

# Effect of Economic Complexity on Environmental Performance: Evidence from Lower Income & Lower-Middle Income Countries

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## Abstract

There are cursory studies on the impact of economic complexity on environmental performance in lower-income and lower-middle-income countries. This relationship is important because as countries develop, balancing economic growth with environmental sustainability becomes crucial for long-term ecological health, especially in nations where economic growth may exacerbate environmental degradation. In this paper we study how economic complexity, measured by the Economic Complexity Index (ECI), influences environmental performance, initially measured by the Environmental Performance Index (EPI), and later using CO<sub>2</sub> and greenhouse gas (GHG) emissions as indicators, in 45 developing countries over the period from 1999 to 2019. We utilize a set of panel data regression models, including both Fixed Effects (FE), Random Effects (RE), and Arellano-Bond Generalized Method of Moments (GMM) estimators, with the Hausman test and Hansen test to select the appropriate model. Several control variables, including GDP per capita, energy consumption, and FDI, were included in the analysis. Findings suggest an insignificant relationship between ECI and EPI, indicating that economic complexity does not significantly impact overall environmental performance in developing countries. However, a statistically significant negative correlation was found between ECI and CO<sub>2</sub> emissions, suggesting that increased economic complexity is associated with reduced carbon emissions. The study concludes that while complexity does not appear to affect broader environmental performance (as measured by EPI), focusing on CO<sub>2</sub> reduction could offer a viable policy path for improving environmental quality in developing countries through increased economic complexity and sustainable practices.

**Keywords:** Economic Complexity Index (ECI); Environmental Performance Index (EPI); CO<sub>2</sub> Emissions; Greenhouse Gas (GHG) Emissions; Developing Countries; Panel Data Regression

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