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# **G20 ENVIRONMENTAL TRANSITIONS: A HOLISTIC EXPLORATION OF THE EKC CURVE. THE ROLE OF FDI, URBANIZATION, AND INDUSTRIAL TRENDS**

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## **Abstract**

The objective of this study is to investigate the complex relationship between key economic indicators and their impact on carbon dioxide emissions (CO<sub>2</sub>) within the G20 nations. The study utilizes advanced econometric techniques, including co-integration, PMG, LSDV, dynamic and fully modified OLS, to analyze the relationships between GDP, industrialization, population, urbanization, foreign direct investment (FDI), and CO<sub>2</sub> emissions. The findings indicate that economic growth, as measured by GDP, is positively associated with higher levels of CO<sub>2</sub> emissions. Similarly, industrial production shows a positive correlation with CO<sub>2</sub> emissions. Population growth and FDI also contribute to increased CO<sub>2</sub> emissions. The analysis further reveals bidirectional Granger causal relationships among CO<sub>2</sub> emissions, urbanization, and population growth, as well as four unidirectional causal linkages connecting GDP, GDPS, IVA, and FDI to CO<sub>2</sub> emissions. Overall, the study provides insights into how economic development choices within the G20 nations influence carbon emissions, aiding in the formulation of informed policy decisions for sustainability.

*Key words:* CO<sub>2</sub> emission, economic growth, FDI, population growth

*Received:* January, 2024; *Revised final:* March, 2024; *Accepted:* April, 2024

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