-19 induced lockdown might have a crucial impact on the global environment. During the lockdown, air and water quality improved significantly due to low atmospheric pollution, environmental noise reduced and wild lives are also blooming. COVID-19 may be nature's warning to the human being; when human beings are confined in homes for saving their lives, nature takes advantage and try to heal herself. Based on available research and media reporting, in this article, we try to summarize the episode of COVID-19 induced lockdown and its effect on the environment especially emphasizing the Indian context.

**Keywords:** COVID-19, Environmental impact, Lockdown, SARS-COV-2

**Corresponding author:** Koushik Sen  
**e-mail** ✉ [koushiksen1987@gmail.com](mailto:koushiksen1987@gmail.com)  
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### INTRODUCTION

Coronaviruses are a group of viruses that infect humans through zoonotic transmission. After Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (Zhong *et al.*, 2003; Ramadan & Shaib 2019; Magomedova *et al.*, 2020) in the last two decades, in late December 2019, a novel infectious disease was identified in the Wuhan city of China (Rivas *et al.*, 2020). The International Committee on Taxonomy of Viruses (ICTV) named the virus "severe acute respiratory syndrome coronavirus 2" (SARS-CoV-2) (Gorbalenya *et al.*, 2020), and the disease was named COVID-19 (Chen *et al.*, 2020) on February 19, 2020, by World Health Organization (WHO). With affecting more than 175.5 million people and causing nearly 3.8 million deaths (as of 14<sup>th</sup> June 2021) in more than 200 countries, so far, the COVID-19 is the largest pandemic on the earth (WHO, 2020a). SARS-CoV2 is a member of the  $\beta$ -coronavirus subgroup under the Coronaviridae family (Pyrce *et al.*, 2007) having glycoprotein spikes like a crown on its surface with a diameter ranging between 65-125 nm. COVID-19 is transmitted from person to person through respiratory droplets expelled by the infected person's coughing, sneezing, talking, singing, or spread by touching fomites (Bouey *et al.*, 2020). Recently, WHO (on 9<sup>th</sup> July 2020) admitted that the virus can also be transmitted through the air (WHO, 2020b). This newly-born disease has a long incubation period ranging between 2-14 days with

symptoms like breathing difficulty, dry cough, fever, mild pain or pressure in the chest, and blue lips (CDC, 2020). Initially, there are no specific effective drugs to prevent the disease (Cortegiani *et al.*, 2020). Some preexisting antibacterial and antiviral drugs such as favipiravir, remdesivir, tocilizumab, ivermectin, and lopinavir are used to combat this disease (Paital *et al.*, 2020). There are approximately 300 promising vaccine candidates under trial, among which 102 are under clinical trial and the rest are under preclinical evaluation (WHO, 2020c). National Regulatory Authorities recently approved sixteen vaccine candidates, for emergency mass vaccination purposes (WHO, 2021).

The emergency committee of WHO, on 30<sup>th</sup> January 2020, declared the disease as a global health emergency (WHO, 2020d). Initially, due to a lack of effective medicine or vaccine, the social lockdown was the only way to maintain less human interaction for preventing this disease from spreading (Paital *et al.*, 2020). Several countries implemented these lockdown measures at different stages of infection; China imposing lockdown from the end of January 2020 in Wuhan, whereas in Italy the nationwide lockdown was first applied from 09<sup>th</sup> March 2020, and in Spain, Australia, United Kingdom, and France, the lockdown measure was imposed on 14<sup>th</sup> March 23<sup>rd</sup> March, 23<sup>rd</sup> March, 17<sup>th</sup> March 2020, respectively (Wikipedia, 2020a).

In India, the first confirmed positive case of COVID-19 was reported from Kerala on 13<sup>th</sup> January 2020 (India Today, 2020) and now India holds 2<sup>nd</sup> position with 29,510,410 confirmed cases and 374,305 deaths as of 14<sup>th</sup> June 2021 (Worldometer, 2020). With 500 confirmed cases, the Prime minister

requested all the citizens of the country to observe a 14 hrs (7.00 A.M-9.00 P.M. IST) voluntarily social distancing campaign, observed as Janata curfew on 22<sup>nd</sup> March 2020 (The Hindu, 2020a <http://www.mha.gov.in/>), followed by a nationwide imposed locked down from 25<sup>th</sup> March 2020 with initial duration for 21 days and extended till June 30<sup>th</sup>. Step by step unlocking procedure was started but till now, to control the second wave of COVID-19, state governments are imposed a lockdown on a regional scale (Wikipedia 2020b; Indian Express, 2021). Different phases of lockdown are implemented with different rules and levels of restrictions to maintain strict social distancing as a measure to reduce the effects and transmission of Coronavirus (Somani et al., 2020). In general, under the nationwide lockdown, all the academic institutions, industries, multiplex, shopping complexes, restaurants, and similar public places were closed. All sorts of transportation services including railways and flights were suspended except the essential one. The lockdown affected the Indian economy but led to a dramatic decrease in air pollution and improvement of overall environmental health including surface water quality, GHG emissions, noise level, and organic and inorganic waste product generation.

The total or partial social lockdown around the planet to flatten the pandemic curve results in less anthropogenic and economic activity and human-environment interaction and led to a decrease in pollution (The Guardian, 2020). In a nutshell COVID-19, the biggest pandemic and curse to human civilization to date may be a warning for us from Nature to stop destroying the natural resources, on the other side when we are quarantined at home to prevent this fatal disease, nature is trying to heal itself.

In this article, we try to sum up the impact of COVID-19-induced lockdown on the global environment almost on every aspect (air pollution, water pollution, noise pollution, greenhouse gas (GHG) emission, biodiversity, and wildlife) with emphasizing the Indian context using available literature, news from media and various regulatory authorities.

#### COVID-19 and status of air pollution

To live on the earth, ambient air quality is the essential one; although globally 91% of people live under poor air quality (WHO, 2016). Air pollution is responsible for 4.6 million deaths globally (Cohen et al., 2017). The concentration of particulate matter (PM) is one of the major parameters to measure air quality. The high PM<sub>2.5</sub> is responsible for adverse health effects causing chronic obstructive pulmonary disease (COPD), respiratory infection (GBD, 2018), is declined in various cities all over the world due to lockdown measures. In Zaragoza (city of Spain) the PM<sub>2.5</sub> significantly decreased 58% in March 2020 compared to February 2020; in Rome, the average PM<sub>2.5</sub> value lowered 24 % in March 2020 compared to the value of February 2020. In Dubai (UAE) the PM<sub>2.5</sub> reduced by 11% during March 2020 compared to March 2019 (Chauhan & Singh 2020). According to the Copernicus Atmospheric Monitoring Service (CAMS) of the European Union, in a large area of China mean value of PM<sub>2.5</sub> reduced up to 20-30% in February when compared to the mean value of February 2017, 2018, and 2019 (Zambrano-Monserrate et al., 2020). A study to

analyze the PM<sub>2.5</sub> of fifty most polluted capital cities of different countries around the world reported an average 12% reduction in PM<sub>2.5</sub> concentration worldwide with the highest reduction in the African continent by 33% followed by a 22 % reduction in America and 16 % in Asia; finally, in European countries the reduction level was only 5% due to lockdown in last year (**Table 1**) (Rodríguez-Urrego & Rodríguez-Urrego, 2020). Nitrogen dioxide (NO<sub>2</sub>) is a highly reactive air pollutant emitted from vehicles and industrial activity and causes inflammation, and respiratory distress (He et al., 2020a; He et al., 2020b). National Aeronautics and Space Administration (NASA) and European Space Agency (ESA) released images, of several nations before and during the lockdown, using Ozone Monitoring Instrument (OMI) through the AURA satellite and Tropospheric Monitoring Instrument (TROPOMI) through the Sentinel-5P satellite to capture the data suggests a reduction in NO<sub>2</sub> concentration up to 30 % with improved environmental quality (**Table 2**). Heavy changes in NO<sub>2</sub> concentration were observed in the middle of March 2020, onwards in South Asia and South-East Asian countries including a large part in India, due to the closure of industries and transportation service. Similar changes were recorded in Western Africa and Europe (Lal et al., 2020). Carbon dioxide (CO<sub>2</sub>), another major air pollutant has led to a sharp decline of approximately 17% by 7<sup>th</sup> April 2020 when compared to 2019 levels due to the peak in global lockdown. The carbon emission was reduced by 23.9 %, 30.7 %, and 31.6 % in China, UK, and USA, respectively. In India, carbon emission was reduced by 26 % (Le Quéré et al., 2020).

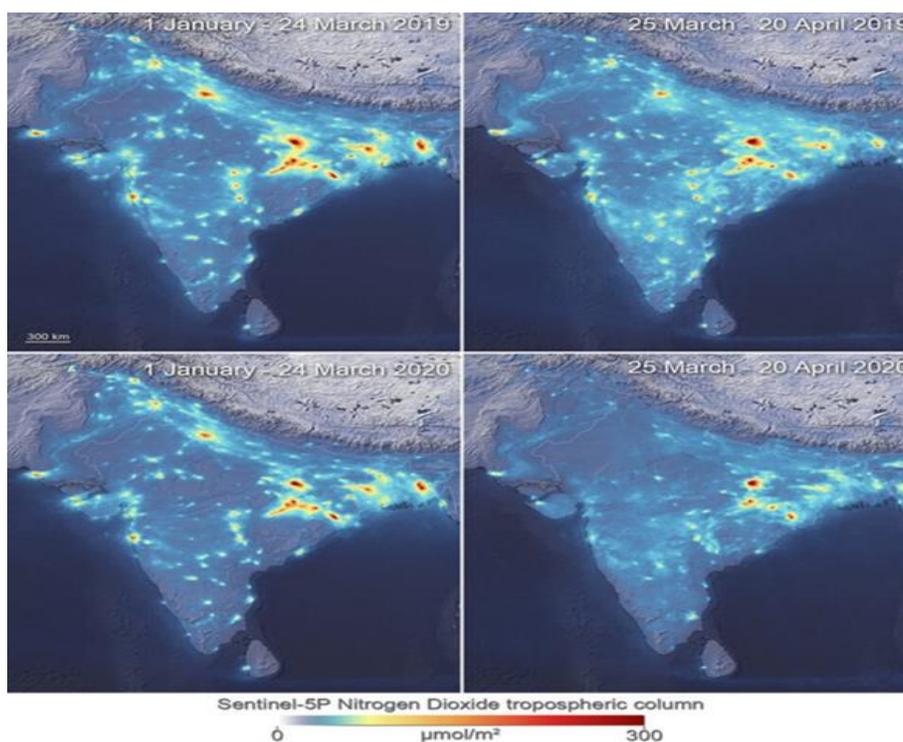
In India, gradual improvement in the overall air quality was also observed. Air Quality Index is an important value to measure the overall air pollution due to principal air pollutants; the lower the AQI value and air quality are inversely related. During the complete lockdown period in 2020, the Air Quality Index (AQI) of the country was 30% reduced when compared to 2019. The north, south, east, west, and central regions of India experienced a 44, 33, 29, 32, and 15 % decline in AQI value, respectively (Sharma et al., 2020). The average AQI of Delhi, which was around 300-400, drastically reduced to 94, during the lockdown phase. According to Sentinel-5P satellite captured data, the NO<sub>2</sub> concentration in India was reduced by almost 40-50% (**Figure 1**) across the major cities of India compared to the same time frame of the previous year (Lokhandwala & Gautam, 2020). During the initial lockdown period (16<sup>th</sup> March to 14<sup>th</sup> April 2020), in 22 cities of India PM<sub>10</sub>, PM<sub>2.5</sub>, carbon monoxide (CO) was reduced by 43, 31, and 10 %, respectively (Arora et al., 2020). In Delhi and Mumbai, PM<sub>2.5</sub> was reduced by 35% and 14%, respectively when compared to March 2019 (Chauhan & Singh, 2020) and a similar pattern of PM<sub>2.5</sub> reduction was also observed in other cities of India, (**Table 3**). Even in this year, due to the second wave of COVID-19, after the starting of lockdown in mid-April 2021, the air quality is similar to that of last year, when a nationwide lockdown was implemented in March 2020. The average PM<sub>2.5</sub> for May of both years is almost identical at about 55-56 µg/m<sup>3</sup>. However, this value is about 42 percent lower than the value in May 2019, when there was no lockdown (India Today, 2021).

**Table 1.** Percentage of PM 2.5 Reduction in World’s Different Cities Due of COVID-19 Lockdown

City	% Reduction in PM 2.5	Time	Source
Newyork, USA	20%	Feb 2020 and Mar 2020	Chauhan and Singh, 2020
Los Angles, USA	30%	Feb 2020 and Mar 2020	
Zaragoza, Spain	58%	Feb 2020 and Mar 2020	
Rome, Italy	24%	Feb 2020 and Mar 2020	
Dubai, UAE	11%	Mar 2019 and Mar 2020	
Delhi, India	35%	Mar 2019 and Mar 2020	
Dhaka, Bangladesh	24%	Feb 2020 and April 2020	Rodríguez-Urrego & Rodríguez-Urrego, 2020
Tehran, Iran	39%	Feb 2020 and April 2020	
Astana, Kazakhstan	18%	Feb 2020 and April 2020	
Santiago, Chile	10%	Feb 2020 and April 2020	

**Table 2.** Nitrogen dioxide (NO<sub>2</sub>) Emission data of Different Countries during Lockdown

City	% Reduction in PM 2.5	Time	Source
Delhi	35%	Mar 2019 and Mar 2020	Chauhan & Singh, 2020
Mumbai	14%		
Chennai	32%	Mar- May 2019 and Mar-May 2020	Kumar et al., 2020
Hydrabad	26%		
Kolkata	24%		
Jaipur	50.5%	Mar- May 2019 and Mar-May 2020	Navinya et al., 2020
Lucknow	51.5%		
Ahemedabad	67.7%		
Nagpur	52.6%		
Bangalore	45.4%		
Chennai	30.2%		



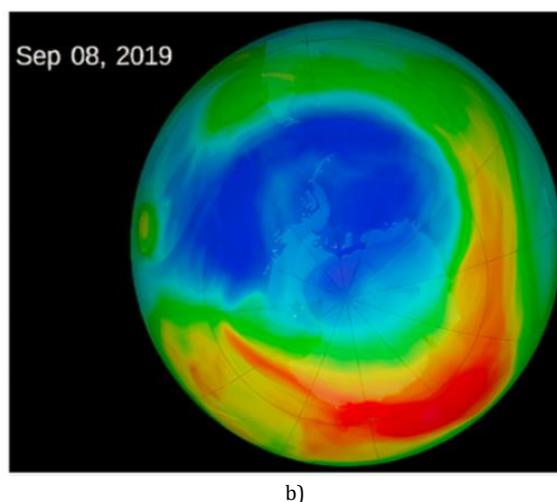
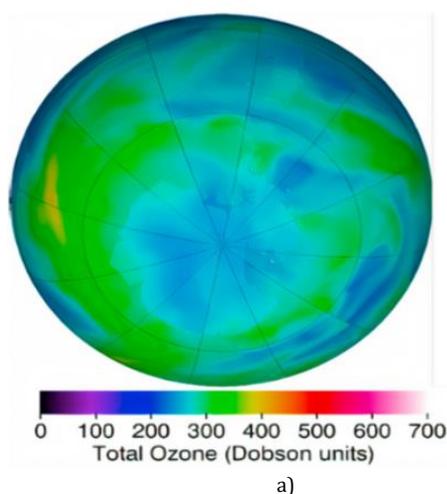
**Figure 1.** Nitrogen Dioxide (NO<sub>2</sub>) Concentration Before and During COVID-19 Lockdown, 2020 in India (Image Source- Earthsky, 2020)**Table 3.** Percentage of PM 2.5 Reduction in Different Cities of India Due to COVID-19 Lockdown

Location	Time	% Reduction	Source
Spain	Mar 2019 and Mar 2020	20-30%	Muhammad <i>et al.</i> , 2020
USA	Mar 2015-19 and Mar 2020	30 %	
France	Mar 2019 and Mar 2020	20-30%	
Italy	Mar 2019 and Mar 2020	20-30%	
China	Jan and Feb 2020	20-30%	
Europe	Mar 2019 and Mar 2020	20-30%	Lokhandwala <i>et al.</i> , 2020
India	Mar- Apr 2019 and Mar -Apr 2020	40-50%	

#### Impact on GHG emission and ozone hole

In the last few years, the amount of GHG emission throughout the world meets a new peak (Global Climate report, 2019). CO<sub>2</sub> emission rising by 1% per year for the last one decade without changing its pattern till 2019 (Le Quéré *et al.*, 2020). The International Energy Agency estimated a fall of 8 % in CO<sub>2</sub> emission (equivalent to 2600 Mt. CO<sub>2</sub>) during this global lockdown. Some agencies have also expected a reduction in

CO<sub>2</sub> emission by more than 5%, the highest annual reduction to date (Scientific American, 2020). Imposing Global lockdown at different times results in a daily reduction of global CO<sub>2</sub> emission by 17% by 7th April 2020. The change in global CO<sub>2</sub> emission rate was highest on 7th April during the last 4 months of 2020 (1st January to 30th April) with an average decrease of 26% in individual countries (Le Quéré *et al.*, 2020).

**Figure 2.** The Hole in the ozone layer over Antarctica on 23rd May 2020 and September 08, 2019, respectively (Image source- Arora *et al.*, 2020)

Implementation of strict lockdown by the Indian government to reduce human interaction, also effectively decreased carbon emission by almost 15% during March 2020 and estimated to reach to 30% level at the end of April (Myllavirta & Dahiya, 2020). Just within 10 days of lockdown, the overall power consumption of India decreased up to 20% compared to the usual consumption level. The thermal power generation sector is one of the major GHG emitting sources, dropped GHG emissions by 31% within the first 21 days of April 2020. Following a similar trend in electricity demand, consumption of fossil fuels and natural gas was also reduced during this lockdown, which ultimately led to a significant reduction in GHG emissions (Myllavirta & Dahiya, 2020).

After implementing Montreal Protocol to save the ozone layer, the stratosphere healed 1-3% per decade in the last 20 years and expected to get back its health as it was in 1980 in the next 50 years. NO<sub>2</sub>, CO<sub>2</sub>, and various GHG and ozone-depleting substances emissions were reduced during lockdown with a simultaneous increase in surface ozone concentration. During

lockdown Copernicus, atmospheric monitoring services (CAMS) confirmed that the largest ozone hole of about 1 million square kilometers over the arctic region has been healed (**Figure 2**) (India Times, 2020). It has been presumed that healing of arctic ozone hole due to reduced emission of GHG and other pollutant triggering by COVID-19 lockdown. However, later scientists reported that ozone layer healing is due to the polar vortex unrelated to the change in lockdown-induced pollution level (Arora *et al.*, 2020).

#### COVID-19: impact on noise pollution

Anthropogenic activity generated unwanted sound can be defined as environmental noise, which is a prime factor for discomfort and disease of human population and also harmful for the environment and other animals of the earth (Zambrano-Monserrate *et al.*, 2019). Most noise pollutions are generated due to anthropogenic activity (Paital, 2020). Long-time exposure to high noise may play a crucial role in irritation, mental stress, hypertension, concentration loss, and

insomnia (Öhrström, 1989; Stansfeld *et al.*, 1996; Rabinowitz, 2000; WHO 2005; Banerjee *et al.*, 2008). An extreme level of sound pollution can cause stroke, heart attack, and dementia (European Union, 2015). In major cities of India generally, the average noise level ranged between 45-86 decibels (db) during the day and 37-76 db during the night. In the residential area, the diurnal noise level is between 63-90 db and 46-78 db, whereas the same for the commercial area are 50-89 and 40-70 during day and night, respectively (Arora *et al.*, 2020). A steep reduction in the noise level has been observed during the lockdown period last year. Global data indicating traffic movement drop down by 54, 36, and 19% in the UK, US, and China, respectively (Somani *et al.*, 2020).

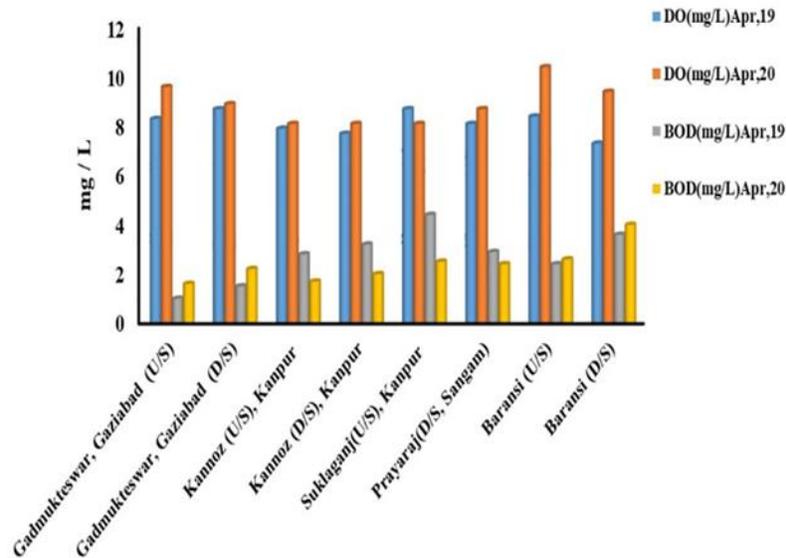
In India, after imposing lockdown, flights, trains, buses, and all other vehicles are stopped except some freight trains and vehicles associated with essential services. For the first time in Indian transportation history, no mail or passenger trains are in operation from 22 March 10:00 PM, 2020 (Hindustan Times, 2020a). With this cessation of transportation, there was a dramatic decrease in noise pollution in Indian cities with an estimated reduction in noise pollution ranged between 35-68 db from 8 AM to 4 PM. In Kolkata and Delhi, noise pollution was decreased by 50-75 db and 20-30 db, respectively in phase-I lockdown (Paital, 2020). In Bengaluru, the noise level was less than 45db in silk bored, JC road, and BTM areas. According to the West Bengal, pollution control board 50-75 % decrease in noise pollution in Kolkata, the city of joy, during the lockdown phase (NDTV, 2020).

#### *COVID-19: impact on water quality*

According to articles and media reports, lockdown for preventing COVID-19 has had a great effect on the aquatic ecosystem. The water quality of some major rivers in India including Ganga, Yamuna, Kavery, improved within a few weeks of imposing lockdown mainly due to less anthropogenic activity and closure of industries. Aquatic parameters of Ganga and Yamuna deteriorated over time due to a gradual increase in industrialization and urbanization (Chakrapani & Subramanian, 1996; Dudeja *et al.*, 2011; Deoli *et al.*, 2017). About 1072 industrial units, by releasing waste products, cause pollution of Ganga between Haridwar and Kanpur (Times of India, 2020a).

During pre-COVID time, 6500-6700 MLD (Million liters per day) toxic waste materials were dumped in Ganga in its UP stretch and onwards, about 10% of which is industrial waste. 100-150 tons of BOD, estimated at about 30% of the total BOD, comes from industrial toxicants (Arora *et al.*, 2020). Despite making and executing several consecutive programs almost over the past four decades by GOVT of India, initiated with Ganga Action Plan (GAP) in 1986, then GAP -II in 1993, and recently "Namami Gange" to clean and lean Ganga, but a load of pollutants and waste keep hike on in the Ganga River but nationwide lockdown improves this situation (Times of India, 2020b).

In upstream and downstream of Ganga Barrage, the average concentration of dissolved oxygen (DO) and biological oxygen demand (BOD), were respectively 8 mg/l, 2.1 mg/l, pH 7.9 and DO (7.90), BOD (2.1 mg/l), and pH (7.9) during COVID-19 induced forced lockdown period of March 2020 (Lokhandwala & Gautam, 2020). A study aimed to analyze the complete lockdown effect on water quality of Ganga in which samples were collected and analyzed before and during lockdown from five polluted sites. It showed that the DO increased up to 25-30% and BOD decreased up to 35-40% when compared to pre-lockdown and during the lockdown (Times of India, 2020b). The Data regarding fecal coliform of five mostly crowded areas of Uttarakhand, *i.e.*, Lakshmanjhula, Rishikesh, Bindughat, Dudhiavan, Har ki Pauri, and Jagjeetpur showed 47%, 46%, 25%, 25%, 34 %, and 27 % reduction, respectively (Hindustan times, 2020b). In the UP stretch of river Ganga, the water quality data analysis clearly showed that in a majority of the stations, DO and BOD was increased and decreased respectively in April 2020 when compared with April 2019 (**Figure 3**) (UPPCB, 2020). The water quality shown by 27 real-time water monitoring units out of the 36 units located along Ganga, suitable for 'bathing' and 'propagation of wildlife and fisheries' (Singhal & Matto, 2020). The upper stretch of Ganga showed the sharpest improvement. According to Uttarakhand Pollution Control Board, after more than 30 years the water of Har-ki-Pauri in Haridwar stunningly became 'fit for drinking' for the first time (Katariya, 2020). The sharp improvement in water quality at Haridwar and Rishikesh was due to a sudden and huge drop in the number of devotees and tourists along with a 500% decrease in sewage and industrial toxicants (Singhal & Matto, 2020). The overall water quality was also improved between Haridwar and Kanpur. A remarkable improvement was noticed during the lockdown phase across the entire stretch of Ganga, especially the up stretch of Kanpur (Dutta *et al.*, 2020). River Yamuna, the largest arm of Ganga, also appeared more transparent, blue, and natural after many years during the lockdown. The toxic foam floated on the river surface, originated due to a mix of detergents, chemicals from industrial effluents and sewage has almost totally wiped out in southeast Delhi's Kalindi Kunj (Lokhandwala & Gautam, 2020). The water quality data collected from Palla, Nizamuddin Bridge and Okhla upstream, Najafgarh and Shahdara Drain of Yamuna River comparison during lockdown period, April 2020 when compared with the same of April 2019, clearly showed that there is a significant reduction in the value of pH, BOD and COD by 1-10 %, 30-70%, 10-70% respectively due to low pollution as a result of complete lockdown. Yamuna Pollution Monitoring Committee Report, 2020). According to the Karnataka State Pollution Control board, River Kavery and its tributaries such as Hemabati, Kabini, Shimsa also rejuvenated due to less pollution (The Hindu, 2020b).



**Figure 3.** Impact of COVID-19 lockdown on water quality of Ganga in UP stretch [Data Source- UP Pollution Control Board (uppcb.com)]

#### COVID-19: effect on wild life and biodiversity

Global lockdown in the last year due to the appearance of the COVID-19 pandemic and restricted human interaction gives the wild animals and birds a free space that has never been seen before. During the complete lockdown period last year, many animals such as deers, elephants, monkeys, turtles, dolphins, and several kinds of birds were spotted very frequently. Animal behavior such as spotting of coyotes (that normally timid of traffic) on the Golden Gate Bridge in San Francisco, USA, deers are munching in Washington homes, a few miles away from the White House, wild boars are becoming bolder in Barcelona and Bergamo, Italy, peacocks have strutted through Bangor and goats through Llandudno and sheep in Wales (Loring, 2020). In North America, Killer whales have been spotted in the parts of Vancouver for the first time in decades due to less human interference (CSR News, 2020). Confining humans in their home, indicate the use of human zone by wild animals.

In India, the scenario is also stunning and promising for wildlife and biodiversity. A few days after implementing lockdown by Govt. of India at the end of March 2020, several wild animals were seen in urban areas, some of which are spotted after a long time. Asian antelopes, deers, Civet cats, peacocks; one-horned rhinos, and dolphins were spotted across the different cities of India. Peacocks were dancing in the streets of Mumbai, deer found in the locality (Figure 4), similarly in Kozhikode, Kerala, an Indian civet cat was spotted on the road, while a Nilgai was spotted in Noida Sector-18, Delhi, walking leisurely on the road. In Chandigarh, a sambar deer was captured while crossing a road in the city (Economic times, 2020).

The aquatic life was also been thriving due to less water pollution. Several species of fishes were observed in Kolkata ghats after 30 years (Katariya, 2020). The lockdown period

coincides with the annual nesting activity of the olive ridley turtle, in different coastal regions of India such as Odisha and Maharastra, came as a blessing for this endangered animal and nearly 2 crore Olive Ridley hatchlings have emerged and successfully made their way to sea (News18, 2020a). In National Chambal Sanctuary, Agra, 3170 Gharial offspring took birth in the last hatching season, June, 2020 whereas in 2019 and 2018 the number of offspring took birth was 2919 and 2800, respectively. According to Govt. officials, less human interference due to COVID-19 lockdown results in the high natality rate of Gharials in the last hatching season (Times of India, 2020c). Large numbers of migratory birds are returning to lakes and different water bodies and migrate freely due to less human interference (Arora et al., 2020). Many bird species, which migrate from other parts of the country – known as partial migratory birds – have been extended their stay at the Therthangal and Melaselvanoor-Keelaselvanoor bird sanctuaries, Tamilnadu (The Hindu, 2020c). Reduced noise pollution makes the bird's mating call more audible to their mates than ever before, they also flap their wings and perform the mating dance (The Hindu, 2020d). In Kolkata, one of the busiest city of India, peoples spotted, saw, and heard the calls of different kinds of birds, such as Yellow-footed green pigeon, Purple sunbird, Coppersmith barbet, and several others, may be for the first time in their locality (Basu, 2020). Brahmakamal (*saussurea obvallata*), a rare flower and also the state flower of Uttarakhand, India. Generally, it blooms during mid-monsoon (July-August) in high altitude (3500-4800 meters) but the flower was found to bloom in the comparatively low altitude, Garhwal of Chamoli district, Uttarakhand, India, till October 2020 due to low pollution and tourist activity as a result of COVID-19 lockdown (Times of India, 2020d).



**Figure 4.** A peacock is seen on the road at Juhu, Mumbai, during the nationwide lockdown in India; A deer crashed through the roof of a house in Mumbai [Image Source-News 18, 2020b]

Among all these positivity for wildlife of India, a report regarding Indian wildlife amid the COVID-19 crisis indicates a hike in poaching of wild animals during the lockdown all around the country. Various cases of poaching have been reported from national parks, wildlife sanctuaries, bird sanctuaries, and others. Mainly 35 different wild animal species were targeted, of which 15 are listed in schedule I of the Wildlife Protection Act, 1972 of India. During the lockdown 88 poaching cases were reported by the media, which was significantly higher than the reported cases of poaching in pre lockdown time (TRAFFIC Report, India June 2020). However, the overall picture regarding nature and wildlife activity during this crisis period, clearly indicates that Nature presses the RE-SET button for rejuvenating itself, after experiencing that so-called nature's best creation (Human) doing nothing for it. So, we should learn from this experience and need to adapt the ways to live our lives in this post covid era so that we can use nature and its resources without harming it.

#### CONCLUSION

COVID-19, the largest global pandemic causing deadly threats to human life and its long-lasting, large-scale impact on human lifestyle and society may be a matter of research and arguing for the next decades. But despite several negative consequences of this pandemic, the environment healed itself during the lockdown period. All the major polluting industries were closed; vehicles are hard to be found on the road, which led to less carbon and GHG emission along with pure water in the river. Due to less pollution and a calm environment, animals were also enjoying the positive impacts of lockdown. All these positive environmental impacts may be temporary but from this situation, human beings should learn to know their limits of dominancy over nature before it is too late.

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