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"Gheorghe Asachi" Technical University of Iasi, Romania

SUSTAINABILITY IN SAUDI ARABIA: THE ROLE OF URBANIZATION, NONOIL GROWTH, AND TRADE OPENNESS IN SO_2 EMISSIONS

Haykel Tlili

Management Information Systems Department, Applied College, University of Hail, Baqaa Road, Hail City, Saudi Arabia
E-mail: h.tlili@uoh.edu.sa; Phone: +966 557648150

Abstract

The study explores the impact of urbanization, financial development, trade openness, and nonoil sector growth on SO_2 emissions in the Kingdom of Saudi Arabia (KSA), a country undergoing rapid economic and social transformations under its strategic plan, Vision 2030. Motivated by the critical need to balance economic growth with environmental sustainability, we hypothesize that urbanization and trade openness have direct effects on SO_2 emissions, while financial development and nonoil sector growth indirectly influence air quality. To test this hypothesis, an Autoregressive Distributed Lag (ARDL) model was utilized alongside a Nonlinear ARDL (NARDL) approach, using data from 1990 to 2018. Results indicate that urbanization and trade openness significantly influence SO_2 emissions in both short and long-term contexts, whereas financial development improves air quality primarily in the long-run. The study's findings underscore the necessity for policies aimed at sustainable urban planning, financial sector incentives for green investments, and trade practices that support environmental responsibility. This research contributes to the discourse on sustainable economic strategies in resource-dependent economies, with implications for policy formulation in KSA and similar contexts.

Key words: ARDL, economic variables impact, NARDL, Saudi Arabia, SO_2 air pollution, sustainability

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