



RESEARCH ARTICLE

Assessing Sustainability: A Comprehensive Analysis of Nuclear Energy, Energy Depletion, and Agriculture in Pakistan

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Abstract

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The pressing impacts of human activities on environmental sustainability made economists and environmentalists think about identifying indicators responsible for the degradation of environmental quality. Accordingly, this study brings a novel analysis adopting Pakistan's Load Capacity Factor (LCF) as the significant environmental sustainability indicator between 1990 and 2022 for empirical analysis. The study applied the novel Dynamic Autoregressive Distributed Lags (ARDL) framework and offered the policymakers compelling insights. It highlights the positive influence of nuclear energy on Pakistan's environmental sustainability by mitigating environmental degradation. In contrast, agriculture expansion and energy depletion remain contributing factors of environmental degradation in the country, signaling significant attention towards them. The results contributed to the fact that expansion in economic activities raises environmental deterioration in Pakistan. Kernel-based Regularized Least Squares (KRLS) was applied to re-affirm these findings. The outcomes obtained from the complex synergy between nuclear energy expansion, agriculture, and energy depletion with environmental sustainability make it critical to strengthen environmental quality by not harming the country's economic growth.

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