

Climate Action Effects on Health-Related Sustainable Development: Evidence from Four Income Groups

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Abstract

The purpose of this study is to examine the effects of climate action on Sustainable Development Goal 3 (Good Health and Well-being) across 193 World Bank member countries classified into four income groups: low-income (26 countries), lower-middle-income (45 countries), upper-middle-income (58 countries), and high-income (64 countries). The analysis employs country-level SDG 3 index scores constructed by Sachs et al. (2026) for the period 2016–2025. Climate action is measured by three indicators: CO₂ emissions from fossil fuel combustion and cement production (tCO₂/capita) (co2gcp), GHG emissions embodied in imports (tCO₂eq/capita) (ghgimport), and CO₂ emissions embodied in fossil fuel exports (tonnes/capita) (co2export).

Pesaran's (2004) cross-sectional dependence test indicates significant cross-sectional dependence in the panel. Given the presence of cross-sectional dependence and the fact that the number of cross-sectional units exceeds the time dimension ($N > T$), the Panel-Corrected Standard Errors (PCSE) estimator of Beck and Katz (1995) is applied separately to each income group.

In the low-income countries, none of the climate action variables is statistically significant. In the lower-middle-income and upper-middle-income countries, co2gcp shows a statistically significant negative relationship with SDG 3, while co2export exhibits a positive relationship. Both results are consistent with theoretical expectations. In the high-income countries, increases in co2gcp and ghgimport are associated with statistically significant declines in SDG 3 scores, again in line with expectations. These findings highlight substantial heterogeneity in the climate–health relationship across income levels.

Keywords

Climate action, SDG 3, income groups, panel-corrected standard errors (PCSE) model.