



IJEAST

INTERNATIONAL JOURNAL
OF ENGINEERING APPLIED SCIENCE
AND TECHNOLOGY



VOLUME : 5 ISSUE : 2 Print / Issue Publication Date: 12-Aug-2020



ISSN : 2455-2143



DOI : 10.33564/IJEAST.2020.v05i02.095

Indexed In



WWW.IJEAST.COM

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COVID-19 LOCKDOWN: ITS EFFECT ON ENVIRONMENT

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Abstract - Paper emphasizes the impact of lockdown on environment due to the spread of Covid-19 across the world. There are some positive changes have occurred in our environment which focuses on the health issues related with the environmental pollution and also explores such changes enhancing and sustaining our environment. It summarizes situations in our country as well as in the world- European and Asian countries for the improvement in air quality, in river water quality and in environment quality due to the spread of Covid-19 during lockdown. Mortality due to air pollution is far greater than the total number of predicted death due to corona virus, people need to understand that at present, we are fighting war with covid-19 but after this pandemic, there is an another war waiting for us and together we shall win the war from environmental pollution as well as of Covid-19.

Key words: Covid-19, Lockdown, Environment, Pollution, Health)

I. INTRODUCTION

Several cases of an unusual pneumonia were discovered in Wuhan, a city in China during December 2019. Then China alerted WHO about these cases and other health care specialists identified it as new virus and named- *novel Covid-19*. Meanwhile WHO declared *novel Corona virus* a global health emergency as the death toll jumped to 170 people and 7,711 cases reported in that city within a month. This virus had spread over all of its provinces in China in a short span. By the end of the next week, China reported 304 deaths amid 14,380 infections. Within a few days, new cases were also confirmed from India, Philippines, Russia, Spain, Sweden, United Kingdom, Australia, Canada, Germany, Japan, Singapore, US, UAE and Vietnam (Al Jazeera, 2020). In this paper we summarize

situations in our country as well as in the world-European and Asian countries for the improvement in air quality, in river water quality and in environment quality due to the spread of *Covid-19* during lockdown.

Further we have observed that there are some positive changes have occurred in our environment, focus on the health issues related with the environmental pollution and also explores such changes enhancing and sustaining our environment. Most of the countries around the globe are suffering by the Corona Virus pandemic. There is no vaccine available to control and prevent the spread of this virus. Every country follows the traditional healing rules during any unknown virus outbreak, which is only control and prevention measure left for this novel virus. Hence, most of the countries had halt international flights and sealed their borders to prevent movement of people inside and outside of the country. Many of the tourists and the people recently came back to their country put into surveillance for the checkup of *Covid-19*. But this was not enough as there are many cases already reported in the countries, to control this outbreak many governments announced the strategy for prevention and control of the cases by maintaining social distance, proper hygiene and lockdown.

India was also constraint to announce the largest lockdown in the world for prevention and control of *Covid-19* cases. According to the present information, there are 12759 reported cases and counting, 420 death and 1514 people recovered till now. Scientists of U.S.A have projected that India could face around 100,000 and 1.3 million confirm cases of the disease caused by a new *Corona virus* by mid-May,2020 if it continues to spread at its current rate (Economic Times,2020a). Moreover, according to a COV-IND-19 Study Group of scholars and scientists involved in the study alarm us that "...even with the best-case scenarios, probably, you (India)

are in a very painful crisis” (*ibid*). At present, the *n-Corona virus* has caused 1,35,227 deaths worldwide and it may cause more damage to the humanity (Elflein,2020). People are not only fighting against *Corona virus* but they are also facing financial crises due to lockdown specially those people who work and get paid on daily bases and global economy is getting affected due to lockdown as many of the industries and business are shut down all over the world.

According to an estimate of WHO, three million people die each year because of the pollution; majority of the death is cause by air pollution. About 80% of the people living in an urban zone are exposing to poor air quality, which is much higher than the safe limit of air quality. Situation is more serious in developing counties and low-income countries where 98% of the cities fail to meet WHO air quality standards (Monk, 2020b). According to *Lancet* (2017) a study by the 40 international scientists that examined the mortality from major diseases and their cause- Air Pollution was responsible for 6.5 million deaths in 2015, water pollution cause 1.8 million death and 1 million deaths due to workplace pollution(see Sifferlin,2017).

The pollution has caused mortality is far greater than the death caused by AIDS, TB and malaria combined. In 2015, India has the highest number of 2.5 million deaths due to air pollution, followed by China, having 1.8 million deaths while United States linked to 1.5 million deaths due to pollution. The mortality rate because of pollution is much higher than the prediction of deaths caused by the novel corona virus. While humanity is facing the hard time, environment is changing positively because of an impact of covid-19 lockdown (*ibid*).

Methodology: The paper is based on the method of literature review and data were collected from various online articles and websites (during covid-19 pandemic) as mentioned in the references. Further, most of these articles focus present pandemic situation and the changes observed in the environment.

II. SITUATIONAL ANALYSIS AND DISCUSSION

2.1. Indian situation

The government of India has announced the largest lockdown to stop an immediate spread of *n-Corona Virus*. *Social distancing* is only the remedy of controlling the spread of this virus, so pollution as

all the industries, markets, shops, worship places are now closed. Personal or public transport had become on halt under lockdown and it has made us to stay at home and maintain social distancing (Wright,2020).

2.2. Improvement in Air Quality

According to the data from the Central Pollution Control Board (CPCB), part of India's Environment Ministry, was collated by the Centre for Research on Energy and Clean Air (CREA). Main cities of India, reported lower level of microscopic particulate matter (PM 2.5) also known as PM 2.5, which is a harmful element and it may lodge deep into the lungs, and gets into other organs by going through the bloodstream. It can cause serious health risk. There is a decrease of nitrogen oxide, which is highly released by vehicles and power plants. NO₂ level decreased drastically after lockdown it can be observed (*see*Figure-1).

NO₂ levels fell dramatically after India's lockdown

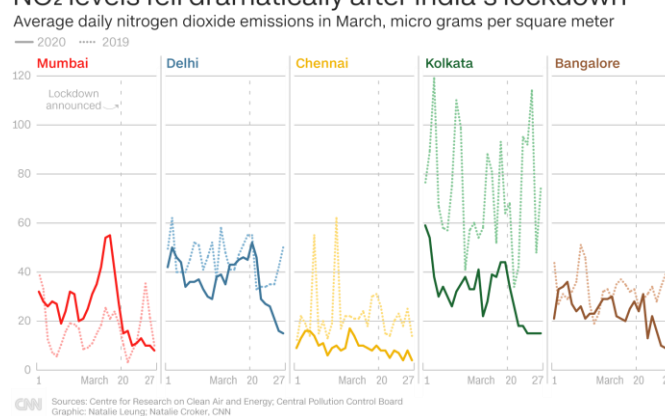


Figure-1: NO₂ Level in five Indian Metro Cities (Wright,2020)

Immediate decrease in NO₂ levels and PM 2.5 indicate dramatic shift in India which hold 21 rank out of world's 30 polluted countries by IQAirVisual's 2019 in *World Air Quality Report*. The average concentration of PM 2.5 has been reduced about 71% from 91 microgram to 20 micrograms in a week after lockdown, whereas nitrogen oxide reduced from 52 cubic meter to 15 cubic meter in a week (Wright, 2020).

The CPCB stated that Indo-Gangatic cities have shown the improvement in AQI value as the level of NO₂ and PM 2.5 decreases. 17 cities are moving towards the *satisfactory* category while 7 cities are put under *good AQI* category. While cities like Kanpur, Vapi, Ratlam (SO₂ as prominent pollutant), Satna, Singrauli and Chandrapur have

high AQI value and positive impact of air quality is hard to observe in these cities because of local combustion sources or emission from industrial area as there is no change in PM 2.5 and NO₂ levels(Vishnoi,2020).

2.3. Improvement in River Water

The *Ganga* and *Yamuna* rivers are main rivers of our country. Most of the people use their water for bathing and washing and further throwing physical garbage which leads to deteriorate quality of water in these rivers. Discharge of biological waste, from sewers and industries, are highly responsible for discharging harmful chemical substances directly into the rivers destroy the properties of rivers to heal naturally from biological waste. After the *Covid-19* lockdown, most of the industries have been closed and there is a significant change in the quality of water especially around the industrial zones.

According to real time monitoring system which is based on the parameters such as dissolved Oxygen (more than 6 mg/litre), *Biochemical Oxygen Demand*(BOD)(less than 2 mg/litre), total coliform levels (5000 per 100 ml) and pH (range between 6.5 and 8.5) to assess the health of the rivers (PTI,2020), 27 unites out of 36 monitors which are placed at various points to check the quality of water shows that the water is suitable for bathing, wildlife and fisheries along the *Ganga* River. The biological waste still diluting but the *Ganga* River shows great improvements in self-cleansing properties (*Ibid*).

Yamuna water quality has also improved because of the stoppage of industrial waste mentioned by Delhi Jal Board (*Ibid*).*Ganga Action Plan* was started in 1986 to clear the river which is consider holy by the people of India. The Central Government has spent 5000 *crores* rupees under this plan but the impact was hardly seen until lockdown (Naqvi and Kumar,2020).

2.4. World Scenario

Most of the countries have used lockdown approach during mid-March this year such as France, Italy and Spain besides India, where the corona virus outbreak hit more sever in comparison to USA and Asia. There are many positive cases of corona virus in United States as well in two weeks. Hence, USA also announced lockdown in California, New York and Los Angeles as these have reported earliest positive cases of corona virus.

2.5. Europe

European countries such as France, Spain and Italy have also introduced lockdown in mid-March, 2020 to fight against *n-Corona virus*. There is a significant change in the reduction of pollution level in an atmosphere as it is clearly seen the drop in amount of nitrogen oxide,NO₂ concentration in France(see Fig-2).

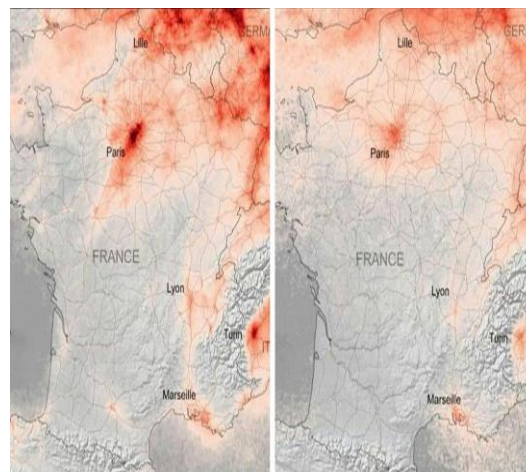


Figure-1: *Before* and *after* lockdown images of France (Gaubert,2020), taken by the Copernicus programmer's Sentinel-5P satellite,

European environmental agency had stated about the Spanish cities, Madrid and Barcelona, under strict lockdown have shown significant positive effects on its environment. The industrial businesses have been on halt and no vehicle emission as the people to stay at home and maintain social distancing. While in Italy, the average NO₂ concentration level has been reduced by 50% from 2019 after the lockdown (Gaubert,2020).

2.6. USA

United States of America (USA) has also adopted the strict lockdown to fight against the *corona virus*. According to the US Environmental Protection Agency, nitrogen oxide-NO₂, mainly comes from burning of fuels and from the emission of the vehicles. After the lockdown, the concentration of nitrogen oxide (NO₂) is less as compared to the last year. Reduction in concentration of pollution can be observed very clearly in California, where people are following lockdown strictly in following *Satellite Images* of north-east USA which show reduction of toxic gases in the atmosphere (Holcombe and O'Key,2020).

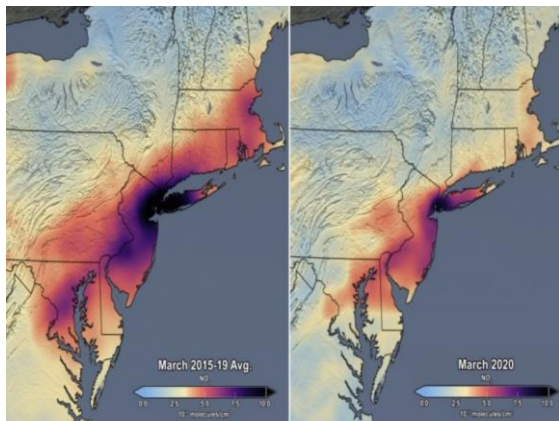


Figure-2: Image taken by NASA shows reduction in pollution (EarthSky,2020)

2.7. Asia

Bhattacharyya (2020) has illuminated the causes of pollution in Asia, particularly in China. It is due to large population and many industrial businesses. It is one of the most polluted nation in the world in terms of air quality. Wuhan is the epicenter of the *corona virus* and whole city with other cities of Hubei province went into the strict lockdown to fight against corona virus. NO₂ level of China mainly comes from the vehicle's emissions and power plants but as Wuhan and its nearby zones went into the lockdown there are many factories and industrial business that are shut down and lower number of vehicles on road. These factors collectively responsible for 40% drop of NO₂ concentration in China as compared to 2019 while significant drop of PM 2.5 concentrations after lockdown is also observed by the government (Monk,2020a).

Pollutant Levels in Wuhan

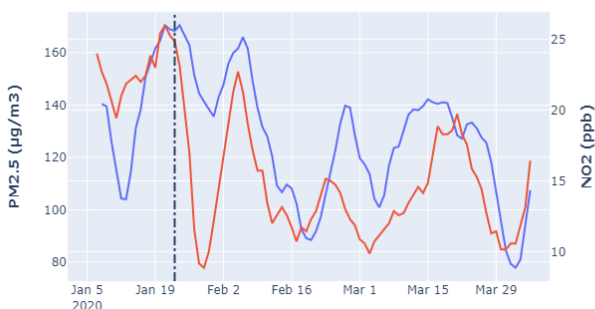


Figure-3: Pollution level of Wuhan, China (see Bhattacharyya,2020),

Satellite image from European Space Agency's Sentinel-5P satellite also claimed that during January and February 2020, there is a 40% drop in the concentration of NO₂ levels over industrial areas and cities of China from 2019 (*Ibid*).

III. CONCLUSION

We feel this outbreak is a lesson to entire humanity which has shown us our actions, if we stop our actions then we can reduce the pollution level as it is observed that after lockdown days. The air pollution drastically reduced, water bodies started self-healing and ozone layer begin to repair, low concentration of PM 2.5 as well as low concentration of harmful gases such as NO₂ in the atmosphere have altogether improved entire environment. The main questions we should be thinking that are these changes permanent? When lockdown will be over and life shall be back to the normal routine, industries will open again and they will try to cover up the loss due to lockdown by increasing the production, more chemical discharge from industries which will again let into the water bodies. People will use personal vehicles and avoid using public transport due to the fear of corona virus even when the situation get normal and governments will restart nuclear power plants for generating the resources, which can give boost to the economic growth of the countries.

No improvement in environment can justify the loss of life and suffering of humanity due to the outbreak of corona virus. But we should not deny the fact that numbers of death caused by the pollution are far more than the total prediction of deaths due to corona virus all over the world. Everyone was trying to minimize the pollution level but there were no changes, instead it keeps on increasing year by year due to the increase in the number nuclear power plants, population, industrial businesses and more vehicle emissions.

Lockdown also affects the global economy and many governments will ignore the pollution rules to increase the GDP of the country. There is a direct relationship of world economy and environmental pollution: as the world economy increases environmental pollution also increases and vice versa. This relationship of economy and environment was also observed at the time of 2008 recession, as there was an improvement in the environment while global economy of the world drastically went down. After the crises of 2008 recession, there was the boom in world economy rate and pollution started increasing with much higher rate than before. Another very important question on which we all



should focus is: how to sustain these positive changes on environment without any adverse effect on people? This can only be possible with the contribution of the governments and every person of the world because it is our duty to protect and sustain the environment for ourselves as well as for future generation, if we keep continue to ignore our environment which may turn to be next health emergency concerning environmental disaster or due to the high concentration of pollution.

After the lockdown, governments should not support the industrial business so that it will not discharge chemical waste into the water bodies. It will not cause emission of harmful gases into air. Use of public transport, which runs on CNG and Electricity should be given more preference than using personal vehicles, more electric vehicle must be used by the people to reduce carbon emission. This will help us to reduce air pollution and the problem of traffic jams specifically in developing countries. MNCs should also consider work from home for the employees because it will help the people to cut off the time and expenditure on travelling. This will lead to better *work-life balance* to their employees and it indirectly contributes towards the environment. It will be win-win situation for MNCs and employees as MNCs should able to save more money because there will be no need of buying large office buildings. Governments should reduce the use of nuclear power plant and try to use the natural resources for generation of power such as solar energy, wind energy and water energy. This will be very helpful for controlling the pollution level in the environment. Establishing the power plants of these resources will cost huge amount of capital but in long-term it will be the good investment and its worth for the improvement of environment.

In the last we all feel strongly that these can reduce the concentration of pollution and improve overall condition of the environment. Government should introduce the strict rules for industries and other business which directly or indirectly contribute to the pollution. If the government induces the sense of awareness about environmental pollution and its effect on health among the people then they can feel the need of protecting the environment from pollution. Mortality due to air pollution is far greater than the total number of predicted death due to corona virus, people need to understand that at present, we are fighting war with covid-19 but after this pandemic, there is an another war waiting for us and together we shall win the war from environmental pollution as well as of *Covid-19*.

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