

Impact of COVID-19 Lockdowns on air quality in Bangladesh : Analysis and AQI forecasting with support vector regression

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ABSTRACT

Over the past few decades, air pollution has emerged as a significant environmental hazard, causing premature deaths in Southeast Asia. The proliferation of industrialization and deforestation has resulted in an alarming increase in pollution levels. However, the COVID-19 pandemic has significantly reduced the amount of volatile organic compounds and toxic gases in the air due to the decrease in human activity caused by lockdowns and restrictions. This study aims to investigate the air quality in various geographical areas of Bangladesh, comparing the air quality index (AQI) during different lockdown periods to equivalent eight-year time spans in 10 of the country's busiest cities. This study demonstrates a strong correlation between the rapid and widespread dispersion of COVID-19 and air pollution reduction in Bangladesh. In addition, we evaluated the performance of Support Vector Regression (SVR) in AQI forecasting using the time series dataset. The results can help improve machine learning and deep learning models for accurate AQI forecasting. This study contributes to developing effective policies and strategies for reducing air pollution in Bangladesh and other countries facing similar challenges.

KEYWORDS

Air pollution; Air quality index (AQI); COVID-19; Environmental risk; Machine learning; Support Vector Regression (SVR); Time series analysis

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