ISBN: 978-93-90847-57-0

1. Environment and COVID-19

Dr. Nitu

Department of Psychology,
Assistant Professor,
Dr. S. K. S. Women's College, Motihari.

1.1 Introduction:

The COVID-19 pandemic has influenced different aspects of our life. It has affected numerous sectors worldwide. While the COVID-19 pandemic has had an unprecedented effect on society and the economy, to the contrary, it has helped to restore some environmental damage (Chakraborty and Maity, 2020). Impact of COVID on the environment has been mixed. Although the pandemic resulted in enhanced environmental conditions, there have been other harmful effects. In short, the positive effects have been reduced GHG (greenhouse gas) emissions, improved water quality, reduced noise pollution, improved air quality and in some cases, wildlife restoration. Negative effects have been increased medical waste, haphazard disposal of PPE, increased municipal waste and reduced recycling efforts.

Worldwide spread of COVID-19 has brought a dramatic decrease in industrial activities, productivity, tourism, road traffic, classroom teaching etc. Inadequate human interaction with nature during this crisis time has appeared as a blessing for nature and environment. Worldwide reports are indicating that after the occurrence of COVID-19, environmental conditions including water quality in rivers, air quality are getting better and wildlife is blossoming. The consequences of lockdowns have been remarkable, as pollution levels have dropped significantly; for instance, greenhouse gas emissions, nitrogen dioxide, black carbon and water pollution have decreased significantly.

It has been seen for a long time that India has always been a core of pollution with vast population, heavy traffics and polluting industries. But after announcement of lockdown due to COVID-19, quality of air has started to improve and all other environmental parameters such as water quality in rivers, air, wildlife, climate etc. have improving which is an excellent for our environment. In this chapter, the impacts of COVID-19 on water resources of India, especially on the **river water quality, air quality and impact on wildlife are discussed.**

- **COVID-19 and River Water Quality:** In India, more than 38,000 million liters of untreated sewage are discharged daily into the rivers. Due to the limited sewage treatment capacity, which can treat only 38% of the sewage generated (CPCB, 2015). Many industries in India, whether it is large or small were closed from March 2020, to September 2020, as a result of nationwide lockdown imposed for COVID-19. During this period, the water quality and quantity in many rivers have consequently improved in a short span of time, especially in river Ganga, as we know Ganga is longest river of our country which covers many states of our country.

In river Ganga, the dissolved oxygen levels have increased, biological oxygen demand, and nitrate concentration have decreased which leads to improvement in the overall water quality (Dutta et al., 2020).

According to Central Pollution Control Board (CPCB, 2020) report, improvements in water quality have also been observed in India. It is indicating slight decreases in nitrates and improvements in dissolved oxygen in the river Ganga, and similar improvements in the biological, chemical and oxygen demand indicators in the river Yamuna.

The changes were predominantly attributable to the lack of industrial and agricultural activity although unabated domestic waste discharge led to there not being a significant fall in the biological oxygen demand in the river Ganga (CPCB, 2020).

However, such analyses can be extended to other major rivers of India. In the same way, the Krishna and Cauvery rivers and their tributaries in Karnataka (in the central and southern part of India) also regained their decades-old status in terms of water quality (KSPCB, 2020). On the contrary, the rivers that have more urban catchment areas, such as Yamuna River in Delhi, reported no major decline in water quality since domestic sewage makes up about 80% of the pollution, while the rest is from the industries (India Water Portal, 2020).

- **COVID-19 and Air Quality:** Air pollution caused serious health issues, and a large number of people die due to the air pollution. In 2017 alone, air pollution caused 4.9 million deaths globally, with low-income economies suffering the most (Global Burden of Disease Collaborative Network, 2018).

Air pollution has been a widespread and visible concern, which has increased significantly over the last decade across many parts of India with several studies tracking the severe consequences for health and well-being (Spear et.al). Disability Adjusted Life Years (DALYs) suggest that deaths of around 1.24 million could be due to air pollution in the year 2017 for India (Balakrishnan, 2017).

Early estimates suggest that reduced air pollution during lockdowns and restrictions in the economy could have prevented up to 0.65 million annual deaths for India (Sharma at.al), 11 thousand avoided deaths in Europe (Myllyvirta et.al) and saved many lives in China (Isaifan et.al). Due to the drop in fossil fuel consumption, air pollution has dropped in several countries, such as China, Italy, the USA, and India (Paital, 2020). Dantas et al. (2020) reported that carbon monoxide (CO) and NO2 decreased significantly during the global shutdown, while ozone (O3) increased due to reduction in NO2.

Air pollutants such as NO2 levels in major Indian cities such as Ahmedabad, Mumbai, and Pune decreased between 40 and 50% at the time of lockdown (Wright, 2020). NO2 and carbon dioxide (CO2) emissions dropped significantly due to the shutdown in industrial and vehicle operations worldwide (Paital, 2020). Indian residents can now see the towering peaks of the Himalayas from Punjab for the first time in 30 years, after a massive drop in pollution caused by the country's corona virus lockdown. The lockdown, implemented on March 22, has resulted in a "significant improvement in air quality in the country", as revealed by data analysis from India's Central Pollution Control Board.

The report showed air quality in 85 cities had improved significantly as most vehicles remained off roads and non-essential businesses closed. The report said:

Data shows that on average, Indian cities had an AQI (Air Quality Index) of 115 between March 16 and 24. The air quality started showing improvements from the first day of the 21-day lockdown. The average AQI fell to 75 in the first three days of the lockdown.

Dozens of residents from the Jalandhar district in Punjab took to social media to share crystal-clear views of the snow-capped mountains, thanking the improved air quality for the awe-inspiring snaps. The mountain range is the world's highest with elevations of more than 8,000 metres, and includes the world's tallest peak, Mount Everest. (See Figure 1.1).

Figure 1.1: Mount Everest

India has a population of around 1.3 billion people, with one of the world's most polluted cities, according to IQ Air pollution researchers. Ghaziabad, an area close to New Delhi in northern Uttar Pradesh state, had been ranked as the world's most polluted, with an average PM 2.5 concentration measurements of 110.2 in 2019. NASA and the European Space Agency's pollution monitoring satellites detected a significant decline in the amount of nitrogen dioxide (NO2) over China since the lockdown.

- **Covid-19 and Impact on Wildlife:** The COVID-19 pandemic has resulted in a global shutdown. Cities which are large or small both have effected almost equally. Reduced motorized traffic, shuttered businesses, restricted travel and trade and closed parks and beaches has the potential to significantly impact wildlife. It has been seen that, in the absence of people, nature was improved and became more perfect. But some new research showed that the true effect of suddenly removing people from different aspect of environment has turned out to be much more complex.

Cities that kept natural spaces unlock during the shutdown may unintentionally have contributed to harmful impacts on wildlife if more people visited these sites than usual. According to Kowarik (2011) environmental variation within cities, including urban noise, vehicular traffic, air and noise pollution, have long been known to be associated with shifts in wildlife behaviour, dispersal, and survival. In countries like India, monkeys and a number of other wildlife species are very much adapted to urban environments and are very much dependent on human generated food waste to stay alive. People feed monkeys for religious sentiments also which condition them to associate human presence with food and complicate the matter further.

Where no one to feed, animals that have grown dependent on humans for food has been forced to fend for them. This condition also has the potential to generate further problems including man-animal conflict situations. Thailand, known for the urban macaque monkey population that relies on food provided by the numerous tourists, has seen gangs of macaques surrounding open stores and fighting in the streets over dwindling food resources. Some urban dwellers like monkeys, gulls and rats struggled to find enough food in the absence of tourists and restaurant scraps. The idea that wildlife population will reclaim urban environments during this lockdown period seems quite far-fetched as animals have always been part of our surroundings. Another immense impact of the corona virus occurrence is the decline in wildlife trade which comes as a much needed silver lining in these dark times. When Lockdowns began and humans reduced their activities, reports of unusual wild animal encounters and behaviours began appearing on social and regular media. The shy predatory species like cougars were unexpectedly recorded in cities in the Americas. It has been seen Jackals ventured into the city part in broad daylight in Tel Aviv, Israel. Among all above mentioned environmental factor there are many other environmental aspects which has influenced by covid-19 lockdown. As we see there are various researches and studies which are showing that our environment has improved and became more suitable for living creature but there are also some negative impacts of this. But in short, it can be said that positive impacts is more noticeable as compare to negative impacts.

1.2 References:

1. CPCB (2015). *Directions Issued under Section 5 of EPA Act, 1986 Regarding Treatment and Utilization of Sewage for Restoration of Water Quality of River to Metropolitan Cities and States/UT Capitals.* Available online at: http://www.indiaenvironmentportal.org.in/content/420116/directions-issued-under-section-5-of-epa-act-1986/
2. Dutta, V., Dubey, D., and Kumar, S. (2020). Cleaning the river Ganga: impact of lockdown on water quality and future implications on river rejuvenation strategies. Sci. *Total Environ.* 743:140756. doi: 10.1016/j.scitotenv.2020.140756
3. KSPCB (2020). *Cauvery, Tributaries Look Cleaner as Pandemic Keeps Pollution Away*. Available online at: https://www.thehindu.com/news/national/karnataka/cauverytributaries-in-old-mysuru-region-look-cleaner-as-pandemic-keeps-pollutionaway/article31210429.ece.
4. India Water Portal (2020). *COVID-19 Lockdown: Health of Ganga and Yamuna Rivers Improves.* Available online at: https://www.indiawaterportal.org/articles/covid-19-lockdown-health-ganga-and-yamuna-rivers-improves.

5. Chakraborty, I., Maity, P., 2020. COVID-19 outbreak: migration, effects on society, global environment and prevention. Sci. Total Environ. 728.
6. Global Burden of Disease Collaborative Network, 2018. Global Burden of Disease Study 2017 (GBD 2017) Results. Institute for Health Metrics and Evaluation, Seattle, United States.
7. Paital, B., 2020. Nurture to nature via COVID-19, a self-regenerating environmental strategy of environment in global context. Sci. Total Environ. 729, 139088.
8. Wright, R., 2020. The world's largest coronavirus lockdown is having a dramatic impact on pollution in India. Available. https://edition.cnn.com/2020/03/31/asia/coronavirus-lockdown-impact pollution-india-intl-hnk/index.html.
9. Dantas, G., Siciliano, B., França, B.B., da Silva, C.M., Arbilla, G., 2020. The impact of COVID- 19 partial lockdown on the air quality of the city of Rio de Janeiro, Brazil. Sci. Total Environ. 729.
10. CPCB (Central Pollution Control Board), A Report on Impact of Lockdown on Water Quality of River Ganga, Delhi, 2020. Accessed, https://cpcb.nic.in/openpdffile.php?id¼TGF0ZXN0RmlsZS8yOTNfMT
11. CPCB (Central Pollution Control Board), Report on Assessment of Impact of Lockdown on Water Quality of River Yamuna- Delhi Stretch, Delhi, 2020.https://cpcb.nic.in/openpdffile.php?id¼TGF0ZXN0RmlsZS8yOTJfMTU4NzczNDE2N19tZWRpYXBob3RvNzEzMC5wZGY¼.
12. India Today. 2020. 1 lakh children under 5 years of age die from air pollution in India every year: Study.www.indiatoday.in/education-today/latest-studies/story/air-pollution-india-deaths-children-five-years-report-centre-for-science-and-environment-1543779-2019-06-06 Retrieved from: [Google Scholar].
13. Spears, D., Dey, S., Chowdhury, S., Scovronick, N., Vyas, S., J., Apte, S. The association of early-life exposure to ambient PM2.5 and later-childhood height-for-age in India: an observational study, Environ. Health 18 (62) (2019), https://doi.org/ 10.1186/s12940-019-0501-7.
14. Balakrishnan, K., Dey, S., Gupta, T., Dhaliwal, R., Brauer, M., Cohen, A. J. The impact of air pollution on deaths, disease burden, and life expectancy across the states of India: the Global Burden of Disease Study 2017, The Lancet.
15. Planetary Health 3 (1) (2019) e26ee39, https://doi.org/10.1016/S2542- 5196(18)30261-4.
16. L. Myllyvirta, H. Thieriot, 11,000 Air Pollution-Related Deaths Avoided in Europe as Coal, Oil Consumption Plummet," CREA, 2020. Accessed, https://energyandcleanair.org/wp/wp-content/uploads/2020/04/CREA-Europe-COVID-impacts.pdf.
17. R.J. Isaifan, The dramatic impact of Corona virus outbreak on air quality: has it saved as much as it has killed so far? Global Journal of Environmental Science and Management (2020) 275e288, https://doi.org/10.22034/GJESM.2020.03.01.
18. S. Sharma, M. Zhang, Anshika, J. Gao, H. Zhang, S.H. Kota, Effect of restricted emissions during COVID-19 on air quality in India, Sci. Total Environ. 728 (2020) 138878, https://doi.org/10.1016/j.scitotenv.2020.138878
19. Kowarik, I. 2011. Novel urban ecosystems, biodiversity, and conservation. Environmental Pollution 159:1974-1983.