

Impact of Lockdown due to Covid-19 on the Climate with Reference to India: A Review

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ABSTRACT

In December 2019 an infectious disease of Coronavirus family was identified in Wuhan city of China with human to human transmission and with in no time turned into global pandemic. The entire world underwent lockdown to slow down this infection. This lockdown has a drastic effect on social and economic fronts, whereas it is having a positive impact on the environment. The latest data released by NASA (National Aeronautic and Space Administration) and ESA (European Space Agency) indicates that pollution level in China, Spain, USA and India etc. has reduced up to 30%. Therefore this article is compiled with the objective that how this pandemic impact the air quality throughout the world.

Keywords: Coronavirus, Lockdown, Environment, NASA and ESA

INTRODUCTION

A new viral infectious disease of coronavirus family was reported from Wuhan City of Chin in December 2019, which was later on named as COVID-19 (Chen et al.,2020) [1]. World Health Organization confirmed its transmission from human to human (WHO 2020) [2]. This virus spreads to surroundings area and then within short period the entire country of China and outbreak turns into epidemics (Dutheil et al., 2020) [3]. In order to minimize or slow down the infection, the Chinese government subsequently placed the whole country under lockdown to ease the pressure on health facilities and simultaneously increase the health infrastructure (Wilder-Smith and Freedman 2020) [4]. On 30th January 2020 WHO declared worldwide public health emergency because of Covid-19. Torepu et al; 2020 [5] stated that in February 2020 this epidemic turns into pandemic and by the end of the March half of the world population underwent some form of lockdown. As of June 15 there were 433400 deaths and 7.69 million positive cases of Covid-19 in the world (WHO). The COVID-19 pandemic has caused industrial activity to shut down, business closed, transport slashed, flights cancelled and other activities throughout the world came to halt, this result slashing of green house gases emission and air pollution around the world. The positive outcome of this terrible Covid -19 lockdown is the clean air we breathe with low carbon content in future.

According to the estimate of World Health Organization (WHO) that 3 million people died each year from ailments caused by air pollution and approximately 80% of the people living in urban areas are exposed to air quality that is not safe for human health, and even the situation is worse in developing and underdeveloped countries, where 98% of cities fails to meet WHO standards of air quality. The level of nitrogen dioxide (NO₂) as one the major air pollutant during late January and early February 2020 over cities and industrial area in Asia and Europe were lower as much as 40% as compared to same previous period as shown by European Space Agency's Sentinel 5-P satellite. Two weeks after the nationwide lockdown

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Receiving Date: June 01, 2020
Acceptance Date: June 26, 2020
Publication Date: June 29, 2020

was announced in March 23 in UK, NO₂ level in some cities fell as much as 60% compared to the same period in 2019 (Philip RK et al., 2020) [6]. NASA shows that NO₂ over New York and major metropolitan areas in north eastern USA was 30% lower in March 2020, compared to monthly average from 2015 to 2019, similarly nitrogen dioxide level in some cities of UK fall as much as 60/ compared to same period in 2019. Therefore the major source of NO₂ is traffic pollution. NO₂ is highly harmful to human health as is shown by studies and short term and long term exposure to NO₂ can increase mortality rate (Faustini et al; 2014) [7]. This may cause severe problems such as cellular inflammation, bronchial hyper responsiveness and respiratory problem (He at al; 2020) [8]. Cohen et al., 2017 [9] reported that air pollution being a global problem and can have lethal effects even on the developed nations such as Europe where 193,000 people died due to this menace.

Pollution assessment during Covid-19 with reference to India

Due to the COVID-19 lockdown in India various activities such as transport, industries, factories, came to halt or reduced, result in less energy consumption and lower oil demand. These changes in transport activities and oil demand have significant impact on air quality. According to the European Space Agency (ESA) and National Aeronautics and Space Administration (NASA) release latest data which suggest that quality of the air improved and emission of harmful gases i.e NO₂ reduced to average 30% (Figure 1).

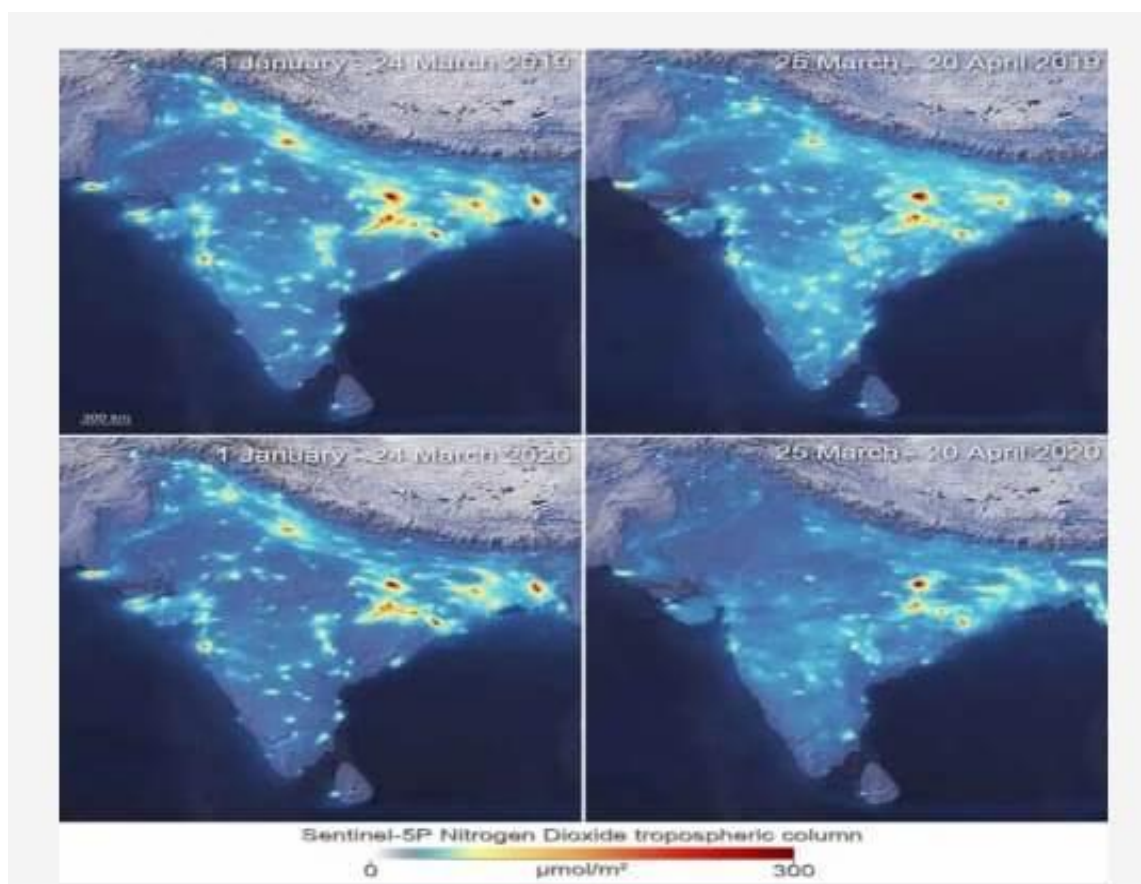


Figure 1: The images showing the average nitrogen dioxide concentrations from 1 January to 24 March 2020 and 25 March (the first day of the lockdown) to 20 April 2020 – compared to the same time-frame as last year. Mumbai and Delhi saw drop of around 40-50% compared to the same period of last year

Source: ESA, Copernicus Sentinel 5-P Satellite

Both these agencies i.e NASA and ESA collect data through OMI (Ozone Monitoring Instrument) and AURA satellite and Sentinel-5P satellite using TROPOMI (Tropospheric Monitoring Instrument) respectively. The lockdown imposed by the government throughout the country to restrict the spread of this novel Corona virus has shown positive result in the improvement of air quality across the country during Covid-19 lockdown and as a result there is remarkable reduction in air pollution level across major Indian cities. European Space Agency (ESA) has observed a remarkable fall of around 40 to 50% of nitrogen dioxide (NO₂) in Delhi and Mumbai compared to the same period of last year (Table 1).

As a result of lockdown critically endangered South Asian River Dolphins also known as Gangas Dolphins have been spotted back in the Ganga River after 30 years, due to the reduction in pollution of water, the South Asian River Dolphins have been spotted at various Ganga Ghats of Kolkata. Thousands of flamingos have gathered in the city of Navi Mumbai. The birds normally visit to the area every year, but residents have reported that this year they have seen a massive increase in their numbers. The Uttarakhand Pollution Control Board reported that Water from Har-Ki -Pauri in Haridwar was tested and the tests revealed that the water has been classified as "Fit" for drinking after chlorination. It is assumed that due to lockdown the drainage of industrial waste into the river has stopped and brought a significant change in water quality.

Table 1: Showing the reduction in Nitrogen dioxide (NO₂) in different countries of world as reported by NASA and ESA

Location	Agency	Satellite	Period	% Age Reduction	Source
India (Mumbai)	NASA & ESA	Sentinel 5P Copernicus	25 th March 2020 20 th April 2020	40-50%	NASA 2020
USA	NASA	Aura Satellite	March 2015 to April 2020	30%	NASA 2020
China	NASA and ESA	Sentinel-5P Satellite and Aura	March 2019 and March 2020	30%	ESA 2020
France	ESA	Sentinel 5P	March 2019 and March 2020	30-40%	ESA 2020
Spain	ESA	Sentinel 5P	March 2019 and March 2020	20-30%	ESA2020
Italy	NASA	Aura	March 2019 and March 2020	30%	NASA 2020

CONCLUSION

Although Covid-19 pandemic pose a serious threat to mankind and staggered the economic activities, but on the other hand it is considered as "Blessing in Disguise" where pollution is reducing and nature seems to be busy in reclaiming its space in the absence of constant flurry of human activities. This positive impact on environment seems to be short, but government rather than all human beings learn to reduce the pollution in the long run for the sustainable development.

REFERENCES

1. Chen H, Guo J, Wang C, Luo F, Yu X, Zhang W, Li J, Zhao D, Xu D, Gong Q, Liao J. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *The Lancet*. 2020 Mar 7;395(10226):809-15.
2. Sohrabi C, Alsafi Z, O'Neill N, Khan M, Kerwan A, Al-Jabir A, Iosifidis C, Agha R. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal of Surgery*. 2020 Feb 26.
3. Dutheil F, Baker JS, Navel V. COVID-19 as a factor influencing air pollution?. *Environmental Pollution (Barking, Essex: 1987)*. 2020 Aug;263:114466.
4. Wilder-Smith A, Freedman DO. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of travel medicine*. 2020 Mar;27(2):taaa020.
5. Tosepu R, Gunawan J, Effendy DS, Lestari H, Bahar H, Asfian P. Correlation between weather and Covid-19 pandemic in Jakarta, Indonesia. *Science of The Total Environment*. 2020 Apr 4:138436.
6. Philip RK, Purtill H, Reidy E, Daly M, Imcha M, McGrath D, O'Connell NH, Dunne CP. Reduction in preterm births during the COVID-19 lockdown in Ireland: a natural experiment allowing analysis of data from the prior two decades. *medRxiv*. 2020 Jan 1.
7. He MZ, Kinney PL, Li T, Chen C, Sun Q, Ban J, Wang J, Liu S, Goldsmith J, Kioumourtzoglou MA. Short-and intermediate-term exposure to NO₂ and mortality: a multi-county analysis in China. *Environmental Pollution*. 2020 Jun 1;261:114165.
8. Faustini A, Rapp R, Forastiere F. Nitrogen dioxide and mortality: review and meta-analysis of long-term studies. *European Respiratory Journal*. 2014 Sep 1;44(3):744-53.
9. Cohen AJ, Brauer M, Burnett R, Anderson HR, Frostad J, Estep K, Balakrishnan K, Brunekreef B, Dandona L, Dandona R, Feigin V. Estimates and 25-year trends of the global burden of disease attributable to ambient air pollution: an analysis of data from the Global Burden of Diseases Study 2015. *The Lancet*. 2017 May 13;389(10082):1907-18.