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## G20 ENVIRONMENTAL TRANSITIONS: A HOLISTIC EXPLORATION OF THE ENVIRONMENTAL KUZNETS CURVE (EKC). 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 Gross Domestic Product (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, GDP Share (GDPS), Industrial Value-Added (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

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