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Despite remarkable success in attracting financial development and trade openness to achieve maximum GDP, the Indian economics grappling with an undesirable situation of environmental degradation have become a hot topic at COP-28. Researches have longer focused on this relationship. Under the UN Framework Convention on Climate Change action plans, national and international environmentalists must urgently promote sustainable development in these rapidly growing Indian economies. The present study aims to investigate the impact of green energy consumption, financial development, natural resources, and trade openness on CO₂ emissions in India by examining the data from 1995 to 2024. This study uses a recently developed quantile autoregressive distributed lag (QARDL) method. The QARDL results show that the error correction coefficients are statistically significant and have expected negative sign across all the quantiles. The empirical results show a significant reversal of the variables of concern and carbon emissions in India towards the long-run equilibrium relationship. This trend is observed in all the quantiles. In particular, the results show that green energy consumption helps to reduce carbon emissions in the long run at each quantile. Contrarily, the effects of financial development, trade openness and natural resources on CO₂ emissions are positive at all quantiles, both in long and short terms. Furthermore, the results of the QARDL support the Environmental Kuznets Curve (EKC) hypothesis in India. In addition, Wald test results show that the null hypothesis of parameter constancy is rejected for all variables. The empirical findings of this study can help the policy implications for effective strategies against environmental degradation.

Key words: financial development, India, green energy consumption, and natural resources, QARDL model

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