

## Environmental Change during Lockdown

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### Abstract

The outbreak of COVID-19 which started from a small town Wuhan, in China, resulted in a pandemic which has spread its tentacles across the globe. The nations of the world and their economies never witnessed such an unprecedented threat. Country wide lockdown was imposed. Millions of people were forced to stay indoors in order to contain the virus and prevent its transmission. The epidemic also changed the lifestyle of people in terms of travelling. Industries were closed and transport systems were completely halted. All these resulted in significant drop in carbon emission in the environment. The polluted air in metro and mega cities in Pre-COVID era were already above danger mark. Such activities paved way for our nature to heal. The quality of air and water improved significantly. Wildlife was spotted in otherwise densely populated urban stretches. Such changes emphasize that it is very important to quit the use of fossil fuels that are causing immense damage to our environment. The tangible improvements in nature raises hope that mother nature can be saved. The pandemic has given us the opportunity to reboot our economic system and align its growth along with the environment. Lockdown has also proven that the mother nature can recover very fast if polluting and other agents are withdrawn. Though we cannot forgo the growth and economy, the need of the hour is environmentally balanced resilient economic growth. This study involves in-depth analysis of problems faced, the challenges ahead and strategies for a sustainable future.

**KEYWORDS:** Emission, environmental degradation, Lockdown, pandemic,

### INTRODUCTION

Decades of human exploitation had left our nature gasping for breath. May it be extreme high pollution level, deforestation, ozone layer depletion, excessive use of plastics or discarding factory and pharmaceutical wastes without treatment. Such activities have been posing numerous threats to the survival of our race, the race which dominates this planet of the cosmos.

Coronavirus disease, an infectious disease caused due to newly discovered corona virus (COVID 19) created an unprecedented havoc across the globe, bringing even the super powers like the United States of America, to its knees. It wretched the entire Europe and left the rest of the world in a state of awry. The situation in India in the months of April 2020 was somewhat stable but worst was expected. So the only way to minimize the spread was - Lockdown - "an official order to control the movement of people or vehicles because of a dangerous situation". It can be defined as a condition of staying isolated or restricted with minimal movement as a security measure.

The sudden lockdown to combat the threat of COVID-19 spread was seen as a blessing in disguise in terms of environmental conservation. The lockdown resulted in bringing a halt to the lives of people. They were now staying indoors - some due to scare and others under compulsion. There were only restricted movements happening around. Flights, railways, automobiles, factories and all other drivers of our country's economy, stopped. The sky turned clear, the air breathable and the lush greenery was no longer a thing of past. In the last week of April, the water of river Ganges was declared fit for drinking even without any filtration. The WHO's press conference on 19th May 2020 recommended the Six Points strategies to be followed once life is resumed after COVID-19 is defeated. The manifesto of WHO talks about saving nature, proper sanitization and health facilities which should be resilient to climate change, promote healthy and sustainable food system, build cities that integrate sustainable transport system and healthy housing & stop subsidizing fossil fuel. But there was something good happening amidst all these disturbances - Our environment started healing. There was considerable low emission of harmful gases reported in the months of April 2020 and May 2020 due to sharp decline in use of flights and vehicles. The vehicles constitute approximately 25% of the carbon emission. The factories too have 1/5th of the share in contributing to air pollution.

Before the onset of COVID –19 pandemic, the air around us have reached to very high level of toxicity in the major towns of India. The metropolitan and cosmopolitan cities were the ones worst affected. This was the result of emission of high volume of greenhouse gases since centuries. This also led to the substantial increase in temperature year after year. Increase in temperature further leads to melting of glaciers which in turn result in rise in sea level. World Environment Day is being celebrated every year since 1974 on 5th of June to create awareness among the masses regarding the various aspects of environmental degradation, the harmful effect of human activities which is disrupting various forms of life, resulting in disturbing the natural equilibrium.

**The Ministry of Environment, Forest and Climate Change (MoEFCC)** is the nodal agency in the administrative structure of the Central Government for the planning, promotion, co-ordination and overseeing the implementation of India's environmental and forestry policies and program.

The broad objectives of the Ministry are:

- Conservation and survey of flora, fauna, forests and wildlife
- Prevention and control of pollution
- Afforestation and regeneration of degraded areas
- Protection of the environment and
- Ensuring the welfare of animals

These objectives are well supported by a set of legislative and regulatory measures, aimed at the preservation, conservation and protection of the environment. The ministry deals with four broad areas under the heading environment.

#### 1) Pollution

- 2) Climate change
- 3) Biodiversity
- 4) Waste management

Now let us consider our environment conditions under three heads:

1. Environment in Pre-COVID times
2. Environment during COVID times
3. Environment in Post-COVID times

### **1. Environment in Pre-COVID times**

Deteriorating air quality has been posing a great threat for existence of all living forms. Majority of cities particularly the metro cities were three to four times higher in terms of particulate matter concentration. The harmful effect of air pollution has been triggering various respiratory problems, particularly for elders. Global emissions of carbon dioxide (CO<sub>2</sub>) have increased by almost 50% since 1990 with emissions increasing more quickly between 2000 and 2010 than in each of the three previous decades. It has been rightly pointed out that - Emissions anywhere affect people everywhere. Climate change has been an area of concern not only for India but for the entire world. It adversely affects global economy. In order to bring about measures for control, countries adopted Paris Agreement on 12th December 2015. It came into force on 4th November 2016. It was decided by all the participating countries to work together to limit global temperature rise to less than 2 percent. The implementation of Paris agreement was needed to achieve sustainable development goals. SDG 13 (sustainable development goal) deals with climate action. Unfortunately, India is the third emitter of CO<sub>2</sub> contributing to 6.9% of global emissions. India is continuous in its commitment to reduce its emissions. In order to achieve this, various schemes such as National Action Plan on Climate change & National Mission for Green India has been adopted. The idea is to work together acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

There is a significant need to realize the importance of biological diversity of our planet. Biodiversity refers to the various forms of life-flora and fauna coexisting on this planet. Diverse forms of species ensure sustainability of life. It is very important to preserve the different life forms and prevent its extinction. The Biological Diversity Act of 2002 was enacted to conserve the vast biological resources.

Waste management is yet another significant dimension to be understood while discussing environment. Domestic and industrial activities account to a huge pile of waste everyday in our country. The wastes from various sources needs to be disposed responsibly. All the various activities and actions carried out which includes collection, transport, treatment, disposal-monitoring and regulating together constitutes waste management. Improper waste management will result in severely impacting the public health system. Megacities of the country are showing dynamic economic growth and high waste generation *per capita* as shown below:

City	*population (2011) × 106	#total waste generated in tonnes per day	waste generation (kg <i>per capita</i> per day)
Ahmedabad	6.3	2300	0.36
Hyderabad	7.7	4200	0.54
Bangalore	8.4	3700	0.44
Chennai	8.6	4500	0.52
Kolkata	14.1	3670	0.26
Delhi	16.3	5800	0.41
Mumbai	18.4	6500	0.35

Table 1: Major cities in India and *per capita* waste generation data (2010–2011).  
Source: \*Census of India 2011, #CPCB Report 2011.

Effective waste management infrastructure can lead to sustainable economic growth of our country.

It is predicted that world waste production is expected to increase manifold—approximately 27 billion tonnes per year by 2050, about one-thirds of it shall come from Asia, the major contributors would be India and China. It is expected that waste generation in urban areas of India will be 0.7 kg per person per day in 2025, approximately four to six times higher than in 1999.

#### **The Ongoing waste management system in India (Pre COVID Era):**

Regulation have been made by MoEF(Ministry of Environment and Forest) and the Municipal authorities are responsible for implementing the laid rules and regulations. The informal sector comprising of waste pickers too contributes largely in collection and segregation of wastes for reuse and recycle. However, studies confirm that a large portion of waste is being dumped in an unsatisfactory manner. Waste dumps have adverse impacts on the environment and public health. Open dumps release methane from decomposition of biodegradable waste under anaerobic conditions. Methane causes fires and explosions and is a major contributor to global warming.

## 2. Environment during COVID times

COVID times include phases of lockdown as well as unlock period. In the first phase, on 24th March 2020, countrywide lockdown was declared for twenty-one days. The country along with its economy had come to a standstill. There were stringent measures taken to enforce minimum outdoor activities. People too cooperated since it was for their own good. The lockdowns enforced due to the COVID-19 pandemic led to significant improvement in air quality. It was even seen as a possible emergency measure to combat severe air pollution episodes like those witnessed in Delhi-NCR region during the winter months. Ahead of the World Environment Day this year, experts have highlighted several environmental factors that witnessed improvements in India as a result of the lockdowns, namely air quality, noise pollution, water quality, and biodiversity among others due to reduced industrial and human activities. The lockdown did which the combined efforts of governments and other agencies failed to do in past thirty years. There has been significant drop in coal consumption as well. Dhauladhar range in Himachal Pradesh again being visible from Jalandhar, which is 200 km away. Citizens have also seen Mt. Kanchenjunga from Siliguri and Mt. Everest from parts of Bihar during the lockdown.

Social media has been flooded with pictures of clear skies, mountains and greenery. There have been even stories about wild animals spotted in urban areas. The American space agency, NASA, has using satellite images to study the impact of pandemic related lockdown to global pollution levels.

We must not forget that it's the people who play role of drivers of any initiative and it's the government that substantiates it. It is the need of the hour that we move towards sustainable efforts.

### **Effect of COVID-19 lockdown on Environment**

People breathed the cleanest air after country wide lockdown was declared by Prime minister Shri Narendra Modi. There had been many positive changes worldwide witnessed after decades.

**Quality of Air:** Due to lockdown, travelling was reduced to minimal by all means - by air, trains or own vehicle. Closed industries significantly dropped the pollution level in air since there was significant decline in the emission of harmful nitrous oxide.

**Quality of Water:** Since the activities in different water bodies stopped, the water cleared up. Because of no human intervention, oceans and marine ecosystem started thriving.

**Effect on Wildlife:** Lockdown affected wildlife in a positive manner. Many countries have noted that the number of sea turtles, which are an endangered species, are currently on the rise.

This is because there are fewer people visiting beaches at the moment. As a result, there's been less disruption to the reptiles and there's also a lot less waste being left behind by humans. In India, authorities confirm greater numbers of sea turtles hatching on beaches compared to this time during a typical year. Adult Olive Ridley turtles settled in India's Gahirmatha beach in Odisha laid their eggs at the end of March 2020, and now thousands of babies have hatched and started their journeys

towards the sea. A rise in the number of leatherback sea turtles nests has also been recorded in Florida and Thailand. A large flock of flamingoes were spotted in wetlands in Navi Mumbai. These sights make us believe in good things that happened during lockdown.

However, besides all the good things happening with environment, lot of biomedical wastes or pharmaceutical wastes are being added every day in almost all parts of the world. There has been exhaustive use of single use surgical masks, gloves and other protective gears not only by health workers but by masses. As a result, tons of clinical trash is being produced which in most cases are discarded without proper treatment. This in turn is a threat for those involved in cleaning of cities. They are the most vulnerable group and highly susceptible to get infected with the virus from used masks. These may also be infected by other pathogens existing in the discarded pieces of garbage, for instance meningitis and Hepatitis B. The masks are made up of plastic based materials that are liquid- resistant and are long lasting after they are discarded, ending up in ocean or landfill. Besides, it is recommended that the surgical masks should not be worn longer than one day, they are discarded along with empty bottles of hand sanitizers. These are ending up to a huge trail of medical wastes in the environment. There is urgent need of medical waste management to be in place in India to prevent the calculated risks in times to come.

### **3. Environment in Post-COVID times**

Now the question lies ahead us - What will be life post COVID? The changes appearing in environment, will they last? What would be the “new normal” to prevent environment from further degradation? These positive changes however seem to be short lived. After the various stages of lockdown, Government decided to unlock the country and the economy since it was in shambles. It has been predicted that as the human and the industrial activities would resume, the situation would be same as before or would be even worse. For example, if we take the case of Uttarakhand. Every year it attracts over 3.5 crore tourists and pilgrims. Due to the different phases of lockdown, all activities associated with tourism in such places halted. But with Unlock 1.0, the officials and green activists are worried that with movement of people, resumption of commercial and industrial activities and traffic, these might increase again. The Uttarakhand Environment Protection and Pollution Control Board, in the month of April 2020 confirmed that there is definitely a decrease in pollution levels in Ganga and other rivers of the state and general improvement in air quality. The state forest department has even reported the movement of wild animals like leopards, Nilgai, bears and elephants near human habitations and on to roads during the lockdown times. The government restrictions on vehicular traffic and human movement made it easier for wild animals to venture near human settlements and highways. Places like Uttarakhand is known for pilgrimage and tourism. Tourism activities lead to increase in huge quantities of solid wastes and water pollution. The lockdown is a wakeup call for everyone. Once the pandemic subsides, we'll be left in a much poorer world, lesser money, fewer jobs and other added anxieties. The main focus of Governments will be to get the factories and businesses on track and recover the economy. However, if the revival isn't done mindfully, it's just going to be an onset of another crisis that could be even worse.

### Way forward

India is accredited with large production of energy from renewable sources. As of 31 March 2020, 35.86% of India's installed electricity generation capacity is from renewable sources, generating 21.22% of total utility electricity in the country. India is also the first country in the world to set up a ministry of non-conventional energy resources (Ministry of New and Renewable Energy (MNRE)).

Lockdown has given time to wildlife, environment, nature and planet Earth to rejuvenate and heal themselves. It also made everyone understand the significance of environment and wildlife. We must not forget that we co-exist with different life forms and it is very important to stay in harmony with all the various biotic and abiotic forms. There is need of global consensus on climate change. With the relaxation and lifting of lockdown, environmental stress would increase. There is need of sustainable economic growth to be calibrated again so as to define a new normal. The post lockdown world awaits many challenges ahead - issues such as climate change, water security, water pollution, food security, human health, disaster and waste management. These can be overcome by adopting environmental friendly ways. The planning, strategies and implementation has to be aligned with greater social responsibility so as to make this environmental effect last longer. Else, as it is predicted by the experts, its going to be short lived.

This pandemic showed the humans their vulnerability and strengths as well as taught lifelong lessons. Our capital city and other mega cities have been grappling with air pollutions since long but no strict measures like compulsory wearing of masks were started. Environmental degradation is much serious problem to consider. It is also a well-established that air pollution is a silent killer that affects our lungs and causes serious health problems, especially, in the elderly and children. The National Green Tribunal (NGT) need to step in and draft a collaborative plan to deal with this problem. Unfortunately, Judiciary is intervening. Environment Pollution (Prevention and Control) Authority, a Supreme Court-mandated body, is tasked with taking various measures to tackle air pollution in places like the NCR. The Implementation of environmental norms in the most polluting coal-based sector seems impossible without the intervention of the Supreme Court. Remember, pollution is going to come back in a much worse form if we ignore investment required for cleaning our air, water and land. Its time we divert all our resources for environmental friendly, sustainable and renewable resources. After COVID-19, we need to understand that a growing economy needs to respect the carrying capacity of nature. By ignoring that, we have already made our cities no longer liveable with excessive pollution and population, which make us further vulnerable during COVID-19-like pandemics. We are standing on the threshold of various environmental issues. If not checked now, the species of homo sapiens would fail to exist and survive on this planet and will soon lead to extinction. Lack of environmental planning in expanding our economy is already killing millions and it is going to come back in a much worse form unless its seriousness is accepted and communicated.

The guidelines of WHO for a healthy, green recovery states that it is very important that we protect and preserve the source of human health i.e Nature. We need not forget that economies are a product of healthy human societies and they in turn depend on natural environment. There is a need to investment in essential services, may it be sanitation, water or clean form of energy. The food systems deployed should be healthy and sustainable. In such times, there is need of global movement for health and environment.

### Data accessibility

No data was generated from the work, and all supporting data were obtained from previously published work available via the references below and from the output of the international seminar on which the paper is based.

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