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9. Environment Sustainability and Covid-19: Its Repercussions

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Abstract:

The global impact of Covid -19 is enormous not only to humans but to flora and fauna as well. No doubt that Covid-19 pandemic is a crisis that affects each and everyone. It is a global crisis but, on the other hand, no one should fathom that Covid-19 would do good to the environment as it is clearly evident that environment experienced healing by itself due to long period of lockdowns that prevent movement of man.

The pandemic situation significantly improves air quality across the world, it reduces GHGs emission, reduces water and noise pollution.

It further on reduces the pressure of the tourist destinations, which may assist the restoration of ecological system.

The impact of the pandemic on flora and fauna is remarkable particularly it enriched wildlife habitat and reduced human activities which led wildlife to increase their diurnal activities. But the negative impact of Covid-19 is also astonishing which are glaring in terms of endangering the environment.

Thus, this study intends to explore the positive and negative impacts of Covid-19 to environment and will also accentuate environmental sustainability during Covid-19 with its repercussions.

Keywords:

environment, assessment, Covid-19, effects, positive, negative. sustainability, repercussions.

9.1 Introduction:

The COVID-19 pandemic recorded a worldwide health crisis. It has found out that the pandemic is linked with natural and/or human factors. However, a review on the relationship is wanting. Looking at many literatures, since the outbreak of the pandemic, it is found out that many articles focused on three main aspects: (a) the impact of environmental factors on COVID-19 incidence, but with spatial heterogeneity and uncertainty. (b) the environmental factors that employ interactive effects on COVID-19 prevalence (the interactions of natural factors that affect COVID-19 transmission in micro- and macro- ways by impacting SARS-CoV-2 survival, as well as human mobility and behaviors). (c) the impact of COVID-19 rate on the environment lies in the fact that COVID-19-induced lockdowns caused air quality improvement, wildlife shifts and socio-economic depression.

This, in turn emphases on adaptation strategies during Covid -19 regarding the interactions between the environment and COVID-19. An understanding on the biological interactions between environmental factors (such as air quality, temperature, humidity) and the spread or severity of COVID-19 gave a better perception on public health strategies. The long-term environmental impact of COVID-19 measure up through taking stock of the spread of COVID-19 (such as changes in waste generation, water consumption patterns, and energy use). The COVID-19 pandemic demonstrated the severity of confirmed cases and mortality rates all over the world. Studies revealed that at the outset of COVID-19, outbreaks were confined in high-latitude regions with colder climate and in better off societies such as parts of North America, South Asian and European countries (Sarmadi et al., 2020). The opinion to rule out of the factors responsible for the outbreak are environment factors which are categorized into natural- environmental factors and human-environmental factors (Wu et al., 2021).

As an airborne transmission pandemic, SARS-CoV-2 and the severity of COVID-19 infection have been proven to be affected by climate conditions and air pollutants (Domingo et.al., 2020; Al Huraimel et al., 2020: Nottmeyer and Sera, 2021). Climatic parameters like Temperature (T) affect the survival and transmission of the virus, and humidity (H) contributes to its viability and persistence when attaching to inanimate objects (Sarkodie & Owusu, 2020; Zariel et., 2021).

The wind speed, rainfall and air pressure also affect the survival of SARS-CoV-2 suspended in the air, which may explain the high COVID-19 incidence in countries with a stable meteorological environment (Hossain et.al., 2020; Sarkodie & Owusu, 2020). Previous studies indicated that meteorological factors, such as Temperature and wind speed, have a lagged effect on COVID-19 cases and SARS-CoV-2 (Islam et.al.,2021). Coccia (2020) suggested that "air pollution-to-human transmission" is the main mechanism accelerating the transmission dynamics of COVID-19 rather than "human-to-human transmission".

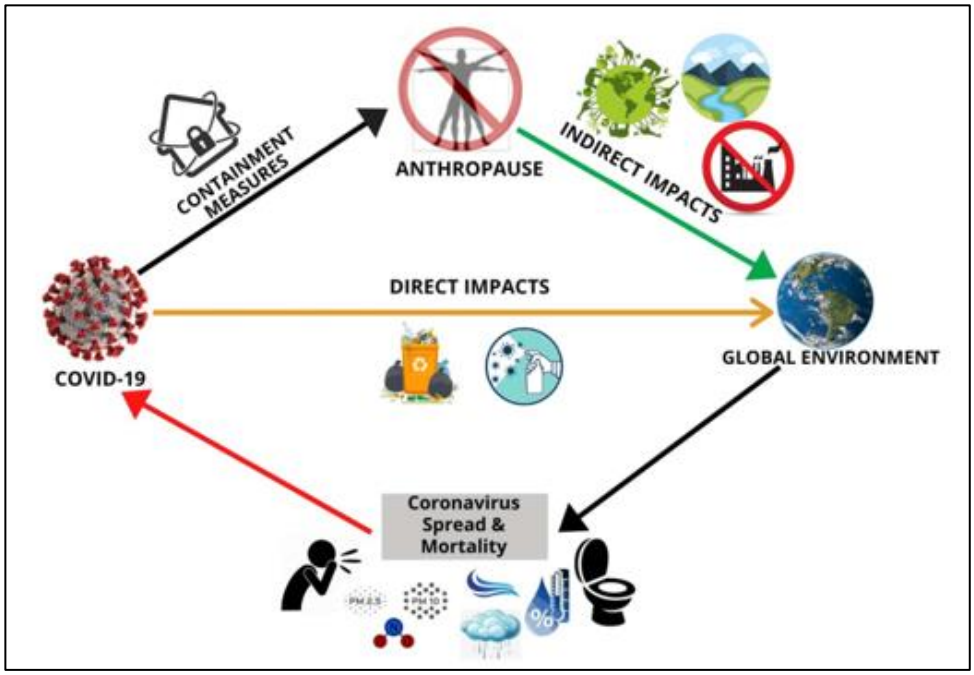

Figure 9.1: The Impact of Environmental Factors on COVID-19

Source: Prateek Srivastaval, Shalini Dhyani, Mrinal Alexander Emmanuel, · Ambrina Sardar Khan (2021), COVID-19 and environment: a poignant reminder of sustainability in the new normal in Environmental Sustainability, Springer, 4:649–670 https://doi.org/10.1007/s42398-021-00207-4.

Moreover, COVID-19 infections show strong correlations with the human environment (Zhou et al., 2020). The SARS-CoV-2 infects people by combining with ACE2, which means that COVID-19 contraction has no bias in favour of age, ethnicity, or gender (Saini et al., 2021).

Several studies show that patients with a history of pre-existing diseases, such as diabetes, hypertension, etc., have greater odds of COVID-19 mortality (Gold et.al., 2020). During COVID-19 pandemic, health disparities and inequalities have been spotlighted because of financial problems and inequities in access to health services (Nana-Sinkam et al., 2021).

Policymakers in different countries have implemented social lockdowns, showing remarkable effectiveness in controlling the transmission dynamics of COVID-19(Askitas et al., 2021; Candido et at., 2020; Flaxman et al., 2020; Paital et al., 2020).

Understanding the dynamics of the direct impact of COVID-19 on humans therefore, is very necessary as the implementation of social distancing, and lockdowns has in turn an indirect impact on environment. The economic shutdown under the Covid-19 pandemic has had two monumental impacts on our environment. It has improved our air and water quality dramatically, and slashed our material consumption, water usage and waste production.

Concentration of particulate matter (PM) and Nitrogen Dioxide (NO2) and Sulphur Dioxide (SO2) emissions reduced significantly in the lockdown period enforced to curb the novel coronavirus disease (COVID-19) outbreak, according to a Central Pollution Control Board (CPCB) analysis of 115 Indian cities according to the reference note of the Lok Sabha on COVID-19 and its impact on Environment.

The CPCB monitored the cities between March 16 and April 15, 2020. The air quality index (AQI) of 78 per cent cities was 'good' and 'satisfactory' during lockdown as compared to 44 per cent cities in the pre-lockdown phase. "The drop could be attributed to, restricted vehicle movement, halt on construction activities, less road dust resuspension and curb on industrial activities," according to CPCB.

Data from the CPCB (Central Pollution Control Board) and the UPPCB (Uttar Pradesh Pollution Control Board) shows that the Ganga's water along its most polluted stretch in Uttar Pradesh has more dissolved oxygen and less nitrates and this creates a conducive condition for survival of aquatic life which is a testament to improved water quality. Similar positive developments have been reported for the Yamuna. Several Reports indicates the visibility of Dhauladhar range in Himachal Pradesh 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. This scenario had been witnessed long back i.e., 40 years ago which points to the fact that we have battled severe air pollution for so long. Most remarkably, the nation-wide lockdown has considerably reduced municipal solid waste (MSW) generation. Pune's daily tonnage of MSW has fallen by 29 per cent, while Chennai's and Nagpur's have dropped by 28 per cent and 25 per cent, respectively.

Materials and Methods: This study is depended on published literatures, information from different government and non-government organizations, reports from various websites. The materials collected is then systematically compiled so as to meet the relevance of the subject matter.

9.2 The Impacts:

9.2.1 Positive Environmental Impacts:

A. Improved Air Quality: Lockdowns and reduced industrial activities led to a significant decrease in air pollution levels, resulting in improved air quality in many regions. This has been particularly noticeable in major urban centres.
B. Reduced Greenhouse Gas Emissions (GHGs): With decreased industrial production and transportation, there has been a temporary reduction in greenhouse gas emissions, contributing to a slight alleviation of climate change concerns.
C. Reduced Water and Noise Pollution: Industrial shutdowns and reduced human activities have led to decreased water and noise pollution in various areas, providing a temporary respite for aquatic ecosystems and wildlife.
D. Relief for Tourist Destinations: The decline in tourism due to travel restrictions has relieved the pressure on many natural and cultural tourist destinations, allowing ecosystems to recover.
E. Enrichment of Wildlife Habitat: Reduced human interference has allowed some wildlife habitats to recover, providing a more favourable environment for certain species.
F. Increased Diurnal Activities in Wildlife: With less human disturbance, some wildlife has been observed to increase their diurnal (daytime) activities, benefiting from the quieter and less intrusive environment.

9.2.2 Negative Environmental Impacts:

A. Endangering the Environment: Despite the temporary positive impacts, the overall impact of the pandemic on the environment is not entirely positive. The endangerment of the environment includes issues such as increased single-use plastics, improper disposal of personal protective equipment (PPE), and potential setbacks in environmental conservation efforts.
B. Disruption of Conservation Efforts: The pandemic has disrupted various environmental conservation initiatives and research activities, as resources and attention have been diverted to address the health crisis.
C. Waste Management Challenges: The increased use of disposable items, including masks and gloves, has led to challenges in waste management. Improper disposal of these items can contribute to pollution and pose a threat to wildlife.
D. Economic Pressures on Conservation: Economic downturns and budget constraints during the pandemic have placed pressure on environmental conservation efforts, with many projects facing funding challenges.

In summary, while the COVID-19 pandemic has offered a temporary respite for the environment in certain aspects, yet, it also poses risks and challenges that need to be addressed to ensure sustainable and long-term - environmental well-being. Balancing economic recovery with environmental conservation remains a crucial aspect of the post-pandemic world.

9.3 Environmental Sustainability and Covid-19:

The COVID-19 pandemic has brought both challenges and opportunities for environmental sustainability. Some aspects are discussed below:

9.3.1 Challenges:

A. Single-Use Plastics: The increased use of single-use plastics, including masks, gloves, and packaging for takeout and delivery services, has contributed to environmental

concerns. Proper disposal and recycling of these items have become critical to mitigate the impact on ecosystems.

B. Waste Management: The surge in medical waste, such as disposable PPE, has posed challenges for waste management systems. Ensuring proper disposal and treatment of medical waste is essential to prevent environmental contamination.
C. Economic Pressures: Economic downturns and financial challenges faced by businesses and governments may lead to reduced funding for environmental initiatives. This can impact conservation efforts, research projects, and sustainable development programs.
D. Reduced Focus on Climate Action: The immediate focus on addressing the health crisis has diverted attention and resources away from climate action and sustainability initiatives. This could slow down progress toward global environmental goals.

9.3.2 Opportunities:

A. Remote Work and Reduced Travel: The widespread adoption of remote work has led to decreased commuting and business travel. This reduction in transportation-related emissions has showcased the potential for more sustainable work practices and transportation systems.
B. Digital Transformation: The acceleration of digitalization during the pandemic has the potential to reduce the need for physical resources and paperwork, contributing to a more sustainable and paperless environment.
C. Green Recovery Plans: Some governments and organizations are incorporating green elements into their recovery plans. Investing in renewable energy, sustainable infrastructure, and nature-based solutions can stimulate economic recovery while promoting environmental sustainability.
D. Increased Environmental Awareness: The pandemic has heightened awareness of the interconnectedness of human health and the environment. This awareness may lead to a greater appreciation for sustainable practices and a desire for resilient and environmentally friendly systems.
E. Re-evaluation of Consumption Patterns: The disruptions caused by the pandemic have prompted individuals and businesses to re-evaluate their consumption patterns. There is a growing emphasis on sustainable and local products, reducing unnecessary consumption, and embracing circular economy principles.

F. Nature-Based Solutions: Recognizing the importance of nature in providing essential services, there is an increased focus on nature-based solutions for climate adaptation and mitigation. This includes efforts to protect and restore ecosystems, such as forests and wetlands.
G. Renewed Commitment to Climate Goals: Some countries and organizations have reaffirmed their commitment to climate goals despite the challenges posed by the pandemic. This commitment is evident in various international agreements and initiatives.
H. Public Awareness: The pandemic has increased public awareness of the interconnectedness between human health and the health of the environment. This awareness may lead to greater support for policies and practices that promote environmental sustainability.
I. Policy Shifts: The crisis has prompted some policymakers to re-evaluate and strengthen environmental regulations. There is growing recognition of the need for resilient and sustainable systems to prevent future global crises.

9.3.3 Its Repercussions:

The COVID-19 pandemic has had various repercussions on the environment. The overview of how the pandemic has affected the environment is seen in *air quality improvement* due to prolonged lockdowns and restrictions on travel and industrial activities which resulted in a substantial reduction in air pollution.

With fewer vehicles on the roads and decreased industrial emissions, air quality improved in many urban areas. The slowdown in economic activities led to a temporary *reduction in carbon dioxide (CO2) emissions*. This reduction was particularly noticeable in sectors such as transportation and industry. Further on, *noise pollution has been drastically reduced* due to reduced human activities, there was a decrease in noise pollution, providing a temporary respite for ecosystems and wildlife. Decreased human interference and reduced tourism in some areas has allowed for the *regeneration and improvement of wildlife habitats*. Wildlife in certain regions experienced less disturbance, leading to changes in behaviors and increased diurnal activities. The pandemic prompted some individuals and businesses to adopt more sustainable practices through *shift in consumer behaviors*.

There was an increased focus on local products, sustainable consumption, and a re-evaluation of supply chain practices.

But simultaneously there is a negative repercussion of Covid-19 on environmental Sustainability where the whole world experienced *increase in Single-Use Plastics*. The demand for single-use plastics, including masks, gloves, and packaging, surged during the pandemic.

Moreover, improper disposal of these items poses a threat to marine and terrestrial ecosystems.

The disposal of medical waste, such as personal protective equipment (PPE), presented *challenges for waste management systems*.

Ensuring proper disposal and treatment of this waste became crucial to prevent environmental contamination. *Environment Conservation projects* and initiatives faced disruptions due to shifting priorities, resource reallocation, and logistical challenges also during the pandemic.

The *Economic Pressures on Renewable Energy* during the pandemic is astonishing due to economic uncertainties that had impacted investments in renewable energy projects, with some governments and businesses prioritizing short-term economic recovery over long-term sustainability goals.

There is a *setback in Biodiversity Conservation* whereby the economic impact of the pandemic led to a diversion of resources away from biodiversity conservation efforts, potentially resulting in setbacks in the protection of endangered species and ecosystems.

In summary, the repercussions of COVID-19 on the environment are multifaceted. While there were temporary positive changes, such as improved air quality and wildlife habitat regeneration, there were also negative impacts, particularly in terms of increased plastic usage and disruptions to conservation efforts. The post-pandemic period provides an opportunity for societies to adopt sustainable practices and policies as they rebuild and recover.

9.4 Conclusion:

In conclusion, while the COVID-19 pandemic has presented challenges to environmental sustainability, it has also created opportunities for positive change. The key lies in harnessing these opportunities to build a more resilient and sustainable future that prioritizes the health of both people and the planet. The COVID-19 pandemic has brought both challenges and opportunities for environmental sustainability. While certain aspects, such as reduced carbon emissions and a renewed focus on local and sustainable practices, have been positive, challenges like increased single-use plastic usage and disruptions to ongoing sustainability initiatives require careful attention and mitigation strategies. The post-pandemic recovery phase provides a unique opportunity to build back better with a strong emphasis on environmental sustainability.

9.5 References:

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