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Review paper

India's Importance and Obstacles in Achieving Net Zero Emissions by 2050

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ABSTRACT

The BRICS (Brazil, Russia, India, China, and South Africa) emerging economies will have a big impact on the direction of the world economy and environment. Their carbon-intensive economic systems have a major role in the worldwide production of greenhouse gases (GHGs), which is what causes climate change. But in the interest of a sustainable and climate-neutral global economy, the BRICS have entered the contest to emerging net. But there are chances and difficulties along the way. Regarding the impact on net-zero trajectories, scientists' responses to the spread of the coronavirus illness 2019 (COVID-19) were not uniform. Although statistical evidence indicates a relationship COVID-19 and a drop in overall emissions, it is anticipated that COVID-19 hampered affected to create CO_2 reduced economies. More inquiry is thus still required to fully understand how COVID-19 may affect efforts to achieve net-zero, particularly in emerging nations. To reach net-zero emissions by 2050, governments and stakeholders must concentrate on removing the obstacles while taking advantage of the possibilities brought about by the pandemic.

1. Introduction

Atmospheric changes, mostly attributed to (GHG) emissions, are one of the most important issues confronting humanity today. More frequent and extreme weather events have been the outcome of catastrophic and long-lasting changes to the climate system since 1900 due to the release of greenhouse gases into the atmosphere and the ensuing rise in their atmospheric concentration. The "business as usual" model predicts average global temperatures to climb by more than 3.5 C if current emission trends continue. With all of the devastation this temperature increase has caused, it is imperative that the world's economy decarbonize. During the 2015 Paris Conference of the United Nations Framework Convention on Climate Change (UNFCCC), commitments to lower greenhouse gas emissions were made by Brazil, Russia, India, China, and South Africa are among the BRICS countries whose governments contribute the most to global emissions. As countries battled to adopt net-zero emission routes in 2020, the COVID-19 pandemic, which spread quickly throughout the world, killed millions of people,

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crippled economies, and took front stage, gained prominence. As a result, financial and environmental concerns garnered greater attention than the epidemic. Responding to COVID-19 necessitated the use of several severe strategies. Everywhere these acts disrupted economic, social, and physical activities. GHG-emitting industries and other critical links in their value chains had to temporarily close, either completely or partially, as a result of the lockdowns. While COVID-19 has a lot of negative consequences, Naderipour et al. asserted that by lowering GHG emissions, especially CO_2 emissions, the lockout and other restrictive measures had greatly improved the quality of the air. For example, the transport sector's emissions decreased when intercity travel was suspended. The legislation allowing for work from home has reduced the carbon impact of those who commute by car. According to Ray et al., there have been several studies on the effects of COVID19-related activities on carbon monoxide, but few in-depth analyses of the effects on CO_2 emissions.

Still, Khan et al. reported a significant drop in carbon emissions among other major CO2 emitters, such as the US, India, Italy, Spain, and Brazil. In 2020, global carbon emissions decreased, according to similar findings published by Lamb et al. This happened concurrently with certain polluting industries lowering their carbon footprint as a result of COVID-19-related lockdowns. Le Quéré and colleagues compared the daily CO2 emissions of both years from January to April and found a 17% decrease in 2020 compared to 2019. Several scholarly investigations have furthermore indicated that the implementation of lockdown protocols, which reduced the level of carbon-releasing activities, often resulted in a decrease in greenhouse gas emissions during the COVID-19 timeframe.

Any reduction in GHG emissions is praiseworthy given the current global demand for and commitment to the net-zero emissions trajectory; nevertheless, in order to reinforce and deepen the sustainability of the low carbon trajectory, the reasons for such a reduction must be thoroughly investigated. But according to some experts, COVID19's short-term effects on emissions could have altered our trajectory towards net-zero emissions by 2050. Considering the need for scientific attention, this paper explores India's net-zero status. This study looks at India's net-zero.

2. Literature Review

The pathway towards global net-zero and climate change International agreements like the Glasgow Pact, Kyoto Protocol, and Paris Agreement have not yet succeeded in curbing the rise in global warming that raises surface temperatures. GHG emissions, mostly carbon dioxide (CO_2), are rising in tandem with temperatures. With record high levels of carbon dioxide, a host of climate-related problems are being experienced, and global warming is speeding up. The current intensification of climate change's devastating consequences has resulted in billions of dollars being wasted annually due to infrastructure damage and fatalities.

To reach net-zero emissions by the middle of the twenty-first century, the world's leading economies and developing countries—including the BRICS—have committed to lowering their greenhouse gas emissions. Open Innovation Technology Mark Complex. 2022, 172 3 of 19 the anticipated effects of climate change. China, one of the biggest polluters, aims to peak its emissions by 2030 and become carbon neutral by 2060.

Conversely, by 2050, Europe hopes to be the first continent with net-zero emissions. Aggressive measures are needed to support the net-zero emission pledges in order to achieve carbon neutrality, stabilise the world's fast rising climate, and lessen related consequences. The chance of climate change occurrences, such extreme droughts, wildfires, and floods, is generally thought to increase exponentially above the 1.5 °C threshold.

To keep things from getting out of surveillance, drastic steps must ultimately be taken. In light of these tragedies and in order to achieve sustainable development, all nations must be dedicated to the objective of achieving net-zero emissions. An economy that prioritises carbon capture above emissions is known as a negative carbon economy, or one with net-zero emissions. Politicians that care about the environment have made reducing emissions their main concern, even during the deadly COVID-19 pandemic. In actuality, a number of countries have connected COVID-19 rescue packages to net-zero climate goals.

Worldwide Pollution and the COVID-19 Epidemic A worldwide emergency was proclaimed on March 11, 2020 by the United Nations in response to the COVID-19 outbreak. Due to the virus's rapid cross-border spread, 223 countries had recorded 81.5

million cases by December 2020. Owing to a jumble of measures implemented to halt its spread, the pandemic suddenly heralded in a period of "business quiet" over the globe. Due to the virus's quick spread, drastic measures like face mask use, social disengagement, and rigorous lockdowns that mandated staff work from home had to be taken. COVID-19-related lockdowns resulted in both full and partial economic shutdowns, which were marked by low social and physical activity, quiet cities, low industrial output, and low transit volumes.

The energy sector had been affected by the abrupt and severe drop in oil prices. The proliferation of COVID-19 and the accompanying lockdowns and restriction measures led to a significant reduction in greenhouse gas emissions into the atmosphere, which temporarily improved the state of the environment, particularly the air quality. The strict lockdown and temporary closure measures implemented by Covid-19 restricted both local and international journey, which directly affected the transportation sector and led to a significant decrease in energy consumption.

The route to net-zero emissions by 2050 becomes achievable with more analysis of the various choices that helped to reduce emissions during the epidemic period. However, there is still little information available about the impact of the non-lockdown measures put in place during the COVID-19 period on GHG emissions and enhanced environmental quality. Due to business tendencies toward compensation in the absence of such knowledge and subsequently inaction, there is a substantial possibility that GHG emissions will return to the pre-COVID-19 patterns [20] or even worse. GHG Emissions from the BRICS and COVID-19 The BRICS nations make a sizable contribution to the net world emissions of GHGs. The block, however, has made major steps to prioritise climate action, utilising its position in the G20 to push the issue forward. However, the bloc has worked very hard to prioritise climate action, pressing the G20 to make fundamental changes regarding concerns relating to climate change. To try and slow the rate of GHG emissions, a number of futuristic pledges have been put out. According to the principles of justice and "shared but differentiated duties and distinct capacities," the bloc has reiterated its commitment to working together to combat climate change [46]. With this context in mind, each nation has decided on its emissions paths, based on national objectives and capacities. The introduction of COVID-19 has, however, changed the anticipated routes and altered the emission patterns in some way.

3. Conclusion

The spread of COVID-19 sparked sector reactions that were marked by criminal actions, financial crises, a decline in energy consumption, job losses, and a number of other society ,financial , and religion vices. However, empirical investigations have demonstrated that there has been an increase in climatel quality, indicated by a decline in the amount of GHG . Nature's drive to re-establish its climatic equilibrium was realised despite a plethora of detrimental effects the epidemic had on many sectors of existence. In the framework of the COVID-19 epidemic, this research looked at India's paths for the 2050 net-zero trajectory. The limitations include constructing a setting that makes it challenging to spread the net-zero message throughout communities, limiting the technology transfer ladder, and restricting energy sources, among other impediments. Given these obstacles, the decrease in emissions is seen as a brief blip, a familiar characteristic of previous global crises that have caused a short-term cut in emissions but eventually re-emerge and follow the typical trajectory leading to the warming of the planet. A steady mindset change is taking place toward low carbon technology and the phase-out of polluting entities at all levels (policymakers, industry, and communities). Consequently, since before COVID-19, investments in green energy have surged. By establishing and growing manufacturing facilities that use green energy, which will also create spillover chances for environmental sustainability and employment, production may be brought back to normal along this trajectory.

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