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## ASSESSING THE ENVIRONMENTAL IMPACT OF EXPORT TRADE ON THE BEIJING-TIANJIN-HEBEI URBAN AGGLOMERATION. AN ANALYSIS USING THE SPATIAL PANEL STIRPAT MODEL

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### Abstract

In recent years, the export trade of Beijing, Tianjin, and Hebei has demonstrated stability and improved quality, contributing to the advancement of the dual domestic and international cycle and presenting both opportunities and challenges for the region. However, the spatial spillover effects of export trade on environmental impacts in the Beijing-Tianjin-Hebei city cluster remain understudied. This research paper addresses this gap by enhancing the STIRPAT model and utilizing panel data from the Beijing-Tianjin-Hebei city cluster spanning 2009 to 2020. The study examines the influence of foreign trade on carbon emissions and air pollution from the perspective of export trade. The results reveal that carbon dioxide emissions in the Beijing-Tianjin-Hebei city cluster are not significantly spatially correlated; whereas PM<sub>2.5</sub> demonstrates significant spatial correlation and forms a distinct cluster in terms of geographical distribution. Based on this regression model from panel data, it is concluded that a 1% increase in export trade results in a 4.794% increase in CO<sub>2</sub> emissions; spatial econometric analysis concludes that a 1% increase in export trade leads to an 11.54% increase in PM<sub>2.5</sub> concentration values. Additionally, GDP per capita and urban green space has a certain mitigation effect on environmental pollution. Regional synergy is an important guide for the development of large urban agglomerations. In the new era, high-level economic development must be pursued alongside ecological and environmental protection. Accelerating the green transformation of industries and promoting synergistic emission reduction in the Beijing-Tianjin-Hebei urban agglomeration is the key to development.

*Key words:* carbon emissions, export trade, PM<sub>2.5</sub>, spatial aggregation

*Received: May, 2023; Revised final: July, 2023; Accepted: August, 2023; Published in final edited form: August, 2023*

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